RECLAMATION

Managing Water in the West

North Valley Regional Recycled Water Program

Final Environmental Impact Statement

U.S. Department of the Interior
Bureau of Reclamation

September 2015

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

North Valley Regional Recycled Water Program
Final Environmental Impact Statement

NEPA Lead Agency: United States Department of the Interior, Bureau of Reclamation, Mid-Pacific Region, South-Central California Area Office

Cooperating Agencies: City of Modesto, City of Turlock, Del Puerto Water District, U.S. Fish and Wildlife Service, NOAA National Marine Fisheries Service

The U.S. Department of the Interior, Bureau of Reclamation (Reclamation) has prepared this Environmental Impact Statement (EIS) for the North Valley Regional Recycled Water Program (NVRRWP or proposed project).

The City of Modesto, City of Turlock, and Del Puerto Water District (Partner Agencies) propose to implement a regional solution to address water supply shortages in Del Puerto Water District's service area on the west side of the San Joaquin River in San Joaquin, Stanislaus and Merced Counties, south of the Sacramento-San Joaquin River Delta (Delta). The project would deliver up to 59,000 acre feet per year of recycled water produced by the cities of Modesto and Turlock to the Delta-Mendota Canal (DMC), a feature of the Central Valley Project owned by Reclamation. Water in the DMC would then be conveyed directly to DPWD turnouts for use in-district. This project also proposes to provide water to certain Central Valley Project Improvement Act designated refuges located south of the Delta to deliver a portion of their supplemental water needs.

The EIS evaluated two alternatives that use different pipeline alignments to convey water to the DMC, and a third alternative, which would continue river discharge and then divert and convey water to the DMC through expanded facilities owned by the Patterson Irrigation District. Reclamation and the Partner Agencies have identified the Combined Alignment Alternative as the Preferred Alternative in the Final EIS.

The EIS assesses potential environmental effects of the NVRRWP Action alternatives and a No Action Alternative on resources including: aesthetics, air quality, agriculture, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services and utilities, recreation, transportation, socioeconomics, and environmental justice.

For further information contact:
Rain Emerson, Supervisory Natural Resources Specialist
Bureau of Reclamation
1243 "N" Street
Fresno, CA 93721
e-mail: remerson@usbr.gov

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J Mitigation Monitoring and Reporting Program

Acronyms and Abbreviations

40 CFR Part 51	Code of Federal Regulations, Title 40, Part 51
A-2	General Agriculture (zoning)
AB	Assembly Bill
AF	Acre-feet
AFY	Acre-feet per year
Alpha-BHC	Alpha-Hexachlorocyclohexane
Alpha-HCH	Alpha-Hexachlorocyclohexane
APE	Area of Potential Effect
ASCE	American Society of Civil Engineers
ATCM	Airborne Toxic Control Measure
BACT	Best Available Control Technology
BLAST	Bus Line Service of Turlock
BMPs	Best Management Practices
BNR	Biological Nu`trient Removal
BOD	Biochemical Oxygen Demand
BPS	Best Performance Standards
^{o}C	Degrees centigrade
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CalOSHA	California Division of Occupational Safety and Health
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCIC	Central California Information Center
CCP	Comprehensive Conservation Plan
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife

CDOC	California Department of Conservation
CDPH	California Department of Public Health
CEAT	Contractor Environenntal Awareness Training
CEC	California Energy Commission
CECs	Contaminants of Emerging Concern
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFNR	California Northern Railroad Company
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CH_4	Methane
CHRIS/CCIC	California Historical Resources Information System-Central California Information Center
CNDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
Commission	California Fish and Game Commission
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CSLC	California State Lands Commission
CVJV	Central Valley Joint Venture
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
CWSRF	Clean Water State Revolving Fund
CY	cubic yards

DART	Dial-A-Ride of Turlock
dB	Decibel
dBA	A-weighted decibel
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DDW	Division of Drinking Water
Delta	Sacramento-San Joaquin River Delta
DMC	Delta-Mendota Canal
DPM	Diesel particulate matter
DPWD	Del Puerto Water District
Draft EIR/EIS	Draft Environmental Impact Report/Environmental Impact Statement
DTSC	(California) Department of Toxic Substances Control
DWP	(California) Drinking Water Program
DWR	Department of Water Resources
EC	Electrical conductivity
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMFAC	Emissions factors (model)
EO	Executive Order
EPA	(United States) Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ERIP	Emission Reduction Incentive Program
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
^{o}F	Degrees Fahrenheit
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
FPPA	Farmland Protection Policy Act
ft	feet

FTA	Federal Transit Administration
FWCA	Fish and Wildlife Coordination Act
GAMAQI	Guide for Assessing and Mitigating Air Quality Impacts
GGS	Giant garter snake
GHG	Greenhouse Gas
GRCD	Grasslands Resource Conservation District
GWD	Grasslands Water District
GWP	Global warming potential
H_2O	Water
H_2S	Hydrogen sulfide
HCP	Habitat Conservation Plan
HDD	Horizontal Directional Drilling
HFCs	Hydrofluorocarbons
Hp	horsepower
HPSR	Historic Property Survey Report
Hz	Hertz
I-5	Interstate 5
IL2	Incremental Level 2 (water delivery)
IL4	Incremental Level 4 (water delivery)
IPCC	Intergovernmental Panel on Climate Change
Jennings Plant	City of Modesto's Jennings Water Quality Control Facility
Jones Pumping Plant	C.W. "Bill" Jones Pumping Plant
LBV	Least Bell's vireo
LCFS	Low Carbon Fuel Standard
L_{dn}	day-night average noise level
L_{eq}	energy-equivalent noise level
LF	Linear Feet
L_{max}	maximum noise level
LOS	Level of Service
LRA	Locally Responsible Area
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MBR	Membrane bioreactor

MBTA	Migratory Bird Treaty Act
MEI	Maximally Exposed Individual
mg/L	milligrams per liter
mgd	million gallons per day
mL	milliliter
MLD	Most Likely Descendant
MMRP	Mitigation Monitoring and Reporting Program
MOU	Memorandum of Understanding
MP	Milepost
mph	Miles per hour
MPN	Most probable number
MPO	Metropolitan Planning Organization
MSDS	Material Safety Data Sheet
msl	Mean sea level
MUTCD	Manual on Uniform Traffic Control Devices
MVFPD	Mountain View Fire Protection District
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Comission
National Priority List	Federal Superfund Sites
National Register	National Register of Historic Places
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOD	Notice of Determination
NOI	Notice of Intent
NOP	Notice of Preparation

NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Area
NRCS	National Natural Resources Conservation Service
NVRRWP	North Valley Regional Recycled Water Program
NWP	Nationwide Permit
NWR	National Wildlife Refuge
O_3	Ozone
OBD	On-board diagnostic system
OSHA	Occupational Safety and Health Administration
Partner Agencies	City of Modesto, City of Turlock, Del Puerto Water District
Pb	Lead
P-D	Planned Development Zone
PFCs	Perflourocarbons
PG&E	Pacific Gas & Electric
PID	Patterson Irrigation District
PM_{10}	Particulate Matter $\leq$ 10 microns
$PM_{2.5}$	Particulate Matter $\leq$ 2.5 microns
ppb	parts per billion
ppm	parts per million
PPV	Peak particle velocity
PUA	Planned Urbanizing Area
PVC	Polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
Reclamation	Bureau of Reclamation
Recycled Water Policy	Policy for Water Quality Control for Recycled Water
RMS	Root mean square
ROG	Reactive organic gases
ROW	right-of-way
ROWD	Report of Waste Discharge
RPS	Renewables Portfolio Standard
RSL	Regional Screening Levels

RWQCF	(Turlock) Regional Water Quality Control Facility
SAA	Streambed Alteration Agreement
SCVWD	Santa Clara Valley Water District
SDC	Seismic Design Category
SDWA	Federal Safe Drinking Water Act
SF_6	Sulfur hexafluoride
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan (SIP)
SJKF	San Joaquin Kit Fox
SJV	San Joaquin Valley
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLDMWA	San Luis and Delta-Mendota Water Authority
SO_2	sulfur dioxide
SO_x	sulfur oxides
SOD	South of Delta
SR	State Route
SRA	State Responsibility Area
SRA	State Recreation Area
SSC	Species of Special Concern
StanCOG	Stanislaus Council of Governments
STaRT	Stanislaus Regional Transit
SWA	State Wildlife Area
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TDS	total dissolved solids
TID	Turlock Irrigation District
TMDL	Total Maximum Daily Load
TMP	Traffic Management Plan

U.S.	United States
U.S.C.	United States Code
UCR	Uniform Crime Reporting Program
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UV	Ultraviolet light
VdB	Vibration velocity in decibels
VELB	Valley elderberry longhorn beetle
VERA	Voluntary Emissions Reduction Agreement
VOC	Volatile organic compounds
WA	(State) Wildlife Area
WDR	Waste Discharge Requirements
WFPD	Westport Fire Protection District
WQCF	(Modesto) Water Quality Control Facility
WSCFPD	West Stanislaus County Fire Protection District
WSID	West Stanislaus Irrigation District

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Executive Summary

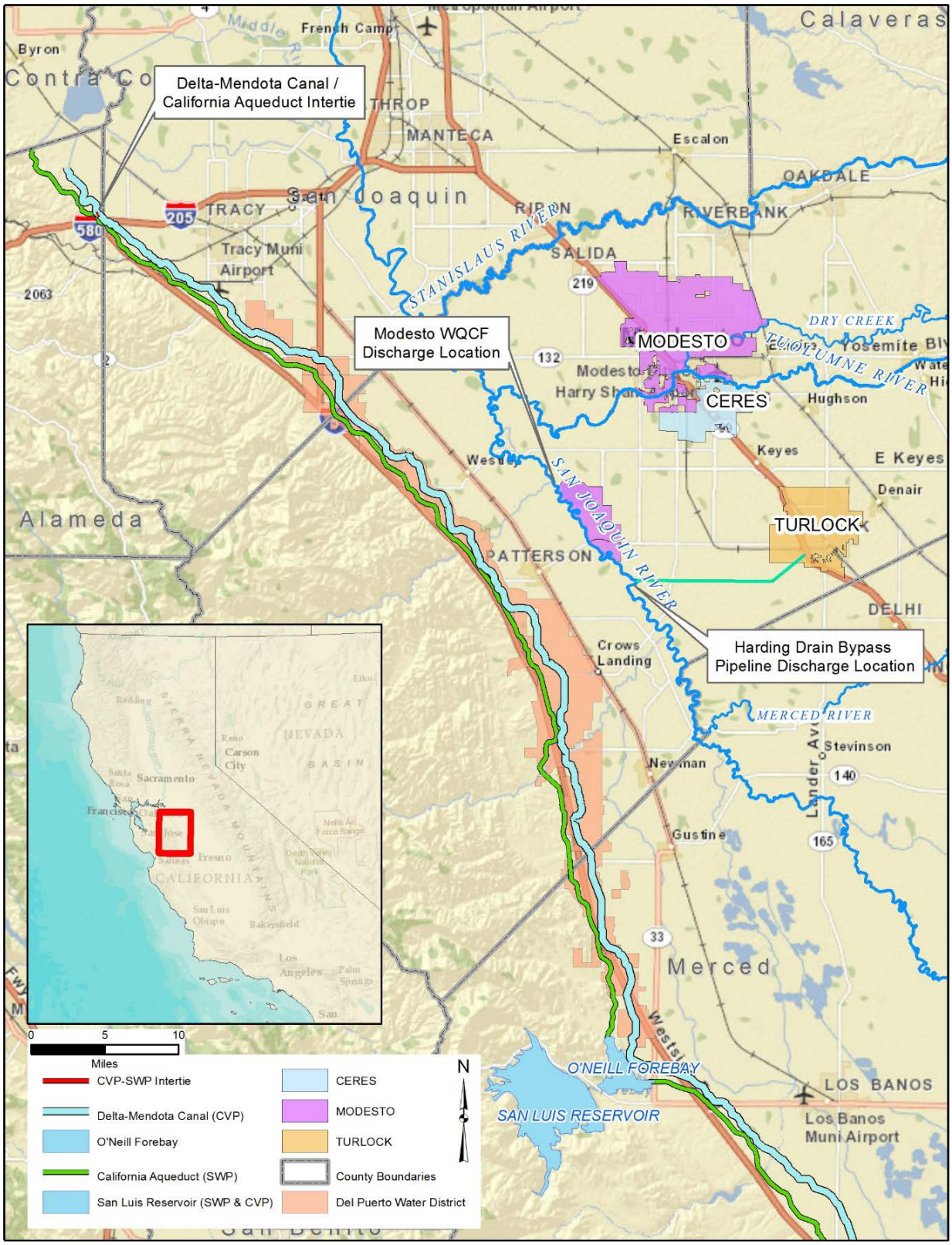
ES-1 Introduction

The U.S. Department of Interior, Bureau of Reclamation (Reclamation) as National Environmental Policy Act (NEPA) lead agency and the City of Modesto, as California Environmental Quality Act (CEQA) lead agency, prepared a Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS) for the North Valley Regional Recycled Water Program (NVRRWP). The City of Modesto represents the Partner Agencies for the NVRRWP which include the Cities of Modesto and Turlock and the Del Puerto Water District (DPWD or District). The Partner Agencies have proposed the NVRRWP to address water supply shortages in DPWD's service area located on the west side of the San Joaquin River in San Joaquin, Stanislaus, and Merced Counties, south of the Sacramento-San Joaquin River Delta (Delta). The NVRRWP was developed in conformance with the requirements of Reclamation's Directives and Standards for the Title XVI Reclamation and Reuse Program (Reclamation Document WTR 11-01), including preparation of a Feasibility Study, which identified and evaluated feasible conveyance alternatives that were included in the Draft EIR/EIS.

The Draft EIR/EIS was developed to provide the public and responsible and trustee agencies reviewing the NVRRWP an analysis of the potential effects on the local and regional environment associated with construction and operation of the NVRRWP. The primary purpose of the NVRRWP is to provide recycled water from the Cities of Modesto and Turlock to DPWD (See **Figure ES-1**).

The NVRRWP would also provide supplemental water to certain south of Delta (SOD) Central Valley Project Improvement Act (CVPIA)-designated wildlife refuges and wetland areas. Although Reclamation and the City of Modesto prepared a Draft EIR/EIS for public review, due to timing constraints, the City of Modesto prepared a stand alone Final EIR (SCH# 2014042068) pursuant to CEQA requirements. The Final EIR was released on June 19, 2015 and the City of Modesto certified the Final EIR on July 7, 2015. Pursuant to NEPA requirements, Reclamation has prepared this Final EIS to address the alternatives, affected environment, and environmental consequences associated with Reclamation's federal discretionary actions and the proposed NVRRWP. The purpose of this Final EIS is to inform decisionmakers and stakeholders about the potential adverse and beneficial impacts of the Proposed Action and associated alternatives. This Final EIS also provides responses to comments received on the Draft EIR/EIS. Changes between this Final EIS and the Draft EIR/EIS, which are not minor editorial changes, are indicated by vertical lines in the left margin of this document. Additional changes have also been made to the document in order to comply with Reclamation's Visual Identity formatting and for clarity.

Figure ES-1: Project Vicinity



This EIS evaluates three Action alternatives compared to the No Action Alternative for the NVRRWP. Identification of the No Action Alternative and the three Action alternatives for this EIS was informed by the purpose and need of the project, as presented in *Section 1.2, Purpose and Need*; comments received during the scoping process, preparation of a Feasibility Study (RMC 2013), and preparation of the Draft EIR/EIS. Alternatives evaluated in the Feasibility Study but rejected from further consideration are discussed in *Section 2.7* of the Final EIS.The alternatives considered in the Final EIS include:

No Action Alternative, assumes that the proposed project would not be constructed and that recycled water would not be supplied to DPWD or to certain SOD refuges.

Alternative 1, Combined Alignment Alternative, would convey recycled water from the City of Turlock through a pipeline beginning at the end of the existing Harding Drain Bypass Pipeline north to the City of Modesto's Jennings Water Quality Control Facility (Jennings Plant), where it would be combined with recycled water from Modesto. From the Jennings Plant the pipeline would cross under the San Joaquin River, and convey water to the DMC. This alternative has been identified as the Preferred Alternative. Discharges to the river would be discontinued under this alternative.

Alternative 2, Separate Alignment Alternative, would include two separate pipelines to convey flows from Turlock and Modesto: one from the end of the Harding Drain Bypass Pipeline, crossing under the San Joaquin River and conveying flows to the DMC, and one from Modesto's Jennings Plant, crossing under the river and delivering water to the DMC. Discharges to the river would be discontinued under this alternative.

Alternative 3, PID Conveyance Alternative, would continue the existing Modesto and Turlock discharges to the San Joaquin River, which would function as a part of the conveyance system. Water would be diverted from the river through the Patterson Irrigation District (PID) intake and conveyed to the DMC through expanded PID facilities. Because the existing PID system does not have sufficient capacity to convey all of the recycled water flows from Modesto and Turlock, this alternative would need to include expansion of the existing PID intake structure on the San Joaquin River, and expansion of the conveyance system through construction of a new pipeline paralleling the PID Main Canal.

ES-2 Background

DPWD is located along the west side of the San Joaquin Valley adjacent to the DMC, and extends from near Vernalis in the north to near Santa Nella in the south. The District provides agricultural irrigation water to approximately 45,000 acres of productive farmland in Stanislaus, San Joaquin, and Merced Counties. Currently, DPWD's only source of water is through a contract with Reclamation for the delivery of up to 140,210 acre-feet (AF) of Central Valley Project (CVP) water annually.

Since the early 1990s, DPWD's CVP water allocations have been significantly reduced due to Delta pumping restrictions resulting from the passage of the CVPIA, water rights decisions that

were implemented to address Delta water quality objectives, National Marine Fisheries Service (NMFS) salmon and United States Fish and Wildlife Service (USFWS) Delta smelt biological opinions, and drought conditions. In 2014, DPWD received a 0 percent allocation of its CVP contract. Future CVP contract water deliveries to DPWD are uncertain, so DPWD is seeking a reliable alternative water supply.

DPWD's service area is located a little over five miles from Modesto's Water Quality Control Facility (Jennings Plant) and less than five miles from the end of Turlock's Harding Drain Bypass Pipeline, which will convey flows from the Turlock Regional Water Quality Control Facility (RWQCF) to a discharge located on the San Joaquin River. Both Modesto and Turlock have recycled water available that could be delivered to the District and its customers. This supply of recycled water from Modesto and Turlock could provide a long-term, reliable water supply for DPWD and its customers that would serve to augment DPWD's CVP supply.

In addition to provision of water to the DPWD service area, the NVRRWP would make recycled water available to certain SOD CVPIA-designated federal National Wildlife Refuges (NWRs), State Wildlife Areas (SWAs), and the privately-managed wetlands of the Grassland Resource Conservation District, collectively referred to herein as "refuges". Reclamation has a legislative obligation under the CVPIA, in cooperation with the USFWS,the California Department of Fish and Wildlife (CDFW)), the Grassland Water District (GWD), and the Central Valley Joint Venture (CVJV) to provide firm, average annual historical water deliveries (defined as Level 2, or L2 in the CVPIA) of suitable quality to the refuges' habitat areas. In addition to L2 deliveries, an additional increment of water supply is needed for optimal wildlife management (defined as incremental Level 4, or IL4 in the CVPIA). Provision of adequate and reliable water supplies (L2 and IL4) for the refuges to meet the CVPIA-mandated water levels has not been achieved "due in large part to state and federal budget shortages, inconsistency in the timing of water deliveries, and increases in the costs of blocks of water made available annually from willing sellers on the open market" (CVJV 2006).

ES-3 Purpose and Need

One of the authorized purposes of the CVP is to provide water for irrigation and domestic use within California's Central Valley. In recent years, SOD CVP contractors and CVPIA-designated wildlife refuges have experienced an increased reduction in CVP water allocations from historical amounts due to drought conditions and expanded Delta pumping restrictions. As a CVP contractor, DPWD has a need to establish alternative, reliable long-term agricultural water supplies to offset this reduction in supply. Also CVPIA Section 3406(d)(2) directs Reclamation to acquire and provide supplemental water to CVPIA-designated wildlife refuges in the Central Valley. The purpose of the project is to make the Cities' recycled water available to DPWD for agricultural purposes and to SOD refuges for wetland habitat purposes in support of migratory birds.

ES-4 Partner Agencies' CEQA Objectives

The overall objective of the proposed project is to maximize beneficial use of a sustainable, alternative water supply within the region, which would address reductions in water supplies from the CVP and reduce the reliance on groundwater use. Specifically, the objectives of the project are as follows:

- Establish an alternative, reliable, long-term water supply of up to 59,000 AF per year (AFY) of recycled water for DPWD and refuges.
- Maximize beneficial use of recycled water by DPWD customers and refuges.
- Maximize Partner Agencies' control of operations and delivery of water to DPWD and refuges, while recognizing the need for coordination with Reclamation and the San Luis & Delta-Mendota Water Authority (SLDMWA).
- Establish a long-term water right(s) to allow for the beneficial use of recycled water.
- Maximize use of existing facilities for treatment / delivery of recycled water.
- Provide supplemental annual water supplies annually to SOD refuges to meet CVPIA Sections 3406(b)(3) and 3406(d)(2) requirements.
- Avoid or minimize, through incorporation of design constraints and management practices, impacts to environmental resources such as surface water, groundwater supplies, land subsidence, groundwater quality and biological resources including sensitive species.
- Deliver agricultural water to DPWD at a cost that supports regional economic sustainability.

The proposed project is needed to offset the significant reduction in CVP water allocations to DPWD associated with Delta pumping restrictions, drought conditions, and climate change. In addition, the proposed project is needed to offset anticipated effects (e.g., overdraft, subsidence, water quality issues) from increased groundwater pumping that have occurred and would likely continue to occur with the absence of an alternative water supply.

ES-5 Feasibility Study

The NVRRWP Partner Agencies have worked cooperatively to define shared objectives and develop feasible alternatives to provide a supply of recycled water to DPWD. Their efforts culminated in the preparation of a Feasibility Study for the NVRRWP, which was completed in December 2013 (RMC 2013). The Feasibility Study documents the process for development of alternatives, and includes and economic and financial analysis.

ES-6 Summary of Impacts

Table ES-1 provides a summary of potential impacts by topic area. The table does not include impacts or criteria that were deemed not applicable to construction or operation of the NVRRWP. Alternatives 1 and 2 would not result in any significant and unavoidable impacts for

either alternative alignment. Alternative 3, the PID Conveyance Alternative, could result in significant unavoidable impacts associated with the need to construct upgraded wastewater treatment facilities. The No Action Alternative has the potential to result in significant and unavoidable impacts associated with conversion of agricultural land to non agriculture land uses resulting from a lack of reliable water supply and the need for additional wastewater treatment facilities in the future.

Table ES-1: NVRRWP EIS Impact Summary

Impact Statement	No Action	1-Combined Alignment	2-Separate Alignments	3 – PID Conveyance	Mitigation Measure	No Action	1-Combined Alignment	2-Separate Alignments	3 – PID Conveyance
Aesthetics									
AES-1: Substantial damage to scenic resources and substantial degradation of existing visual character	LTS	LTS	LTS	LTS	No mitigation necessary	LTS	LTS	LTS	LTS
AES-2: New sources of substantial light or glare	NI	PS	PS	PS	AES-2a: Nighttime Construction Lighting (Alternatives 1, 2, 3) AES-2b: Directional Security Lighting for New Pump Station at Harding Drain Bypass Pipeline (Alternative 2)	NI	LSM	LSM	LSM
Agriculture and Forestry Resources									
AG-1: Convert farmland to non-agricultural use	S&U	PS	PS	PS	AG-1: Stockpile Soil (Alternatives 1, 2, 3)	S&U	LSM	LSM	LSM
AG-2: Conflict with existing zoning for agricultural use	NI	B	LTS	B	No mitigation necessary	NI	B	LTS	B
AG-3: Conflict with Williamson Act contract	S&U	NI	LTS	NI	No mitigation necessary	S&U	NI	LTS	NI
AG-4: Provide drought-resistant source of water to agriculture	S&U	B	B	B	No mitigation necessary	S&U	B	B	B
Air Quality									
AIR-1: Construction emissions of criteria pollutants and precursors	NI	PS	PS	PS	AIR-1: Reduce NOx Emissions (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
AIR-2: Local community risks and hazards during construction	NI	LTS	LTS	LTS	No mitigation necessary	NI	LTS	LTS	LTS
AIR-3: Odors generated during project construction	NI	LTS	LTS	LTS	No mitigation necessary	NI	LTS	LTS	LTS
AIR-4: Direct emissions of criteria pollutants during project operation	LTS	LTS	LTS	LTS	No mitigation necessary	LTS	LTS	LTS	LTS
AIR-5: Local community risks and hazards during project operation	LTS	LTS	LTS	LTS	No mitigation necessary	LTS	LTS	LTS	LTS
AIR-6: Odor emissions during project operation	LTS	LTS	LTS	LTS	No mitigation necessary	LTS	LTS	LTS	LTS
AIR-7: Consistency with applicable air quality plans	LTS	LTS	LTS	LTS	No mitigation necessary	LTS	LTS	LTS	LTS
Biological Resources									
BIO-1: Effects on special-status plants	NI	PS	PS	PS	BIO-1a: Avoid or Minimize Impacts to Special-Status Plant Species (Alternatives 1, 2, 3) BIO-1b: Perform Focused Surveys for Special-Status Plant Species in Suitable Habitats (Alternatives 1, 2, 3) BIO-1c: Monitor or Compensate for Impacts to Special-Status Plant Species (Alternatives 1, 2, 3) BIO-1d: Develop and Implement a Frac-out Contingency Plan for Trenchless Construction (Alternatives 1 and 2)	NI	LSM	LSM	LSM
BIO-2: Effects on vernal pool fairy branchiopods	NI	PS	NI	NI	BIO-2a: Avoid Impacts to Vernal Pool Branchiopods and their Habitat (Alternative 1) BIO-2b: Minimize and Compensate for Impacts to Vernal Pool Fairy Shrimp and their Habitat (Alternative 1)	NI	LSM	NI	NI
BIO-3: Effects on valley elderberry longhorn beetle	NI	PS	PS	PS	BIO-1d: Develop and Implement a Frac-out Contingency Plan for Trenchless Construction (Alternatives 1 and 2) BIO-3a: Avoid Impacts to Valley Elderberry Longhorn Beetle (Alternatives 1, 2, 3) BIO-3b: Minimize or Compensate for Impacts to Valley Elderberry Longhorn Beetle (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM

Notes: NI= No Impact, LTS=Less than Significant, PS=Potentially Significant, LSM=Less than Significant with Mitigation, S&U=Significant and Unavoidable, B=Beneficial; Alternative 1=Combined Alignment, Alternative 2=Separate Alignment, Alternative 3=PID Conveyance

Impact Statement	No Action	1-Combined Alignment	2-Separate Alignments	3 – PID Conveyance	Mitigation Measure	No Action	1-Combined Alignment	2-Separate Alignments	3 – PID Conveyance
BIO-4: Effects of project construction on special-status fishes	NI	PS	PS	PS	BIO-1d: Develop and Implement a Frac-out Contingency Plan for Trenchless Construction (Alternatives 1 and 2) BIO-4a: Minimize Pile Driving-related Impacts to Special Status Fish (Alternatives 1 and 2) BIO-4b: Best Management Practices for In-River Intake Construction (Alternative 3)	NI	LSM	LSM	LSM
BIO-5: Effects of project operations on special-status fishes	NI	LTS	LTS	LTS	No mitigation necessary	NI	LTS	LTS	LTS
BIO-6: Effects on giant garter snake	NI	PS	PS	PS	BIO-6: Avoid and Minimize Impacts to Giant Garter Snake (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
BIO-7: Effects on San Joaquin whipsnake	NI	LTS	LTS	LTS	No mitigation necessary	NI	LTS	LTS	LTS
BIO-8: Effects on western pond turtle	NI	PS	PS	PS	BIO-8: Avoid and Minimize Impacts to Western Pond Turtle (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
BIO-9: Effects on burrowing owl	NI	PS	PS	PS	BIO-9: Avoid, Minimize, or Compensate for Impacts to Burrowing Owl (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
BIO-10: Effects on tricolored blackbird	NI	PS	PS	PS	BIO-10: Avoid and Minimize Impacts to Tricolored Blackbird Nesting Colonies (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
BIO-11: Effects on golden eagle and bald eagle	NI	LTS	LTS	LTS	No mitigation necessary	NI	LTS	LTS	LTS
BIO-12: Effects on raptors including special-status species	NI	PS	PS	PS	BIO-12: Avoid, Minimize, or Compensate for Impacts to Raptors including Special-status species (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
BIO-13: Effects on special-status passerine species and birds protected under the MBTA	NI	PS	PS	PS	BIO-13: Avoid and Minimize Impacts to Special-status passerine species and other Birds Protected under the Migratory Bird Treaty Act (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
BIO-14: Effects on special-status mammals	NI	PS	PS	PS	BIO-14a: Avoid and Minimize Impacts to San Joaquin kit fox (Alternatives 1, 2, 3) BIO-14b: Avoid and Minimize Impacts to Special-Status Bats (Alternative 3)	NI	LSM	LSM	LSM
BIO-15: Effects on riparian habitat and other sensitive natural communities	NI	PS	PS	PS	BIO-1d: Develop and Implement a Frac-out Contingency Plan for Trenchless Construction (Alternatives 1 and 2) BIO-2a: Avoid Impacts to Vernal Pool Branchiopods and Their Habitat (Alternative 1) BIO-16a: Avoid and Minimize Impacts to Federally Protected Wetlands (Alternatives 1, 2, 3) BIO-16b: Obtain Regulatory Permits for Work Activities Taking Place in Wetlands and Waters of the United States and the State (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
BIO-16: Effects on federally protected wetlands	NI	PS	PS	PS	BIO-1d: Develop and Implement a Frac-out Contingency Plan for Trenchless Construction (Alternatives 1 and 2) BIO-16a: Avoid and Minimize Impacts to Federally Protected Wetlands (Alternatives 1, 2, 3) BIO-16b: Obtain Regulatory Permits for Work Activities Taking Place in Wetlands and Waters of the United States and the State (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
BIO-17: Effects on movement of fish and wildlife and use of breeding sites	NI	PS	PS	PS	See Mitigation Measures BIO-6, 8, 9, 10, 12 and 13 (Alternatives 1, 2, 3) and Mitigation Measure BIO-4 (Alternative 3) TR-2: Install Temporary Trench Plates Over Open Trenches (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
BIO-18: Conflict with local ordinances or policies protecting biological resources	NI	PS	PS	PS	See Mitigation Measures BIO-1d (Alternatives 1 and 2), 2a (Alternative 1), BIO-4b (Alternative 3) and 16a (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
BIO-19: Effects on existing Habitat Conservation Plan (HCP)	NI	LTS	LTS	LTS	No mitigation necessary	NI	LTS	LTS	LTS
BIO-CUM-1: Effects on terrestrial vegetation, wildlife and sensitive communities	NI	LTS	LTS	LTS	No mitigation necessary	NI	LTS	LTS	LTS

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Impact Statement	No Action	1-Combined Alignment	2-Separate Alignments	3 – PID Conveyance	Mitigation Measure	No Action	1-Combined Alignment	2-Separate Alignments	3 – PID Conveyance
BIO-CUM-2: Effects on fish species and their habitats	PS	PS	PS	PS	BIO-CUM-1: Assistance with Salmonid Recovery Plan Actions (Alternatives 1, 2, 3)	PS	LSM	LSM	LSM
Cultural Resources									
CUL-1: Substantial adverse change in the significance of a unique archaeological resource or disturb any human remains, including those interred outside of formal cemeteries.	NI	PS	PS	PS	CUL-1: Discovery of previously unknown archaeological resources during construction (Alternatives 1, 2, 3) CUL-2: Discovery of human burials during construction (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
CUL-2: Cause a substantial adverse change in the significance of a historical resource	NI	PS	PS	PS	CUL-1: Discovery of previously unknown archaeological resources during construction (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
CUL-3: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature	NI	PS	PS	PS	CUL-3: Discovery of paleontological resources during construction (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
Energy									
ENE-1: Inefficient, wasteful, or unnecessary use of energy resources	LTS	PS	PS	PS	AIR-1: Reduce NOx Emissions (Alternatives 1, 2, 3)	LTS	LSM	LSM	LSM
Geology, Soils, and Seismicity									
GEO-1: Facility damage and exposure of people to hazards from strong seismic groundshaking	NI	PS	PS	PS	GEO-1: Perform Design-Level Geotechnical Evaluations for Seismic Hazards (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
GEO-2: Facility damage and exposure of people to hazards from liquefaction and lateral spreading	NI	PS	PS	PS	GEO-2: Perform Design-Level Geotechnical Evaluations for Soil Expansion (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
GEO-3: Potential for substantial erosion or loss of top soil	NI	LTS	LTS	LTS	No mitigation necessary	NI	LTS	LTS	LTS
Greenhouse Gas Emissions									
GHG-1: GHG construction emissions	NI	LTS	LTS	LTS	No mitigation necessary	NI	LTS	LTS	LTS
GHG-2: GHG operational emissions	LTS	LTS	LTS	LTS	No mitigation necessary	LTS	LTS	LTS	LTS
GHG-3: Consistency with applicable GHG reduction plans	LTS	LTS	LTS	LTS	No mitigation necessary	LTS	LTS	LTS	LTS
Hazards and Hazardous Materials									
HAZ-1: Create a Hazard through Reasonably Foreseeable Upset and Accident Conditions Involving Release of Hazardous Materials into the Environment	NI	PS	PS	PS	HAZ-1a: Hazardous Materials Management and Spill Prevention Control Plan (Alternatives 1, 2, 3) HAZ-1b: Conduct Phase I Study along Pipeline Segments (Alternatives 2 and 3)	NI	LSM	LSM	LTS
HAZ-2: Expose People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires	NI	LTS	LTS	LTS	HAZ-2: Prevention of Fire Hazards (Alternatives 1, 2, 3)	NI	LTS	LTS	LTS
HAZ-3: Conflict with Any Adopted Emergency Response Plan or Emergency Evacuation Plan	NI	PS	PS	PS	See Mitigation Measures HAZ-1a, HAZ-1b, and HAZ-2	NI	LSM	LSM	LTS
Hydrology and Water Quality									
HYD-1: Violation of Water Quality Standards and/or Waste Discharge Requirements (Due to Construction Activities)	NI	PS	PS	PS	HYD-1a: Comply with the Construction General Permit (Alternatives 1, 2, 3) HYD-1b: Implement BMPs to Control Erosion and Sediment During Construction (Alternatives 1, 2, 3) HYD-1c: Comply with the General Order for Dewatering or Other Appropriate NPDES Permit (Alternatives 1, 2, 3) BIO-1d: Develop and Implement a Frac-out Contingency Plan for Trenchless Construction (Alternatives 1 and 2)	NI	LSM	LSM	LSM
HYD-2: Violation of Water Quality Standards and/or Waste Discharge Requirements (at Project Implementation)	LTS	LTS	LTS	LTS	No mitigation necessary	LTS	LTS	LTS	LTS
HYD-3: Substantial Depletion of Groundwater Supplies or Substantial Interference with Groundwater Recharge	PS	LTS	LTS	LTS	No mitigation necessary	PS	LTS	LTS	LTS
HYD-4: Otherwise substantially degrade water quality (Constituents of Emerging Concern)	LTS	LTS	LTS	LTS	No mitigation necessary	LTS	LTS	LTS	LTS
HYD-5: Reduction of Flows in San Joaquin River	LTS	LTS	LTS	LTS	No mitigation necessary	LTS	LTS	LTS	LTS

Notes: NI= No Impact, LTS=Less than Significant, PS=Potentially Significant, LSM=Less than Significant with Mitigation, S&U=Significant and Unavoidable, B=Beneficial; Alternative 1=Combined Alignment, Alternative 2=Separate Alignment, Alternative 3=PID Conveyance

Impact Statement	No Action	1-Combined Alignment	2-Separate Alignments	3 – PID Conveyance	Mitigation Measure	No Action	1-Combined Alignment	2-Separate Alignments	3 – PID Conveyance
HYD-6: Effect on Delta Exports at Banks and Tracy Pumping Plants	LTS	LTS	LTS	LTS	No mitigation necessary	LTS	LTS	LTS	LTS
Land Use and Planning									
LU-1: Physically divide an established community or result in land use conflicts	NI	NI	NI	NI	No mitigation necessary	LTS	NI	NI	NI
LU-2: Conflict with any applicable land use plan, policy or regulation	S&U	LTS	LTS	LTS	No mitigation necessary for Action alternatives/ No mitigation possible for No Action	S&U	LTS	LTS	LTS
Noise									
NOI-1: Temporary Construction-Related Noise Increases	NI	PS	PS	PS	NOISE-1: Noise Reduction Measures (Alternatives 1, 2,3)	NI	LTS	LTS	LTS
NOI-2: Temporary disturbance from construction-related vibration increases	NI	LTS	LTS	LTS	No mitigation necessary	NI	LTS	LTS	LTS
NOI-3: Increases in ambient noise levels due to operational noise and vibration	LTS	LTS	LTS	LTS	No mitigation necessary	LTS	LTS	LTS	LTS
Public Services and Utilities									
PUB-1: Impacts associated with new or altered governmental facilities to maintain acceptable levels of performance	NI	LTS	LTS	LTS	No mitigation necessary	NI	LTS	LTS	LTS
PUB-2: Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.	LTS	LTS	LTS	PS	No mitigation necessary (Alternatives 1 and 2) PUB-2: Treatment Plant Upgrades (Alternative 3)	LTS	LTS	LTS	LSM
PUB-3: Served by a landfill without sufficient permitted capacity or violate regulations related to solid waste	NI	LTS	LTS	LTS	No mitigation necessary	NI	LTS	LTS	LTS
PUB-4: Temporary disruption of utilities or services due to construction-related activities	NI	PS	PS	PS	PUB-4: Coordinate Relocation and Interruptions of Service with Utility Providers during Construction (Alternatives 1, 2, 3)	NI	LSM	LSM	LSM
PUB-5: Could require construction of new wastewater treatment facilities that would cause significant environmental effects	S&U	NI	NI	S&U	No mitigation defined for PID Conveyance Alternative	S&U	NI	NI	S&U
Recreation									
REC-1: Substantial impairment of the use of existing parks or other recreational facilities	NI	LTS	LTS	LTS	No mitigation necessary	NI	LTS	LTS	LTS
REC-2: Increase in water flow to the National Wildlife refuges such that substantial increase in birdwatching and other recreational opportunities would occur	NI	NI	NI	NI	No mitigation necessary	NI	NI	NI	NI
Transportation									
TR-1: Temporary Lane and Road Closures and Potential for LOS Degradation	NI	PS	PS	PS	TR-1: Implement a Construction Management Plan to Minimize Interference with Traffic and Emergency Response Hazards (Alternatives 1, 2, 3)	NI	LTS	LTS	LTS
TR-2: Potential Impacts on Public Transit, Bicycle, and Pedestrian Uses of Affected Roadways	NI	PS	PS	PS	TR-1: Implement a Construction Management Plan to Minimize Interference with Traffic and Emergency Response Hazards (Alternatives 1, 2, 3)	NI	LTS	LTS	LTS
TR-3: Interference with Emergency Access and Circulation	NI	PS	PS	PS	TR-1: Implement a Construction Management Plan to Minimize Interference with Traffic and Emergency Response Hazards (Alternatives 1, 2, 3)	NI	LTS	LTS	LTS
TR-4: Impacts to Traffic and Circulation from Trip Generation	NI	PS	PS	PS	TR-1: Implement a Construction Management Plan to Minimize Interference with Traffic and Emergency Response Hazards (Alternatives 1, 2, 3)	NI	LTS	LTS	LTS
TR-5: Damage to Driveways from Open Trench Excavation	NI	PS	PS	PS	TR-1: Implement a Construction Management Plan to Minimize Interference with Traffic and Emergency Response Hazards (Alternatives 1, 2, 3) TR-2: Install Temporary Trench Plates Over Open Trenches (Alternatives 1, 2, 3)	NI	LTS	LTS	LTS

Notes: NI= No Impact, LTS=Less than Significant, PS=Potentially Significant, LSM=Less than Significant with Mitigation, S&U=Significant and Unavoidable, B=Beneficial; Alternative 1=Combined Alignment, Alternative 2=Separate Alignment, Alternative 3=PID Conveyance

Impact Statement	No Action	1-Combined Alignment	2-Separate Alignments	3 – PID Conveyance	Mitigation Measure	No Action	1-Combined Alignment	2-Separate Alignments	3 – PID Conveyance
TR-6: Impacts to State Route 33 and California Northern Railroad Company Railroad Tracks	NI	NI	NI	NI	No mitigation necessary	NI	NI	NI	NI
TR-7: Impacts to Roadway Surfaces as a Result of Construction Activities	NI	LTS	LTS	LTS	No mitigation necessary	NI	LTS	LTS	LTS

Notes: NI= No Impact, LTS=Less than Significant, PS=Potentially Significant, LSM=Less than Significant with Mitigation, S&U=Significant and Unavoidable, B=Beneficial; Alternative 1=Combined Alignment, Alternative 2=Separate Alignment, Alternative 3=PID Conveyance

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Chapter 1 Introduction

The United States (U.S.) Department of Interior, Bureau of Reclamation (Reclamation) as National Environmental Policy Act (NEPA) lead agency and the City of Modesto, as California Environmental Quality Act (CEQA) lead agency, prepared a Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS) for the North Valley Regional Recycled Water Program (NVRRWP). The City of Modesto represents the Partner Agencies for the NVRRWP which include the Cities of Modesto and Turlock and the Del Puerto Water District (DPWD or District). The Partner Agencies have proposed the NVRRWP to address water supply shortages in DPWD's service area located on the west side of the San Joaquin River in San Joaquin, Stanislaus, and Merced Counties, south of the Sacramento-San Joaquin River Delta (Delta). The NVRRWP was developed in conformance with the requirements of Reclamation's Directives and Standards for the Title XVI Reclamation and Reuse Program (Reclamation Document WTR 11-01), including preparation of a Feasibility Study, which identified and evaluated feasible conveyance alternatives that were included in the Draft EIR/EIS. The Draft EIR/EIS was developed to provide the public and responsible and trustee agencies reviewing the NVRRWP an analysis of the potential effects on the local and regional environment associated with construction and operation of the NVRRWP. The primary purpose of the NVRRWP is to provide recycled water from the Cities of Modesto and Turlock to DPWD. **Figure 1-1** shows the project vicinity. The NVRRWP would also provide supplemental water to certain south of Delta (SOD) Central Valley Project Improvement Act (CVPIA)-designated wildlife refuges and wetland areas. Although Reclamation and the City of Modesto prepared a Draft EIR/EIS for public review, due to timing constraints, the City of Modesto prepared a stand-alone Final EIR (SCH# 2014042068) pursuant to CEQA requirements. The Final EIR was released on June 19, 2015 and the City of Modesto certified the Final EIR on July 7, 2015.

Pursuant to NEPA requirements, Reclamation has prepared this Final EIS to address the alternatives, affected environment, and environmental consequences associated with Reclamation's federal discretionary actions and the NVRRWP. The purpose of this Final EIS is to inform decision makers and stakeholders about the potential adverse and beneficial impacts of the Proposed Action and associated alternatives. This Final EIS also provides responses to comments received on the Draft EIR/EIS. Changes between this Final EIS and the Draft EIR/EIS, which are not minor editorial changes, are indicated by vertical lines in the left margin of this document. Additional changes have also been made to the document in order to comply with Reclamation's Visual Identity formatting and for clarity.

1.1 Background

The Draft EIR/EIS was circulated for a 60-day public review period beginning on January 8, 2015. A public meeting was held on Wednesday, February 11, 2015 to receive comments on the Draft EIR/EIS. Reclamation and the City of Modesto received 15 written comments on the Draft

EIR/EIS. No verbal comments were made at the public meeting. The comments and Reclamation's response to comments are included in Chapter 8 of this Final EIS.

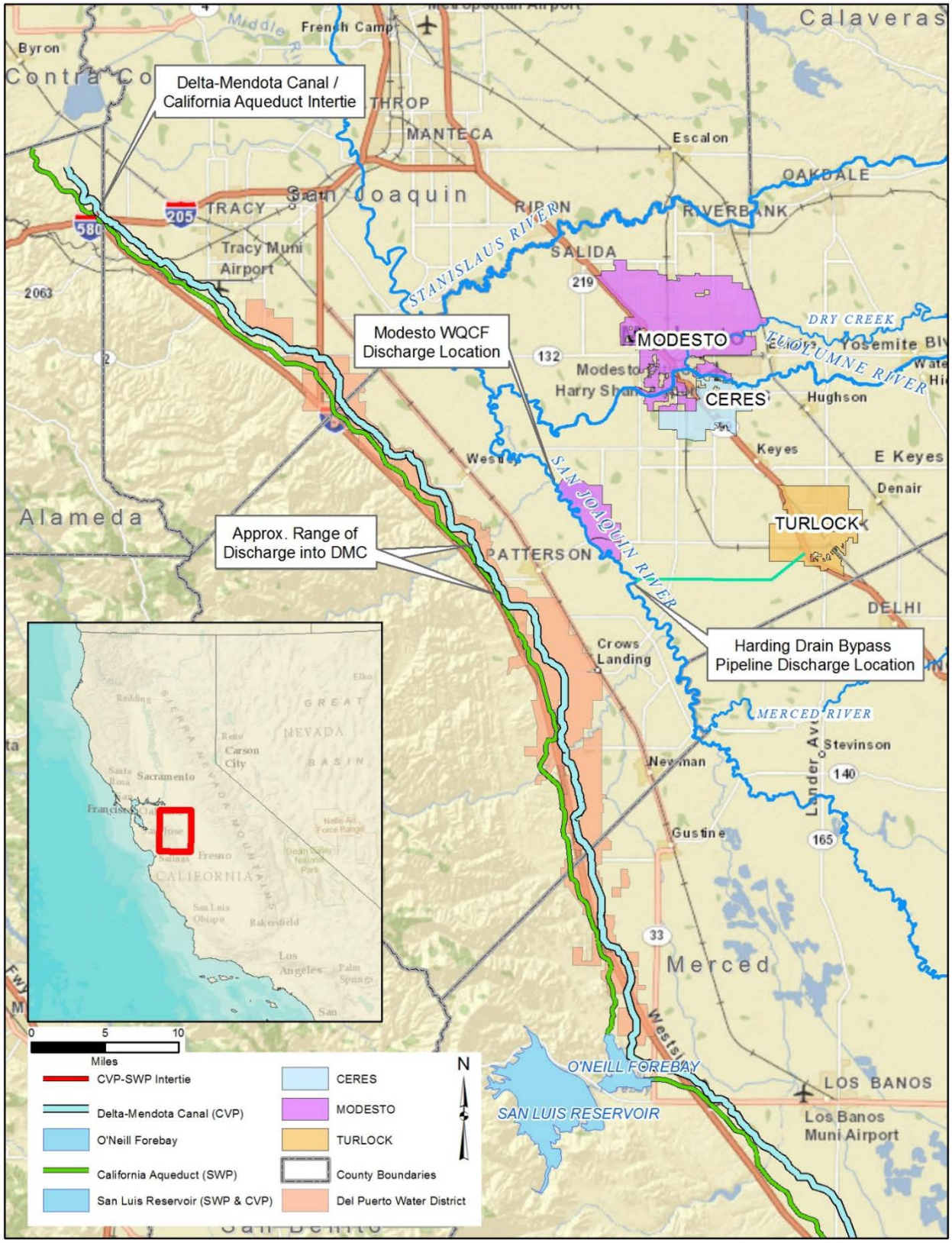
1.1.1 DPWD's Need for an Alternative Water Supply

DPWD provides irrigation water to approximately 45,000 acres of productive farmland in western San Joaquin, Stanislaus, and Merced Counties. Currently, DPWD's primary source of water is from a contract with Reclamation which provides for the delivery of up to 140,210 acre-feet (AF) of Central Valley Project (CVP) water annually. The CVP is a federal water management project consisting of multiple dams and reservoirs, conveyance facilities, and other related facilities created to provide water to California's Central Valley.

Since the early 1990s, DPWD's annual CVP water allocation has been significantly reduced due to multiple factors, including:

- Delta pumping restrictions resulting from the passage of the CVPIA and the CVPIA Anadromous Fish Restoration Program.
- State Water Resources Control Board (SWRCB) water rights decisions, in particular, Water Rights Decision 1485 regarding salinity control in the Delta and Suisun Marsh (SWRCB 1978), and the Bay Delta Accord, adopted as Water Right Decision 1641, which was implemented to address water quality objectives in the San Francisco Bay and Delta (SWRCB 2000).
- Water quality objectives as established in the Water Quality Control Plans for the San Francisco Bay/ Delta Estuary, most recently the 2006 Basin Plan (SWRCB 2006).
- National Marine Fisheries Service (NMFS) salmon and United States Fish and Wildlife Service (USFWS) Delta smelt biological opinions (USFWS 2008, NMFS 2009).
- Drought conditions.

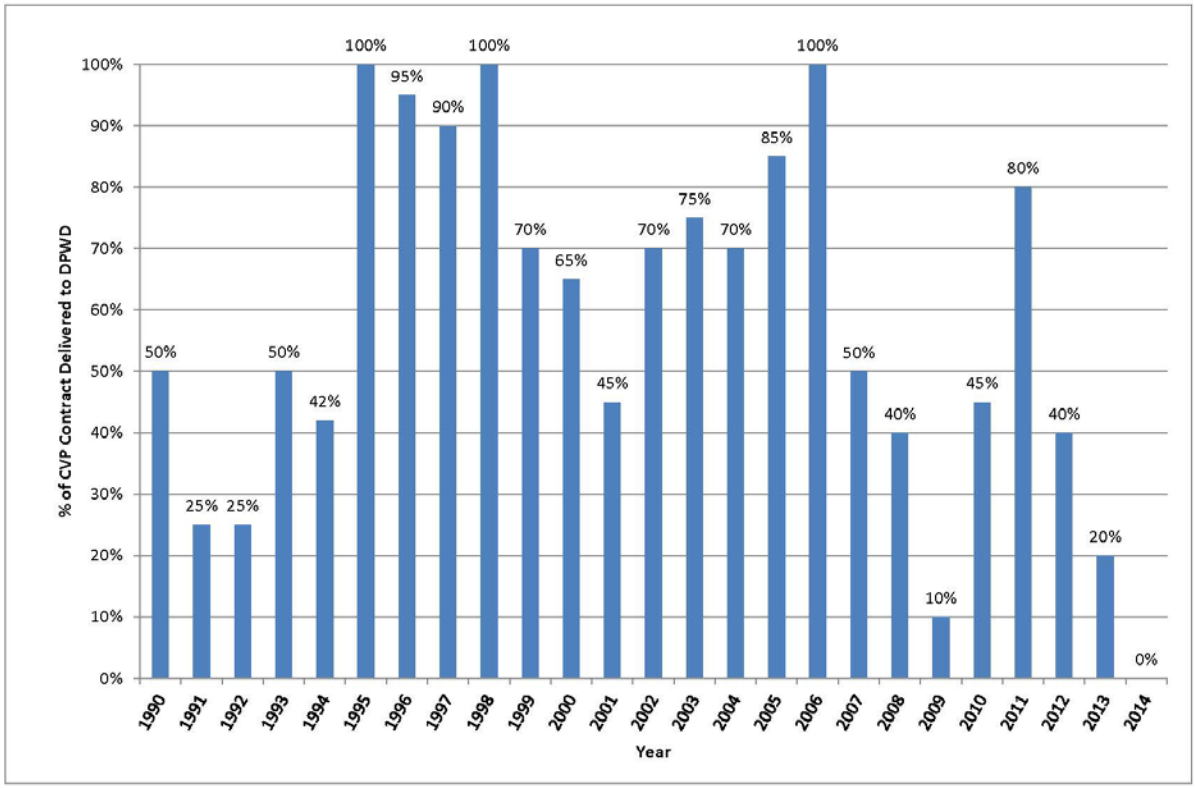
Figure 1-1: Project Vicinity



In 2009, DPWD received only 10 percent (i.e., 14,000 AF per year [AFY]) of its contract allocation. DPWD's contract supply for 2013 was 20 percent of its contracted allocation (28,000 AFY), and in 2014 and 2015 the allocation was 0 percent due to current hydrologic conditions and regulatory requirements.

Figure 1-2 shows the historic DPWD CVP allocations from 1990 to 2014 and the downward trend in the annual allocations (DPWD 2014). While future contract water deliveries to DPWD are uncertain, it is anticipated that restrictions on CVP operations will result in the District receiving no more than an average of 35 percent of its contract allocation (i.e., 49,000 AFY) on an annual basis under normal hydrologic conditions (i.e. non-drought conditions).

Figure 1-2: Historical CVP Allocations Delivered to DPWD



Source: DPWD 2014, Del Puerto Water District Historical Water Service Allocations and Rates

Shortages in CVP deliveries have resulted in economic hardships on the District and growers within the District's service area. To maintain the existing cropping patterns and economic conditions within the District, DPWD is compelled to secure alternate water supplies, and has done so through temporary water transfers from other agencies or the use of groundwater from privately owned wells. If alternate water supplies cannot be secured, growers are forced to fallow land that would otherwise have been planted. From 2001 to 2014, from 12 to 24 percent of the agricultural land in the DPWD service area has been fallowed due to limited water supplies (DPWD 2015, 2014).

In 2014 and 2015 DPWD received no allocation of CVP water, which has presented a severe hardship to growers in the District. Buying enough water through temporary transfers to keep

crops growing is becoming more difficult every year, and sufficient groundwater is not available to supplement CVP supply. In 2014, reports indicate that the fallowed acreage has increased by almost 4,000 acres over the prior year's total of 7,239 acres to 10,997 acres of fallowed land (DPWD 2015). Fallowing is not an option for approximately 24,000 acres of orchard crops within DPWD, which need to be irrigated each and every year in a uniform pattern.

Water transfers have been partially effective in meeting the District's water demands in the past, but they are not a reliable or sustainable long-term solution because of uncertainty in the availability of surface water supplies in the future, the difficulties in the ability to wheel[1] water through the Delta, and the financial impact to customers associated with the high cost of supplemental surface water supplies. As the availability of water sources decreases, the cost of water transfers will increase while the ability to secure water for transfers will decrease. Several factors could impact the availability of surface water supplies in California. Climate change is expected to affect Delta water exports (Reclamation 2014) because weather patterns are anticipated to become more severe (longer droughts and wetter non-drought years) and warmer temperatures are expected to reduce snowpack amounts. These two climate-related changes are expected to impact the amount of surface water runoff, the timing of runoff, and the ability to store and use runoff. In addition, changes in climate are expected to result in rising sea levels, which will, in turn, increase the salinity of the Delta, requiring more fresh water to be kept in the Delta to maintain water quality conditions to support the Delta ecosystem and to maintain adequate flow and water quality. Additionally, because the time frame in which transfer water can be wheeled through the Delta is limited by the USFWS and NMFS biological opinions (USFWS 2008, NMFS 2009) for the coordinated operation of the CVP and State Water Project (SWP) to the months of July-September, a significant capital investment will be needed in the future to maintain the infrastructure system that enables Delta conveyance. Without these improvements, Delta conveyance will be limited, which ultimately impacts the ability of SOD water users to wheel water transfers through the Delta (California Water Plan Update 2009, DWR Bulletin 160-09).

DPWD is located within the San Joaquin River groundwater basin and primarily overlies the Delta-Mendota groundwater subbasin, with a small section overlying the Tracy subbasin. The Delta-Mendota groundwater subbasin is not considered to be in a state of overdraft (DWR 2006), but there is concern that continued use of groundwater in DPWD's service area to supplement CVP water deliveries could result in potential issues such as declining water table elevation, land subsidence, degradation of groundwater quality, and adverse impacts to crop yield from unsuitable groundwater quality. Land subsidence creates problems both through direct effects (including ground failures and permanent reduction in the total storage capacity of the aquifer) and indirect effects (such as subsidence reducing freeboard and therefore reducing flow capacity in canals that convey water through the project area [Sneed et al. 2013]).

1.1.2 DPWD's Water Demands and Anticipated Shortfalls

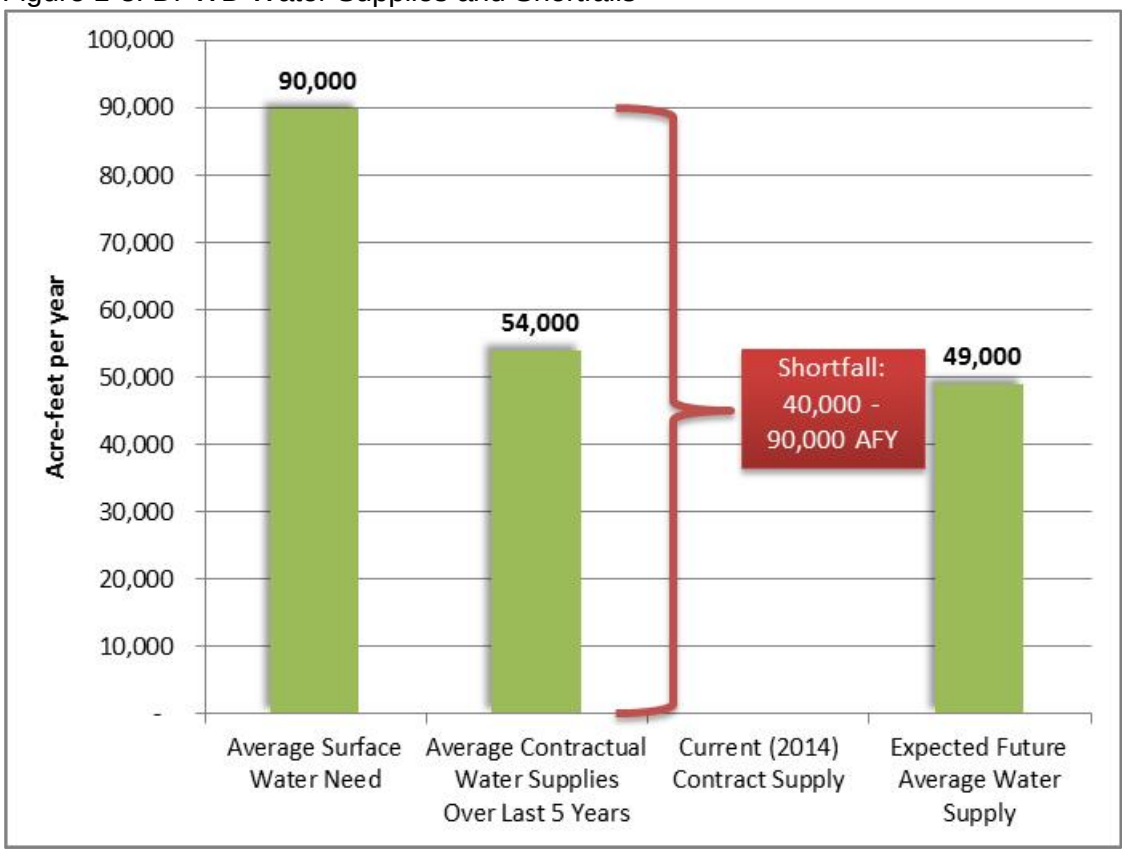
Irrigation water demands were estimated for the entire District and each target delivery area based on the projected productive cropping acreages and the specific water demand for each crop grown in the District. The 2013 water demand was estimated at approximately 90,000 AFY (see

[1] Wheeling is the conveyance of water by an entity that does not own the water it is conveying.

Figure 1-3) and was assumed to represent the District's existing average annual water demand. The existing water demand represents the demand in a dry hydrologic year, when fallowing patterns may be higher than average. It is expected that if the District had an alternate, reliable source of water, cropping and fallowing patterns would revert to more historic patterns, where the projected water demand would be closer to 110,000 AFY. Projected monthly water demands are shown in **Figure 1-4**, and would vary depending on the season, from a very small amount in the winter (January) to a high of more than 25,000 AF in the middle of summer.

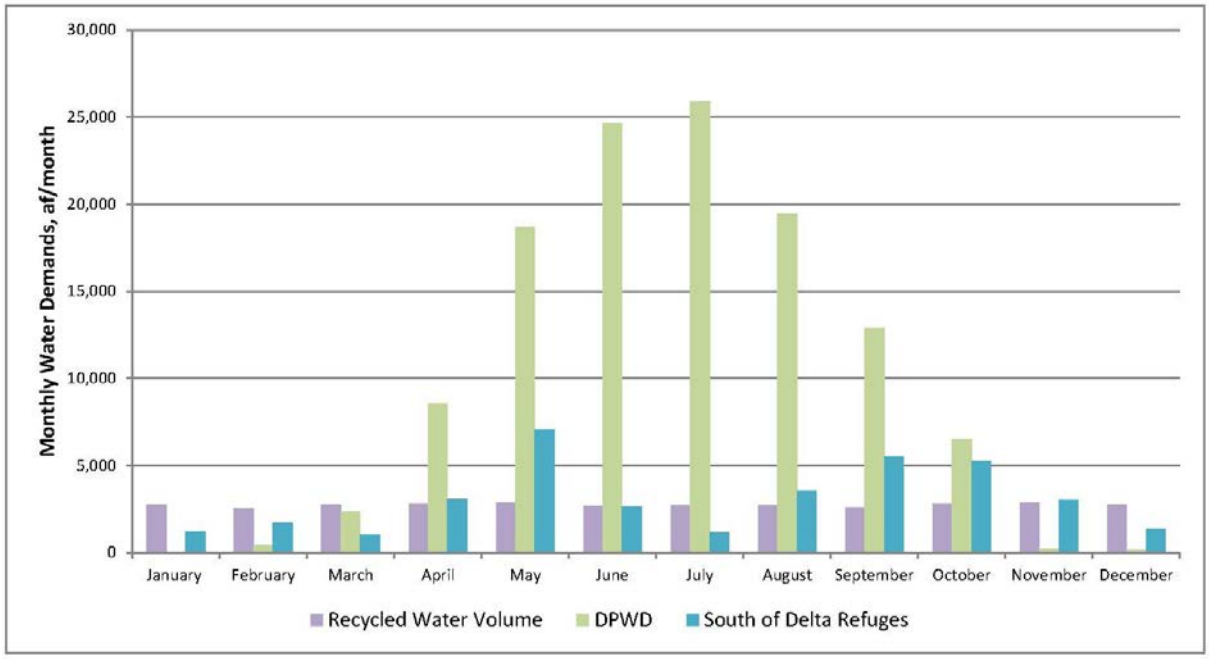
It is predicted that future deliveries from the CVP to DPWD will average approximately 49,000 AFY[2], an allocation of only 1 AF/acre (RMC 2013), which is inadequate to meet the District's water demand. This would result in an anticipated average shortfall of 41,000 AFY (see **Figure 1-3**). If compared to the 2013 supplies or the average of contractual water supplies over the last five years, the average shortfall would range from approximately 40,000 to 60,000 AFY. The 2014 and 2015 shortfall was 90,000 AFY.

Figure 1-3: DPWD Water Supplies and Shortfalls



[2] Under current regulatory conditions, it is estimated that in the future, DPWD may receive no more than 35 percent of its contract allocation (49,000 AFY) in an average hydrologic year, which would provide only 1 AF/acre. The future deliveries to DPWD were developed by applying historic SOD allocation reductions from Delta pumping restrictions due to hydrologic conditions and regulatory requirements to the DPWD contract allocation. The methodology for estimating expected allocation reductions is shown in Appendix A of the Feasibility Study for the project (RMC 2014).

Figure 1-4: Projected Monthly Demands from DPWD and IL4 Demand from Refuges and Monthly Volume of Recycled Water Production

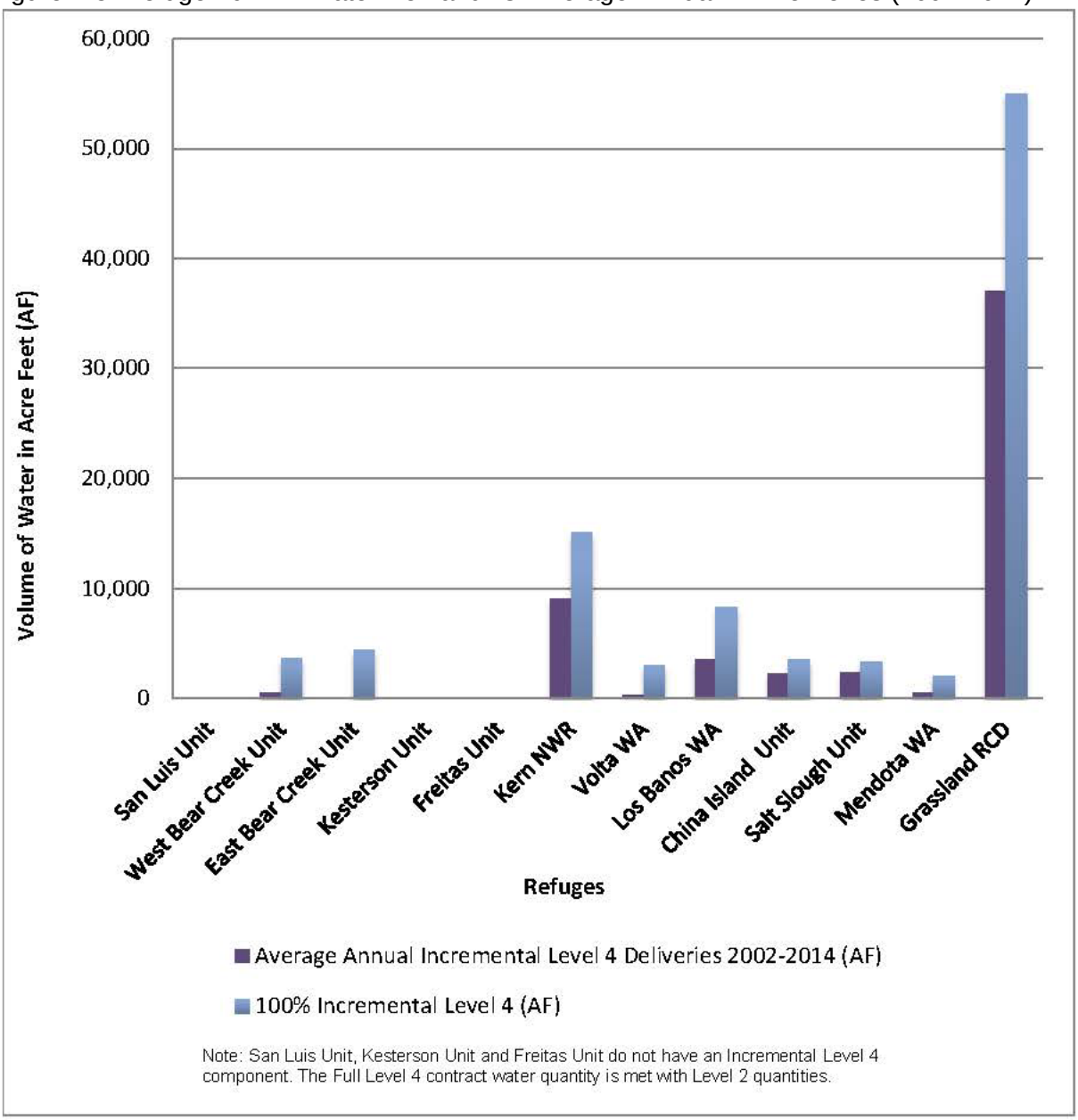


1.1.3 South of the Delta Refuges Water Needs and Descriptions

Refuges Need for Additional Water Supply

In addition to provision of water to the DPWD service area, the NVRRWP would make recycled water available to certain SOD CVPIA designated federal National Wildlife Refuges (NWRs), State Wildlife Areas (SWAs), and the privately-managed wetlands of the Grassland Resource Conservation District, collectively referred to herein as "refuges." Reclamation has a legislative obligation under the CVPIA, in cooperation with the USFWS, the California Department of Fish and Wildlife (CDFW), the Grassland Water District (GWD), and the Central Valley Joint Venture (CVJV) to provide firm, average annual historical water deliveries (defined as Level 2, or L2 in the CVPIA) of suitable quality to maintain the refuges' habitat areas. In addition to L2 deliveries, an additional increment of water supply is needed for optimal wildlife management (defined as Incremental Level 4, or IL4 in the CVPIA). Provision of adequate and reliable water supplies (L2 and IL4) for the refuges to meet the CVPIA-mandated water levels has not been achieved "due in large part to state and federal budget shortages, inconsistency in the timing of water deliveries, and increases in the costs of blocks of water made available annually from willing sellers on the open market" (CVJV 2006). An annual allocation of 271,001 AF of L2 and 105,514 AF of IL4 water supplies (a total of 376,514 AF) is required for delivery to the SOD refuges (Reclamation 2013a). In the 2012-2013 time period, Reclamation delivered 270,294 AF of L2 water supplies, which is close to the amount required. Regarding the SOD refuges' IL4 water quantity, however, the average annual amount delivered between 2002 and 2012 was 63,233 AF or about 60 percent of the total IL4 water (105,514 AF) required. **Figure 1-5** shows the IL4 demand for refuges as compared to the actual amount of water delivered in the 2012-2013 water year. The NVRRWP could not serve the full IL4 demand, but could help reduce the shortfall.

Figure 1-5: Refuge Full IL4 Water Demand vs. Average Annual IL4 Deliveries (2002-2014)



Source: Reclamation 2015

Refuges that could be served by the NVRRWP

The SOD refuges contain habitat that supports a variety of birds and wildlife species, and are an important part of the Pacific flyway, a major migration route for migratory birds. The NVRRWP could potentially benefit the refuges shown in **Table 1-1**. Additional water supplies would provide refuges an increased ability to conduct spring and summer irrigations, which would improve the production and availability of food supplies in wintering migratory waterfowl. Refuges would be able to use water supplies to protect giant garter snake habitat, and to provide higher quality brood habitat for local breeding bird populations (GWD Comments on the Draft

EIS/EIR for the NVRRWP, see Chapter 8). As shown in **Figure 1-4**, refuges need water year-round, however, their fall and winter water demand occurs in a season when there is less of a need for irrigation.

Table 1-1: Potential SOD Refuge Beneficiaries

National Wildlife Complex and Refuges	State Wildlife Areas	Other
San Luis National Wildlife Complex	Volta Wildlife Area	Grassland Resources Conservation District
East Bear Creek Unit	Mendota Wildlife Area	
Freitas Unit	Los Banos Wildlife Area	
Kesterson Unit	North Grasslands Wildlife Area	
San Luis Unit	*Salt Slough Unit*	
West Bear Creek Unit	*China Island Unit*	
Kern NWR		

1.1.4 Recycled Water Sources and Availability

DPWD's service area is located a little over five miles from Modesto's discharge location at the Jennings Wastewater Treatment Plant (Jennings Plant) and less than five miles from the end of Turlock's Harding Drain Bypass Pipeline, which currently conveys flows from the Turlock Regional Water Quality Control Facility (RWQCF) to a discharge point located on the San Joaquin River. These cities either already have upgraded or are in the process of upgrading their facilities to treat wastewater to recycled water standards to meet San Joaquin River discharge requirements in their respective National Pollutant Discharge Elimination System (NPDES) permits.

By 2045, Modesto and Turlock will produce up to 59,000 AFY of recycled water, as shown in **Table 1-2**. Recycled water would be provided incrementally under the NVRRWP as treatment facilities are expanded and flows increase from projected population growth.

Table 1-2: Recycled Water Availability at Project Start-up and at Buildout[1]

Agency	2018 Recycled Water (AFY)	2018 Recycled Water (mgd)	2045 Recycled Water (AFY)	2045 Recycled Water (mgd)
Modesto	16,500	14.7	30,600	27.3
Turlock	14,100	12.6	28,400	25.4
Total	30,600	27.3	59,000	52.9

Source: RMC, 2013
[1] Available recycled water is calculated after accounting for all currently contracted uses
mgd = million gallons per day AFY = acre-feet per year

City of Modesto (Modesto)

The City of Modesto provides primary treatment at the Sutter Wastewater Treatment Plant; primary effluent is then conveyed to the Jennings Plant, where facultative ponds are used to produce secondary effluent. The secondary effluent is applied to Modesto-owned ranch land (approximately 2,500 acres) or is discharged to the San Joaquin River pursuant to a NPDES permit (Permit No. CA0079103) between October 1 through May 31, when river flows provide a 20:1 dilution ratio. There are two storage ponds at the Jennings Plant that provide about 7,800

AF of seasonal secondary effluent storage when effluent cannot be discharged to the river or land applied. Under the Proposed Action, the City of Modesto would continue to irrigate ranch lands using secondary effluent which is blended with cannery process water that is available during the July to September canning season.

In response to new effluent discharge requirements imposed by the Central Valley Regional Water Quality Control Board (CVRWQCB), the City of Modesto added biological nutrient removal (BNR) and tertiary treatment to a portion of its flow at the Jennings Plant. BNR will provide a high quality source of recycled water once upgrades are complete. Phase 1 of the treatment upgrades was completed in 2010 and provides 2.3 million gallons per day (mgd) of tertiary effluent, all of which is applied to Modesto-owned ranch land. The Phase 2 treatment facilities are scheduled to be online by February 2016 and will provide an additional 12.6 mgd of tertiary treatment capacity, bringing the total capacity to 14.9 mgd. Modesto is planning to continue to increase tertiary treatment capacity to 27.5 mgd by build-out of the City and this water would be available for the proposed project. No tertiary treated water produced by Modesto is discharged into the San Joaquin River at this time; however, by 2016, with the completion of the Phase 2 treatment facilities, a new effluent pump station and pipeline will convey final effluent from the treatment facilities to the current point of discharge for the City of Modesto's effluent into the San Joaquin River.

The treatment process used for BNR at the Modesto facility is the membrane bioreactor (MBR) process. The MBR process contains two steps. The first step is the activated sludge process, which takes place in the BNR aeration basins. The BNR aeration basins grow the biomass (bacteria and microorganisms) that provides treatment. The second step is to separate out the solids and clean water from the biomass. This is achieved with membranes. The MBR system is designed to remove biochemical oxygen demand (BOD), and the nutrients ammonia and nitrates/nitrites. Filtered water that has passed through the membranes is then disinfected with ultraviolet (UV) light radiation.

City of Turlock (Turlock)

The City of Turlock's RWQCF has a treatment capacity of 20 mgd of tertiary-treated water. Turlock currently discharges an average annual flow of 10 mgd to the San Joaquin River via the Harding Drain Bypass Pipeline, consistent with the city's NPDES permit requirements.

Constructed in 2013, the primary goal of the Harding Drain Bypass Pump Station and Pipeline Project was to eliminate the discharge of treated wastewater to the Harding Drain, which is an open channel owned by Turlock Irrigation District (TID), and discharge directly to the San Joaquin River. Changing the point of discharge from Harding Drain to the San Joaquin River serves at least two beneficial purposes. First, removal of the City's permitted wastewater discharges from Harding Drain relieved the City of the need to coordinate with TID regarding management of wastewater flows in the Harding Drain, allowing TID to more efficiently operate and maintain its system. Second, the project allows TID and agricultural operations that discharge to Harding Drain to separately monitor and manage water quality associated with agricultural activities, which are subject to separate regulatory requirements.

The Harding Drain Bypass Pump Station and Pipeline Project provides Turlock with the ability to deliver recycled water for other beneficial uses, potentially minimizing and/or eliminating wastewater discharges to the San Joaquin River. Turlock estimates that by buildout of the City (year of 2030), 25.4 mgd will be available after other currently existing recycled water contractual commitments have been fulfilled. These commitments include a 50-year contract with the TID-owned Walnut Energy Center for 2 mgd as well as the Turlock-owned Pedretti Park for 0.1 mgd with no expiration date.

The treatment process at the Turlock facility consists of primary sedimentation, biotowers, aeration basins, and secondary clarifiers. The clarified effluent then flows to the secondary effluent equalization basins for subsequent pumping into the tertiary treatment system. Tertiary treatment facilities consist of filtration using a proprietary cloth disk system, chlorine-disinfection, and dechlorination prior to discharge. The facility provides ammonia removal to meet its NPDES permit requirements; however, unlike the Modesto facility, the Turlock facility does not remove nitrates/nitrites from the effluent.

1.1.5 Delta-Mendota Canal

Completed in 1951, the Delta-Mendota Canal (DMC) carries CVP water from the Delta southeasterly from the C.W. “Bill” Jones Pumping Plant (Jones Pumping Plant) along the west side of the San Joaquin Valley, delivering water for irrigation, municipal uses, and wildlife refuges. A portion of the water from the Delta conveyed in the DMC replaces San Joaquin River flows that would have gone to the Mendota Pool. The DMC also transports CVP water to the O’Neill Forebay for delivery to the San Luis Unit. The canal extends 70 miles from the Delta to the O’Neill Forebay and then 46 miles to the Mendota Pool on the San Joaquin River, about 30 miles west of Fresno. The initial diversion capacity is 4,600 cubic feet per second (cfs), which is gradually decreased to 3,211 cfs at its terminus at the Mendota Pool.

The San Luis & Delta-Mendota Water Authority (SLDMWA) has operated the DMC and associated facilities for Reclamation since 1992. Members of the SLDMWA, which receive water supplies for irrigation and municipal uses, include:

- Banta-Carbona Irrigation District
- Byron Bethany Irrigation District[3]
- City of Tracy
- DPWD
- Firebaugh Canal Water District
- GWD
- James Irrigation District
- Mercy Springs Water District
- Pacheco Water District
- Patterson Irrigation District (PID)
- Reclamation District 1606
- San Luis Water District
- Tranquility Irrigation District
- West Side Irrigation District
- Broadview Water District
- Central California Irrigation District
- Columbia Canal Company
- Eagle Field Water District
- Fresno Slough Water District
- Henry Miller Reclamation District #2131
- Laguna Water District
- Oro Loma Water District
- Panoche Water District
- Pleasant Valley Water District
- San Benito County Water District
- Santa Clara Valley Water District
- Turner Island Water District
- West Stanislaus Irrigation District

[3] CVP Service Area only.

Westlands Water District

Over the past 10 years, water conveyed in the canal (as measured at the Jones Pumping Plant), has varied from a high of 4.5 million AF for the 2006 water year to a low of 0.75 million AF in the 2005 water year. Reclamation routinely monitors water quality in the DMC for selenium and other inorganic and organic constituents.

1.1.6 San Luis Reservoir

The DMC is connected to the San Luis Reservoir via O'Neill Forebay midway along the length of the canal. This 2 million-AF artificial lake on San Luis Creek in the eastern slopes of the Diablo Range of Merced County is jointly owned and operated by Reclamation and the California Department of Water Resources (DWR) and is one of California's largest reservoirs (Reclamation 2013c). During the summer or dry season, water in San Luis Reservoir is used by CVP contractors, as well as SWP contractors. The California Aqueduct also flows into the O'Neill Forebay at San Luis Reservoir; from the O'Neill Forebay, the aqueduct continues south to serve municipal users in southern California including Kern, Los Angeles, San Bernadino, San Diego and Santa Barbara Counties. Under the Proposed Action, tertiary-treated water introduced and conveyed in the DMC during low-demand periods could be stored in the federal portion of San Luis Reservoir. Storage may be done either through operational exchanges with Reclamation or through direct delivery. Any storage of recycled water would occur after the water has been blended with flows in the DMC as it moves down the DMC from the introduction point north of O'Neill Forebay (see **Figure 1-1**).

1.1.7 Recycled Water Quality

Recycled water from the Modesto and Turlock treatment facilities is suitable for all currently allowed uses of recycled water, including irrigation of public parks and food crops. Although recycled water discharged into the DMC would not technically be required to meet criteria that are established by the California Department of Public Health (CDPH), it would have to meet the standards of the NPDES Permit for discharge issued by the CVRWQCB in addition to Reclamation's water quality criteria. As such, recycled water from both Modesto and Turlock would still be oxidized, filtered, and adequately disinfected, pursuant to the CDPH reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22) or equivalent.

The Cities of Modesto and Turlock are pursuing revised NPDES permits to allow discharges to the DMC[4]. It is expected that the CVRWQCB would address the full range of beneficial uses of the DMC as delineated in the Central Valley Basin Plan (CVRWQCB 2011) when considering issuance of an NPDES permit. Recycled water from the NVRRWP would also have to comply with Reclamation's water quality standards for introduction of non-CVP water into the DMC. The Cities' proposed discharges would have to meet any standards established by the CVRWQCB and by Reclamation before initiating project operations.

[4] Both cities would retain their existing discharge locations and access at the San Joaquin River. Under Alternatives 1 and 2 of the Proposed Action, water would not be discharged to the river under normal circumstances. However, the Cities may discharge under either of these alternatives if there are operational constraints in the DMC that do not allow introductions during given periods of time over the life of the proposed NVRRWP.

1.1.8 San Joaquin River

Consistent with the Central Valley Basin Plan, current designated beneficial uses of the San Joaquin River downstream of the Turlock and Modesto discharges (from the mouth of the Merced River to Vernalis) include:

- Municipal and domestic supply (potential beneficial use; not existing in current Central Valley Basin Plan).
- Agricultural – irrigation and stock watering.
- Industrial process supply.
- Recreation – water contact, canoeing/rafting, and other non-contact water recreation.
- Freshwater habitat – warm water ecosystems.
- Migration of aquatic organisms – warm and cold.
- Spawning, reproduction, and/or early development of fish – warm.
- Wildlife habitat.

Since the mid-1990s Reclamation has been operating the CVP to meet the Vernalis salinity objectives. The water quality objective is 1,000 µmhos/cm 30-day running average of mean daily electrical conductivity (EC) from September 1 through April 29 and a 700 µmhos/cm 30-day running average of mean daily EC from April 30 through August 31. DWR and the U.S. Geological Survey, in partnership with Reclamation, have been participating in the San Joaquin River Real-Time Water Quality Program to perform ongoing work to facilitate the control and timing of wetland and agricultural drainage to coincide with periods when dilution flow is sufficient to meet the Vernalis salinity objectives. The water saved through this optimization can be used later to increase San Joaquin River basin streamflow during critical periods for anadromous fish restoration efforts.

1.1.9 Water Rights

Implementation of the NVRRWP would require that the Cities of Modesto and Turlock obtain approval of Wastewater Change Petition(s) from the SWRCB, Division of Water Rights. Approval of the petition(s) would establish a water right for the recycled water, and would enable a change in the point of discharge from the San Joaquin River to the DMC. The City of Modesto submitted its Wastewater Change Petition in July 2014. The City of Turlock is currently discharging to the San Joaquin River and has submitted an application to the Division of Water Rights to appropriate and divert an equivalent quantity of water at the PID intake, downstream of Turlock's current discharge point for delivery to DPWD in the interim period. It is expected that as part of implementation of the NVRRWP, the City of Turlock would submit a Wastewater Change Petition to allow the existing discharge to be re-routed directly to the DMC.

1.2 Purpose and Need

One of the authorized purposes of CVP is to provide water for irrigation and domestic use within California's Central Valley. In recent years, SOD CVP contractors and CVPIA-designated wildlife refuges have experienced an increased reduction in CVP water allocations from historical amounts due to drought conditions and expanded Delta pumping restrictions. As a

CVP contractor, DPWD has a need to establish alternative, reliable long-term agricultural water supplies to offset these reductions. Also CVPIA Sections 3406(b)(3) and 3406(d)(2) direct Reclamation to acquire and provide supplemental water to CVPIA designated wildlife refuges in the Central Valley. The purpose of the NVRRWP is to make the Cities' recycled water available to DPWD for agricultural purposes and to certain SOD refuges for wetland habitat purposes in support of migratory birds.

1.3 Partner Agencies' CEQA Objectives

The overall objective of the proposed project is to maximize beneficial use of a sustainable, alternative water supply within the region, which would address reductions in water supplies from the CVP and reduce the reliance on groundwater use. Specifically, the objectives of the project are as follows:

- Establish an alternative, reliable, long-term water supply of up to 59,000 AFY of recycled water for DPWD and refuges.
- Maximize beneficial use of recycled water by DPWD customers and refuges.
- Maximize Project Partners' control of operations and delivery of water to DPWD and refuges, while recognizing the need for coordination with Reclamation and the SLDMWA.
- Establish long-term water right(s) to allow for the beneficial use of recycled water.
- Maximize use of existing facilities for treatment/delivery of recycled water.
- Provide supplemental water supplies annually to SOD refuges to meet CVPIA Sections 3406(b)(3) and 3406(d)(2) requirements.
- Avoid or minimize, through incorporation of design constraints and management practices, impacts to environmental resources such as surface water, groundwater supplies, land subsidence, groundwater quality and biological resources including sensitive species.
- Deliver agricultural water to DPWD at a cost that supports regional economic sustainability.

The proposed project is needed to offset the significant reduction in CVP water allocations to DPWD associated with Delta pumping restrictions, drought conditions, and climate change. In addition, the proposed project is needed to offset anticipated effects (e.g., overdraft, subsidence, water quality issues) from increased groundwater pumping that have occurred and would likely continue to occur with the absence of an alternative water supply.

1.4 Compliance with NEPA

Compliance with NEPA is a Federal responsibility and involves the participation of Federal, State, tribal, and local agencies, as well as concerned and affected members of the public in the planning process. NEPA requires full disclosure of the potential effects of actions proposed by Federal agencies. NEPA requires that the Federal agencies analyze and disclose the potential impacts and possible mitigation for the Federal proposed action and a reasonable range of

alternatives to the proposed action. NEPA is required when a discretionary Federal action is proposed. The regulations (40 CFR 1508.18(a)) define a Federal action as including new and continuing activities, actions partly or entirely financed by Federal agencies (where some control and responsibility over the action remain with the Federal agency [43 CFR 46.100]), actions conducted by Federal agencies, actions approved by Federal agencies, new or revised agency rules or regulations, and proposals for legislation.

Section 102 of NEPA (42 U.S.C. section 4332) indicates that a "detailed statement" (i.e., an EIS) shall be included with "proposals for legislation and other Federal actions significantly affecting the quality of the human environment." The term "human environment" is defined to include "the natural and physical environment and the relationship of people with that environment" (40 CFR 1508.14).

An EIS provides an objective evaluation and disclosure of potential environmental consequences of a proposed action and a reasonable range of alternatives as compared to the No Action Alternative that would occur without the proposed action, identification of measures to mitigate impacts, and opportunities for public and agency participation in decision making.

1.5 Intended Use of the Final EIS

This EIS identifies and evaluates alternatives for the NVRRWP, including other actions by Reclamation as described in Section 2.1, analyzes the environmental effects on the human environment of the alternatives in an equal level of detail, and identifies measures to reduce or avoid potential adverse environmental effects resulting from implementation of the alternatives. This EIS also describes significant adverse effects that may not be avoided, indirect effects including growth-inducing effects, and significant cumulative effects; as well as effects that are not found to be significant.

This EIS does not recommend specific actions. The recommendations will be included in the Record of Decision developed by Reclamation following completion of the EIS. Other federal agencies, such as the U.S. Army Corps of Engineers (USACE), USFWS, and NMFS may use the EIS to satisfy NEPA for their individual approvals of project components.

The information in the Final EIS (and Final EIR prepared separately by the City of Modesto) would also be used to support the acquisition of regulatory permits or approvals by the City of Modesto and Partner Agencies.

Table 1-3 summarizes the potential permits and/or approvals from other agencies that may be required prior to construction of the proposed project.

Table 1-3: Responsible and Trustee Agencies and Coordination

Agency	Type of Approval
FEDERAL	
Reclamation	Warren Act Contract
Reclamation	Possible funding through Public Law 102-575, Title XVI
Reclamation	Land Use Authorization for construction, operation, and maintenance of non-federal facilities within DMC right-of-way
Reclamation	Purchase contract for supplemental supplies for Refuge Water Supply Program under CVPIA Section 3406(d)(2)
USACE	Clean Water Act, Section 404 Permit for any fill of wetlands or waters of the U.S.
USACE	Section 10 Permit for pipeline crossing under San Joaquin River, which is a navigable waterway.
USFWS & NMFS	Section 7 Consultations
Natural Resource Conservation Service	Farmland Conversion Assessment
STATE	
SWRCB	Wastewater Change Petition (Petition for Change)
CDFW	Streambed Alteration Agreement for pipeline crossings of streams
CDFW	Incidental Take Permit for California Endangered Species Act
CalOSHA	Construction Permit / Tunnel Classification
CA Office of Historic Preservation	Section 106 National Historic Preservation Act Consultation
CA State Lands Commission	Lease Agreement
California Department of Transportation	Encroachment Permit
CVRWQCB	Clean Water Act, Section 401 Water Quality Certification
CVRWQCB	Notice of Intent for coverage under Statewide Construction Stormwater Permit (Section 402 Clean Water Act)
CVRWQCB	Notice of Intent for coverage under Low-Threat Discharge Order for Dewatering during Construction and for Pipeline Discharges for Testing and Startup
CVRWQCB	NPDES Permit for Discharge to the DMC
Central Valley Flood Protection Board	Possible encroachment permit
LOCAL	
San Joaquin Valley Air Pollution Control District	Authority to Construct/Permit to Operate
Stanislaus County	Encroachment permit, grading permit, building permit, and tree removal permit
Stanislaus County	Williamson Act cancellation (if needed)
Genesee & Wyoming Railroad	Utility Occupancy License for crossing of California Northern Railroad Company rail line

1.6 Organization of the Final EIS

This Final EIS is organized into the Chapters described below. Chapters 1 through 7 were originally published in the Draft EIR/EIS and are reproduced here, incorporating changes in text that were made to address the comments on the Draft EIR/EIS. Text changes are indicated by a line in the left margin of the page, as described previously.

Executive Summary. This chapter includes a summary of the NVRRWP and the alternatives evaluated. It includes a table that summarizes the impacts, mitigation measures, and levels of significance after mitigation measures are incorporated.

Chapter 1: Introduction. This chapter provides an introduction and overview describing the project objectives, purpose and scope of the Final EIS, intended uses of the Final EIS, including a list of responsible agencies and approvals, brief explanation of areas of controversy and issues to be resolved, and a summary of the NEPA review process.

Chapter 2: Alternatives and Proposed Action. This chapter presents a detailed description of the proposed NVRRWP, including a description of proposed facilities and construction and operational considerations under each of the Action alternatives as well as the No Action Alternative.

Chapter 3: Affected Environment/Environmental Setting, Environmental Consequences/Impacts and Mitigation Measures. This chapter analyzes the environmental consequences and impacts of the Action alternatives in comparison to the No Action alternative. Each topic includes a description of the affected environment/environmental setting, regulatory setting, methodology, thresholds of significance, impacts (both project-specific and cumulative), mitigation measures, and significance after mitigation. Chapter 3 includes subsections addressing each environmental resource.

Chapter 4: Other NEPA Considerations. This chapter identifies any direct or indirect impacts, significant and unavoidable impacts, the project's irreversible and irretrievable commitment of resources, and growth-inducing impacts. The impacts of alternatives are summarized so as to allow identification of the environmentally preferable alternative.

Chapter 5: Consultation, Coordination and Compliance. This chapter addresses compliance with federal statutes and regulations, summarizes the scoping process, and identifies the distribution of the Final EIS, and opportunities for future public involvement.

Chapter 6: Report Preparation. This chapter lists the authors of the Final EIS.

Chapter 7: Index. This chapter contains an index to topics discussed in the Final EIS.

Chapter 8: Responses to Comments: This chapter contains each letter or email commenting on the Draft EIR/EIS, and includes responses to each comment. Comment letters are reproduced followed by the respective response to comments.

1.7 NEPA Process and Review

1.7.1 Notice of Intent

In accordance with 40 CFR 1508.22, a Notice of Intent (NOI) was published by Reclamation in the Federal Register on April 22, 2014. During the 36-day public review period a public scoping

meeting was held, which is described below. During the NOI public review period, which ended on May 28, 2014 Reclamation received six written comments.

1.7.2 Public Scoping

Scoping Meeting

A scoping meeting for the NVRRWP was held on May 13, 2014 as described below:

Modesto City Hall
1010 Tenth Street
Modesto, CA
3:00 to 7:00 pm

The time and location of the scoping meeting were included in the postcards announcing the availability of the NOI, in the public notice placed in The Modesto Bee, as well as in a joint press release that was sent to local media outlets. An announcement of the meeting was published in the "News & Notes" section of the newspaper. The scoping meeting was held in an open house format, and comment cards were provided for those attending the meeting to facilitate submittal of written comments. At the scoping meeting, the NVRRWP was presented to the public through use of graphic displays showing maps, pipeline alignments, and information about project objectives, purpose and need, and proposed uses of recycled water. The graphic displays used at the meeting were also made available to the public on the NVRRWP website.

Areas of Controversy/Issues to be Evaluated

Comments received in response to circulation of the NOI are included in **Appendix A**. Written comments were received from three private citizens and from the following federal, state and regional/local agencies:

- USACE.
- U.S. Environmental Protection Agency (EPA).
- SWRCB.
- CDFW.
- California State Lands Commission (CSLC).
- CVRWQCB.
- TID.
- Stanislaus County Planning and Community Development Department.
- Stanislaus County Environmental Review Committee.
- San Joaquin Valley Air Pollution Control District (SJVAPCD).

Comments included questions about the project description and about effects on water quality, water supply, and groundwater recharge flows and patterns. All of these issues are evaluated in the Final EIS.

The only area of controversy identified during scoping was the use of recycled water in the Delta-Mendota subbasin for which TID suggested an alternative that would provide recycled water to users in the Turlock subbasin.

1.7.3 Public Review of the Environmental Documentation for the NVRRWMP

Draft EIR/EIS

On January 8, 2015, the City of Modesto, as the CEQA Lead Agency, released the Draft EIR/EIS for the NVRRWP for public review. Reclamation as the NEPA lead agency released the Draft EIR/EIS for review on January 9, 2015, and published a Notice of Availability in the Federal Register. Appendix H of the Draft EIR/EIS provided the distribution list of individuals, organizations, and agencies who received the Notice of Availability; notices were also sent to property owners adjacent to proposed project facilities. A 60-day public review period ended on March 11, 2015. A public hearing on the Draft EIR/EIS was held from 5:00 p.m. to 8:00 p.m. on February 11, 2015 at the Modesto City Hall, 1010 Tenth Street, Room 2001, Modesto, CA 95354.

Final EIR

As described previously, the City of Modesto prepared and released a Final EIR (SCH# 2014042068) pursuant to CEQA requirements on June 19, 2015. A Notice of Determination was issued by the City of Modesto on July 8, 2015.

Final EIS

Reclamation has prepared this Final EIS pursuant to NEPA requirements. Comments received during the public review of the Draft EIR/EIS and Reclamation's and the City of Modesto's response to comments are included in Chapter 8 of this Final EIS. Reclamation will use this document to support a Record of Decision to document Reclamation's decisions regarding the various potential federal actions for the project, which are described in *Chapter 2, Alternatives and Proposed Action*. The Record of Decision will not be prepared until at least 30 days after the release of the Final EIS and notice in the Federal Register.

1.8 References

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Chapter 2 Alternatives and Proposed Action

The U.S. Department of the Interior, including Reclamation, utilizes the regulations implementing NEPA and the guidance from the Council on Environmental Quality's (CEQ) document entitled, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations." The CEQ guidance indicates that the "range of alternatives" (addressed in Question 1b and referred to in 40 CFR Part 1502.14) includes all reasonable alternatives, which must be rigorously explored and objectively evaluated. In addition, there must be a discussion of other alternatives eliminated from detailed study, with a brief discussion of the reasons for eliminating them.

2.1 Alternative Development Process

This EIS evaluates three Action alternatives compared to the No Action Alternative for the NVRRWP. Identification of the No Action Alternative and the three Action alternatives for this EIS was informed by the purpose and need of the project, as presented in *Section 1.2, Purpose and Need*; comments received during the scoping process, preparation of a Feasibility Study (RMC 2013), and preparation of the Draft EIR/EIS.

Five alternatives were considered during the preparation of the Feasibility Study (RMC 2013). Each of the five alternatives was evaluated against the following criteria to determine the alternatives to carry forward for further analysis:

- Technical feasibility.
- Need for treatment plant upgrades.
- Recycled water delivery.
- Ability to deliver water to the entire District.
- Cost effectiveness.
- Institutional issues and obstacles.

The Feasibility Study recommended implementation of a project that provides pipeline conveyance of recycled water directly to the DMC. Therefore this EIS evaluates three Action alternatives that deliver recycled water directly to the DMC. The remaining alternatives evaluated in the Feasibility Study but rejected from further consideration are discussed in *Section 2.7*.

2.1.1 No Action Alternative

For the sake of this document, the No Action Alternative was considered to be the existing conditions of the environment in early 2014 when the NOI was published. For that reason, the No Action Alternative assumes no long-term, sustainable recycled water supply would be available to meet demands within DPWD or the refuges. The District would continue to rely on

the CVP as its primary water supply. To offset reductions in CVP allocations, the District would continue to execute water transfers/exchanges and to pump groundwater from private wells.

In 2014, the CVP allocation to DPWD was 0 percent, which resulted in the fallowing of over 11,000 acres of prime farm land, resulting in economic losses and loss of permanent crops, and placing even greater pressure on groundwater resources. To replace CVP water, DPWD irrigators were forced to rely on increased groundwater pumping and water transfers (13,459 AF for water year 2014). The availability of water for transfers may decline over time, continuing the shortfall, and potentially further increasing pressure on groundwater resources through increased pumping. Groundwater pumping could ultimately lead to overdraft of the basin and other undesired associated effects, including subsidence and groundwater quality degradation.

For the refuges, additional water supplies for wildlife management would continue to be needed. Reclamation would continue to compete for and purchase available supplemental water for SOD refuges on the open water acquisition/transfer market, which is increasingly becoming unreliable, unsustainable, and costly.

If recycled water from the NVRRWP is not conveyed, the DMC would continue operations in a fashion similar to existing conditions. Under the No Action Alternative, it is expected that operation of the DMC would continue unchanged.

If recycled water is not provided to DPWD, the Cities of Modesto and Turlock would continue their existing discharges to the San Joaquin River at their present levels. The Cities would not be obligated to discharge future, additional amounts of water to the San Joaquin River. The Cities could pursue other options for disposition of these future, additional amounts of water. If discharge to the river is continued, it is anticipated that both the Modesto and Turlock treatment plants would have to be upgraded in the future to meet increasingly stringent discharge regulations for cold-water fisheries. Even though the City of Modesto is upgrading to BNR/tertiary treatment, future discharge regulations could further increase treatment requirements. The CVRWQCB has indicated that stricter limitation on discharge to the river will be imposed in the future, which are driven, in part, by requirements for protection of anadromous fish. This could require construction of reverse osmosis or other expensive treatment processes.

The City of Turlock would also likely need to upgrade treatment processes, possibly including new UV disinfection and nitrogen removal processes. Their existing facility provides ammonia removal to meet discharge permit requirements; however, unlike the Modesto facility, the Turlock facility does not remove nitrates/nitrites from the effluent. Nitrate/nitrite removal could potentially be required in the future for Turlock, as it is for Modesto, which would require construction of new treatment processes similar to Modesto’s. In addition, Turlock faces the same potential future restrictions on river discharge, which could require costly treatment processes such as reverse osmosis.

2.2 Proposed Federal Actions

This EIS addresses a number of potential actions by Reclamation: (1) provision of funding under Title XVI and/or CVPIA Section 3406(d), (2) execution of a long-term Warren Act Contract, (3) execution of a license for construction, operation, and maintenance of a discharge structure at the DMC, and (4) an agreement with the Refuge Water Supply Program to provide supplemental water supplies to certain SOD refuges. The investigation and development of the NVRRWP is being carried out in conformance with Public Law 102-575, Title XVI, which provides a mechanism for federal participation and cost-sharing in approved water reuse projects (if specifically authorized by Congress) and with the CVPIA, Public Law 102-575, Title 23, Section 3406(d), which provides authorization for Reclamation to acquire supplemental water for refuges.

The long-term Warren Act Contract between Reclamation and DPWD would be required to convey recycled water in the DMC for delivery to DPWD and to provide for storage in San Luis Reservoir. In order to facilitate the storage component of the contract, an operational exchange would be required for DPWD to take delivery of stored water out of San Luis Reservoir.

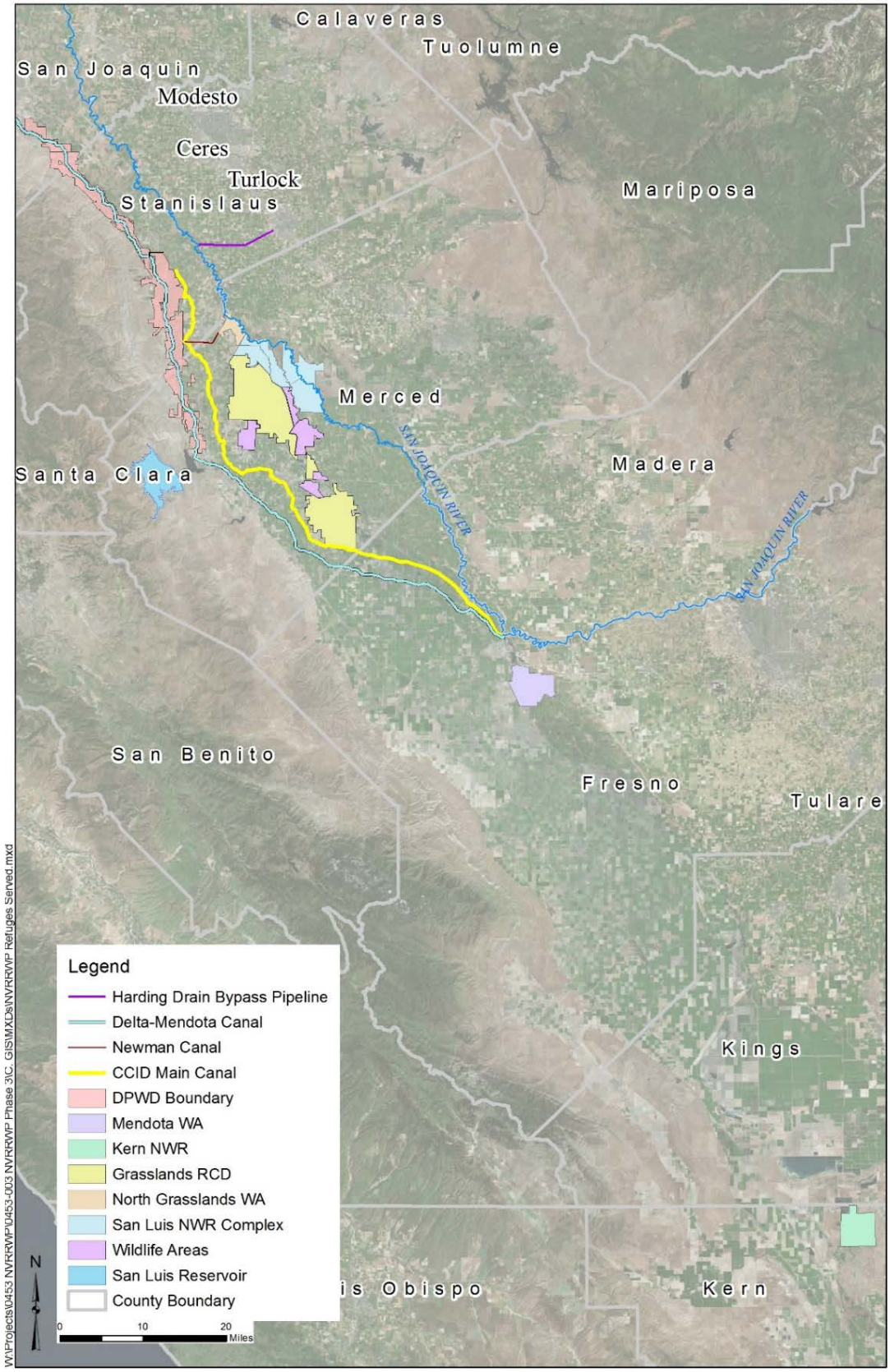
The license would allow DPWD to construct and maintain a DMC discharge structure within Reclamation's right-of-way (ROW). The project would also require a temporary construction easement from Reclamation to allow construction activities and possible staging in the area around the proposed DMC discharge structure.

Reclamation would work with DPWD to obtain supplemental water supplies (such as IL4) from the NVRRWP for delivery to certain SOD wildlife refuges.

2.3 Project Location

The Proposed Action is located within San Joaquin, Stanislaus and Merced Counties, as shown in **Figure 2-1**. Proposed facilities, consisting of pipelines, pump stations, and appurtenance improvements would generally be located about eight miles west of the cities of Modesto and Turlock, in Stanislaus County, though all work within the Jennings Plant site would be within the jurisdictional boundaries of the City of Modesto. Water would be delivered to farms within DPWD's service area in San Joaquin, Stanislaus and Merced Counties, as well as to certain SOD refuges.

Figure 2-1: Overview of Project Location



2.4 Proposed Action Components

Pipeline and pump station infrastructure would be constructed to deliver recycled water from Modesto and Turlock's treatment facilities to the DMC. The water would then be distributed to DPWD's service area and downstream refuges. This EIS evaluates three Action alternatives, which differ based on how recycled water would be conveyed from the Turlock and Modesto treatment facilities to the DMC. Alternative 1 and Alternative 2 are both "pipeline corridor alternatives", which include construction of new pipeline(s) to convey water to the DMC. Alternative 3 would use the San Joaquin River as the first segment and an expanded PID diversion and delivery distribution facility as the second segment to convey water to the DMC. The three Action alternatives considered are:

- Alternative 1: Combined Alignment Alternative (Preferred Alternative).
- Alternative 2: Separate Alignment Alternative.
- Alternative 3: PID Conveyance Alternative; continued discharge to the San Joaquin River with diversion and delivery to the DMC via an expanded PID diversion and delivery system.

All three Action alternatives were developed at two recycled water production rates (30,600 AFY available at the onset of the project in 2018, and 59,000 AFY at buildout of the Cities in 2045). Both pipeline corridor alternatives would avoid requirements for additional treatment upgrades at each City's treatment facility, have design capacity to convey all of the anticipated recycled water produced at buildout, use the CVP facilities to provide seasonal storage, and allow for delivery to the entire DPWD service area and refuges.

Both pipeline corridor alternatives would require that Modesto and Turlock obtain approval of Wastewater Change Petitions from the SWRCB, Division of Water Rights pursuant to Section 1211 of the Water Code. Approval of the petitions would enable changes in the points of discharge from the San Joaquin River to the DMC. In reviewing and approving Petitions for Change, the Division of Water Rights must find that the proposed change would not injure other legal users of water, would not unreasonably harm instream uses, and would not be contrary to the public interest. All petitioners must send a copy of the petition to CDFW, and the Division requires public notice of the petition to be provided to interested parties including other legal users of water. Protestants may raise concerns about protecting their water rights, or may raise public trust concerns. A protest sets forth the protestant's objections to approval of the petition. If the Division receives a protest, further review would be conducted. Both Modesto and Turlock would maintain their existing discharge locations at the San Joaquin River, as well as the NPDES permits for those discharges. However, the Proposed Action for these two alternatives would reduce the amount of recycled water discharged to the San Joaquin River because the primary point of discharge would be changed to the DMC.

Because the PID Conveyance Alternative would continue discharge of recycled water to the San Joaquin River, water rights for this option would need to be established through a different approval process. Instead of a Wastewater Change Petition, Turlock and Modesto would need to

acquire a new water right under Section 1485 of the California Administrative Code, which provides that agencies that discharge treated wastewater to the San Joaquin River can apply for a permit to appropriate an equal amount of water. Both Cities would need to obtain a water right to allow diversion of the recycled water from the river at the PID intake, which is downstream of the Turlock discharge location, but upstream of Modesto's discharge. Because water would be diverted upstream of Modesto's discharge point, the process for establishing a water right for diversion at the PID intake may be complex. Depending on the water rights process, the proposed project might require an exchange with a downstream diverter. Turlock would need to secure a water right for recycled water currently discharged to the San Joaquin River. Modesto would need to secure a water right for the portion of their recycled water currently discharged to the San Joaquin River (during winter months) and a water right for the portion of their recycled water that is currently land applied (during summer months), which would be discharged to the river under this alternative.

The primary difference between the three Action alternatives is how the recycled water would be conveyed to the DMC. The two pipeline corridor alternatives would convey water completely within new pipelines. Alternative 1, the Combined Alignment Alternative, includes shared conveyance facilities between Turlock and Modesto. Alternative 1 would convey recycled water from Turlock's Harding Drain Bypass Pipeline to Modesto's Jennings Plant, where it would be combined and conveyed in one pipeline to the DMC (see **Figure 2-2**). Alternative 2, the Separate Alignment Alternative includes independent pipelines from each City's treatment facility to the DMC, as shown in **Figure 2-3**. One pump station would be needed for Alternative 1 and two pump stations would be needed for Alternative 2. Alternative 3 would utilize the San Joaquin River for a portion of the conveyance, and then rely on expanded PID diversion and conveyance facilities, as shown in **Figure 2-4**. A detailed description of the project components is provided below.

Figure 2-2: Combined Alignment Alternative (Alternative 1/Preferred Alternative)

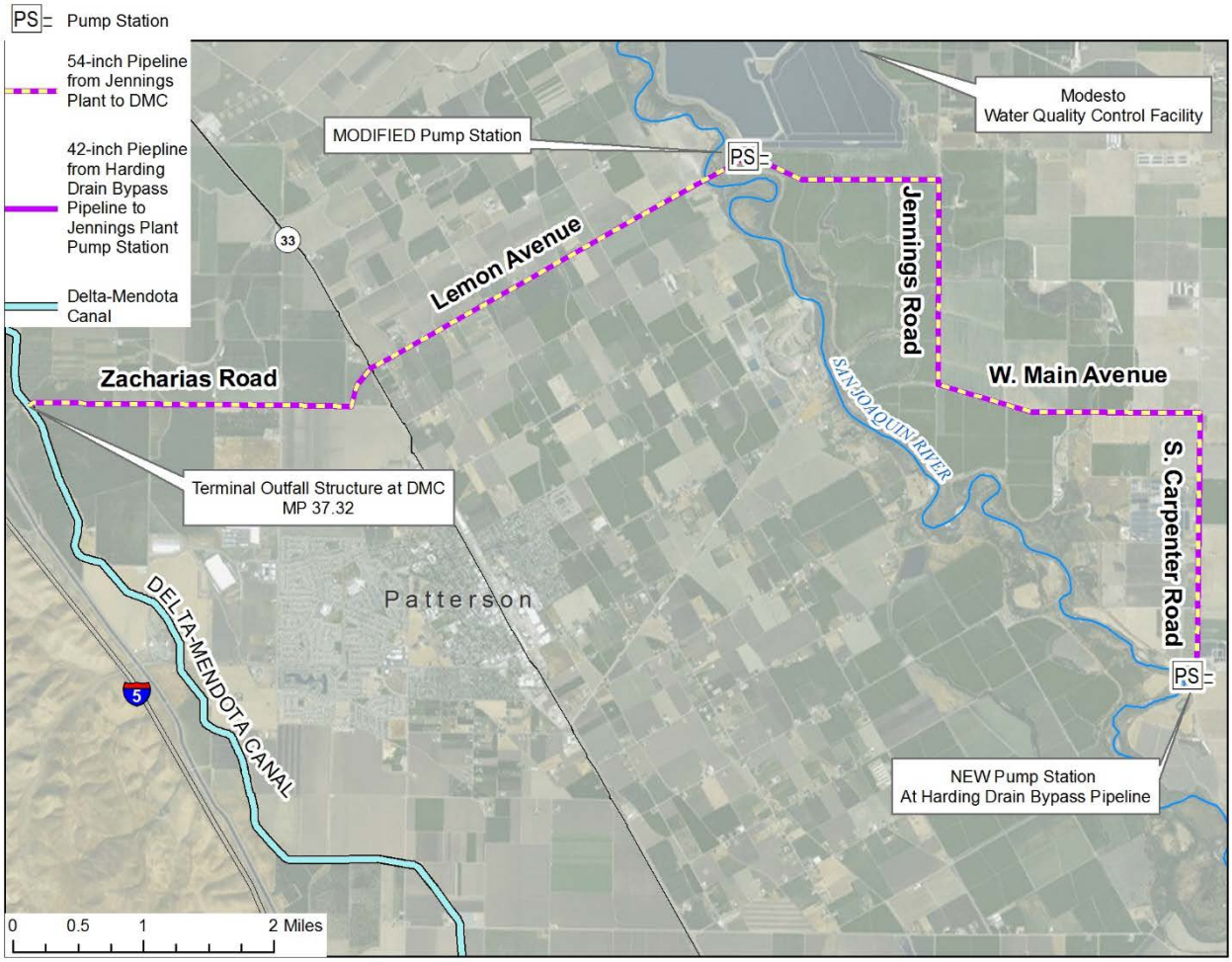


Figure 2-3: Separate Alignment Alternative (Alternative 2)

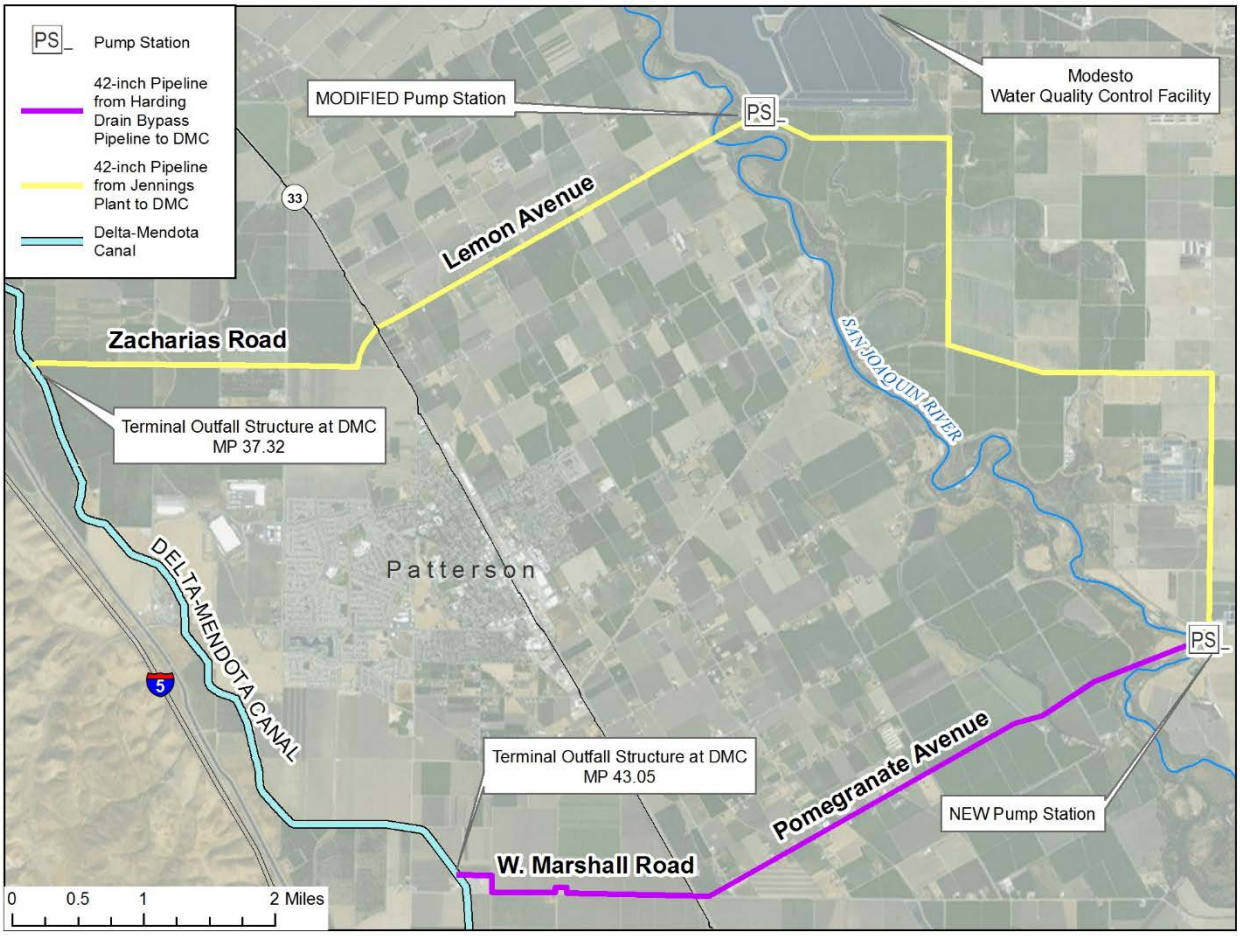
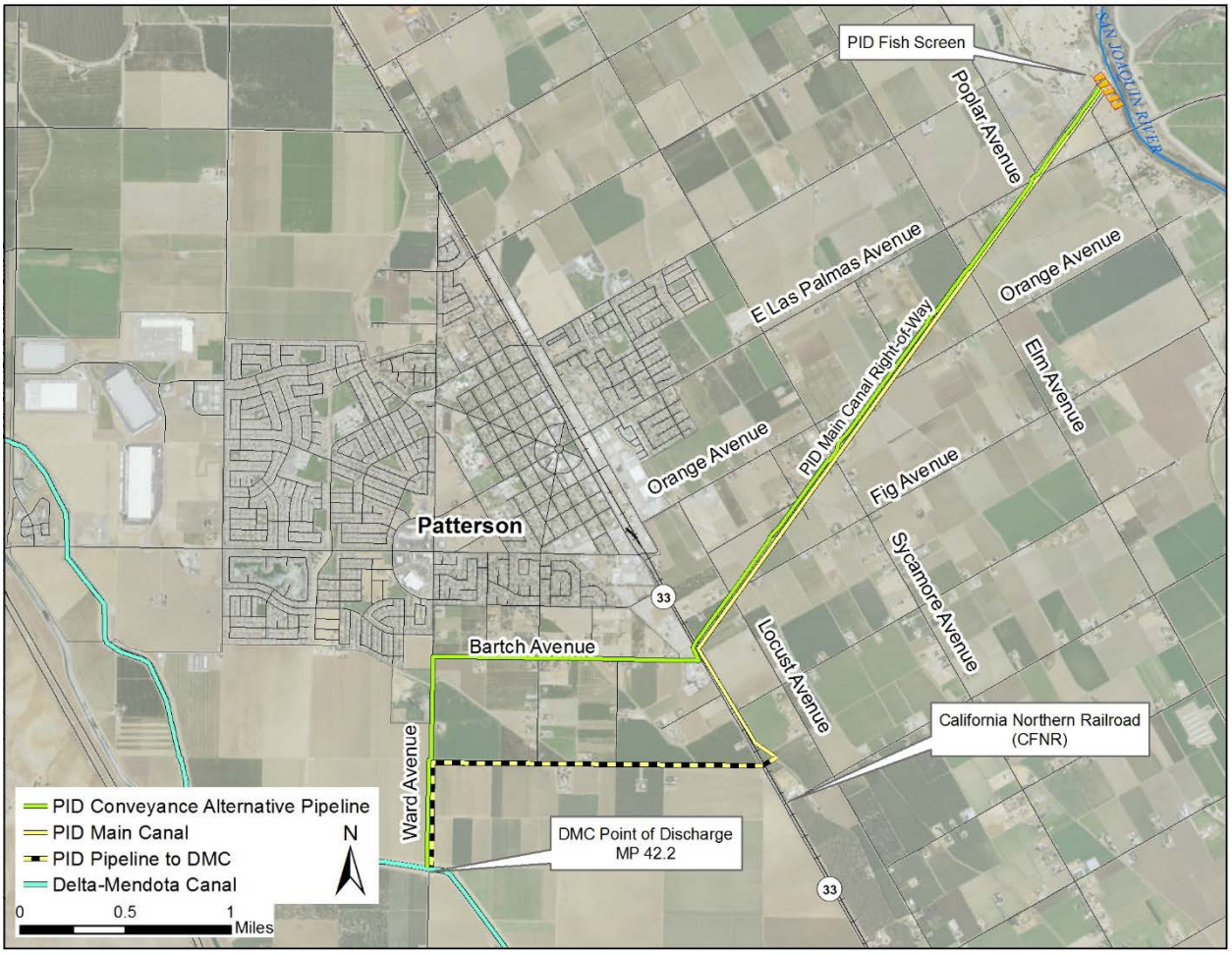


Figure 2-4: PID Conveyance Alternative (Alternative 3)



2.4.1 Pipelines and Appurtenances-Separate and Combined Alignment Alternatives

This section provides a discussion of the pipeline elements of both pipeline corridor alternatives, followed by a detailed description of each alternative.

The proposed pipeline corridor alternatives would be similar in length. The pipelines would vary from 36 to 54 inches in diameter and would likely be constructed of steel or reinforced concrete pipe. All pipelines would be equipped with air valves to release air from high points to prevent air binding that can reduce the pipeline capacity. Air valves may be located above or below ground. If located above ground, they would be housed on a concrete slab in a protective steel cage approximately 4 feet by 4 feet, on the shoulder of an adjacent road. If located underground, they would be located either within or on the shoulders of roadways in below-ground covered concrete vaults with vent pipes extending above-ground. Design and placement of air valves would be coordinated with Stanislaus County so as to ensure that vents would not interfere with potential future road widening projects such as the West Main Street Highway Improvement Project. Where feasible, air valves and vents could be located below ground so that it would be possible to construct a roadway on top of them, with appropriate venting through the pavement surface using a structure similar to a manhole. All pipelines would be equipped with drain valves

at low points in the pipeline to allow the pipelines to be drained for maintenance and repairs. Up to 30 drain valves could be required for each alternative, depending on topography. The drains would discharge to land, or if permitted, to existing drainage or irrigation supply ditches along the pipeline alignments.

The pipeline corridor alternatives would require one or two crossings of the San Joaquin River, State Route 33 (SR 33), the California Northern Railroad Company (CFNR) railroad tracks, and multiple crossings of irrigation canals. In most instances, these crossings would use trenchless installation techniques, such as horizontal directional drilling (HDD) or tunneling to minimize surface effects to waterways or transportation. The crossing of SR 33 would be coordinated with potential future roadway improvements in the area so as to not interfere with possible widening of the roadway at the location of the pipeline crossing. The recommended trenchless installation method would be determined after geotechnical data are collected and evaluated during the design phase of the project. The proposed pipeline alternatives also run parallel and across a variety of underground and overhead utilities, including natural gas, fiber optic communication, cable, electricity, and water. Although the precise pipeline locations have not yet been determined, the proposed alignments would avoid major utilities and are expected to avoid minor utilities through their strategic placement within individual alignments. Any pipelines constructed in fields would require storage and stockpiling of topsoil, which would be replaced after pipeline installation. Pipeline placement would also meet the CDPH separation requirements. Because of the rural setting of the proposed project, there are no sewer mains along potential pipeline alignments (as the area uses septic systems), and there would be no conflicts with storm drain infrastructure, as there is none in the project area.

Alternative 1: Combined Alignment Alternative (Preferred Alternative)

The Combined Alignment Alternative consists of two reaches totaling 69,800 linear feet (see **Figure 2-2**). The south-north reach from the Harding Drain Bypass Pipeline would be 42 inches in diameter and would extend from the western end of the Harding Drain Bypass Pipeline near the existing standpipe structure on South Carpenter Road, then parallel South Carpenter Road north to West Main Street, then turn west on West Main Street to Jennings Road. At Jennings Road, the pipeline would then turn north for about 1.8 miles. From Jennings Road, the pipeline would extend west along existing dirt roads through agricultural fields owned by Modesto and terminate at the existing Jennings Plant outfall pump station near the southeastern end of the Jennings Plant. Combined flows from the pumping facility at the Jennings Plant, which would be modified to meet capacity needs, would then travel in a 54-inch pipeline, cross under the San Joaquin River, and extend west to the DMC along Lemon Avenue, through farmland, and along Zacharias Road. **Table 2-1** shows the two segments and characteristics of each pipeline segment.

The proposed pipeline would cross a total of five irrigation canals along the Lemon Avenue alignment, all of which are operated by PID. Construction would take approximately 21 months, and is estimated to start in the fall of 2016.

Table 2-1: Alternative 1 - Combined Alignment Alternative Reach Characteristics

Segment	Approximate Length (feet)	Pipe size (inches)	Special Construction Considerations
Harding Drain Bypass Pipeline to Jennings Plant Pump Station – Segment 1			
South Carpenter Road between Harding Drain Bypass Pipeline and West Main Street West Main Street between South Carpenter and Jennings Road Jennings Road between West Main and agricultural field access road Agricultural field access road between Jennings Road and Jennings Plant Pump Station	37,800	42	Potential for lane/road closure requiring detours and other traffic control. Potential lane/road closures along South Carpenter Road, West Main Avenue and Jennings Road. Crossing of West Main Avenue at South Carpenter Road may use trenchless technology.
Jennings Plant Pump Station to DMC – Segment 2			
Open Space (including San Joaquin River and floodplain) between Jennings Plant and Lemon Avenue Lemon Avenue between San Joaquin River and SR 33 Agricultural Fields from east side of SR 33 to west side of SR 33 Zacharias Road from just west of SR 33 to DMC	32,000	54	Trenchless installation techniques such as HDD or tunneling of the pipeline would be required to cross under San Joaquin River to avoid the waterway and wetland resources. Road closure anticipated along Lemon Avenue during construction, requiring detours. One segment of trenchless pipe would be required to cross both SR 33 and CFNR[1]. Trenchless method may be needed to cross irrigation canals.
Total Length of two reaches	69,800		

Notes: The CFNR parallels SR 33 through much of the San Joaquin Valley, and spans the extent of the NVRRWP project bounds. The center line of SR 33 is approximately 75 feet away from the center line of the CFNR. Due to the proximity of the highway to the CFNR, it is assumed that a single trenchless pipe would be sized to span both crossings. The CFNR would require a protective casing for the pipe crossing under the railroad tracks.

Alternative 2: Separate Alignment Alternative

The Separate Alignment Alternative consists of two reaches totaling 64,000 linear feet. As shown in **Figure 2-3**, the northern reach would begin at the Jennings Plant Pump Station located at Modesto's Jennings Plant and would extend west and cross under the San Joaquin River then along Lemon Avenue and Zacharias Road to the DMC, as described above for Segment 2 of Alternative 1. The southern reach would originate at a new pumping facility at the western end of the Harding Drain Bypass Pipeline near the San Joaquin River outfall location and would cross under the river and extend west to the DMC via open space, Pomegranate Avenue, and agricultural lands (primarily along West Marshall Road). **Table 2-2** shows the two pipeline reaches and their characteristics. Pipelines in both reaches would be 42 inches in diameter. Pumping facilities are described below.

The northern reach from the Jennings Plant would cross a total of five irrigation canals, four of which are owned by PID. The southern pipeline alignment would cross four parallel PID lined and unlined irrigation canals. Similar to Alternative 1, construction would take approximately 21 months to complete once construction is initiated. Construction is estimated to begin in late summer/early fall 2016.

Table 2-2: Alternative 2 - Separate Alignment Alternative - Reach Characteristics

Segment	Approximate Length (feet)	Pipe size (inches)	Special Construction Considerations
Northern Reach – Modesto's Jennings Wastewater Treatment Plant to DMC			
Same as Segment 1 for Alternative 1	32,000	42	Same as Segment 1 for Alternative 1
Southern Reach - Harding Drain Bypass Pipeline to DMC			
Open Space (including San Joaquin River and floodplain) between Harding Drain Bypass Pipeline and Pomegranate Avenue Pomegranate Avenue between San Joaquin River floodplain and Locust Avenue Private road between Locust Avenue and SR 33 Parallel and north of West Marshall Road between SR 33 to DMC (up to 80 feet north of West Marshall Road)	32,000	42	As with the northern reach, HDD or tunneling of the pipeline would be required to cross under San Joaquin River to avoid the waterway and wetland resources. Road closure anticipated along Pomegranate Avenue during construction, requiring detours. One segment of trenchless pipe would be required to cross both SR 33 and CFNR[1]. Trenchless method also may be needed to cross irrigation canals.
Total Length of two reaches	64,000		

Notes: The CFNR parallels SR 33 through much of the San Joaquin Valley, and spans the extent of the NVRRWP project bounds. The center line of SR 33 is approximately 75 feet away from the center line of the CFNR. Due to the proximity of the highway to the CFNR, it is assumed that a single trenchless pipe would be sized to span both crossings. The CFNR would require a protective casing for the pipe crossing under the railroad tracks.

2.4.2 Pump Stations-Separate and Combined Alignment Alternatives

For Alternative 1, flow from the Harding Drain Bypass Pipeline would be conveyed by gravity to a modified pump station at the Jennings Plant, where it would combine with flow from Modesto. Only the modified existing Jennings Plant outfall pump station described below would be required as part of the proposed project to convey combined flow to the DMC under Alternative 1. **Figure 2-5** shows the conceptual modifications to the existing pump station. Details for the individual pump stations are shown in **Table 2-3**.

For Alternative 2, two pump stations would be required as part of the proposed project. For the northern reach of Alternative 2, the existing Jennings Plant outfall pump station located at the southwestern end of the Jennings Plant would be modified for pumping to the DMC by retrofitting new pumps, motors and electrical gear into the existing structure. For the southern reach of Alternative 2, a new pump station would be constructed near the western end of the Harding Drain Bypass Pipeline on land owned by the City of Turlock at the southwest corner of the intersection of South Carpenter Avenue and Harding Road. This proposed pump station would be above ground and would be enclosed. A conceptual plan and elevation for the new

above-ground pump station at the Harding Drain Bypass Pipeline are shown in **Figure 2-6** and **Figure 2-7**, and the location is shown in **Figure 2-8**.

Table 2-3: Pump Station Characteristics (Preliminary)

Alternative / Pump Station	Horsepower (hp)	Flow Rate (cfs)	Dimensions (length x width)	Maximum Height (feet)
Alternative 1				
Modified Jennings Plant Pump Station	500	46	Pumps would be installed in existing pump station structure; approximately 20 feet x 30 feet	Pumps located outdoors on top of existing wet well; approximately 15 feet high above ground level
Alternative 2				
Modified Existing Jennings Plant Pump Station	300	23	Same as above	Same as above
Pump Station at Harding Drain Bypass Pipeline	250	23	Overall site dimensions 100 feet x 100 feet. Pump building footprint approximately 40 feet x 50 feet	Building height approximately 15 feet above ground level

The pump station buildings would be surrounded by pavement for access and a fence to ensure security. Automatic-sensor lights would also be installed to provide safety and security. Power to the new pump station at Harding Drain Bypass Pipeline is assumed to be furnished by the nearby electric grid system operated by the TID. The existing TID power supply to the Jennings Plant pump station, consisting of above-grade wires mounted on poles is assumed to be used for the modified pump station under both Alternatives 1 and 2. Alternative 1 is estimated to use 15,442 megawatt hours per year of electricity for pumping; Alternative 2 is projected to require 17,898 megawatt hours per year, and Alternative 3 would require 20,063 megawatt hours per year. Generators may be needed to provide emergency power in the event of a power outage.

Figure 2-5: Modifications to Jennings Plant Pump Station

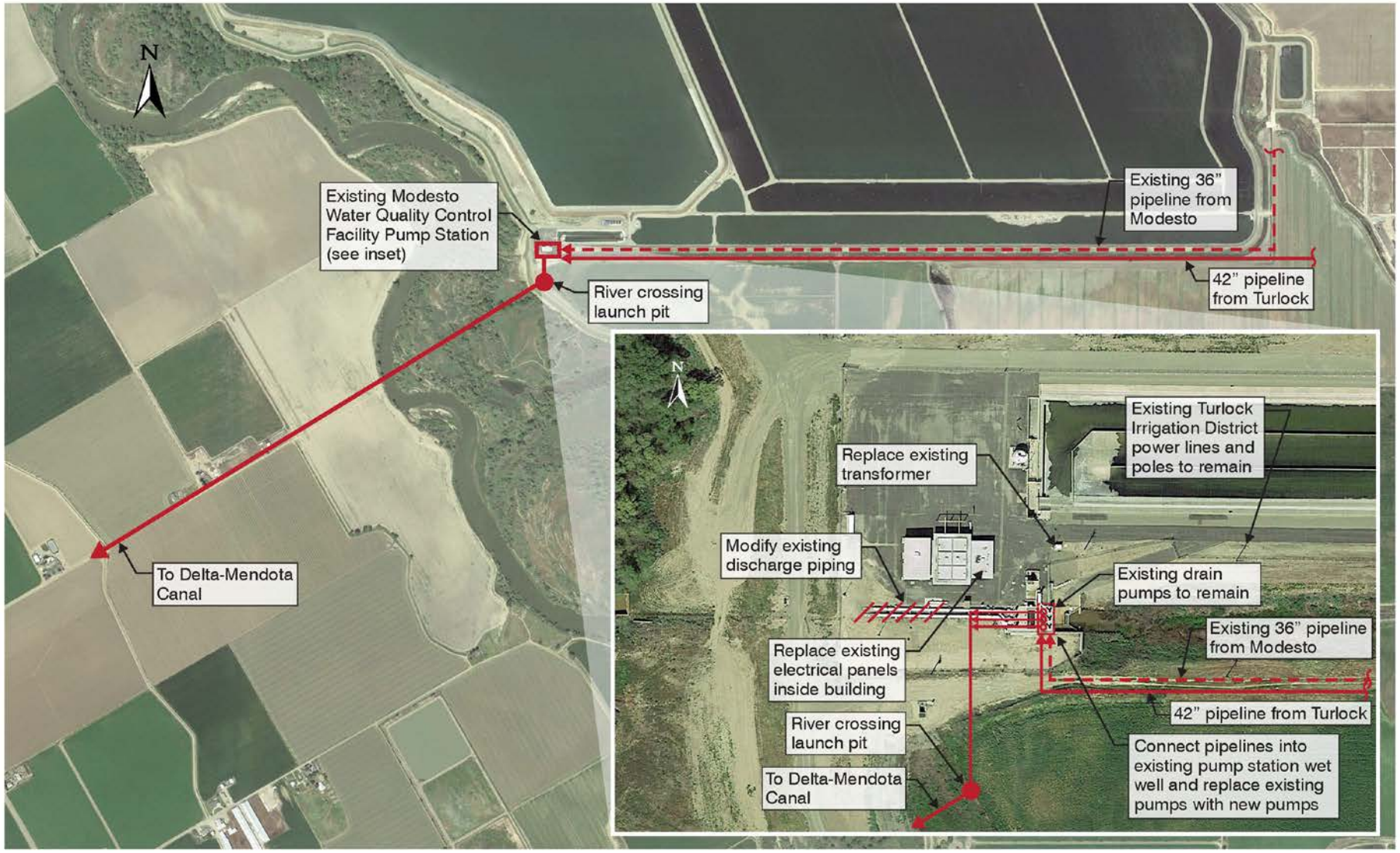


Figure 2-6: Site Plan for New Pump Station

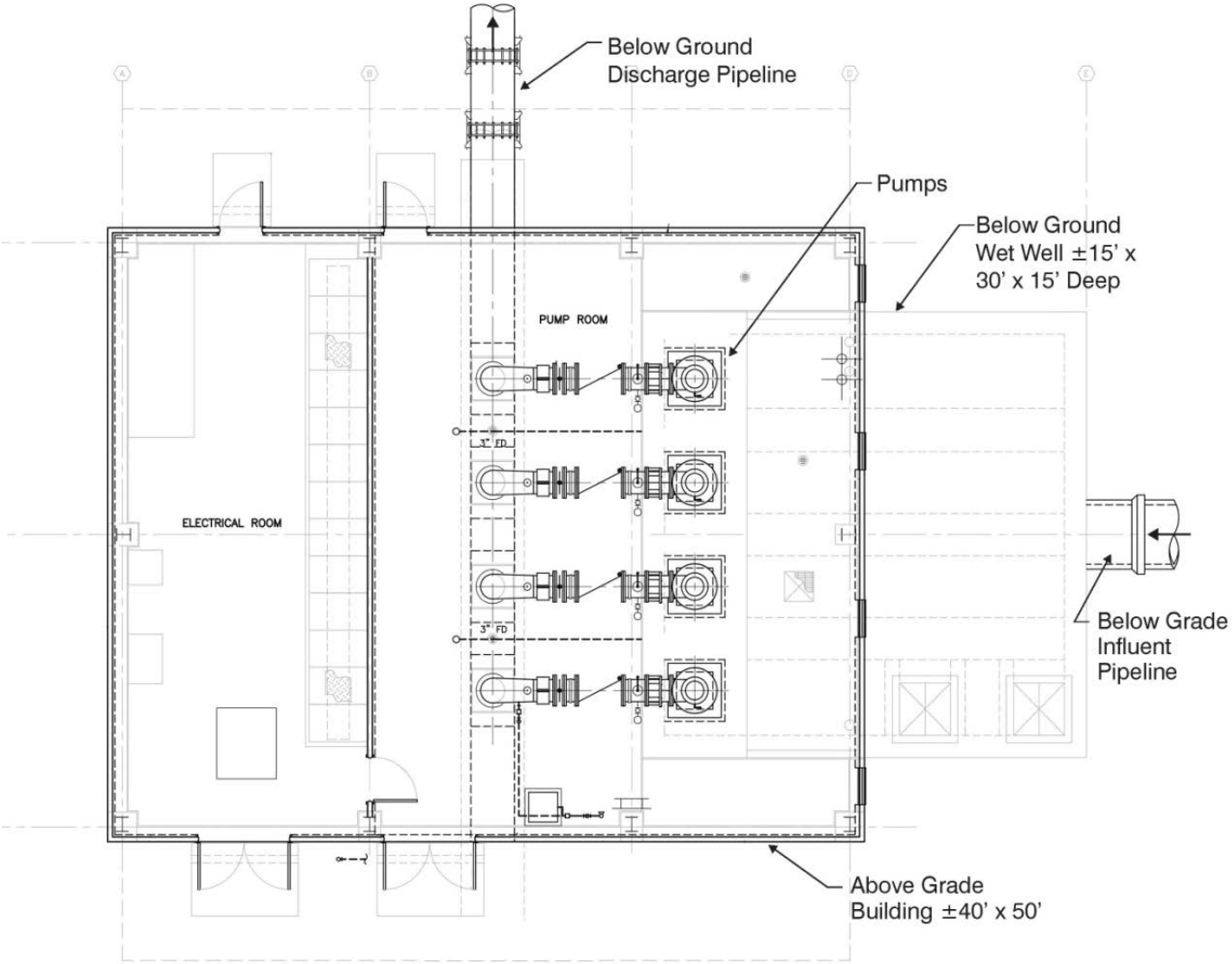


Figure 2-7: New Pump Station Elevation

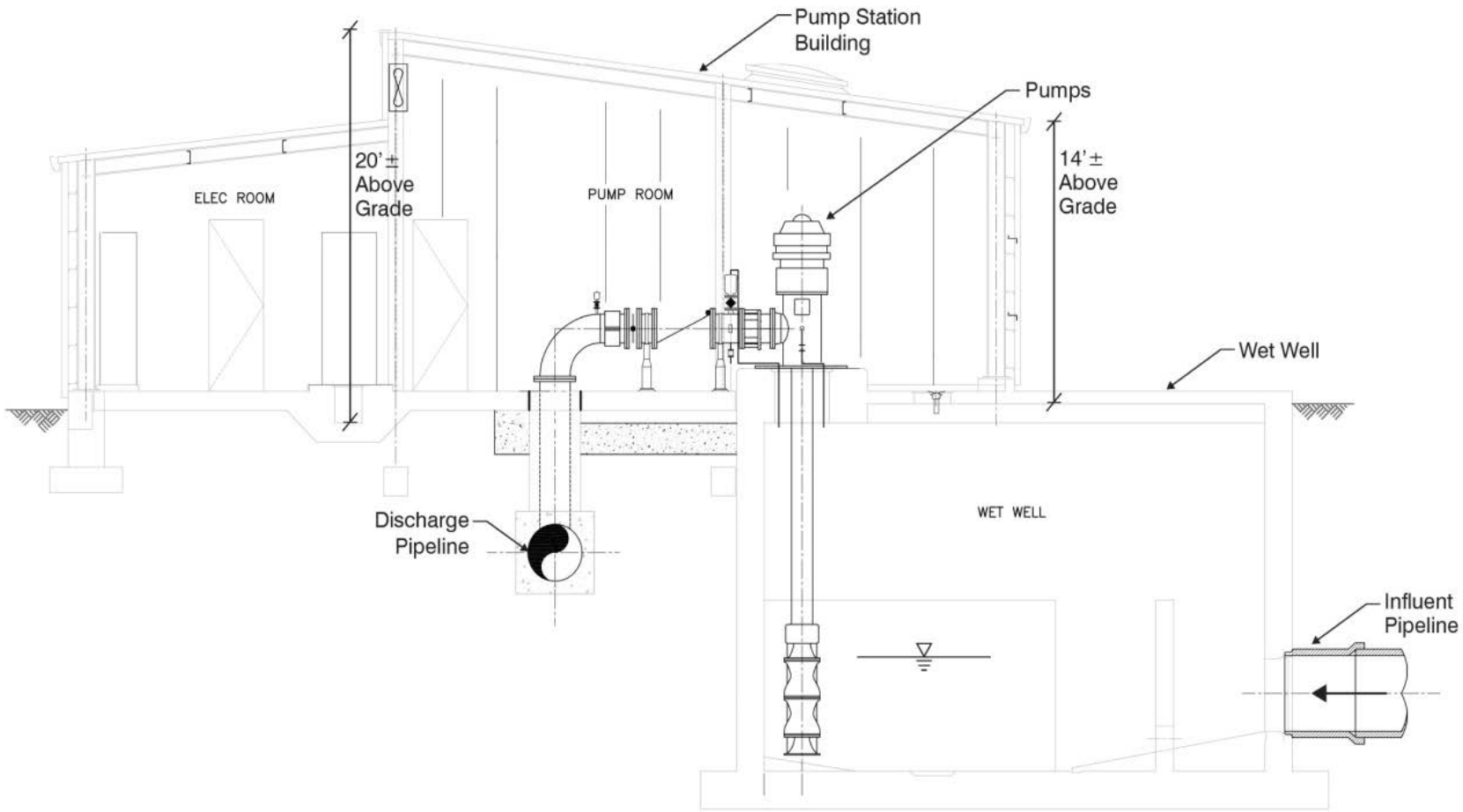
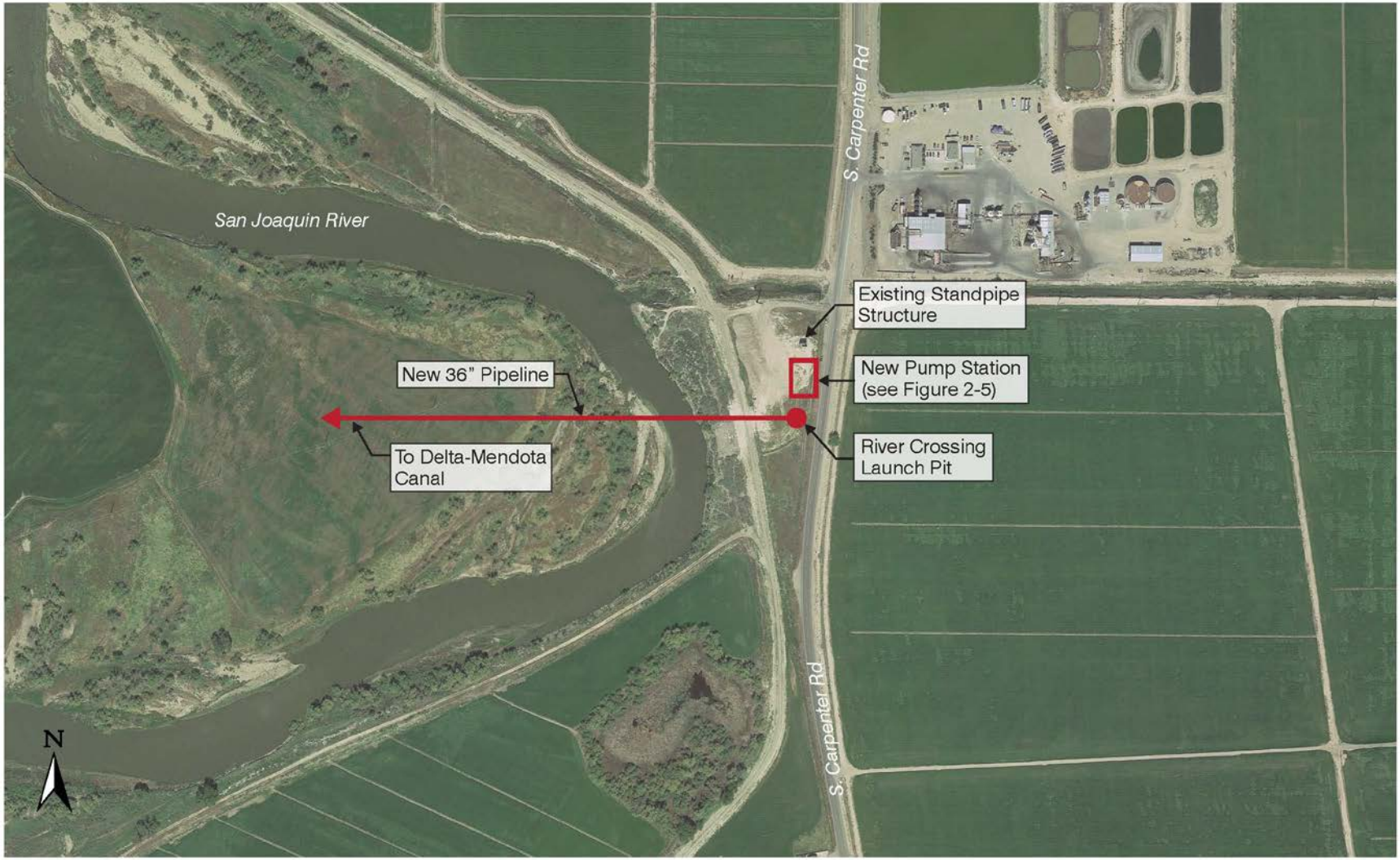


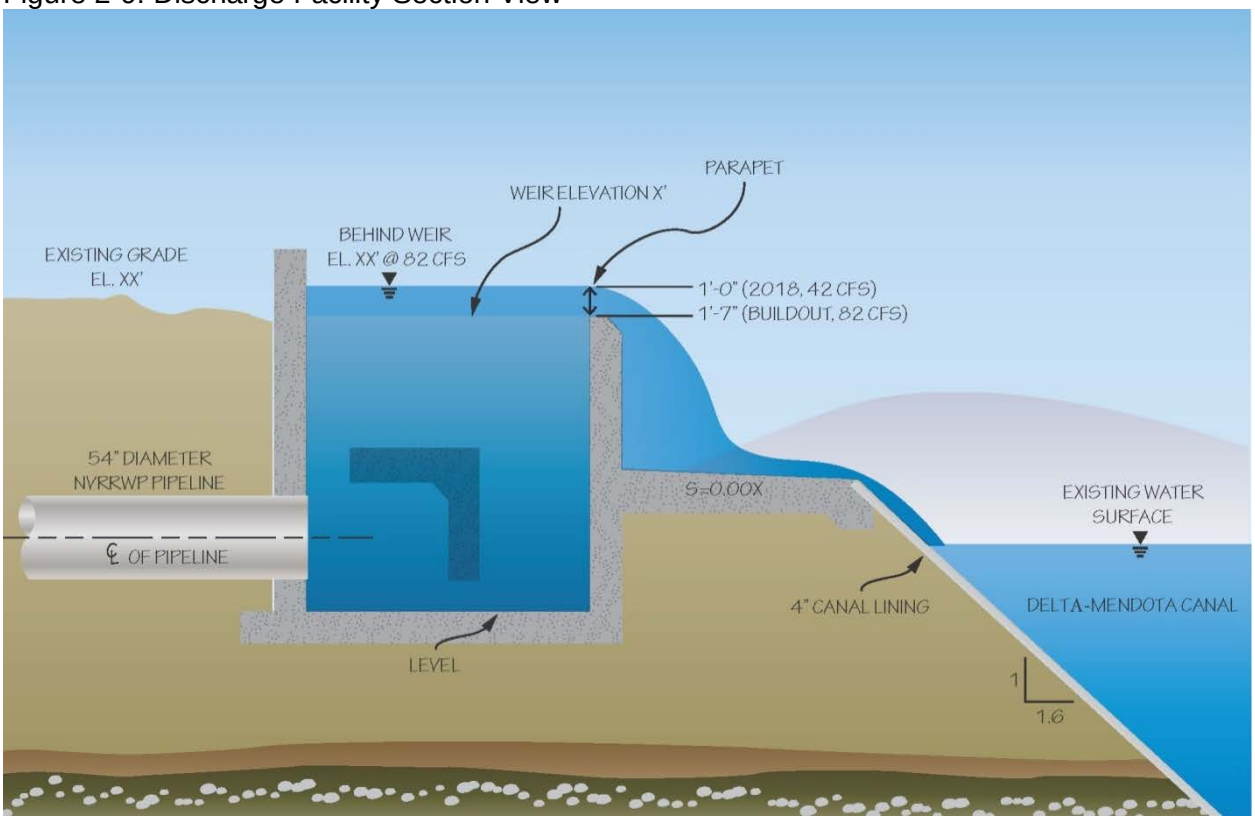
Figure 2-8: Location of New Pump Station at Harding Drain Bypass Pipeline



2.4.3 DMC Discharge Facility- Combined and Separate Alignment Alternatives

For both pipeline corridor alternatives water would be discharged to the DMC at an outfall facility located adjacent to the east bank of the existing DMC. The footprint of the facility would be approximately 30 feet by 50 feet, and would be enclosed with security fencing. The structure itself would consist of a reinforced concrete, open-ended rectangular box, situated below and above grade **(Figure 2-9)**. The box would contain a fixed-point, sharp-crested weir for hydraulic stability. Downstream of the weir, the water would flow over a concrete slab and into the DMC; this would be designed so as to require little to no modification or alteration of the existing DMC concrete lining. The facility would also include metering in a concrete vault structure and telemetry devices for communicating flow and water quality data and remote monitoring of the discharge facility.

Figure 2-9: Discharge Facility Section View



2.4.4 Alternative 3: PID Conveyance Alternative

This alternative differs from the Combined Alignment Alternative and Separate Alignment Alternative in that water would be discharged to the San Joaquin River, which would function as a portion of the conveyance system. Water would then be diverted at the PID intake and conveyed partially through existing PID facilities and partially through an expanded PID system that would connect to the DMC.

An agreement with PID would be necessary to allow conveyance of water through their system. Because the existing canal is too small to convey all of the flows, in addition to conveying water

through the canal, the PID conveyance system would have to be expanded, so that a portion of the flows would flow through a pipeline paralleling the Main Canal, and then discharged to the DMC. The PID Conveyance Alternative would have some operational constraints because PID routinely ceases operation of the Main Canal annually for 4 to 6 weeks for maintenance, specifically sediment removal. During that time period, the main canal would not be available to convey recycled water, though flows through the new pipeline paralleling the canal would continue.

Under separate environmental documentation, Reclamation is evaluating an interim transfer proposed by the City of Turlock and DPWD which would be similar in description. As proposed, the transaction would entail transfer up to 13,400 AFY of water from Turlock to DPWD. The transfer would include 10,000 AFY of existing flows, which are currently discharged to the San Joaquin River, plus future flows up to a total of 13,400 AFY. The transfer would require appropriation of San Joaquin River flows under Section 1485 of the Water Code in an amount equal to quantities discharged by Turlock to the river, conveyance of the flows through the PID intake facility and Main Canal to the DMC, and conveyance of flows to DPWD turnouts along the DMC pursuant to a Warren Act Contract with Reclamation. PID currently has sufficient capacity in the Main Canal to convey up to 13,400 AFY of existing Turlock flows to DPWD. The interim transfer would only continue until the NVRRWP was implemented.

However, because the NVRRWP contemplates conveyance of up to 59,000 AFY of flows from both Turlock and Modesto, existing PID facilities would need to be expanded because there is insufficient capacity available to convey all of flows in the existing system. It is estimated that about 13,400 AFY of capacity could be made available in the Main Canal, though the ability to negotiate a long-term conveyance agreement with PID is uncertain. Assuming that 13,400 AFY of capacity would be available, it would be necessary to construct facilities to convey an additional 45,600 AFY from the San Joaquin River through the PID intake and to the DMC. Alternatively, the entire 59,000 AFY could be conveyed through a new pipeline paralleling the Main Canal. The environmental impacts of a slightly larger pipeline are not expected to be materially different than those for a pipeline that could convey 45,600 AFY.

PID Intake Expansion

The existing intake facility would have to be expanded by installing an additional 70 linear feet of structure containing about 48 additional linear feet of fish screen to divert the additional 45,600 AFY of NVRRWP buildout flow. The existing fish screen contains ten 12-foot-long bays for a total of 120 linear feet of fish screen; the expanded intake facility would have four additional bays. Construction of the additional fish screen bays would require work be conducted within the San Joaquin River. A cofferdam would be constructed and actual construction of the expanded intake would then take place within the cofferdam.

PID Pump Station

A new pump with 2,500 installed horsepower would be required to pump water through a new pipeline from the PID intake to the DMC. The pump would be sited at the existing PID intake facility, which is located on the west bank of the San Joaquin River at the end of Old Las Palmas Avenue. An emergency generator may also be installed to ensure capture of the available recycled water flows during times of power outages at the PID diversion facility.

PID Delivery System Expansion

From the expanded pump station, an additional 30,100 linear feet of 48-inch pipeline would be required to convey water to the DMC. The pipeline would parallel the northwest side of the Main Canal to the CFNR railroad and SR 33. Crossing of the railroad and SR 33 is assumed to use a trenchless construction method. From SR 33 the pipeline would travel west on Bartch Avenue to Ward Avenue, where it would turn south and follow Ward Avenue to a discharge point at the DMC. The pipeline would cross five irrigation canals owned by PID; construction of these crossings would likely use some form of trenchless technology. The majority of the pipeline, other than the crossings described above, would be constructed using cut and cover construction.

Discharge from PID Conveyance System

Water would be discharged to the DMC through a discharge structure similar to those described for Alternatives 1 and 2. The structure would be a reinforced concrete, open-ended rectangular box containing a fixed-point, sharp-crested weir.

Future Treatment Plant Upgrades

This alternative could require the two Cities to install future treatment plant upgrades if the CVRWQCB imposes additional requirements for removal of salinity and nutrients to protect cold water fisheries in the San Joaquin River. Such improvements could require installation of reverse osmosis, or similar technologies, for removal of salts. Installation of reverse osmosis or similar membrane technologies would also entail installation of brine management and disposal facilities. Any such future improvements would be completed under applicable regulations and may require additional environmental review.

2.5 Operation and Maintenance Requirements

2.5.1 Operations

Under the NVRRWP, the SOD CVP system would be used to convey and store recycled water, which is considered “non-project water” (i.e. non-CVP water). A long-term Warren Act Contract, which would include an operational exchange component, would be needed with Reclamation. Once in the DMC, water could be diverted from any point along the DMC through existing turnouts to the DPWD service area and certain SOD refuges or to the San Luis Reservoir for storage. Because both Cities’ treatment plants operate 24 hours per day/365 days per year, the project would be operated year-round. Thus, the pump stations and pipelines would be operated 24 hours per day/365 days per year to deliver tertiary-treated water to the DMC if capacity exists. Non-CVP water conveyed in the DMC is on a “space-available” basis; availability of space is determined by Reclamation and is based on either the physical or “operational” constraints. All discharges to the DMC under this project would be scheduled in advance and approved by Reclamation and SLDMWA prior to discharge.

No changes to the District’s internal, administrative water allocation system would occur. DPWD would work directly with Reclamation and SLDMWA to track water inputs and outputs into the DMC.

With respect to the SOD refuges, it is most likely water would be delivered to them during low agricultural-demand periods, although this has yet to be determined. Water would be delivered to the refuges via either existing turnouts from the DMC or through other existing private conveyance systems, as appropriate, and in accordance with the refuges' respective annual water delivery schedules. Water delivered to SOD refuges would be managed on refuge for wetland habitat purposes in accordance with the refuges' Reclamation approved Refuge Water Management Plans (available at: http://www.usbr.gov/mp/watershare/wcplans/index.html). No additional infrastructure would be required to serve water to the refuges.

2.5.2 Maintenance

Maintenance of the project would primarily involve regular inspections of the pipelines and pump stations. The pipeline(s) would be inspected as needed in any given year, and the pump stations would be inspected monthly. Existing Turlock and Modesto operations and maintenance staff would conduct maintenance activities. No vehicular trips would be needed for inspection of the pump station at Modesto's Jennings Plant because it is located on the treatment plant site, where existing staff currently maintain its facilities. City of Turlock staff would drive to the pump station at the Harding Drain Bypass Pipeline for regular inspections. For the PID Conveyance Alternative pump station, arrangements for maintenance would need to be agreed upon with PID.

2.6 Construction Considerations

This section outlines the pipeline installation techniques under consideration for the NVRRWP. The precise construction methods are yet to be determined but work is anticipated to follow the broad methods outlined in the following sections.

All pipeline construction would occur within public roadways or other public ROW, private and municipal agricultural lands, and public open space areas (San Joaquin River and its floodplain). An easement from the California Department of Transportation (Caltrans) would be required to construct the pipeline underneath SR 33. An access agreement may be required for railroad crossings. Construction of the pipeline alignments would consist of open-cut construction, except at specific crossings (e.g., river, highway, railroad, and irrigation canals), where trenchless construction techniques would be employed.

Spoil (soil and rock) excavated during construction would be reused on site for backfilling or would be disposed of properly. Any material that would not be reused as backfill would be stabilized and stored temporarily at the construction staging area until characterized and then hauled away to a permitted disposal site. Potential for reuse of spoil from a trenchless installation would depend on the trenchless method selected because some methods remove spoil using slurry (i.e. the material is mixed with water or drilling fluid) and for those methods it is not practical to reuse excavated spoil.

2.6.1 Construction Timing

Construction is tentatively scheduled to last approximately 1.5 years for all three Action alternatives and is estimated to begin in late summer/early fall of 2016 and last until late 2017.

Typical project work hours would be Monday through Friday from 7:00 AM to 7:00 PM, but construction might take place during weekends and nighttime if necessary. The project construction contractor would be responsible for obtaining the necessary permits to conduct weekend and nighttime activities.

2.6.2 Staging Areas

Equipment, material and vehicle staging would be accommodated either at the construction zones, or at selected off-site locations (e.g., open lots) owned by the Cities. Staging areas could include:

- The area around the proposed discharge structure at the DMC.
- The area around the existing Jennings Plant Pump Station.
- The area around the site for the new pump station at the west end of the Harding Drain Bypass Pipeline.
- The area of the existing PID intake facility.

2.6.3 Pipeline Construction

Open-cut construction

Open-cut construction (also referred to as open trench with shoring, or cut-and-cover) is the proposed option for installing the majority of the pipeline along existing roadways and private and municipal agricultural lands. The open-cut trench would range from 6 to 8 feet wide and approximately 8 to 10 feet deep, depending on the pipe size, existing utility locations, and pipe bedding requirements. Shoring would be required to provide trench stability. Open-cut construction would involve cutting, removing, and replacing pavement in existing paved areas. Where possible, the pipelines would be installed along the shoulder of the roads to minimize paving and traffic disruption.

To accommodate construction equipment and work area, the entire construction corridor (active work area including the trench) would be approximately 45 feet wide. Because of the limited width of the existing roads (especially Lemon Avenue, Zacharias Road, Pomegranate Avenue, and Jennings Road) and the size of the trench and construction zone, it is expected that the construction may require full road closures unless temporary access for construction equipment can be provided along the shoulders of the road and/or adjacent property. If access can be provided along the roadway shoulders and adjacent property, only partial road closures with appropriate traffic control would be required. Otherwise segments of the affected roadway would be closed during pipeline installation activities and work would likely need to be conducted during late night/early morning hours to minimize traffic disruptions. Traffic control operations will be noticed at the location of the temporary traffic restrictions a week in advance of the any road work that impedes the flow of traffic (i.e. closes the road, closes a traffic lane, or closes the road shoulder).

It is expected that open trench construction within paved roadways would proceed at the rate of 200 to 500 feet per day within rural areas. Excavated trench materials would be sidecast within approved work areas and reused as appropriate for backfill. Upon completion of pipeline installation, affected roadways would be repaved per the requirements of Stanislaus County.

Open-cut construction would also be used within farmland. Some of the lands are fallowed while others are cultivated. Open-cut construction proposed for cultivated areas may require removal of the crop, depending on the crop and time of year. Temporary and permanent easements would be obtained from individual growers as needed.

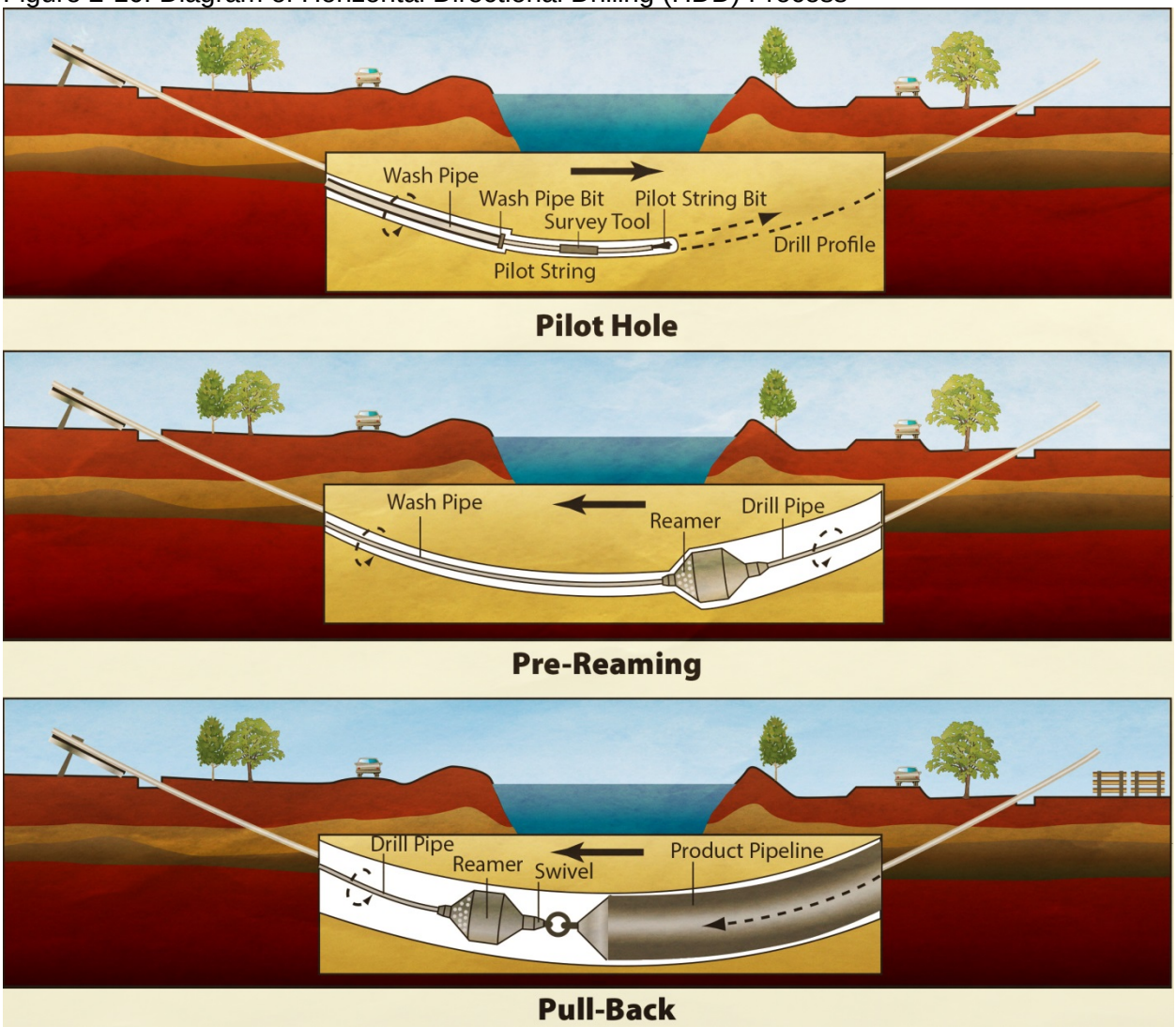
Open-cut construction would not be used to cross the San Joaquin River, which would be crossed using trenchless construction, as described below. As shown in **Figure 2-5**, open-cut construction would be used within the Jennings Plant up to the point where trenchless construction would begin at a river crossing launch pit approximately 1,260 feet east of the river. Open-cut construction also would be used for the pipeline on the west side of the river, beginning at the receiving pit for the trenchless crossing. The exact location of the receiving pit has not been determined, but would be at least 250 feet from the west side of the river. Both the Combined Alignment and Separate Alignment Alternatives would include a river crossing at the Jennings Plant Pump Station. The Separate Alignment Alternative would also require a second river crossing at the new pump station located at the end of the Harding Drain Bypass Pipeline. At that location, open cut construction would proceed up to the river crossing launch pit, which is shown in **Figure 2-8**. The launch pit would be about 250 feet east of the river, and open-cut construction would also be used to construct the pipeline to the DMC from the receiving pit, which is located about 1,300 feet west of the river.

Trenchless Pipeline Construction

As described previously, trenchless construction methods would be used for specific crossings. These methods are used to minimize the area of surface disruption required for pipeline installation or where open-cut construction is not practical or not allowed. HDD would likely be used for crossing of SR 33 and the CFNR railroad, provided that a suitable geometric profile can be designed taking into consideration entry/exit angles, bend radius of the pipe, and sufficient room for pipe assembly and laydown. Otherwise, a pipe jacking methodology would be considered for those installations. The San Joaquin River crossing may be completed using microtunneling or HDD, depending on soil conditions and other design factors. For the San Joaquin River crossing, the launching and receiving pits would be located on either side of the waterway, outside the river levees and floodplains. The exact types of trenchless methods to be employed at irrigation canal crossings have not yet been determined, but could consist of HDD, jacking and boring, and/or microtunneling.

Horizontal Directional Drilling HDD is a trenchless pipeline installation method that can be used for crossing major roadway intersections and waterways. HDD crossings are installed between an entry (launch) and exit (receiving) pit (see **Figure 2-10**). HDD involves the use of a drill rig tilted at the top at an angle, typically in the range of 10 to 15 degrees from horizontal. A small diameter (4 to 8 inch diameter) pilot hole is first drilled along a pre-determined horizontal and vertical alignment from the entry pit to the exit pit. This pilot hole can be guided using electromagnetic readings transmitted from the drill bit back to the drill rig. Excavation takes place by introducing pressurized slurry (a thin mixture of water and clay) through a drill string to the bit. The slurry pressure in combination with a rotating drill bit excavates the material, which is then transported back to the entry pit along the outside of the drill string. In some cases, a larger diameter wash pipe may be rotated around the drill string to prevent sticking of the steerable string.

Figure 2-10: Diagram of Horizontal Directional Drilling (HDD) Process



Entry and exit pits are required at each side of the crossing. The pits are approximately 50 to 100 feet square by approximately 5 feet deep, and are used as the collection point for the fluid material removed during drilling, which is a mixture of the drilling slurry and spoil. This fluid is then pumped to a slurry separation plant to separate the spoil from the fluid so that the fluid can be reused. The pilot hole is then enlarged by pulling larger reamers (see **Figure 2-10**) from the pilot exit pit back towards the drilling rig. The pipeline is then pulled into place behind the last reamer.

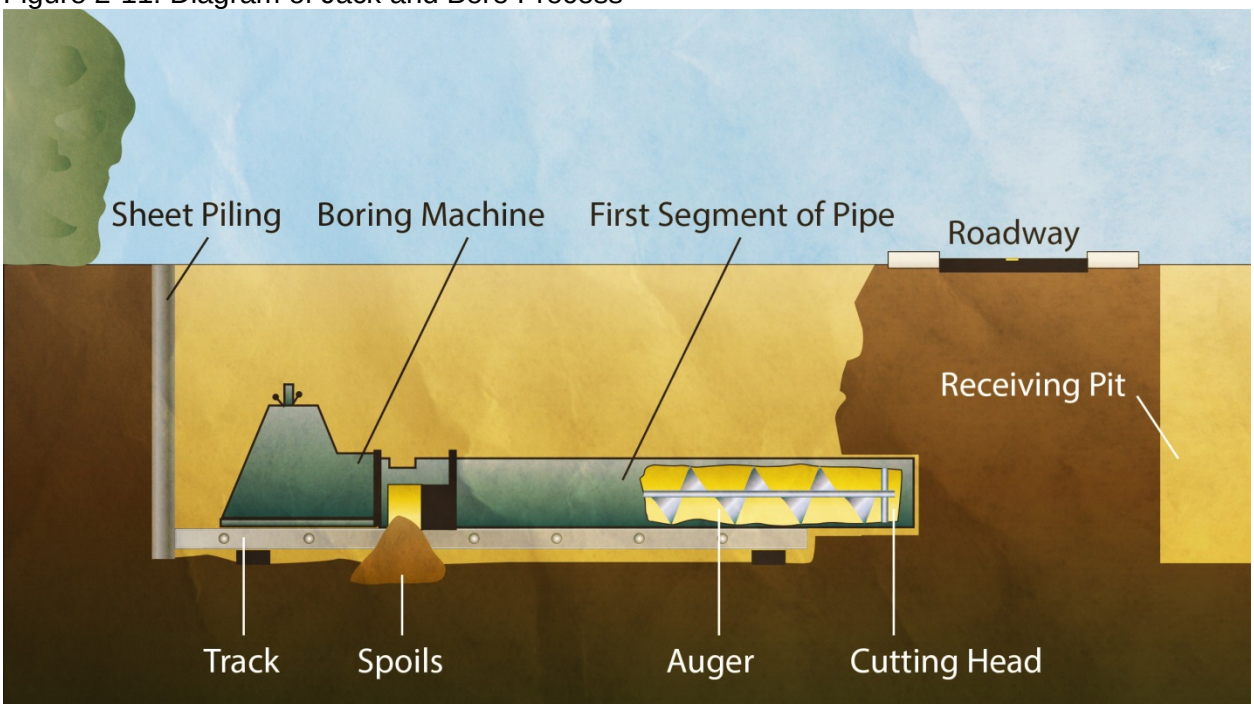
The entry side requires a work area of approximately 1,500 to 3,000 square feet for the drill rig, slurry separation plant, material storage and other support equipment. The exit side requires a work area of about 1,000 to 1,500 square feet for the pullback. This area is exclusive of the area needed for the pipe assembly and laydown area. Typically, a corridor about 15 feet wide by the length of the pipe is needed for the buildup and laydown.

Pipes would be installed at varying depths depending on features being avoided, the existing underlying utilities, soil types, environmental constraints, entry and exit constraints, and bend radius of the installed product and drill pipe. Although the exact depths of the pits and drilling have not been defined as design has not yet been initiated, for the purpose of this analysis, it is assumed that the depth of construction would vary from 30 to 50 feet under the San Joaquin River bed and 10 to 15 feet under the highway/railroad/canals.

Pipeline installation using HDD at the San Joaquin River crossing would take about 8 to 10 months, and the SR 33/CNFR railroad crossing would take approximately 4 to 6 weeks to complete.

Jack and Bore Construction Jack and bore is a method that is often used for major roadway intersections and railroad crossings where crossings are generally less than 300 feet long and above the ground water level. Jack and bore would require two pits that are excavated at each end of the pipeline to be installed (see **Figure 2-11**). A boring machine is inserted into one pit to bore the soil using an auger to remove material. As material is removed a casing is pushed forward until it reaches the receiving pit. After the casing is installed, the pipe is inserted in the casing. The jacking pit is excavated (and shored) with typical dimensions of 8 to 12 feet wide and 25 to 35 feet long depending on the casing length selected. The depth would depend on the feature to be avoided, existing utilities, or separation requirements. The exact depths of the pits and drilling have not been defined because design has not yet been initiated; however, for the purpose of this analysis, it is assumed that the depth of construction would be on the order of 15 to 20 feet deep for canal, railroad and highway crossings. Jack and bore typically has very limited steering control and it is not the method of choice if precise line and grade control is required. Jack and bore is not feasible for the San Joaquin River crossing.

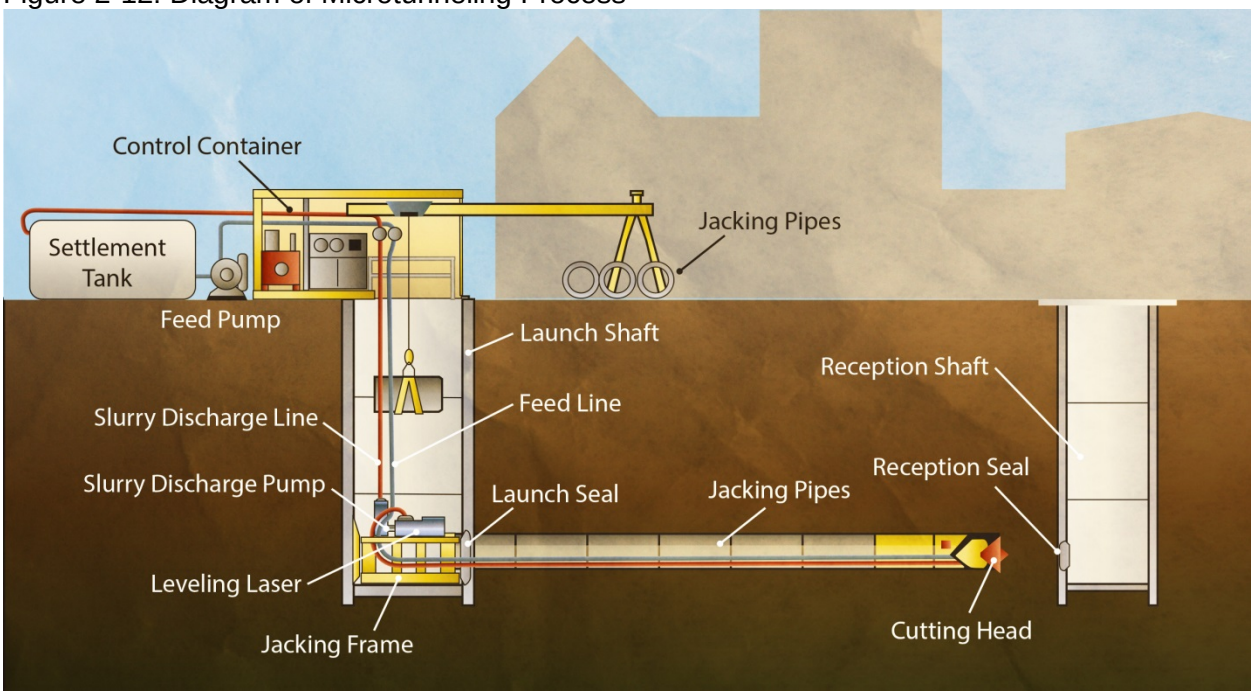
Figure 2-11: Diagram of Jack and Bore Process



Shoring, appropriate to the pit depth, would be used to support the excavation. In addition, the back wall of the jacking pit would need to be constructed so as to withstand the reactive forces from the jacking frame. An additional area of about 1,500 to 2,000 square feet would be needed around the pit for temporary storage of pipe sections and for loading material removed from the bore. The receiving pit at the other end of the crossing would be smaller, encompassing approximately 100 square feet. Pits and work areas would be located within existing ROW and along streets, where appropriate. Crossings of roadways would typically take three to five days. After pipeline construction and installation is complete, the work area would be restored to preconstruction conditions.

Microtunneling Construction Microtunneling is a remotely-controlled pipe jacking process that can be used in saturated areas below the groundwater level. The microtunneling boring machine is advanced through the ground by incrementally adding jacking pipe segments to the end of the pipe string and advancing the pipe string from a jacking pit to a receiving pit on the opposite side of the crossing (see **Figure 2-12**). A cutting head excavates material at the face as the machine is jacked forward. The excavated material is mixed with clean slurry and pumped to the surface for separation and muck removal.

Figure 2-12: Diagram of Microtunneling Process



Jacking pits for microtunneling are typically 10 to 14 feet wide. The length is dictated by the pipe segment length that would be installed. Ten-foot segments require a pit about 15 feet long and 20-foot pipe segments require a pit about 25 feet long. Receiving pits are typically 12 to 16 feet square. Pit depths would vary depending on the feature being avoided, existing utilities, and the presence of soil layers that are more favorable to tunnel through than others. The exact depths of the pits and drilling have not been defined because design has not yet been initiated. For the purpose of this analysis, it is assumed that the depth of construction would be

approximately 15 to 25 feet under the river channel. A microtunnel operation requires a work area (including the area of the pit) of approximately 2,000 to 3,000 square feet at the jacking pit. The work area at the receiving pit can be smaller, but is typically a minimum of 1,000 square feet. Off-site staging areas can be used to reduce work areas.

Pipeline installation using microtunneling at the San Joaquin River crossing would take about 10 months, and the SR 33/CNFR railroad crossing would take approximately 4 to 6 weeks to complete.

2.6.4 Pump Station Construction

Modifications to the existing outfall pump station at Modesto's Jennings Plant would require removal and replacement of the three existing outdoor pumps and motors, and a power transformer within the same footprint. The new pumps would be larger than existing pumps, requiring the existing openings in the top slab of the pump station to be enlarged. The existing switchgear and motor control center housed in the existing control building would need to be replaced with higher capacity equipment to accommodate the new pumps. Equipment would be accommodated adjacent to the project site during construction. The construction zone, including the footprint of the pump station, would be 50 by 50 feet, mainly for storage of equipment. Minimal excavation would be required.

The new pump station at the Harding Drain Bypass Pipeline outfall site in Alternative 2 would require site preparation (e.g., removal of vegetation, if any), cutting the pavement if required, excavation and shoring, and placement of the structure. After the structure has been constructed, electrical equipment (e.g., motor control cabinets, panels, switchboards, lighting) would be installed and other installations (e.g., conduits and cables) would occur. Finally, installation of pavement and fencing, restoration of the work site, and testing would be conducted prior to the start of operations. Equipment would be accommodated adjacent to the project site during construction. The construction zone, including the footprint of the pump station, would be approximately 250 feet by 200 feet to provide clearance for excavation, storage of construction materials, and equipment access.

Construction of a new pump station for the PID Conveyance Alternative would follow procedures similar to those described for the pump station at the Harding Drain Bypass Pipeline outfall site.

2.6.5 Construction Equipment, Crew, Spoil and Trip Generation

Construction Equipment and Crew Size

The installation of the proposed facilities would require, but is not limited to, the following equipment: excavator, backhoe, front-end loaders, pavement saw, dump trucks, diesel generator, water tank, water truck, flat-bed truck, drill rig, compactors, double transfer trucks for soil hauling, concrete trucks, dewatering equipment and paving equipment. Following are descriptions of typical construction operations for the proposed pipelines and pump stations.

Pipeline Installation

Prior to the start of excavation, asphalt would be cut where needed for the new pipe trench using large saw blades mounted on a special cart that would be pushed by a construction laborer. The

asphalt would be lifted in large chunks and slabs from the cut area by a front-end loader or backhoe into a dump truck for off-hauling. The saw cutting operation would be relatively fast, with several hundred feet typically being cut within a few hours. Installation of dewatering wells may be required prior to start of excavation depending on the soil type and groundwater level. Water pumped from the excavation area must be properly disposed to nearby irrigation ditches or impoundments. Dewatering pumps would run continuously (24 hours per day) in the open trench areas while excavation is taking place, to maintain the groundwater level below the bottom of trench. After the pipeline is installed and backfilled, the dewatering pumps would be removed and relocated to the next segment of pipeline construction. Heavy equipment for excavation would follow, which typically involves continuous use of an excavator to fill dump trucks which would make intermittent trips to an off-site disposal area. Typically two or more dump trucks would be used to allow continuous offloading from the excavator. In addition, dump trucks hauling material from off-site sources for pipeline bedding and backfill would make semi-continuous trips to the site as pipe is being installed. A front-end loader would be used to lift pipe segments from a flat-bed delivery truck and position the pipe in the trench. Temporary trench plates and paving would be installed over the trench at the end of each work day. Final paving and marking typically would be done for the entire pipeline length after installation. Trenchless pipe installation is described above and typically would involves use of a drill rig (for HDD) or jacking machine for 8 hours per day with associated mud collection pumps running simultaneously. It is assumed that two crews of up to 10 workers would be installing the pipelines at any one time.

Pump Stations

Construction of the proposed new Harding Drain Bypass Pipeline pump station or expansion of the PID Conveyance Alternative pump station would begin with site grading followed by excavation for below-ground utilities, foundation, and the wet well. Dewatering equipment would likely be required to maintain the groundwater level below the bottom of excavation. An excavator and dump trucks would be required during this phase of work, similar to pipeline construction. The excavation for this project would be relatively fast, likely less than one week. Below-ground concrete structures would be poured including the wet well and footings, followed by installation of the slab on grade. The building would be constructed on top of the slab, followed by installation of the pumps, electrical gear, controls, power supply, and ancillary systems.

Modification of the existing Jennings Plant outfall pump station would involve only minor excavation for new power conduits and piping. Existing pumps would be removed from the structure using a boom truck or small crane. The pump cut-outs in the existing above-ground wet well slab would be enlarged using a concrete saw. New electrical gear would be installed inside the existing control building, and a new power transformer installed in the existing transformer location. Minor grading and concrete work may be needed for a new spill containment structure for the transformer. The new pumps would then be installed in the enlarged cutouts of the existing pump locations. Much of the existing pump discharge piping would likely be re-used, pending a condition assessment.

One crew of approximately five members would construct the pump stations, which would be done in sequence.

Construction Spoil and Trip Generation

The amount of spoil generated would depend on the construction methods selected. **Table 2-4** shows estimated cubic yards (CY) of spoil from pipeline construction for each alternative.

Table 2-4: Spoil Generated by Pipeline Construction

Alternative/Facility	Spoil Quantity (CY)
Alternative 1-Combined Alignment	
Open trench construction	155,000
Trenchless construction at river	3,500
Alternative 2-Separate Alignment	
Open trench construction	150,000
Trenchless construction at river	3,700
Alternative 3-PID Conveyance	
Open trench construction	54,000

On a per day basis, assuming an average of 350 feet of pipeline would be constructed per day (200 days of construction) for Alternative 1, a maximum of 775 CY of material would be generated. This is equivalent to approximately 39 truck trips (20 CY haul, round trips) per day. For Alternative 2, the installation rate for the smaller pipe would be slightly faster. Assuming 400 feet per day (160 days of construction), the daily generation would be approximately 470 CY, resulting in approximately 23 truck trips. For Alternative 3, assuming 400 feet per day for 76 days of construction, up to 710 CY could be generated per day, requiring 36 truck trips per day. In addition, a maximum of 26 truck trips (round trips) per day would be required for all three alternatives for delivery of imported backfill, pipe, equipment and other materials. For the new pump stations, the spoil generated from the wet well excavation would be approximately 600 CY, resulting in approximately 30 truck trips.

In addition to equipment and material delivery, a total of 8 worker trips (round trip) would be generated per day assuming each individual drives separately and half of the workers travel for lunch.

2.6.6 Construction-Related Water Requirements

Water from water trucks would be used during construction activities for dust control purposes. Water generated from the trench dewatering operations may also be usable for dust control.

2.6.7 Environmental Commitments

Mitigation measures are described in *Chapter 3, Affected Environment/Environmental Setting, Environmental Consequences/Impacts and Mitigation Measures*, and address potentially significant impacts for each resource area. Pursuant to their CEQA requirements, the Partner Agencies have adopted a Mitigation Monitoring and Reporting Program (MMRP) as part of their Final EIR, which specifies the mechanisms by which implementation of mitigation measures would be ensured during construction and operation of the NVRRWP. The MMRP specifies the environmental commitments that would be adopted as conditions of project approval. A copy of the MMRP is included as **Appendix J**.

2.7 Alternatives Considered but Rejected

As described above, the following alternatives were evaluated during the preparation of the Feasibility Study for the project and were determined either to be infeasible or did not adequately meet the purpose and need or Partner Agencies' project objectives.

2.7.1 Pipeline Conveyance of Recycled Water Directly to DPWD and Refuges

Alternatives to serve various portions of the DPWD service area with recycled water pipelines direct to customers were investigated during the Feasibility Study. For ease of implementation and cost-effectiveness, service was limited to the DPWD customers east of the DMC (to avoid a pipeline crossing under the DMC) and to customers within approximately 10 miles of the Modesto Jennings Plant. The supply of recycled water to the refuges was considered by delivering recycled water to the Newman Wasteway; from there the recycled water would be delivered to a select number of refuges. Under this alternative, recycled water would only be available to the North Grasslands and China Island Units.

One concern with this alternative was the implication of direct discharges of recycled water into the refuges without the benefit of any dilution. Also, because customers would be served directly off of the pipeline network, the lack of year-round demand may require seasonal storage of recycled water in existing and potential new storage ponds. Recycled water is generated year-round, with quantities typically being higher in the rainy months when inflows to wastewater treatment facilities are higher. Demand for water supply for irrigation peaks in the summer months, and there is little demand in the winter. Therefore, maximizing reuse would require some mechanism to store recycled water during the winter for use during the irrigation season. Providing water to refuges would help to balance the seasonal supply and demand, because refuges need water during different time periods, with peak demand typically occurring in the fall, when irrigation demand is decreasing. However, this alternative would only serve two refuges, and their demand, is not expected to be sufficient to use all of the wintertime flows of recycled water that would be generated by Turlock and Modesto, especially in wet winters. Therefore, some type of additional seasonal storage would be needed to allow reuse of all of the recycled water that would be produced at buildout of the Cities.

Similar to the Proposed Action, water rights would need to be established through approval of a Wastewater Change Petition, which would allow Modesto and Turlock to change the location of discharge and place of use for water that is currently discharged to the San Joaquin River.

The direct pipeline alternatives were determined to not meet project objectives, including maximizing use of recycled water for agriculture and the refuges, as it would only serve DPWD growers on the east side of the DMC, and only provide recycled water to two refuges.

2.7.2 Pipeline Conveyance of Recycled Water to Existing Facilities for Dilution and Conveyance in the DMC

PID Main Canal for conveyance to the DMC was investigated during the Feasibility Study. This alternative is similar to Alternative 3 except that it does not propose expanding PID's existing

facilities. This alternative would reduce the overall length of pipeline that would be constructed by the NVRRWP by using the existing PID Main Canal for a portion of the conveyance distance. As such, this alternative would include a requirement for participation in PID's Proposed East-West Conveyance Project, which seeks to upgrade PID facilities using some combination of canal widening and construction of new pipeline. The combination of NVRRWP pipeline construction plus construction associated with the PID East-West Conveyance Project is expected to result in a similar degree of short-term environmental impacts, as compared to the Proposed Action.

As described under Alternative 3, PID routinely ceases operation of the Main Canal annually for 4 to 6 weeks for maintenance, specifically sediment removal. During this maintenance period, water from the Modesto and Turlock would have to be discharged to the San Joaquin River for disposal as no alternative mechanism for conveyance would be available, and could not be retrieved from the Delta for beneficial use by DPWD or the refuges because the maintenance period would be outside of the July-September transfer window. Because the quantity of water being conveyed for PID customers' use varies, the ability to achieve adequate dilution for discharge within the Main Canal would be limited at times, thus subjecting PID customers who take water from PID facilities before it reaches the DMC to requirements of a water recycling program, including signage and separation from potable water wells.

Similar to the Proposed Action, water rights would need to be secured to change the location of discharge and place of use for Modesto and Turlock. Turlock and Modesto would need to secure the right to change the location from the San Joaquin River to the PID Main Canal through a Wastewater Change Petition.

Due to the complications from PID's operational constraints on the Main Canal and the potential impacts to PID customers, this alternative was rejected. The inability to deliver recycled water year-round was considered by the Partner Agencies to be a fatal flaw because a substantial quantity of recycled water would not be available for beneficial reuse.

2.7.3 Pipeline Conveyance to DMC Utilizing Groundwater Storage and Operational Modifications

This alternative to serve DPWD and the refuges considers a combination of direct delivery to the DMC (during the months of April to June when the O'Neill Pumps at the head of the DMC are likely to be off) and groundwater recharge and recovery (year-round). During the rest of the year recycled water would be diluted with river water and percolated into the groundwater, where it would be stored for later recovery.

Conveyance of water to the DMC would be accomplished using a pipeline system connecting the City's treatment plants to the DMC, similar to the Proposed Action; however, additional pipelines would be needed to convey water to new spreading basins. This alternative investigated the creation of spreading basins near PID's planned sedimentation basin, which is currently in the feasibility stage of design, or near Orestimba Creek for groundwater recharge. This alternative would also require dilution water from the DMC and/or the San Joaquin River to meet blending requirements for recharge of Modesto and Turlock's water.

Because it would require more pipelines plus the creation of new spreading basins this alternative has the potential for greater environmental impacts and would be operationally more complicated than the Proposed Action. Because of the complexity of incorporating groundwater storage, and potentially greater environmental impacts, this alternative was rejected from further consideration. It was also determined by the Partner Agencies to be infeasible to coordinate and implement recycled water discharge to the DMC only when Reclamation's O'Neill Pumping Plant is non-operational.

2.7.4 San Joaquin River Conveyance of Recycled Water through the Delta to the DMC or O'Neill Forebay

This alternative to serve DPWD and the refuges by conveying recycled water through the San Joaquin River to the Delta and into the DMC or O'Neill Forebay via the Jones or Banks Pumping Plants was considered but rejected for analysis in the Feasibility Study. Water loss from seepage and evaporation along the San Joaquin River (estimated at 10 percent) and carriage losses (which can be from 0-100 percent, with the average being 30 percent), combined with the limited July-September timeframe during which transferred supplies can be pumped through the pumping plants, would greatly reduce the quantity of recycled water from Modesto and Turlock that would be available to DPWD and the refuges. These losses would be in addition to the standard 5 percent loss imposed by a Warren Act Contract, which under all options analyzed will be required in order to utilize conveyance and/or storage in the Federal Facilities.

Unlike the Proposed Action, which would obtain water rights through a Wastewater Change Petition, water rights would need to be secured by Turlock and Modesto to allow for diversion of water. The process for obtaining a new water right for diversion from the Delta to the DMC is expected to be more complex than the process for a Wastewater Change Petition, and it is also highly likely that a request for a water right from the Delta would be subject to protest. Turlock would secure their water right for recycled water currently discharged to the San Joaquin River. Modesto would need to secure the water right for the portion of their recycled water currently discharged to the San Joaquin River (during winter months) and the water right for the portion of their recycled water currently land applied (during summer months), which would now have to be discharged. With continued discharge to the river it is anticipated that both treatment plants would have to be upgraded in the future to provide partial treatment via reverse osmosis for salinity removal, which would be very costly. Additionally, unlike the Modesto Jennings Plant, the Turlock RWQCF does not remove nitrates/nitrites from the effluent. Nitrate/nitrite removal could potentially be required in the future under Turlock's NPDES Permit, as it is for Modesto's, which would require construction of new treatment process facilities.

Due to the potential need for future treatment plant upgrades, evaporative and carriage water losses in the San Joaquin River and the Delta, the limited window for pumping water transfers at the Jones or Banks Pumping Plants, and the complication of securing new water rights within the Delta, this alternative was rejected as it would provide far less recycled water to DPWD and the refuges and would not to meet project objectives.

2.8 References

Bureau of Reclamation (Reclamation). 2012. Water Management web page available at: http://www.usbr.gov/mp/watershare/wcplans/index.html.

Central Valley Regional Water Quality Control Board (CVRWQCB). 2011. The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region , Fourth Edition, the Sacramento River Basin and the San Joaquin River Basin. Available at: http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr.pdf

RMC Water and Environment (RMC) 2013. North Valley Regional Recycled Water Program Feasibility Study, December 2013

State Water Resources Control Board (SWRCB). 2010. 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report) – Statewide. Available at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml?wbid=CAR5440000020021002100850

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Chapter 3 Affected Environment/ Environmental Setting, Environmental Consequences/Impacts and Mitigation Measures

3.0 Introduction to Environmental Analysis

This chapter presents an assessment of the environmental effects associated with each alternative being considered, including the No Action Alternative. This chapter describes the existing physical environment of the Proposed Action area and delineates the potential effects that may result from implementation of the NVRRWP under each of the Action alternatives compared to the No Action Alternative. Also included is a discussion of the regulatory framework and significance criteria.

3.0.1 Determination of Impact Significance

NEPA and CEQA differ in the standard language used to describe adverse environmental effects. CEQA requires that impacts regarded as "significant" be identified as such. NEPA criteria for significance (as listed in 40 CFR 1508.27) are based on the context and intensity of the impact. Significance determinations under CEQA are based on comparisons to existing conditions. NEPA requires a comparison of the Action alternatives with the No Action, and under NEPA, when an EIS is prepared, it is not necessary to specify whether or not a particular impact is significant. The fact that the level of NEPA document is an EIS presumes that adverse impacts may have a significant impact on the quality of the human environment. Therefore, each impact assessment in the Draft EIR/EIS concluded with a finding of significance based on a comparison of the evaluated impact with the stated significance criteria in order to comply with CEQA. This has been retained in the Final EIS for continuity although it is not necessary for the Final EIS. For all impacts that are identified as significant pursuant to CEQA and considered adverse pursuant to NEPA, and where mitigation is possible and feasible, appropriate mitigation measures have been identified to reduce the impacts to a less-than-significant level. Where implementation of more than one mitigation measure is needed to reduce an impact below a threshold of significance, all of the measures are described. Finally, for all significant impacts, the significance of each impact after implementation of the mitigation measures is assessed.

Mitigation measures were formulated consistent with the strategy as set forth in CEQA Guidelines §15370 and NEPA CEQ Guidelines §1508.20 as follows:

- Avoiding the impact altogether by not taking a certain action or parts of an action.

- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the impacted 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.

As described previously, the City of Modesto adopted a MMRP for the NVRRWP pursuant to their CEQA requirements. The Plan has been included as **Appendix J** of the Final EIS.

3.0.2 Organization of Discussion of Environmental Issue Areas

Sections 3.1 through 3.19 discuss the environmental impacts that may result with approval and implementation of the NVRRWP. Each environmental section contains a description of:

1. The environmental setting as it relates to the specific resource topic.
2. The regulatory framework governing that issue.
3. The methodology used in identifying the issue(s).
4. The CEQA significance criteria.
5. An evaluation of impacts and identification of mitigation measures, if needed; impacts are presented for the following alternatives:
    - No Action Alternative.
    - Combined Alignment Alternative (Alternative 1).
    - Separate Alignment Alternative (Alternative 2).
    - PID Conveyance Alternative (Alternative 3).
6. A determination of the level of significance after mitigation measures are implemented.

3.0.3 Analysis of Cumulative Impacts

Cumulative effects are defined as the impact on the environment that results from the incremental effects of the action when added to other past, present, and reasonably foreseeable actions, regardless of what agency (federal or non-federal) or person undertakes such actions (40 CFR 1508.7). Cumulative effects can result from individually minor but collectively major actions taking place over a period of time.

The analysis of cumulative effects associated with reasonably foreseeable future actions should not be speculative, but based upon known long-range plans and other plans developed by agencies, organizations, and individuals. The study area for effects is dependent on the resource and the anticipated range of the effect. For most resource effects, the cumulative effects analysis focuses on effects in the Action area. As the Proposed Action has a lifespan that coincides with buildout of the Cities, all reasonably foreseeable future actions are considered.

The cumulative impact analysis for each individual resource topic is described at the end of each resource section in this Chapter.

Approach to Cumulative Analysis

For evaluation of cumulative impacts, this EIS uses a list-based approach, and evaluates the potential for past, present and probable future projects in the project area to result in cumulative impacts. **Table 3.0-1** contains a list of projects under consideration in the project area, and identifies those projects that have a potential nexus with the NVRRWP (i.e. there is a possibility that the proposed project could contribute to incremental effects on the same environmental resources). The list of projects in **Table 3.0-1** was developed using information provided by Reclamation, the Partner Agencies, and Stanislaus County.

Table 3.0-1: List of Cumulative Projects for NVRRWP

Reclamation Projects in Delta-Mendota Canal				
Doc Type	**Log #**	**Status**	**Description**	**Impact Nexus?**
EA/FONSI	14-020	FONSI 7/30/2014	Warren Act Contract for Conveyance of Groundwater from 4-S/Smith Ranch to Del Puerto Water District	No
EA/FONSI	14-031	FONSI 8/4/2014	Temporary change in the selenium MCL from 2 PPB to up to 5 PPB for groundwater introduced into the upper portion of the DMC	No
CEC	14-023	FONSI 8/18/2014	License to Panoche Drainage District to Re-route Drainage Collected by the Firebaugh Sumps to the San Joaquin River Water Quality Improvement Project	No
EA/FONSI	14-021	FONSI 2/12/2015	Five-year Warren Act Contracts for Banta-Carbona Irrigation District, Byron-Bethany Irrigation District, Patterson Irrigation District, and West Stanislaus Irrigation District	No
EA/FONSI	13-050	Active	Warren Act Contract for Conveyance from Turlock to Del Puerto Water District	No
EA/FONSI	12-060	FONSI 3/13/2015	Exchange Contractors Los Banos Creek Diversion Project	No
EA/FONSI	14-034	Active	Mendota Pool Group Warren Act Agreement	No
EA/FONSI	14-033	FONSI 5/5/2015	Three-Year Extension of the Mendota Pool Group Exchange Agreements	No
EIS/EIR	12-009	Active	20-Year Extension of the Mendota Pool Group Exchange Program	No
EA/FONSI	12-061	FONSI 1/10/2013	10-Year Exchange and/or Warren Act Contracts for Conveyance of Groundwater in the Delta Mendota Canal DMC (DMC pump-in program)	No
EA/FONSI	10-051	FONSI 2/14/2011	Accelerated Water Transfers and Exchanges between Central Valley Project Contractors South of Delta Contractors Years 2011-2015	No
EA/FONSI	09-149	FONSI 2/7/2014	Long-term Contract with Byron-Bethany Irrigation District for Storage and Conveyance of Non-Project Water in the Delta Division and San Luis Unit (BBID, Tracy Hills Water Supply Project)	No
SEA	14-006	FONSI 3/6/2014	Banta-Carbona Warren Act Contract Increase of 5,500 AF	No
EA/FONSI	14-10-MP	FONSI 4/22/2014	Water Transfers for the San Luis & Delta-Mendota Water Authority in 2014	No
SEA	13-007	FONSI 5/23/2013	Supplementing the Accelerated Water Transfer Program EA for South-of-Delta Contractors to Include Water Acquisitions for Refuges	No

EA/FONSI	14-001	FONSI 5/5/2014	Firebaugh Canal Water District Transfer of up to 7,500 acre-feet of Central Valley Project Water to Panoche, San Luis, and Westlands Water Districts	No
EA/FONSI	13-059	FONSI 5/5/2014	Central California Irrigation District Transfer of up to 20,500 acre-feet of Central Valley Project Water to Del Puerto, Panoche, San Luis and Westlands Water Districts	No
EA/FONSI	13-014	FONSI 6/18/2013	Storage and Conveyance of Yuba Accord Water in Federal Facilities for South of Delta Central Valley Project Contractors	No
EA/FONSI	12-023	FONSI 6/29/2012	Annual Exchange at the Mendota Pool between the Bureau of Reclamation and Donald J. Peracchi for up to 3,600 acre-feet of Farmers Water District's Groundwater for Central Valley Project Water	No
EA/FONSI	11-013	FONSI 9/16/2013	Amendment to the Meyers Groundwater Banking Exchange Agreement	No
EA/FONSI	13-035	FONSI 9/17/2013	Merced Irrigation District Warren Act Transfer to Westlands Water District 15,000 AF	No
EA/FONSI	14-009	FONSI 6/24/14	Tranquility Irrigation District/San Luis Water District Mendota Pool Groundwater Exchange Program Contract Years 2014-2018	No
			City of Turlock Projects	
Doc Type	**Date**	**Status**	**Description/Location**	**Impact Nexus?**
IS/MND	1/22/2014	Published	Monte Verde Subdivision, 2531 West Tuolumne Rd, Turlock - 109 single family lots	No
IS/MND	4/25/2014	Published	Traditions 6, Fitzpatrick homes, 2920 Sandstone St, Turlock - 15 single family homes	No
IS/MND	5/6/2014	Published	Taco Bell, 3606 N. Golden State Bv, Turlock - 2,106-square-foot fast food restaurant	No
IS/MND	6/23/2014	Published	Verizon Wireless Cell Tower, 2300 Industrial Rowe, Turlock - new cell tower	No
IS/MND	5/29/2014	In process	Dairy Processing Plant, 4407 W Main Street, Turlock - 116,287-square-foot industrial facility	No
TBD	NA	In planning	Turlock Engineering Division Capital Project, various water, wastewater projects - none in vicinity of NVRRWP	No
			City of Modesto Projects	
Doc Type	**Date**	**Status**	**Description/Location**	**Impact Nexus?**
IS/MND	2010	under construction	Jennings Road Treatment Plant Phase 2 Improvements, 7007 Jennings Rd, Modesto - increase tertiary treatment capacity by 12.6 mgd	Yes
EIR	2013	Published	Marketplace Shopping Center, Oakdale Rd/Sylvan Av, Modesto - 170,000-square-foot retail project	No
			City of Patterson Project	
Doc Type	**Date**	**Status**	**Description/Location**	**Impact Nexus?**
EIR	2012	Approved	West Patterson Business Park Expansion Project	No
			DPWD Project	
Doc Type	**Date**	**Status**	**Description/Location**	**Impact Nexus?**
Cat Ex	2014	In planning	Orestimba Creek Groundwater Banking Pilot Project	No

Stanislaus Council of Governments (StanCOG) Project				
Doc Type	**Date**	**Status**	**Description/Location**	**Impact Nexus?**
TBD	2014	In planning	South County Corridor Study-potential route along West Main Street	Yes
TBD	2014	In planning	State Route 33 widening/expressway from Sperry Avenue (downtown Patterson) north to Rogers Road	Yes
Stanislaus County Projects				
Doc Type	***Date***	***Status***	***Description/Location***	***Impact Nexus?***
TBD	2014	In design, estimate construction in 2016	West Main Street Highway Improvement Project, from San Joaquin River to 0.8 mi. west of Carpenter Rd	Yes
EIR	10/13/14	NOP issued	Crows Landing Industrial Business Park Project, Specific Plan and zoning change for 1,532-acre project site south of West Marshall Road.	No

EA=Environmental Assessment, FONSI=Finding of No Significant Impact, CEC=Certificate of Environmental Compliance, Cat Ex=Categorical Exemption, IS/MND=Initial Study/Mitigated Negative Declaration

Projects identified above as having no impact nexus with the NVRRWP are not considered in the cumulative analysis because they are not expected to have impacts that could combine with the project. This determination is based on one or both of the factors below:

- Projects are located outside of the area where the proposed project would be constructed and could thus not have impacts that would combine with effects of the proposed project.
- Project is of a type that would not produce impacts that could combine with the NVRRWP.

Reclamation projects in the DMC could have a cumulative effect on the capacity of the canal, and potentially on water quality, both of which would be managed by Reclamation through operation of the DMC and would not be expected to result in environmental impacts.

City of Turlock projects include residential, commercial/industrial and water/wastewater projects that are not located in the vicinity of the proposed NVRRWP facilities.

The City of Modesto is considering approval of a retail project, which would not be located near the proposed NVRRWP facilities. The Jennings Road Treatment Plant Phase 2 Improvements would improve treatment, and would provide recycled water for the NVRRWP.

The City of Patterson has approved the West Patterson Business Park Expansion Project, which is expected to be developed in multiple phases over 20 to 30 years. The business park area extends from just north of Sperry Road in Patterson, north to Zacharias Road. While development proposals in the first Phase could occur during the timeframe proposed for construction of the NVRRWP, the first phases are located in the southern portion of the site and

the later phases that would include development along Zacharias Road are not projected to be developed until 2023 at the earliest. Because the timing would not overlap, the development of the business park is not expected to result in cumulative construction-related impacts. Operational impacts would primarily consist of increased traffic and increased demand for services due to new development. Because the NVRRWP would not increase demands for public services and generates minimal operational traffic, these development projects are not expected to combine with effects of the NVRRWP to result in cumulative impacts.

The DPWD Orestimba Creek Groundwater Banking project would include construction of a small segment of pipe to connect the DMC to a new recharge pond near Orestimba Creek. The project could benefit groundwater resources, and would not be expected to affect the San Joaquin River because it would not be located near the river. Because the facilities would not be constructed near the NVRRWP facilities it would not be expected to have construction impacts that would overlap with those of the proposed project. The project could have a cumulative effect on the capacity of the DMC, which would be managed by Reclamation through operation of the DMC and would not be expected to result in environmental impacts.

StanCoG is considering two roadway projects that could overlap with the NVRRWP pipeline alignments. The NVRRWP pipeline alignment would cross SR 33 in the area where widening is proposed; both the Combined Alignment and Separate Alignment Alternatives would cross SR 33 in the vicinity of Lemon Avenue and Zacharias Road. The NVRRWP would use trenchless technology to cross SR 33 and would be coordinated with the road widening project. The NVRRWP pipeline for the Combined Alignment Alternative also coincides with a portion of the potential route for the South County Corridor, which could be located along West Main Street. If this route is chosen, it would also be coordinated with the road widening project.

Stanislaus County is also proposing improvements along West Main Street. Design of the NVRRWP pipeline in this area would be coordinated with any proposed transportation projects along West Main Street, if selected.

The Crows Landing Industrial Business Park Project area is bounded by West Marshall Road on the north, Fink Road to the south, Bell Road to the east, and Davis Road to the west. The northern edge of this project area is thus adjacent to the southern reach of the NVRRWP's Separate Alignment Alternative, which follows West Marshall Road. Stanislaus County envisions that the project would be developed in three 10-year phases. A portion of Phase 1, SR 33 Corridor development, which is scheduled for 2016 to 2025, could occur in the area along the south side of Marshall Road. Phase 2, SR 33 Corridor Buildout, which would include development of the remainder of the project area adjacent to Marshall Road, is not expected to be developed until 2026. Given the extended time period for development of Phases 1 and 2, and the relatively short time period for construction of the NVRRWP, it is expected that pipeline construction can be coordinated with Stanislaus County (through the encroachment permit process) so as to avoid cumulative impacts of construction on West Marshall Road. Operation of a buried pipeline in West Marshall Road would not be expected to have any impacts that would combine with operation of the business park.

3.1 Aesthetics

This section evaluates the potential aesthetic impacts associated with implementation of the Proposed Action. Aesthetic resources are defined as the visible natural and built landscape features that surround a project site. For the purpose of this analysis, the study area includes aesthetic resources in the vicinity of the facilities to be constructed or modified under the Proposed Action. For further discussion of agricultural resources and conveyance infrastructure, see *Chapter 2, Alternatives and Proposed Action* and *Section 3.2, Agriculture and Forestry Resources*. For discussion of the NWRs and SWAs that could be served by the Proposed Action and related public viewing opportunities, see *Chapter 2* and *Section 3.15, Recreation*.

3.1.1 Environmental Setting/Affected Environment

The discussion below defines the terms used in the aesthetics evaluation and describes the visual conditions of the region and study area.

Definitions

Visual character, visual quality, and visual sensitivity are three terms used throughout this section. Visual character is the unique set of landscape features that combines to make a view, including native landforms, water, and vegetation patterns as well as built features such as buildings, roads, and other structures. Visual quality is the intrinsic appeal of a landscape or scene due to the combination of natural and built features in the landscape. Natural and built features combine to form unique perspectives with varying degrees of visual quality, which is rated in this analysis as high, moderate, or low. Visual sensitivity reflects the level of interest or concern that viewers and responsible land management agencies have for a particular visual resource with visual quality taken into account. Visual sensitivity is a measure of how noticeable proposed changes might be in a particular setting and is determined based on the distance from a viewer, the contrast of the proposed changes, and the duration that a particular view would be available to viewers. For example, areas such as scenic vistas, parks, trails, and scenic roadways typically have a high visual quality and visual sensitivity because these locales are publicly protected, appear natural, view durations are typically long, and close-up views are more commonly available.

Regional Setting

The terrain of the study area is generally flat, with the foothills of the Diablo Range rising to the southwest and the foothills of the Sierra Nevada rising to the east. The Coastal Ranges are visible from the valley floor from a distance; however, long-range visibility in the area is frequently limited by haze and particulate air quality contamination. The Sierra Nevada Mountains to the east are typically obscured or only partially visible. The valley floor is comprised of cultivated row crops, orchards, irrigated pasture, and canal systems. The San Joaquin River is the primary body of water in the study area and is the dominant natural feature in the area. Numerous riparian tree species and shrubs line the meandering river corridor. The vast system of drainage and irrigation canals also contributes to the region’s sense of place.

Project Vicinity

The study area is generally located in the central portion of Stanislaus County to the north, east, and south of the City of Patterson. The Combined Alignment Alternative (Alternative 1) pipeline alignment begins near Turlock's Harding Drain Bypass Pipeline and continues north along South Carpenter Road, west on West Main Avenue, north on Jennings Road to the Jenning Plant, west beneath the San Joaquin River, and then along Lemon Avenue and Zacharias Avenue to the DMC. Land uses adjacent to the pipeline alignment and the pump station site for this alternative consist of agriculture and rural residences.

The Separate Alignment Alternative (Alternative 2) includes two independent pipelines from each City's treatment facility to the DMC. The northern segment would be the same as the western portion of the Alternative 1 alignment (from the Jennings Plant to the DMC). The southern segment would begin from a new pump station located adjacent to the Harding Drain Bypass Pipeline, continue west underneath the San Joaquin River across open space and along Pomegranate Avenue, down a private road between Locust Avenue and SR 33, continue along West Marshall Road and end at the DMC.

The PID Conveyance Alternative (Alternative 3) starts on the west side of the San Joaquin River and parallels the PID Main Canal, Bartch Avenue and Ward Avenue, ending at the DMC.

Land uses adjacent to all three Alternatives consist of varied cultivated row crops, scattered residences, and open space. The area's agricultural and rural landscape is characterized by open fields, overhead electrical utility lines, trees, and fencing. Motorists traveling on roads along and near the alignments have close-up and fleeting views of the project site. Residences located along all three alignments including those along Pomegranate Avenue, West Marshall Road, Bartch Avenue, Ward Avenue, Zacharias Avenue and Lemon Avenue have direct views of the alignment. Given the openness and agricultural nature of the lands in the study area, the visual quality is considered moderate and the visual sensitivity is medium.

Since no public access to the Jennings effluent outfall pump station is available, no public views of the proposed modifications at this facility are available. The Alternative 2 pump station site is located near the western end of the Harding Drain Bypass Pipeline near South Carpenter Road. The site is vacant and consists of open space and agricultural land uses. A cascade aeration structure (associated with the Harding Drain Bypass Pipeline) and an industrial facility owned by Darling International are situated north of the Alternative 2 pump station site. Motorists using South Carpenter Avenue would have immediate views of the pump station site. Views of land uses in the vicinity of this particular pump station site consist of agricultural land, a drainage canal, the cascade aeration structure and the nearby industrial facility. Given the rural and partially developed nature of lands in the immediate vicinity, the visual quality of the site is moderate and viewer sensitivity is medium. The PID Intake site is visible from the San Joaquin River and from the end of Old Las Palmas Avenue. Because the site is already developed with an intake facility, the visual quality of the site is moderate and viewer sensitivity is medium.

3.1.2 Regulatory Framework

This section describes laws and regulations at the state and local level that may apply to the Proposed Action. There are no federal aesthetics regulations that apply to the project.

State Policies and Regulations

California Scenic Highway Program In 1963, the state legislature established the California Scenic Highway Program, a provision of the Streets and Highways Code, to preserve and enhance the natural beauty of California (Caltrans 2014). The State Highway System includes designated scenic highways and those that are eligible for designation as scenic highways. Within San Joaquin, Stanislaus, and Merced counties, Interstate 5 (I-5) is considered an officially designated state scenic highway (between SR 152 and SR 205). There are two vista points along I-5 in Stanislaus County: one is located just south of Shiells Road Undercrossing and the other is approximately 0.5 mile south of Salado Creek. Neither of these vista points is in the immediate vicinity of the study area. Due to distance, no close-up views of the study area are available from I-5.

Local Policies and Regulations

Stanislaus County Stanislaus County has identified the following goals and policies in the Conservation Element of its General Plan (1994):

*GOAL ONE***:** Encourage the protection and preservation of natural and scenic areas throughout the County.

> *Policy One***:** Maintain the natural environment in areas dedicated as parks and open spaces.
> *Policy Two:* Assure compatibility between natural areas and development.

City of Modesto The City of Modesto's Urban General Plan does not include any policies relevant to scenic resources in the Project area. However, the General Plan envisions that the City of Modesto will preserve open space, farmland, scenic vistas, historic buildings, and sensitive environmental resources where feasible. The General Plan also envisions that in the long-term, the San Joaquin River floodplain and anticipated wetland preserves will separate urban expansions of the Highway 99 corridor from those of the I-5 corridor (City of Modesto 2008).

3.1.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

This section evaluates whether construction and operation of the facilities associated with the Proposed Action would result in significant impacts related to aesthetic resources. The visual analysis is based on evaluations of aerial and ground-based photographs of the proposed project sites, and preliminary design information.

Visual effects were assessed based on the project's potential to substantially alter scenic resources or to degrade the visual character of the site. The evaluation of temporary or short-term visual impacts considers whether construction activities could substantially degrade the existing

visual character or quality of the site or surrounding area, as well as the duration over which any such changes would occur. Because of their short-term nature, construction activities occurring in an area for less than one year are typically considered to have a less-than-significant effect on visual quality. However, construction activities occurring in an area for over one year have been evaluated for potentially significant visual impacts.

Actions with long-term visual effects, such as constructing new or altered structures, grading roads, removing trees, and introducing new sources of light and glare can permanently alter the landscape in a manner that could affect the existing visual character or quality of the area, depending on the perspective of the viewer. In determining impact potential, the assessment considers the visual sensitivity of the study area. Since damage to scenic resources such as trees, rock outcroppings, and other features of the built or natural environment would typically constitute a long-term effect, the potential for project implementation to damage scenic resources is evaluated solely as a long-term effect and is not included in the analysis of construction-related impacts.

Aesthetic resources in the vicinity of pre-existing facilities that would not be physically modified, and locations that may be served by the Proposed Action, including farms within DPWD's service area and NWRs and SWAs, are evaluated in less detail due to the limited potential for adverse aesthetic effects in these areas.

Thresholds of Significance

Consistent with Appendix G of the *CEQA Guidelines* an impact on aesthetics would be considered significant if the project would:

- Have a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
- Substantially degrade the existing visual character or quality of the site and its surroundings.
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to actions associated with the Proposed Action are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Have a Substantial Adverse Effect on a Scenic Vista* – The Proposed Action facilities are not visible from any nearby scenic vistas, including the one located just south of Shiells Road Undercrossing and the other that is approximately 0.5 mile south of Salado Creek. Therefore, construction and operation of the Proposed Action would not have a substantial adverse effect on a scenic vista.

Impacts and Mitigation Measures

Impact AES 1 Substantial Damage to Scenic Resources and Substantial Degradation of Existing Visual Character or Quality

No Action Alternative Under the No Action Alternative, no pipeline or pump station construction work would occur. Therefore, no construction-related impacts on scenic resources or the area's visual character would occur.

In the long-term, the Cities of Modesto and Turlock would discharge recycled water to the San Joaquin River and DPWD would continue to rely on the CVP for its primary water supply. The District would continue to execute water transfers/exchanges when available and pump groundwater from private wells. The fallowing of land would continue and refuges would not receive additional water for wildlife management. Under these conditions, views of fallowed fields (typically consisting of dry vegetation or bare soil) may become more prevalent. Similarly, if the refuges do not receive additional supplemental water, vegetation may become more dry in these areas. Any increase in fallowed land would incrementally degrade the open and rural visual character of the area. As views of the study area are visible from I-5, a state-designated scenic highway, some viewers may perceive the increased fallowing of land and dried vegetation as a visual degradation. From this highway, motorists would still have intermittent views of irrigated agriculture. Since views of the study area are fleeting and because motorists are expected to be focused on the road to ensure safe driving, impacts on scenic resources and the study area's visual character would be less than significant.

Combined Alignment Alternative (Alternative 1)

Construction Impacts Alternative 1 could result in temporary construction-related impacts on scenic resources and the visual character or quality of the study area and immediate vicinity. Due to the distance from I-5, construction of the Combined Alignment Alternative would not be visible from this scenic highway. Construction activities at the Jennings Plant would not be visible from any public viewpoints, as access to the plant is restricted to plant staff.

Pipeline construction activities associated with Alternative 1 would be mostly visible from public roadways including South Carpenter Road (from the Harding Bypass Pipeline to West Main Avenue), West Main Avenue, Jennings Road, Lemon Avenue, and Zacharias Road, as well as other roads intersecting the pipeline alignment. In general, pipeline construction activities would include vegetation removal, grading and excavation, open-trench pipeline installation for the majority of the alignment, trenchless pipeline installation at SR 33 and the railroad crossing and San Joaquin River crossing, and backfilling. Open-cut pipeline construction would progress at a rate of 200 to 500 feet per day. It is anticipated that staging areas would be accommodated either within the construction zones or at selected off-site locations (e.g., lots) owned by the Cities, which would be used to store equipment, vehicles, pipe, and other construction materials for approximately 1.5 years throughout the construction duration.

Existing residences located along the pipeline alignment and motorists using the affected or nearby roadways would have foreground views of construction vehicles and equipment such as excavators, dump trucks, piping, front-end loaders, backhoes, and dewatering pumps. Motorists would have fleeting views of pipeline construction activities due to the speed of travel. For

residences situated along the alignment (e.g., along Lemon Avenue and Zacharias Road), views of construction activities would generally be of short duration since construction equipment would move onto the next segment and areas affected by pipeline installation work would be restored to pre-construction conditions. In addition, as described in *Chapter 2, Section 2.5.7, Environmental Commitments,* the construction contractor would be required to keep the work areas clean. At the end of each work day, work areas would be cleaned up and trenches would be covered. Given the area's working rural landscape, the temporary nature of pipeline construction, and because the contractor would be required to clean up work areas on daily basis, construction-related impacts on scenic resources and the visual character of the study area would be less than significant.

Operation Impacts Once constructed, the pipelines would be underground and would not be visible. Underground components would therefore have no impacts on scenic resources or the visual character of the area. As described in *Chapter 2, Alternatives and Proposed Action,* air valves may be located above ground and, if so, would be housed on a concrete slab in a protective steel cage approximately 4 feet by 4 feet in dimension on the shoulder of the road. While the steel cages would be visible to motorists passing by, these facilities would be relatively small and would not dominate views of the rural fields. Further, because these views would be fleeting, the aboveground air valves would not substantially degrade the visual character of the study area.

The existing pump station at the Jennings Plant outfall pump station would be repurposed within the existing footprint (approximately 20 feet by 30 feet). As shown in **Figure 2-4**, the new pumps would be housed within the existing pump station building that rises approximately 15 feet above ground. Because the modifications to the Jennings Plant pump station would not change the appearance of the existing facility and because no public views of the pump station are available, impacts on scenic resources and the visual character of the site and surrounding area would be less than significant.

Once operational, conveyance of water through existing facilities (e.g., the DMC) and use of water on farms in DPWD's service area would have no aesthetic impacts and conceivably even a beneficial effect on the agricultural lands' visual character because some lands may no longer be fallowed, deficit irrigated, or irrigated with poorer quality groundwater, and the impact would be less than significant.

Similarly, any water supplied to the SOD refuges directly via existing turnouts from the DMC or through water exchanges/transfers would enhance viewing opportunities and would result in a beneficial effect on the refuges' visual character and the impact would be less than significant.

Separate Alignment Alternative (Alternative 2)

Construction Impacts Similar to Alternative 1, construction activities associated with Alternative 2 would mostly be visible from public roadways including Zacharias Avenue, Lemon Avenue, West Marshall Road, Pomegranate Avenue, and South Carpenter Road, and other roads that intersect the pipe alignment. Impacts associated with pipeline construction along the northern pipeline alignment would be the same as Alternative 1. Given that the visual character

in the vicinity of the southern pipeline segment is also open and rural, construction-related impacts during pipeline installation would be similar to Alternative 1.

Construction activities associated with the new pump station near the western end of the Harding Drain Bypass Pipeline would be visible from South Carpenter Road (near its intersection with West Harding Road). Typical pump station construction activities involve site preparation, pavement cutting, excavation and shoring, placement of the pump station structure, paving, fencing, and restoration. Motorists traveling on South Carpenter Road would have close-up views of construction materials and equipment. However, due to the speed of travel, such views would be short in duration. Given the industrial and working nature of the adjacent Darling International facility, construction of the new pump station would not result in a substantial impact on the site's visual character and the impact would be less than significant.

Operation Impacts Long-term impacts related to pipeline installation and delivery of water to farms and the refuges would be similar to Alternative 1 (see discussion above for details).

Regarding the new pump station, **Figure 2-6** in *Chapter 2, Alternatives and Proposed Action*, presents a conceptual elevation view of the new facility. The building itself would be up to 20 feet tall and would house the new pumps on top of the wet well and discharge pipeline. The pump station building would be surrounded by paving for access and a fence for security purposes. Automatic-sensor lights would also be installed outside of the pump station building. The new facility would be visible from South Carpenter Road and would be built consistent with Stanislaus County General Plan policies. The facility would be smaller in scale than the adjacent industrial facility and would be consistent with the industrial and rural character of the surrounding area. As such, long-term impacts on scenic resources and the visual character of the area would be less than significant.

PID Conveyance Alternative (Alternative 3)

Construction Impacts Similar to Alternatives 1 and 2, construction activities associated with Alternative 3 would mostly be visible from public roadways, including Bartch Avenue and Ward Avenue and other roads that intersect the portion of the pipeline alignment that parallels the PID Main Canal. Given that the visual character in the vicinity of the pipeline alignment is also open and rural, construction-related impacts during pipeline installation would be similar to Alternatives 1 and 2.

Construction activities associated with the expanded intake facility and new pump at the existing PID intake site would be visible from the San Joaquin River and from the end of Old Las Palmas Avenue. Because this is a dead-end road with very little traffic, construction likely would not be visible to many observers. Typical construction activities involve site preparation, pavement cutting, excavation and shoring, placement of the pump station structure, paving, fencing, and restoration. Because the site already contains an intake facility, design and layout of the new structures would not substantially modify the visual character of the immediate area. Construction of the expanded intake and new pump station would not result in a substantial impact on the site's visual character and the impact would be less than significant.

Operation Impacts Long-term impacts related to pipeline installation and delivery of water to farms and the refuges would be similar to Alternatives 1 and 2 (see discussion above for details).

Regarding the new facilities at the PID intake, the expanded fish screen and new pump would be consistent with the existing character of the surrounding area. As such, long-term impacts on scenic resources and the visual character of the area would be less than significant.

Significance Determination Less than significant for all Action alternatives and the No Action Alternative.

Mitigation Measures None.

Impact AES-2 New Sources of Substantial Light or Glare.
No Action Alternative Under the No Action Alternative, no new lighting would be installed. As such no new permanent sources of light and glare would be created and no impact would occur.

Combined Alignment Alternative (Alternative 1)
Construction Impacts As discussed in *Chapter 2, Alternatives and Proposed Action*, throughout the approximately 1.5-year construction duration, construction activities would primarily occur on weekdays from 7:00 AM to 6:00 PM. However, if necessary, construction could take place during nighttime and the contractor would be responsible for obtaining permits for any nighttime construction. Temporary views of nighttime construction lighting could be a nuisance to adjacent residences and motorists traveling on the affected roadway. To minimize any temporary adverse effects on residential views during the duration of nighttime construction, implementation of **Mitigation Measure AES-2a** would ensure that nighttime construction lighting is shielded and oriented downward and would reduce this impact to less than significant.

Operation Impacts As described above under **Impact AES-1**, once constructed, all recycled water pipelines would be underground and would therefore not result in a new source of substantial light or glare.

Improvements at the existing Jennings Plant outfall pump station would be minimal and consist of replacing an existing transformer, modifications to discharge piping, replacement of the pumps within the existing pump station structure and other interior modifications. None of these modifications would result in any changes to the exterior of the existing pump station building nor would it require new lighting. For these reasons and because no publicly accessible views of the pump station are available, operation of Alternative 1 would not adversely affect nighttime views in the area.

Separate Alignment Alternative (Alternative 2)
Construction Impacts Similar to Alternative 1, construction activities associated with Alternative 2 would primarily occur on weekdays between 7:00 AM and 6:00 PM, but some nighttime construction may be necessary. Potential construction-related impacts associated with nighttime construction would be the same as Alternative 1.

Operation Impacts For Alternative 2, one pump station would be constructed at the western end of the Harding Drain Bypass Pipeline and the existing Jennings Plant outfall pump station at the northern reach would be repurposed. Light and glare impacts associated with modifications to the Jennings Plant outfall pump station would be the same as Alternative 1. As shown in **Figure 2-6** in *Chapter 2, Alternatives and Proposed Action*, the new pump station building would rise up to 20 feet aboveground and would have dimensions of approximately 40 feet by 50 feet. Automatic-sensor lights would be installed outside for safety and security purposes. New lights would represent a new permanent source of light and could be seen from South Carpenter Road. Lights would be motion-activated and so would not always be on; however, views of nighttime lighting could be a nuisance to motorists traveling on South Carpenter Road, which would be a potentially significant impact. **Mitigation Measure AES-2b** would ensure that lights would be shielded and directed inward/downward towards the facilities and would therefore not generate substantial glare. For this reason and because there are no other sensitive viewers in the area, the impact related to new permanent sources of light and glare would be less than significant with mitigation.

PID Conveyance Alternative (Alternative 3)

Construction Impacts Similar to Alternatives 1 and 2, construction activities associated with Alternative 3 would primarily occur on weekdays between 7:00 AM and 6:00 PM but some nighttime construction may be necessary. Potential construction-related impacts associated with nighttime construction would be the same as for Alternatives 1 and 2.

Operation Impacts Light and glare impacts associated with modifications at the PID intake facility would be the similar to those for Alternative 1 and Alternative 2. Security lighting is currently installed at the intake and any new lighting would be motion-activated and thus would not always be on. For this reason and because there are very few residences in the area, the impact related to new permanent sources of light and glare would be less than significant.

Significance Determination before Mitigation No impact for the No Action Alternative. Less than significant for construction activities for all Action alternatives. Potentially significant for operations of all Action alternatives.

Mitigation Measures **Mitigation Measure AES-2a Nighttime Construction Lighting (Alternatives 1, 2 and 3) N**ighttime construction lighting, if required, shall be shielded and oriented downward to minimize effects on any nearby receptors. Lighting shall be directed toward active construction areas only, and shall have the minimum brightness necessary to ensure worker safety. **Mitigation Measure AES-2b Directional Security Lighting for New Pump Station at Harding Drain Bypass Pipeline (Alternative 2)** Night time security and associated parking lighting fixtures will be equipped with directional shields that aim light downward and away from adjacent roadways. In addition, the placement of lighting fixtures would be selected to concentrate light on-site to avoid spillover.

Significance after Mitigation Less than significant.

Cumulative Impact Analysis

The geographic scope of the cumulative impacts on aesthetic resources encompasses the study area and surrounding areas. If the Proposed Action, as well as other projects listed in **Table 3.0-1**, would adversely affect the same scenic resources or views from public roads, they could result in a significant cumulative impacts on scenic resources and the visual character of the area.

As discussed in **Impact AES-1**, during the construction phase, Alternatives 1, 2 and 3 would temporarily degrade the visual character of the study area, which would be visible from roadways such as Lemon Avenue, Zacharias Road, Carpenter Road, Pomegranate Avenue, Bartch Avenue, Ward Avenue and other intersecting public roads. Of the projects listed in **Table 3.0-1**, the Jennings Road Treatment Plant Phase 2 Upgrades project, Stanislaus County's West Main Street Highway Improvement Project, and the Stanislaus Council of Governments' South County Corridor Study would be closest to the study area. Construction of the Jennings Road Treatment Plant Phase 2 Upgrades project is currently underway and could overlap with the proposed project's construction schedule. Since construction timing of the West Main Street Highway Improvement Project and the South County Corridor Study is undetermined, this analysis conservatively assumes that the construction schedule of those two projects would overlap with the proposed project's schedule. As discussed in **Impact AES-1**, during the construction phase, the construction contractor would be required to clean up work areas at the end of every work day. If pipeline construction on West Main Avenue overlaps with construction associated with the West Main Street Highway Improvement Project and the South County Corridor Study, residents and motorists traveling on West Main would have longer views of construction activities and equipment along this road than that resulting from the Proposed Action alone. However, given the temporary nature of project construction and short duration of views available to motorists and residents, and through compliance with standard environmental commitments related to site cleanliness, the Proposed Action's contribution to this cumulative construction-related impact on visual resources would not be considerable and thus would be less than significant. As discussed in **Impact AES-1**, the Alternative 2 pump station would be visible from South Carpenter Road. None of the cumulative projects identified in **Table 3.0-1** would occur in the vicinity of this pump station site. Therefore, there would be no long-term cumulative impact on visual resources to which the Proposed Action could contribute, and there would be no impact.

Lastly, as described in **Impact AES-2**, in the event that pipeline construction requires nighttime construction lighting, the project could create a nuisance to motorists and residents near the work areas. Any construction lighting needed for the West Main Street Highway Improvement Project and the South County Corridor Study could also create a nuisance to these sensitive viewers along West Main Street (between Jennings Road and South Carpenter Road). However, implementation of **Mitigation Measure AES-2a (Nighttime Construction Lighting)** would ensure that construction lighting is oriented downwards towards the work areas and avoid glare. With implementation of this measure, the Proposed Action's contribution to this cumulative impact would not be considerable and would be less than significant. Lastly, the Alternative 2 pump station would include exterior automatic-sensor lighting. Since none of the cumulative projects identified in **Table 3.0-1** would occur in the vicinity of this pump station site, there

would be no long-term cumulative impact related to permanent light and glare effects to which the Proposed Action could contribute, and there would be no impact.

Significance Determination Less than significant with mitigation.

Mitigation Measures See **Mitigation Measures AES-2a** and **2b**.

3.1.4 References

California Department of Transportation (Caltrans). 2014. California Scenic Highway Mapping System, available online at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/scenic_hwy.htm, accessed June 30, 2014.

Modesto, City of. 2008. Final Urban General Plan. October 14.

Stanislaus County. 1994. Stanislaus County General Plan: Chapter 3, Conservation Element. Available at: http://www.stancounty.com/planning/pl/gp/gp-chapter3.pdf.

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3.2 Agriculture and Forestry Resources

This section evaluates the potential adverse impacts related to agriculture that could result from implementation of the proposed NVRRWP. No forestry resources exist in the study area and so impacts to these resources have not been evaluated.

3.2.1 Environmental Setting/Affected Environment

The study area for this analysis includes parts of Stanislaus, San Joaquin and Merced Counties in California's Central Valley. While all construction would take place in Stanislaus County, the Proposed Action could affect agricultural areas in other counties as well. Specifically, recycled water provided by the project would be used to irrigate farmland in DPWD's service area, which includes parts of San Joaquin, Stanislaus and Merced Counties (see **Figure 2-1**). Information is provided below on the agricultural resources of the area which would be affected by the Proposed Action.

Del Puerto Water District

As described in *Chapter 2, Alternatives and Proposed Action*, DPWD provides agricultural irrigation water to approximately 45,000 acres of productive farmland in Stanislaus, San Joaquin, and Merced Counties. Currently, DPWD's primary source of water is from a contract with Reclamation which provides for the delivery of up to 140,210 AF of CVP water annually. DPWD's CVP water allocations have been substantially reduced since the 1990s due to Delta pumping restrictions resulting from the passage of the CVPIA, water rights decisions, need to meet Delta water quality objectives, biological opinions for protection of salmon and Delta smelt, and drought conditions. In 2009, DPWD received only 10 percent (i.e., 14,000 AFY) of its contract allocation. DPWD's contract supply for 2013 was 20 percent of their contracted allocation (28,000 AFY), while the 2014 and 2015 allocation was 0 percent. **Figure 1-2** shows the historical DPWD CVP allocations from 1990 to 2013 and the downward trend in the annual allocations.

Although periodic fallowing is a normal part of farming, shortages in CVP deliveries have resulted in fallowing of land within DPWD's service area that would otherwise have been planted. **Table 3.2-1** shows the acreage of land in the DPWD service area that has been fallowed from 2001 through 2013. From 2001 to 2013 the percentage of fallowed land ranged from 12 to 24 percent. Due to reduced availability of surface water and insufficient quantities of groundwater, preliminary reports indicate that 11,020 acres of agricultural land were fallowed in 2014. Fallowing is not an option for the approximately 24,000 acres of orchard crops within DPWD, which need to be irrigated each and every year.

It is predicted that future deliveries from the CVP to DPWD will average approximately 49,000 AFY, an allocation of only 1 AF/acre, which is inadequate to meet the District's water demand. This would result in an anticipated shortfall of 41,000 AFY (see **Figure 1-3)**. If compared to the 2013 supplies or the average of contractual water supplies over the last five years, the shortfall would range from approximately 40,000 to 60,000 AFY. The 2014 and 2015 shortfall was 90,000 AFY.

Table 3.2-1: Acres of Fallowed Land in DPWD

Year	Fallowed Acreage
2001	6,763
2002	5,584
2003	6,826
2004	8,455
2005	6,431
2006	7,556
2007	8,654
2008	8,336
2009	10,737
2010	9,016
2011	6,204
2012	6,486
2013	7,239

Source: Del Puerto Water District Crop Report Summary, 2014

Crops and Production

Stanislaus County Stanislaus County consistently ranks among the top ten agricultural counties in the state. Agriculture in Stanislaus County generates more than a billion dollars annually and is the County's leading industry (Stanislaus County No Date). As shown in **Table 3.2-2**, a wide range of agricultural commodities are produced in Stanislaus County.

Table 3.2-2: Stanislaus County 2012 Agricultural Production by Commodity Category

Category	Harvest Acreage	Total
Fruit and Nut Crops	227,113	$1,264,991,000
Vegetable Crops	47,372	$186,907,000
Field Crops	725,515	$297,856,000
Other Agriculture	N/A	$25,801,000
Seed Crops	986	$1,268,000
Nursery Products	1,836	$109,432,000
Organic Products	4,113	$14,572,000
Apiary Products	N/A	$58,122,000
Livestock and Poultry	N/A	$540,244,000
Livestock and Poultry Products	N/A	$778,652,000
Total	1,006,995	$3,227,843,000

Source: Stanislaus Agricultural Commissioner's Office 2012

Milk and almonds are the two biggest commodities by total value produced in the County. **Table 3.2-3** shows the top 10 commodities in Stanislaus County**.**

Table 3.2-3: Stanislaus County Top 10 Agricultural Commodities in 2012

Commodity	Rank	Value
Milk, All	1	$739,630,000
Almonds	2	$735,826,000
Chickens, All	3	$245,771,000
Cattle & Calves, All	4	$214,217,000
Walnuts	5	$213,600,000
Silage, All	6	$148,557,000
Tomatoes, All	7	$121,148,000
Grapes, All	8	$82,439,000
Turkeys, All	9	$74,515,000
Deciduous Fruit & Nut Industry	10	$64,398,000

Source: Stanislaus Agricultural Commissioner's Office 2012

Merced County Like Stanislaus County, Merced County is a major agricultural county in California. The total value of agricultural commodities produced in Merced County was approximately $2.8 billion in 2012 (Merced County Department of Agriculture 2012). Agriculture is Merced County's number one industry and largest employer. Merced County is one of the top five producers of milk/cream, cheese, sweet potatoes, figs, cantaloupes, fresh market tomatoes, honey, almonds, cotton, sugar beets, eggs/chickens, turkeys, cattle/calves, pasture, silage, corn, honey and hay (Norton et al. 2011). **Table 3.2-4** shows agricultural production and harvest acreage in Merced County in 2012 by commodity category**.**

Table 3.2-4: Merced County 2012 Agricultural Production by Commodity Category

Category	Harvest Acreage	Value
Fruit and Nut Crops	130,835	$664,510,000
Vegetable Crops	45,327	$323,386,000
Field Crops	969,601	$490,294,000
Other Agriculture	N/A	$13,505,000
Seed Crops	4,756	$5,929,000
Nursery Products	1,554	$47,736,000
Apiary Products	N/A	$25,473,000
Livestock and Poultry Production	N/A	$669,453,000
Livestock and Poultry Products	N/A	$1,038,014,000
Total	1,152,073	$3,278,300,000

Source: Merced County Department of Agriculture 2012

In terms of specific commodities, milk and almonds were the two biggest commodities by total value produced in the County in 2012 (see **Table 3.2-5**).

Table 3.2-5: Merced County Top 10 Agricultural Commodities in 2012

Commodity	Rank	Value
Milk *(includes Market & Manufacturing)*	1	$940,236,000
Almonds *(Kernel Basis)*	2	$471,363,000
Cattle & Calves	3	$296,891,000
Chickens *(includes Fryers & Other Chickens)*	4	$290,180,000
Sweet Potatoes	5	$160,543,000
Hay (*Alfalfa)*	6	$131,885,000
Tomatoes *(includes Market & Processing Tomatoes)*	7	$115,710,000
Silage *(Corn)*	8	$109,221,000
Cotton *(includes Acala & Pima Cotton)*	9	$88,372,000
Chicken Eggs *(Market)*	10	$81,726,000

Source: Merced County Department of Agriculture 2012

San Joaquin County Like Stanislaus and Merced Counties, San Joaquin County has a robust agricultural industry. San Joaquin County consistently leads the state in the production value of apples, asparagus, cherries, grain corn and walnuts (San Joaquin County Agricultural Commissioner's Office 2012). In 2012, these five crops generated $833,452,000 (San Joaquin County Agricultural Commissioner's Office 2012). **Table 3.2-6** shows agricultural production in San Joaquin County in 2012 by commodity category and total agricultural production and harvest acreage.

Table 3.2-6: San Joaquin County 2012 Agricultural Production by Commodity Category

Category	Harvest Acreage	Value
Fruit and Nut Crops	253,000	$1,640,372,000
Vegetable Crops	55,300	$265,568,000
Field Crops	508,000	$329,973,000
Seed Crops	1,180	$3,562,000
Nursery Products	N/A	$87,957,000
Apiary Products	N/A	$21,610,000
Livestock and Poultry Production	N/A	$97,151,000
Livestock and Poultry Products	N/A	$423,279,000
Total	817,480	$2,869,472,000

Source: San Joaquin County Agricultural Commissioner's Office 2012

In terms of specific commodities, grapes and walnuts were the top two agricultural commodities produced in the County in 2012, followed by milk, almonds, cherries and tomatoes (see **Table 3.2-7**).

Table 3.2-7: San Joaquin County Top 10 Agricultural Commodities in 2012

Commodity	Rank	Value
Grapes	1	$549,000,000
Walnuts	2	$457,000,000
Milk	3	$404,000,000
Almonds	4	$300,000,000
Cherries	5	$225,000,000
Tomatoes	6	$103,000,000
Hay	7	$90,000,000
Silage Corn	8	$72,000,000
Grain Corn	9	$70,000,000
Cattle, Calves	10	$67,000,000

Source: San Joaquin County Agricultural Commissioner's Office 2012

Types of Farmland

The definitions of the various types of farmland discussed below are provided in *Section 3.2.2, Regulatory Framework, State Policies and Regulations, Farmland Mapping and Monitoring Program*.

Important Farmland Much of the study area is classified by the California Department of Conservation (CDOC) as Prime Farmland. As shown in **Figure 3.2-1**, nearly all the land adjacent to the proposed pipeline from the Modesto Water Quality Control Facility to the DMC (for Alternatives 1 and 2) is Prime Farmland (CDOC 2012a). The land adjacent to the proposed pipeline from the Harding Drain Bypass to the Jennings Plant Pump Station (Alternative 1) is generally classified as Prime Farmland (with some patches of Farmland of Statewide Importance). The pipeline from the Harding Drain Bypass to the DMC (Alternative 2) and from the PID intake to the DMC (Alternative 3) also passes through Prime Farmland (CDOC 2012a)**.**

Williamson Act Contracts As shown in **Figure 3.2-2**, numerous Williamson Act Contract lands exist within the study area. A number of parcels adjacent to the proposed pipeline from the Modesto Water Quality Control Facility to the DMC (Alternatives 1 and 2) are under Williamson Act Contracts (CDOC 2012b). Several parcels along the proposed pipeline from the Harding Drain Bypass Pipeline to the Jennings Plant Pump Station (Alternative 1) are enrolled in Williamson Act Contracts (primarily parcels along S. Carpenter Road as shown in **Figure 3.2-2**). A number of parcels along the proposed pipeline from the Harding Drain Bypass Pipeline to the DMC and from the PID intake to the DMC (Alternative 3) are under Williamson Act Contracts (CDOC 2012b**).**

Figure 3.2-1: FMMP Farmland Types

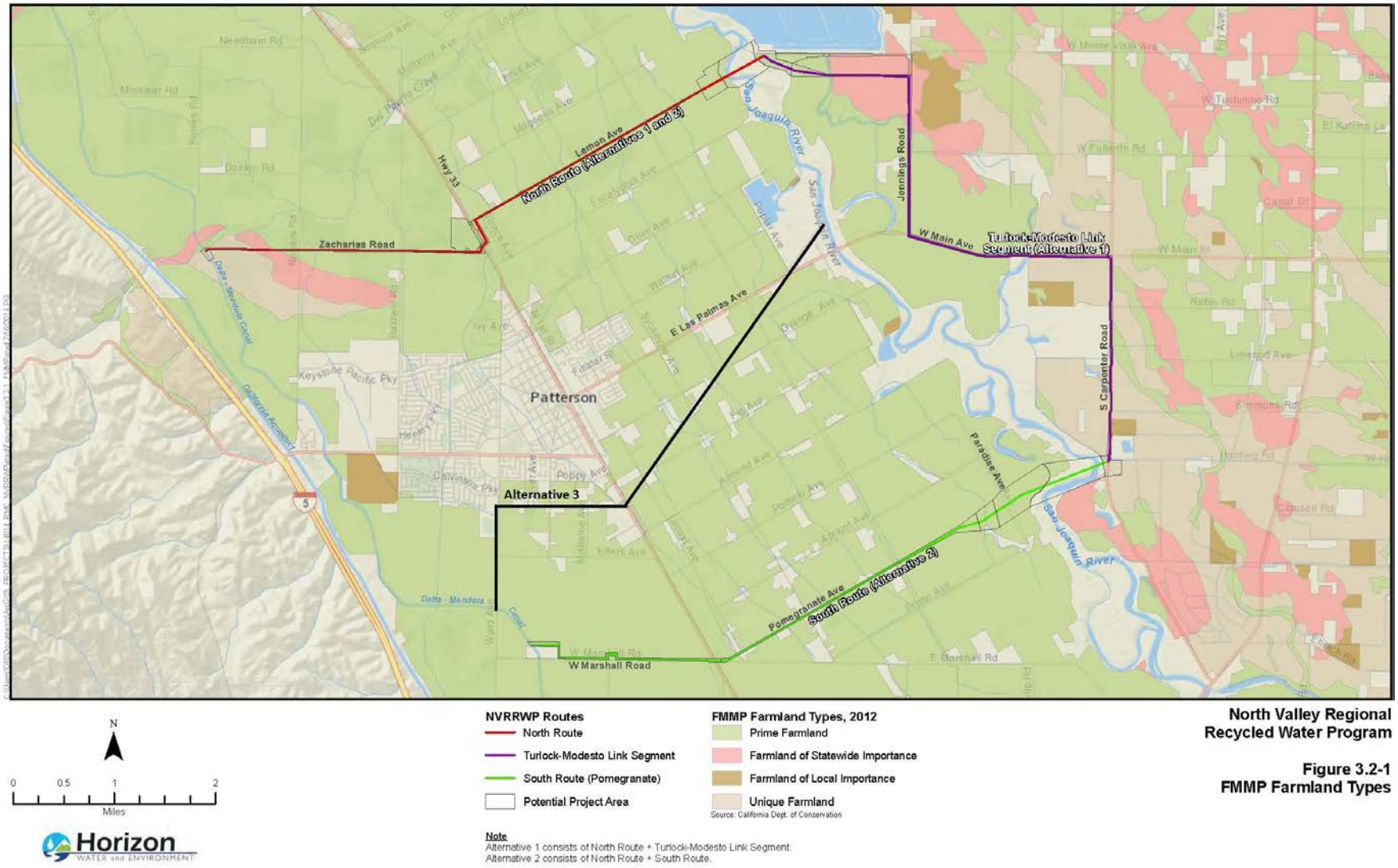

Figure 3.2-2: Williamson Act Lands

3.2.2 Regulatory Framework

This section describes laws and regulations at the federal, state, and local level that apply to agriculture and the Proposed Action.

Federal Policies and Regulations

Farmland Protection Policy Act The Farmland Protection Policy Act (FPPA) requires federal agencies to (a) evaluate the adverse effects of their programs on the preservation of farmland; (b) consider alternative actions that could lessen adverse effects, and (c) ensure that their programs are compatible with state and local programs and policies for the protection of farmland. Farmland is defined as prime or unique farmlands as determined by the appropriate state or local agency. Federal agencies are required to develop and review their policies and procedures to implement the FPPA every two years (USDA 2014).

State Policies and Regulations

Farmland Mapping and Monitoring Program The Farmland Mapping and Monitoring Program (FMMP), administered by CDOC, produces maps and statistical data for use in analyzing impacts on California's agricultural resources (CDOC 2013a). The FMMP rates agricultural land according to soil quality and irrigation status and publishes Important Farmland maps. FMMP maps are updated every two years using a computer mapping system, aerial imagery, public review, and field reconnaissance (CDOC 2013a). Important Farmland categories are as follows (CDOC 2013b):

> *Prime Farmland:* Farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. These lands have the soil quality, growing season, and moisture supply needed to produce sustained high yields. Prime Farmland must have been used for irrigated agricultural production at some time during the 4 years before the FMMP's mapping date.
> *Farmland of Statewide Importance:* Farmland similar to Prime Farmland, but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Farmland of Statewide Importance must have been used for irrigated agricultural production at some time during the 4 years before the FMMP's mapping date.
> *Unique Farmland:* Farmland of lesser quality soils used for the production of the state's leading agricultural crops. These lands usually are irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones. Unique Farmland must have been cropped at some time during the 4 years before the FMMP's mapping date.
> *Farmland of Local Importance***:** Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

California Land Conservation Act of 1965 (Williamson Act) The California Land Conservation Act of 1965 (commonly referred to as the Williamson Act) allows local governments to enter into contracts with private landowners for the purpose of preventing conversion of agricultural land to non-agricultural uses (CDOC 2013c). In exchange for restricting their property to agricultural or related open space use, landowners receive property tax assessments that are substantially lower than the market rate (tax assessments are based upon farming and open space uses as opposed to full market value).

A Williamson Act Contract may be terminated either through nonrenewal (preferred method) or cancellation (CDOC 2013d). To terminate a Williamson Act Contract, a landowner may file a notice of nonrenewal. Beginning on the next contract anniversary date, the contract winds down over the remaining (usually nine-year) term with the landowner's property taxes gradually increasing until they reach the full unrestricted rate at the end of the nonrenewal period (CDOC 2013d).

According to the Williamson Act 2010 Status Report, approximately 15 million acres were enrolled under the Williamson Act statewide as of 2011 (CDOC 2013e). As of 2010, Stanislaus County had 690,110 acres under Williamson Act enrollment. Both Merced and San Joaquin Counties also have lands under Williamson Act Contract, but as no project facilities would be located in those counties, the Proposed Action has no potential to affect lands under Williamson Act Contract in Merced or San Joaquin County.

Local Policies and Regulations

Physical facilities for the project would be located in Stanislaus County. The Modesto Jennings Plant is within the Modesto City limits. Policies for Stanislaus County and the City of Modesto are presented below.

Stanislaus County General Plan The Stanislaus County General Plan (Stanislaus County, 2011) regulates land use and development in unincorporated areas of Stanislaus County and outlines goals and policies to guide zoning and land use decisions. The Stanislaus County General Plan contains the following goals, objectives and policies related to agricultural resources and the Proposed Action:

GOAL ONE: Strengthen the agricultural sector of our economy.

Objective Number 1.2: Support the development of agriculture-related uses

Policy 1.7: Concentrations of commercial and industrial uses, even if related to surrounding agricultural activities, are detrimental to the primary use of the land for agriculture and shall not be allowed.

Objective Number 1.3: Minimizing Agricultural Conflicts

Policy 1.10: The County shall protect agricultural operations from conflicts with non-agricultural uses by requiring buffers between proposed non-agricultural uses and adjacent agricultural operations.

GOAL TWO: Conserve our agricultural lands for agricultural uses.

Objective Number 2.1: Continued Participation in the Williamson Act

Policy 2.1: The County shall continue to provide property tax relief to agricultural landowners by participating in the Williamson Act.

Policy 2.3 The County shall ensure all lands enrolled in the Williamson Act are devoted to agricultural and compatible uses supportive of the long-term conservation of agricultural land.

Objective Number 2.2: Discourage urbanization and the conversion of agricultural land in unincorporated areas of the County

Policy 2.5: To the greatest extent possible, development shall be directed away from the County's most productive agricultural areas.

Policy 2.6: Agricultural lands restricted to agricultural use shall not be assessed to pay for infrastructure needed to accommodate urban development.
Objective Number 2.4: Assessing and mitigating impacts of farmland conversion.
Policy 2.14: When the County determines that the proposed conversion of agricultural land to non-agricultural uses could have a significant effect on the environment, the County shall fully evaluate on a project-specific basis the direct and indirect effects, as well as the cumulative effects of the conversion.

GOAL THREE: Protect the natural resources that sustain our agricultural industry.
Objective Number 3.2: Water Resources
Policy 3.4: The County shall encourage the conservation of water for both agricultural and urban uses.
Policy 3.5: The County will continue to protect the quality of water necessary for crop production and marketing.
Objective Number 3.3: Soil Resources
Policy 3.6: The County shall encourage the conservation of soil resources.

Stanislaus County Zoning Code The Stanislaus County zoning code dictates land use in unincorporated areas of Stanislaus County and describes allowable uses in designated zoning districts. According to the Stanislaus County zoning districts map, all the land within the study area is assigned to the General Agriculture District (A-2) (Stanislaus County 2010).

As described in the County's zoning code, the intent of the General Agriculture District is "to support and enhance agriculture as the predominant land use in the unincorporated areas of the county. These zoning regulations are also intended to protect open space lands and to ensure that all land uses are compatible with agriculture and open space, including natural resources management, outdoor recreation and enjoyment of scenic beauty (Section 21.20.010)."

In general, permitted uses in the A-2 districts include: all agricultural uses; single-family dwelling(s) on parcels of specified size; mobile homes; buildings and appurtenances generally supportive of farming; temporary agricultural service airports; lagoons or ponds for the storage of animal wastes; and other related uses (Section 21.20.020).

Uses that require a use permit in an A-2 district include (Section 21.20.030):

> C. Tier Three. The uses listed below are not directly related to agriculture but may be necessary to serve the A-2 district or may be difficult to locate in an urban area. Some of these uses can be people-intensive and, as a result, have the potential to adversely impact agriculture; these people-intensive uses are generally required to be located within LAFCO-approved spheres of influence of cities or community services districts and sanitary districts serving unincorporated communities. Tier three uses may be allowed when the planning commission finds that, in addition to the findings required under Section 21.96.050:
>
> 1. The use as proposed will not be substantially detrimental to or in conflict with agricultural use of other property in the vicinity; and

> 2. The parcel on which such use is requested is not located in one of the county's "most productive agricultural areas," as that term is used in the agricultural element of the general plan; or the character of the use that is requested is such that the land may reasonably be returned to agricultural use in the future...
>
> j. Facilities for public utilities and communication towers,

In regard to uses on lands subject to the Williamson Act, the County's zoning code states: "Unless the planning commission and/or the board of supervisors makes a finding to the contrary, the following uses are hereby determined to be consistent with the principles of compatibility and may be approved on contracted land: (1) The erection, construction, alteration, or maintenance of gas, electric, water, communication facilities… (Section 21.20.2045)"

City of Modesto General Plan The existing Jennings Plant and several adjacent parcels to the south are within the jurisdiction of the City of Modesto. These include the parcels within and adjacent to the proposed pipeline alignment from the Jennings Plant and Turlock RWQCF (Alternative 1) along Jennings Road and W. Main Avenue. These parcels are all within the Planned Development Zone (P-D) district according to the City's zoning ordinance (see below) and as such would seem to be within the Planned Urbanizing Area, as defined in the City's General Plan (City of Modesto 2008). In regard to the Planned Urbanizing Area (PUA), the General Plan states that:

> Future development within the approximately 20,042-acre Planned Urbanizing Area (PUA) will occur on land which is predominantly flat, vacant and/or developed with agricultural uses, and minimally, if at all, served with urban services and infrastructure, including roads…The Planned Urbanizing Area is expected to absorb substantial urban development in a comprehensively planned manner (City of Modesto 2008: page II-2).

Agriculture policies for the PUA in the General Plan apply to new development (City of Modesto 2008: page VII-8). The pipelines proposed in the project would likely not be considered new development as they would be located below ground and would not change the existing land use. Nevertheless, the agriculture policies for the PUA in the City of Modesto General Plan are as follows:

> *Agricultural Policy (a):* The City will not annex agricultural land unless urban development consistent with the General Plan has been approved by the City.
> *Agricultural Policy (b):* The City shall support the continuation of agricultural uses on lands designated for urban uses until urban development is imminent.
> *Agricultural Policy (c):* The City shall encourage the County to retain agricultural uses on lands surrounding the General Plan area and on lands within the General Plan area pending their annexation to the City or development by mutual agreement with the County.
> *Agricultural Policy (d):* Where necessary to promote planned City growth, the City shall encourage development of those agricultural lands that are already compromised by adjacent urban development or contain property required for the extension of

infrastructure or other public facilities, before considering urban development on agricultural lands that are not subject to such urban pressures.
Agricultural Policy (e): For any subsequent project that is adjacent to an existing agricultural use, the project proponent may incorporate measures to reduce the potential for conflicts with the agricultural use. Potential measures to be implemented may include the following:

1) Include a buffer zone of sufficient width between proposed residences and the agricultural use.
2) Restrict the intensity of residential uses adjacent to agricultural lands.
3) Inform residents about the possible exposure to agricultural chemicals.

City of Modesto Zoning Ordinance As described above, several parcels along the San Joaquin River within and adjacent to the proposed pipeline alignment from the Jennings Plant to the Turlock RWQCF are within the jurisdiction of the City of Modesto. According to the City of Modesto's zoning map, all of these parcels are within the P-D district. As described in Section 21.40.020 of the City's zoning ordinance, the purpose and intent of the P-D district is as follows.

> The application of the conventional regulations can stifle creative planning and design efforts. The P-D district zoning is generally intended to apply to larger scale, integrated development as a means of providing opportunities for creative and cohesive design concepts. The district is intended to allow modification of requirements established by other districts and diversification in the relationship of different uses, buildings, structures, lot sizes and open spaces, while ensuring compliance with, and implementation of, the general plan. Additional objectives of the P-D district include the provision of development consistent with site characteristics, creation of optimum quantity and use of open space, encouragement of good design and promotion of compatible uses. (Ord. CS 556 §1, 1994).

Section 21.40.040 states that "All uses, when consistent with the general plan, shall be allowed in P-D districts subject to the approval of the development plan by the planning commission. (Ord. CS 556 §1, 1994).

3.2.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

This section evaluates whether construction and operation of the facilities associated with the Proposed Action would result in significant impacts related to agriculture resources. It considers the extent to which the Proposed Action could result in conversion of farmland to non-agricultural uses, either temporarily or permanently. In general, temporary impacts would not be considered significant. It also considers the Proposed Action's consistency with existing zoning in the locations where facilities would be modified or constructed. Impacts to forestry are not evaluated because no forestry resources exist within the study area.

Thresholds of Significance

Consistent with Appendix G of the *CEQA Guidelines,* an agricultural impact would be considered significant if the project would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to nonagricultural use.
- Conflict with existing zoning for agricultural use, or a Williamson Act Contract.
- Involve other changes in the existing environment that, because of their location or nature, could result in a conversion of Farmland to a non-agricultural use.

Impacts and Mitigation Measures

Impact AG-1 Convert Farmland to Non-Agricultural Use

No Action Alternative In the No Action Alternative, no pipelines would be installed and existing agricultural land would not be affected by construction. However, over the long-term a lack of reliable water supply could result in conversion of agriculture land to non-agricultural uses. This would be a significant impact for which no mitigation is available.

Combined Alignment Alternative (Alternative 1) Alternative 1 involves installation of pipelines and appurtenances (two reaches) and repurposing of the existing Jennings Plant outfall pump station. As described in **Table 2-1** and shown in **Figure 2-2**, the majority of the length of the two pipeline reaches proposed in Alternative 1 would be located along County roadways. Two segments of the reach from the Jennings Plant to the DMC would cross agricultural land; from roughly the San Joaquin River to Lemon Avenue and from SR 33 to the intersection of Zacharias Road and Baldwin Road. The agricultural land through which these segments of pipeline would be constructed is designated as Prime Farmland (see **Figure 3.2-1**).

As described in *Chapter 2, Alternatives and Proposed Action*, the pipeline would be installed using open-cut construction methods. The open-cut trench would range from 6 to 8 feet wide and approximately 8 to 10 feet deep, depending on the pipe size, existing utility locations, and pipe bedding requirements. To accommodate construction equipment and work area, the entire construction corridor (active work area including the trench) would be approximately 45 feet wide.

Installation of pipeline along roads would be conducted primarily within the public ROW (i.e., within the width of the road). The work area may extend onto adjacent agricultural land in locations where the public ROW is too narrow to accommodate pipeline construction.
In areas where the construction corridor would be located within agricultural lands, agriculture would be temporarily precluded for some portion of the 1.5-year construction period. Construction in agricultural fields may require the removal of crops, depending on the crop and time of year. Because of the temporary nature of this impact, it is considered less than significant.

Construction would also involve the removal of topsoil (to dig the trench). Heavy equipment (e.g., excavator, dump truck, flat-bed truck, front-end loader) would be used to dig trenches, transport pipe, and off-load excavated materials. Removal of topsoil and use of heavy equipment would also have the potential to adversely affect long-term soil characteristics and productivity of this land (i.e., through compaction/removal of topsoil). Potential exists that this could cause such areas to no longer be viable for agricultural production, which would be a significant impact. Implementation of **Mitigation Measure AG-1** would require that topsoil be stockpiled

and replaced, reducing this impact to a level that is less than significant and compliant with Policy 3.6 of Stanislaus County's General Plan (i.e., to conserve soil) (see Regulatory Framework above).

Otherwise, over the long term, agricultural land use in this area would be unaffected as a result of the proposed pipelines in Alternative 1. The pipe would be installed from 8 to 10 feet deep and soil would be backfilled over the trench such that farming would be able to resume following construction. The pipeline would need to be inspected and maintained after construction (for which permanent easements would be acquired as necessary), but inspection and maintenance activities would not be expected to significantly affect agricultural operations.

Separate Alignment Alternative (Alternative 2) The potential impacts associated with the pipeline reaches in Alternative 2 would be the same as for Alternative 1. In addition to the locations where the pipeline would traverse agricultural lands under Alternative 1, portions of the pipeline reach from Harding Drain Bypass Pipeline to the DMC would pass through agricultural fields designated as Prime Farmland. As described in **Table 2-2**, a segment of this reach would pass through agricultural fields designated as Prime Farmland roughly between the San Joaquin River and Pomegranate Avenue. Another segment of this reach would run parallel and north of West Marshall Road (up to 80 feet north of West Marshall Road) between SR 33 and the DMC. The land adjacent to West Marshall Road to the north is classified as Prime Farmland (see **Figure 3.2-1**). Potential impacts (i.e., conversion of farmland to non-agricultural use) from pipeline installation in these areas would be the same as those described for Alternative 1. In general, construction-related impacts in agricultural fields would be temporary and unlikely to result in permanent conversion of farmland to non-agricultural use. Potentially significant impacts to soil resources from construction would be reduced to a less than significant level with implementation of **Mitigation Measure AG-1**.

Alternative 2 would include the same repurposing of the existing Jennings Plant outfall pump station as described for Alternative 1, and the potential impacts would be the same as those described for Alternative 1.

Alternative 2 would also involve construction of a new pump station near the west end of the Harding Drain Bypass Pipeline. As described in *Chapter 2, Alternatives and Proposed Action,* the proposed pump station at the Harding Drain Bypass Pipeline would be above ground and enclosed. **Figure 2-5** shows the site plan for the new pump station. The above grade pump station building would be approximately 40 feet by 50 feet and would be surrounded by paving for access and a fence to ensure security. The pump station site on the west of S. Carpenter Road (and east of the San Joaquin River) is owned by the City of Turlock and is not classified as Important Farmland. Therefore no conversion of farmland to non-agricultural use would occur.

PID Conveyance Alternative (Alternative 3) The majority of the pipeline could be constructed in PID ROW adjacent to their main canal and would not be expected to affect farmland. There are parcels of Prime Farmland located along Bartch and Ward Avenues, and there is a possibility that pipeline construction could temporarily affect portions of those agricultural lands immediately adjacent to those roadways. Potentially significant impacts to soil resources from

construction would be reduced to a less than significant level with implementation of **Mitigation Measure AG-1**.

Alternative 3 would include construction of new facilities at the PID intake, which is not designated as Prime Farmland, Unique Farmland or Farmland of Statewide Importance (PID 2006). Therefore no conversion of farmland to non-agricultural use would occur in this area.

Significance Determination before Mitigation Potentially significant for Alternatives 1, 2 and 3; significant and unavoidable for the No Action Alternative.

Mitigation Measures **Mitigation Measure AG-1: Stockpile Soil** (Alternatives 1, 2 and 3). Topsoil removed during project construction shall be stockpiled for later reuse. Soil shall be stored in a clear area of the construction site where it would not have the potential to affect agricultural or biological resources. Stockpiled soil shall be covered with a tarp at all times to prevent generation of fugitive dust. Following pipeline insertion, soil shall be backfilled into the trench and restored to an appropriate level of compaction.

Significance after Mitigation Less than significant for Alternatives 1, 2 and 3; significant and unavoidable for the No Action Alternative.

Impact AG-2 Conflict with Existing Zoning for Agricultural Use

No Action Alternative The No Action Alternative would be a continuation of existing conditions. No pipelines or pump station would be installed on land zoned for agriculture and there would be no potential for conflict with existing zoning for agricultural use.

Also, under the No Action Alternative no recycled water would be provided to farmland in DPWD's service area. As described in **Impact AG-1**, DPWD's current and predicted future water supplies are not sufficient to meet demands. As such, the No Action Alternative could potentially result in greater fallowing of lands in DPWD's service area and ultimately, conversion of agricultural land to non-agricultural use. Because the extent of conversion and future uses of any such land are unknown and speculative, it is unknown whether such land uses would be in conflict with zoning for agricultural use.

Combined Alignment Alternative (Alternative 1) As described in **Impact AG-1**, the majority of the length of the two pipeline reaches proposed in Alternative 1 would follow the public ROW, but some construction may occur within lands zoned for agriculture.

Repurposing of the existing Jennings Plant outfall pump station would be generally contained within the footprint of the existing facility, but the construction work area may extend onto adjacent land. The land adjacent to the existing Jennings Plant is zoned for agriculture by Stanislaus County but is within the jurisdiction of the City of Modesto. As described in Section 3.2.2, Regulatory Framework, this land is zoned for P-D by the City of Modesto and designated as PUA in the City's general plan. The PUA is intended to absorb suburban development, but the general plan encourages preservation of agricultural uses in these areas until urban development is imminent. This alternative would not conflict with the agricultural policies of this land use designation or zoning district. The outfall pump station, once repurposed, would be contained

within the footprint of the existing facility and any pipelines through P-D zoning district land would be underground and would not affect agriculture.

Where the public ROW is not wide enough to accommodate the construction work area, installation of pipeline along roads may extend onto adjacent land zoned for agriculture. Other than the existing Jennings Plant and adjacent parcels to the south, the entire project area is within the jurisdiction of Stanislaus County. All the land within and adjacent to the proposed pipeline alignments under this alternative is zoned for agriculture by Stanislaus County. Given that construction impacts would be temporary and agriculture would be anticipated to resume following construction, construction would not conflict with the purpose of Stanislaus County's General Agriculture District zoning designation, which is to "support and enhance agriculture as the predominant land use in the unincorporated areas of the county…and to ensure that all land uses are compatible with agriculture (Section 21.20.010)." Following construction, the project area would be suitable for agriculture and agriculture would remain the predominant land use in the project area.

While the General Agriculture District regulations do not specifically reference water pipelines or utilities in their list of permitted uses, the proposed recycled water pipelines would be considered "appurtenances generally supportive of farming," which are defined as allowable in the Agriculture District under Section 21.20.010 of the Stanislaus County zoning code. The proposed pipelines would be used to convey irrigation water to be used on farmland in DPWD's service area.

In regard to Williamson Act Contract lands, Section 21.20.045 of the Stanislaus County code states that "the erection, construction, alteration, or maintenance of gas, electric, water, [and/or] communication facilities" may be approved on Williamson Act Contract lands unless the planning commission and/or the board of supervisors makes a finding to the contrary. Installation of pipelines through Williamson Act Contract lands for the Proposed Action would be allowable under this section of the County code.

The proposed pipelines would need to be inspected and maintained on a periodic basis, but such activities would not be expected to conflict with agricultural operations. Operation of the pipelines and project facilities after construction, including inspection and maintenance, do not require a use permit under Section 21.20.030 of the Stanislaus County code because it would not be substantially detrimental to or in conflict with agricultural use of other property in the vicinity and would not prevent agricultural use of the land.

Serving water to the lands zoned for agriculture in DPWD's service area would support the zoning designations in those locations, which is considered a beneficial impact.

Because Alternative 1 would be consistent with and support agricultural zoning, impacts are considered beneficial.

Separate Alignment Alternative (Alternative 2) The potential impacts associated with the pipeline reach from Jennings Plant to the DMC and the existing Jennings Plant outfall pump station would be the same for Alternative 2 as for Alternative 1.

As described in **Impact AG-1**, Alternative 2 would also involve construction of a new pump station at the western end of the Harding Drain Bypass Pipeline, which would be sited to the west of S. Carpenter Road (on APN 058-023-028). The land to the west of S. Carpenter Road is not currently in agricultural production or designated as Important Farmland, but it is still zoned for agricultural use by Stanislaus County.

On its face, the pump station would seem to conflict with the purpose of Stanislaus County's General Agriculture District, as it would not allow for agriculture within its footprint. However, the pump station would support conveyance of recycled water to DPWD's service area for irrigation of agricultural lands, and could therefore be considered to be serving "to support and enhance agriculture as the predominant land use in unincorporated areas of the county (Stanislaus County Zoning Code, Section 21.20.010)." This use would be consistent with Stanislaus County's zoning code. Similar to the pipelines, the pump station could also be considered an "appurtenance generally supportive of farming," as described in Stanislaus County's zoning code, and therefore permitted in the Agriculture District.

Overall, given that the pump station would be located on land not currently in agricultural production and that the pump station would only preclude a small area (roughly the size of the footprint of the above ground pump station building [approximately 40 feet by 50 feet] and surrounding pavement and fencing) from agricultural use in the future, the impact would be less than significant.

Like Alternative 1, Alternative 2 would serve water to lands zoned for agricultural use in DPWD's service area and thereby support the zoning designations in those locations.

PID Conveyance Alternative (Alternative 3) There are agricultural lands located along both sides of Bartch and Ward Avenues, but as noted above construction of pipelines is supportive of farming and is allowable under the zoning code. Impacts of the pipeline would be similar to Alternatives 1 and 2. The site for the expanded intake and pump station is within PID ROW and would not conflict with agricultural zoning.

Like Alternatives 1 and 2, Alternative 3 would serve water to lands zoned for agricultural use within DPWD's service area and thereby support the zoning designations in those locations. Because Alternative 3 would be consistent with and support agricultural zoning, and would not remove land zoned for agricultural use from production, impacts are considered beneficial.

Significance Determination Beneficial for Alternatives 1 and 3; less than significant for Alternative 2; no impact for the No Action Alternative.

Mitigation Measures No mitigation is necessary.

Impact AG-3 Conflict with Williamson Act Contract

No Action Alternative Under the No Action Alternative, no pipelines or pump station would be installed on Williamson Act Contract lands and no potential conflicts with Williamson Act Contracts would occur. In addition, no recycled water would be delivered to customers in DPWD's service area for irrigation of farmland. As DPWD is predicted to experience shortfalls in irrigation water supply of 41,000 AFY, the No Action Alternative could potentially affect Williamson Act Contracts within the District. There may be increased incentive for landowners with Williamson Act Contracts to convert their land to other uses (e.g., real estate developments) and exit contracts if sufficient irrigation water is unavailable. DPWD would be expected to seek alternative sources of irrigation water supply as it has in the past, but such supply may not be available. Termination of Williamson Act Contracts on parcels within DPWD due to lack of water supply is considered a significant and unavoidable impact.

Combined Alignment Alternative (Alternative 1) Several parcels within or adjacent to the proposed pipeline alignment under Alternative 1 are under Williamson Act Contracts. The land between SR 33 and the intersection of Zacharias Road and Baldwin Road and between the San Joaquin River and Lemon Avenue (through which pipeline would be installed) is under a Williamson Act Contract. The land directly adjacent to the existing Jennings Plant outfall pump station is not under a Williamson Act Contract.

As described in **Impact AG-1**, the majority of the pipeline alignment under Alternative 1 would follow existing roads. Installation of pipe along roads would be largely confined to the roadway and road shoulder, but work areas may extend onto adjacent agricultural land. This construction or staging activity may preclude agriculture and require the removal of crops on some portion of adjacent agricultural land under Williamson Act Contract, but these impacts would be temporary (lasting for the 1.5-year construction period) and would not affect the status of Williamson Act Contracts.

Installation of pipe through agricultural fields would entail clearing and use of a 45-foot-wide construction corridor, and operation of heavy machinery. Crops may have to be removed in this construction corridor and agriculture would be precluded for some portion of the construction period (1.5 years). These construction impacts would be temporary and would not affect the status of the Williamson Act Contract(s). Pipe would be installed 8 to 10 feet below-ground and topsoil would be conserved (see **Mitigation Measure AG-1**) and backfilled over installed pipe such that farming could resume following project construction. As a result, Alternative 1 would not conflict with any Williamson Act Contracts and there would be no impact.

Separate Alignment Alternative (Alternative 2) The Williamson Act Contract lands and potential impacts associated with the reach from Modesto's Water Quality Control Facility to the DMC would be the same for Alternative 2 as those described for Alternative 1.

As for the reach from the Harding Drain Bypass Pipeline to the DMC, **Figure 3.2-2** shows many parcels under Williamson Act Contracts within or adjacent to the proposed pipeline alignment. Parcels adjacent to Pomegranate Avenue between the San Joaquin River and Locust Avenue, and the private road between Locust Avenue and SR 33, are under Williamson Act Contracts. All of the land between SR 33 and the DMC is also under Williamson Act Contract (see **Figure 3.2-2**).

Potential conflicts with Williamson Act Contracts on these lands due to pipeline installation would be the same as described for Alternative 1. As mentioned above in the discussion for Alternative 1, the land adjacent to the existing Jennings Plant outfall pump station is not under a Williamson Act Contract so there would be no potential for conflict from repurposing of the existing Jennings Plant outfall pump station.

Alternative 2 would not conflict with any Williamson Act Contracts and there would be no impact.

PID Conveyance Alternative (Alternative 3) There are parcels of Williamson Act Contract lands located along Bartch and Ward Avenues, but as noted above, construction of pipelines is allowable on Williamson Act lands and would not conflict with the Williamson Act Contract(s). The site for the expanded intake and pump station is within PID ROW and would not conflict with a Williamson Act Contract. Alternative 3 would not conflict with any Williamson Act Contracts and there would be no impact.

Significance Determination No impact for Alternatives 1, 2, and 3; significant and unavoidable for the No Action Alternative.

Mitigation Measures No mitigation is necessary for Alternatives 1, 2 and 3. No mitigation is possible for the No Action Alternative.

Impact AG-4 Provide Drought-Resistant Source of Water to Agriculture

No Action Alternative Under this alternative, no recycled water would be provided to DPWD for irrigation of farmland in its service area. In 2014, 10,997 acres of agricultural land were fallowed due to lack of availability of surface water and insufficient quantities of groundwater. Without the Proposed Action, additional farmland may be fallowed, converting this farmland to non-agricultural uses. To the extent that farmland which would otherwise remain in agricultural production under the Proposed Action would be fallowed under this alternative, this impact is considered significant. DPWD would be expected to seek alternative sources of irrigation water supply as it has in the past, but such supply may not be available or reliable, and in these circumstances, additional fallowing of farmland would be unavoidable. Given this situation, impacts of the No Action Alternative are considered significant and unavoidable.

Combined and Separate Alignment Alternatives, PID Conveyance Alternative Under Alternatives 1, 2 and 3, the Proposed Action would establish a reliable, long-term water supply of up to 59,000 AFY of recycled water for DPWD. Alternatives 1 and 2 would also maximize the Partner Agencies' control over operations and delivery of water and establish a long-term ability to beneficially use recycled water. Agricultural water delivered to DPWD would be at a cost that supports regional economic sustainability.

The Proposed Action would address the shortage in water supply within DPWD's service area and would also offset potential related adverse effects from increased groundwater pumping (e.g., overdraft, subsidence, groundwater quality issues) that have occurred and would likely continue to occur with the absence of an alternative water supply.

The Proposed Action would provide a reliable source of water that would generally be available regardless of Delta pumping restrictions or drought conditions to help meet DPWD's water demands. The Proposed Action would provide recycled water produced at the Turlock RWQCF and Modesto Jennings Plant to farmland in DPWD's service area. Volumes of municipal wastewater generation are generally not greatly affected by climate, and as such the Proposed Action's water supply would be drought-resistant and would generally be available in all years.

Significance Determination Beneficial for Alternatives 1, 2 and 3; significant and unavoidable for the No Action Alternative.

Cumulative Impacts

The geographic scope of cumulative impacts on agricultural resources encompasses the study area. Several relevant present and future projects are under construction or in the planning phase that are in proximity to the Proposed Action facilities and the study area, including:

- Jennings Road Treatment Plant Phase 2 Improvements (City of Modesto); increase tertiary treatment capacity by 12.6 mgd.
- South County Corridor Study (Stanislaus County Council of Governments); study potential alignments and corridor options for an expressway from the City of Turlock on the west to I-5 on the east (Stanislaus County Public Works 2011).
- West Main Street Highway Improvement Project (Stanislaus County); widening of West Main Avenue to 3 lanes from the San Joaquin River to Crows Landing Road (Stanislaus County Public Works 2011).

Of these three projects, the South County Corridor Study and West Main Street Highway Improvement Project would have the potential to adversely affect agricultural resources. If the alignment of the new expressway from the City of Turlock to I-5 ultimately selected for construction through the South County Corridor Study were to pass through existing agricultural land, it could result in conversion of farmland to non-agricultural use. Widening of West Main Street could also result in conversion of farmland to non-agricultural use because the land adjacent to West Main Street between the San Joaquin River and the intersection of West Main Street and Crows Landing Road is predominantly Prime Farmland (CDOC 2012a).

A number of Reclamation projects are also underway or planned for the DMC, but none of these projects would be expected to adversely affect agricultural resources.

Ongoing conversion of farmland to non-agricultural uses is a regional problem in the study area and is considered a cumulatively significant impact. As described in the impact discussions above, the proposed project generally supports agriculture and would prevent farmland conversion. In addition, by providing a reliable source of water, the Proposed Action would reduce the potential for future conversions of farmland to non-agricultural use as a result of insufficient water supplies. The Proposed Action's contribution to this cumulative impact is therefore considered beneficial.

3.2.4 References

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3.3 Air Quality

This section evaluates the potential adverse impacts related to air quality that could result from implementation of the proposed NVRRWP Action alternatives compared to the No Action Alternative. The analysis is based on a review of current air quality conditions, inventory of the proposed project air emissions based on equipment expected to be used for the project, and information from state and local agencies.

3.3.1 Environmental Setting/Affected Environment

This section describes the environmental setting for air quality within the study area, which includes the project site and the San Joaquin Valley Air Basin (SJVAB) where the project is located.

Study Area

The study area consists of the locations where physical actions associated with the proposed project would take place. This is primarily the area near the terminus of the Turlock Harding Drain Bypass Pipeline, the City of Modesto's Jennings Plant, the PID intake facility, and the land immediately surrounding the proposed pipeline alignments that would connect to the DMC. The recycled water would be delivered to farms within the DPWD service area in Stanislaus, San Joaquin, and Merced Counties as well as certain SOD CVPIA designated refuges. The entire study area is within the SJVAB, which is under jurisdiction of the SJVAPCD.

San Joaquin Valley Air Basin

The California Air Resources Board (CARB) has divided California into regional air basins according to topographic air drainage features. The SJVAB, which is approximately 250 miles long and averages 35 miles wide, is the second largest air basin in the state. The SJVAB is defined by the Sierra Nevada Mountains in the east (8,000 to 14,000 feet in elevation), the Coast Range in the west (averaging 3,000 feet in elevation), and the Tehachapi Mountains in the south (6,000 to 8,000 feet in elevation). The valley is essentially flat with a slight downward gradient to the north-northwest. The valley terminates where the Delta empties into San Francisco Bay. The San Joaquin Valley (SJV), thus, could be considered a "bowl" open only to the north. Although marine air generally flows into the basin from the Delta, the region's topographic features restrict air movement through and out of the basin. The Coast Range hinders wind access into the SJV from the west, the Tehachapi Mountains prevent southerly passage of airflow, and the high Sierra Nevada Mountains are a significant barrier to the east. These topographic features result in weak airflow, which becomes blocked vertically by high barometric pressure over the SJVAB. As a result, the SJVAB is highly susceptible to pollutant accumulation over time. Local climatological effects, including wind speed and direction, temperature, inversion layers, and precipitation and fog, can exacerbate air quality problems in the SJVAB.

Climate and Meteorology

The SJVAB is in a Mediterranean Climate Zone. Mediterranean Climates Zones occur in areas located on the west coast of continents at 30 to 40 degrees latitude and are influenced by a subtropical high-pressure cell most of the year. Mediterranean Climates are characterized by

sparse rainfall, which occurs mainly in winter. Summers are hot and dry. Summertime maximum temperatures often exceed 100 degrees Fahrenheit (ºF) in the SJV.

The subtropical high-pressure cell is strongest during spring, summer, and fall and produces subsiding air, which can result in temperature inversions in the valley. A temperature inversion can act like a lid, inhibiting vertical mixing of the air mass at the surface. Any emissions of pollutants can be trapped below the inversion. Most of the surrounding mountains are above the normal height of summer inversions (1,500-3,000 feet).

Winter-time high pressure events can often last many weeks with surface temperatures often lowering into the thirties (ºF). During these events, fog can be present and inversions are extremely strong. Wintertime inversions can inhibit vertical mixing of pollutants to a few hundred feet.

Wind Speed and Direction Wind speed and direction play an important role in dispersion and transport of air pollutants. Wind at the surface and aloft can disperse pollution by mixing vertically and by transporting it to other locations. Ozone (O_3) is classified as a "regional" pollutant in part because of the time required for O_3 formation. O_3 precursors can be transported well away from the source area before O_3 concentrations peak. Inhalable particulate matter (PM_{10} and $PM_{2.5}$) is also considered a regional pollutant in part because of its tendency to remain suspended in the air over long periods of time. Some other primary pollutants, carbon monoxide (CO) for example, are classified as "localized" pollutants in part because they tend to dissipate easily over long distances, but may form high concentrations close to the source when wind speed is low.

During the summer, wind speed and direction data indicate that wind usually originates at the north end of the SJV and flows in a south-southeasterly direction through the valley, through Tehachapi pass, into the Southeast Desert Air Basin. During the winter, wind speed and direction data indicate that wind occasionally originates from the south end of the SJV and flows in a north-northwesterly direction. Also during the winter months, the SJV experiences light, variable winds, less than 10 miles per hour (mph). Low wind speeds, combined with low inversion layers in the winter, create a climate conducive to high CO and PM_{10} concentrations.

Superimposed on this seasonal regime is the diurnal wind cycle. In the SJV, this cycle takes the form of a combination of sea breeze-land breeze and mountain-valley regimes. The sea breeze-land breeze regime has a sea breeze flowing into the SJV from the north during the day and a land breeze flowing out of the SJV at night. The mountain-valley regime has an upslope (mountain) flow during the day and a downslope (valley) flow at night. These phenomena add to the complexity of regional wind flow and pollutant transport within the SJVAB.

Temperature Temperature and solar radiation are particularly important in the chemistry of O_3 formation. O_3 is formed in a photochemical reaction requiring sunlight. Generally, the higher the temperature, the more O_3 formed, since reaction rates increase with temperature. However, extremely hot temperatures can "lift" or "break" the inversion layer. Typically, if the inversion layer does not lift to allow the build-up of contaminants to be dispersed into the Southeast Desert, O_3 levels peak in the late afternoon, sometimes as late as 3 to 7 P.M. If the inversion

layer breaks and the resultant afternoon winds occur, the O_3 will peak in the early afternoon and decrease in the late afternoon as the contaminants are transported to the Southeast Desert. Temperature is not as important to formation of high CO or PM_{10} levels except for the influence of temperature on the inversion layer.

The SJVAB has an "inland Mediterranean" climate, averaging over 260 sunny days per year. The valley floor is characterized by warm, dry summers and cooler winters. Summer high temperatures often exceed 100 ºF, averaging in the low 90s in the northern valley and high 90s in the south. In the entire SJV, high daily temperature readings in summer average 95 ºF. Over the last 30 years, the SJV averaged 106 days a year 90 ºF or hotter, and 40 days a year 100 ºF or hotter. The daily summer temperature variation can be as high as 30 ºF. In winter, as the cyclonic storm track moves southward, the storm systems moving in from the Pacific Ocean bring a maritime influence to the SJV. The high mountains to the east prevent the cold, continental air masses of the interior from influencing the valley. Thus, winters are mild and humid. Temperatures below freezing are unusual. Average high temperatures in the winter are in the 50s, but highs in the 30s and 40s can occur on days with persistent fog and low cloudiness. The average daily low temperature is 45 ºF.

Temperature Inversion The vertical dispersion of air pollutants in the SJV is limited by the presence of persistent temperature inversions. Because of expansional cooling of the atmosphere, air temperature usually decreases with altitude. A reversal of this atmospheric state, where the air temperature increases with height, is termed an inversion. Inversions can exist at the surface or at any height above the ground. The height of the base of the inversion is known as the "mixing height". This is the level to which pollutants can mix vertically. Semi-permanent systems of high barometric pressure fronts frequently establish themselves over the SJVAB, deflecting low-pressure systems that might otherwise bring cleansing rain and winds.

Air above and below the inversion base does not mix because of differences in air density. Warm air above the inversion is less dense than air below the base. The inversion base represents an abrupt density change where little exchange of air occurs. Inversion layers are an important factor for determining O_3 formation and CO and PM_{10} concentrations. O_3 and its precursors will mix and react to produce higher concentrations under an inversion, and inversions trap and hold directly emitted pollutants like CO. Two principal types of inversions occur in the SJV: a surface or radiation inversion, and a subsidence inversion.

Surface inversions are formed when the ground surface becomes cooler than the air above it during the night. The earth's surface goes through a radiative process on clear nights, where heat energy is transferred from the ground to a cooler night sky. As the earth's surface cools during the evening hours, the air directly above it also cools, while air higher up remains relatively warm. The inversion is destroyed when heat from the sun warms the ground, which in turn heats the lower layers of air and stimulates the ground-level air to float up through the inversion layer. Daytime temperature inversions during the summer are usually encountered 2,000 to 2,500 feet above the valley floor. Inversions are more persistent (stable) during the winter months. The daily cycle has overnight inversions occurring 500 to 1,000 feet above the valley floor. Studies in the southern part of the Valley indicate more frequent and persistent daytime radiation inversions than in the north due to the lack of marine air intrusion.

Subsidence inversions occur as air is pushed downward by some mechanism, such as the movement of air over mountain ranges, or by differential pressure changes in the atmosphere. As this air moves downward, its pressure increases, causing its temperature to increase. The warm layer of air created by this phenomenon will descend to some relatively static elevation above the ground, creating a low inversion layer. This type of inversion is quite persistent, since heat from the ground does not reach the inversion base to break it up. This is common in high-pressure areas along the coast.

Precipitation and Fog Precipitation and fog tend to reduce or limit some pollutant concentrations. O_3 needs sunlight for its formation, and clouds and fog block the required radiation. CO is slightly water-soluble, so precipitation and fog tends to reduce CO concentrations in the atmosphere. PM_{10} is also somewhat "washed" from the atmosphere with precipitation.

Precipitation in the SJV is strongly influenced by the position of the semi-permanent subtropical high-pressure belt located off the Pacific coast (Pacific High). In the winter, this high-pressure system moves southward, allowing Pacific storms to move through the SJV. These storms bring in moist, maritime air that produces considerable precipitation on the western, upslope side of the Coast Range. Significant precipitation also occurs on the western side of the Sierra Nevada Mountains. On the valley floor, however, there is some downslope flow from the Coast Range and the resultant evaporation of moisture from associated warming results in a minimum of precipitation. Nevertheless, the majority of the precipitation falling in the SJVAB is produced by storms during the winter. Precipitation during the summer months is in the form of convective rain showers and is rare. It is usually associated with an influx of moisture into the SJVAB through the San Francisco area during an anomalous flow pattern in the lower layers of the atmosphere. Although the hourly rates of precipitation from these storms may be high, their rarity keeps monthly totals low.

Precipitation on the SJVAB floor and in the Sierra Nevada decreases from north to south. Stockton in the north receives about 20 inches of precipitation per year, Fresno in the center, receives about 10 inches per year, and Bakersfield at the southern end of the valley receives less than 6 inches per year. This is primarily because the Pacific storm track often passes through the northern part of the state while the southern part of the state remains protected by the Pacific High. Precipitation in the SJVAB is confined primarily to the winter months with some also occurring in late summer and fall. Average annual rainfall for the entire SJV is 9.25 inches on the SJV floor.

Snowstorms, hailstorms, and icestorms occur infrequently in the SJVAB and severe occurrences of any of these are very rare. The winds and unstable air conditions experienced during the passage of storms result in periods of low pollutant concentrations and excellent visibility. Between winter storms, high pressure and light winds allow cold moist air to pool on the SJVAB floor. This creates strong low-level temperature inversions and very stable air conditions. This situation leads to the SJVAB's famous tule fogs. The formation of natural fog is caused by local cooling of the atmosphere until it is saturated (dew point temperature). This type of fog, known as radiation fog, is more likely to occur inland. Cooling may also be accomplished by heat

radiation losses or by horizontal movement of a mass of air over a colder surface. This second type of fog, known as advection fog, generally occurs along the coast.

Conditions favorable to fog formation are also conditions favorable to high concentrations of CO and PM_{10}. O_3 levels are low during these periods because of the lack of sunlight to drive the photochemical reaction. Maximum CO concentrations tend to occur on clear, cold nights when a strong surface inversion is present and large numbers of fireplaces are in use. A secondary peak in CO concentrations occurs during morning commute hours when a large number of motorists are on the road and the surface inversion has not yet broken.

The water droplets in fog, however, can act as a sink for CO and nitrogen oxides (NO_x), lowering pollutant concentrations. At the same time, fog may help in the formation of secondary particulates such as ammonium sulfate. These secondary particulates are believed to be a significant contributor of winter season violations of the PM_{10} and $PM_{2.5}$ standards.

Air Pollutants

Carbon Monoxide CO is an odorless, colorless gas that is highly toxic. CO is formed by the incomplete combustion of fuels and is emitted directly into the air. Ambient CO concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. CO concentrations are also influenced by wind speed and atmospheric mixing. Under inversion conditions, carbon monoxide concentrations may be distributed more uniformly over an area to some distance from vehicular sources. CO binds with hemoglobin, the oxygen-carrying protein in blood, and reduces the blood's capacity for carrying oxygen to the heart, brain, and other parts of the body. At high concentrations, CO can cause heart difficulties in people with chronic diseases, can impair mental abilities, and can cause death.

Ozone O_3 is a reactive gas consisting of three oxygen atoms. In the troposphere (the lowest region of the atmosphere), it is a product of the photochemical process involving the sun's energy. It is a secondary pollutant that is formed when NO_x and volatile organic compounds (VOC) react in the presence of sunlight. O_3 at the earth's surface causes numerous adverse health effects and is a criteria pollutant. It is a major component of smog. In the stratosphere, O_3 exists naturally and shields the Earth from harmful incoming ultraviolet radiation. High concentrations of ground level O_3 can adversely affect the human respiratory system and aggravate cardiovascular disease and many respiratory ailments. O_3 also damages natural ecosystems such as forests and foothill communities, agricultural crops, and some man-made materials such as rubber, paint, and plastics.

Oxides of Nitrogen NO_x are a family of gaseous nitrogen compounds and are precursors to the formation of O_3 and particulate matter (PM). The major component of NO_x, nitrogen dioxide (NO_2) is a reddish-brown gas that is toxic at high concentrations. NO_x results primarily from the combustion of fossil fuels under high temperature and pressure. On-road and off-road motor vehicles and fuel combustion are the major sources of this air pollutant.

Volatile Organic Compounds VOCs are hydrocarbon compounds that exist in the ambient air. VOCs contribute to the formation of smog and/or may themselves be toxic. VOC emissions are a major precursor to the formation of O_3.

Particulate Matter PM is a complex mixture of extremely small particles and liquid droplets. PM is made up of a number of components including acids, organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to the potential for causing health problems. PM particles that are smaller than 10 micrometers in diameter are of most concern because these particles pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. These inhalable coarse particles, called PM_{10}, are typically found near roadways and dusty industries. PM_{10} particles are deposited in the thoracic region of the lungs. Fine particles, called $PM_{2.5}$, are particles less than 2.5 micrometers in diameter and are found in smoke and haze. $PM_{2.5}$ particles penetrate deeply into the thoracic and alveolar regions of the lungs.

Sulfur Dioxide Sulfur dioxide (SO_2) is a colorless, irritating gas with a “rotten egg” smell formed primarily by the combustion of sulfur-containing fossil fuels. Suspended SO_2 particles contribute to the poor visibility that occurs in the SJVAB and are a component of PM_{10}.

Lead Lead is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. The health effects of lead poisoning include loss of appetite, weakness, apathy, and miscarriage. Lead poisoning can also cause lesions of the neuromuscular system, circulatory system, brain and gastrointestinal tract.

Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels. The use of leaded fuel has been mostly phased out, with the result that ambient concentrations of lead have dropped dramatically. Lead concentrations were last systematically measured in the SJVAB in 1989, when the average concentrations were approximately five percent of the State lead standard. Though monitoring was discontinued in 1990, lead levels are probably well below applicable standards, and the SJVAB is designated as attainment for lead.

Hydrogen Sulfide Hydrogen sulfide (H_2S) is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. H_2S is extremely hazardous in high concentrations and can cause death.

Sulfates Sulfates are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

CARB’s sulfate standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function (moving

gas in and out of the lungs), aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, due to the fact that they are usually acidic, can harm ecosystems and damage materials and property. Data collected in the SJVAB demonstrate levels of sulfates significantly less than the health standards.

Vinyl Chloride Vinyl chloride is a colorless gas that does not occur naturally. It is formed when other substances such as trichloroethane, trichloroethylene, and tetrachloroethylene are broken down. Vinyl chloride is used to make polyvinyl chloride which is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials.

Toxic Air Contaminants Toxic Air Contaminants (TACs) are air pollutants that may lead to serious illness or increased mortality, even when present in relatively low concentrations. Hundreds of different types of TACs exist, with varying degrees of toxicity. Many TACs are confirmed or suspected carcinogens, or are known or suspected to cause birth defects or neurological damage. For some chemicals, such as carcinogens, no thresholds exist below which exposure can be considered risk-free. Examples of TAC sources in the proposed project include fossil fuel combustion.

Sources of TACs include stationary sources, area-wide sources, and mobile sources. The EPA maintains a list of 187 TACs, also known as hazardous air pollutants. These hazardous air pollutants are included on CARBs list of TACs (CARB 2013c). According to the California Almanac of Emissions and Air Quality (CARB 2013b), many researchers consider diesel PM (DPM) to be a primary contributor to health risk from TACs because particles in the exhaust carry many harmful organics and metals, rather than being a single substance as are other TACs. Unlike many TACs, outdoor DPM is not monitored by CARB because no routine measurement method exists. However, using the CARB emission inventory's PM_{10} database, ambient PM_{10} monitoring data, and results from several studies, CARB has made preliminary estimates of DPM concentrations throughout the state (OEHHA 2001).

Air Quality Attainment and Local Conditions

The CARB and the EPA have established Ambient Air Quality Standards in an effort to protect human health and welfare. Geographic areas are deemed to be in "attainment" if these standards are met or "nonattainment" if they are not met. Nonattainment status is classified by the severity of the nonattainment problem, with marginal, moderate, serious, severe, and extreme nonattainment classifications for O_3. Nonattainment classifications for PM range from marginal to serious. **Table 3.3-1** shows the attainment status for the SJVAB.

Table 3.3-1: San Joaquin Valley Attainment Status

Pollutant	Designation / Classification	
	Federal Standards	State Standards
O_3-1 hour	No Federal Standard[1]	Nonattainment/Severe
O_3-8 hour	Nonattainment/Extreme	Nonattainment
PM_{10}	Attainment	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment/Unclassified	Attainment/Unclassified
NO_2	Attainment/Unclassified	Attainment
SO_2	Attainment/Unclassified	Attainment
Lead	No Designation/Classification	Attainment
H_2S	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

Notes: 1. Effective June 15, 2005, the EPA revoked the federal 1-hour O_3 standard, including associated designations and classifications. EPA had previously classified the SJVAB as extreme nonattainment for this standard. EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour O_3 nonattainment areas continue to apply to the SJVAB.
Source: SJVAPCD 2014a

Air Monitoring Data The SJVAPCD, CARB, and EPA operate an extensive air monitoring network to measure progress toward attainment of the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS). The closest air monitoring stations located near the project area are the Modesto 14th Street and Turlock South Minaret Street monitoring stations. **Table 3.3-2** shows the most recent three years of data that is available.

Table 3.3-2: Air Monitoring Data for 2011-2013

Site	Pollutant Standard	2013		2012		2011	
		# Exceed	Maximum Concentration	# Exceed	Maximum Concentration	# Exceed	Maximum Concentration
Modesto 14th Street	O_3, State 1-hour	0	0.088 ppm	2	0.104 ppm	0	0.091 ppm
Turlock South Minaret Street	O_3, State 1-hour	1	0.095 ppm	17	0.115 ppm	4	0.111 ppm
Modesto 14th Street	O_3, State 8-hour	13	0.082 ppm	12	0.091 ppm	7	0.078 ppm
Turlock South Minaret Street	O_3, State 8-hour	24	0.085 ppm	56	0.107 ppm	34	0.094 ppm
Modesto 14th Street	O_3, National 8 – hour	2	0.082 ppm	6	0.091 ppm	3	0.078 ppm
Turlock South Minaret Street	O_3, National 8-hour	14	0.084 ppm	35	0.106 ppm	17	0.093 ppm

Site	Pollutant Standard	2013		2012		2011	
		# Exceed	Maximum Concentration	# Exceed	Maximum Concentration	# Exceed	Maximum Concentration
Modesto 14th Street	$PM_{2.5}$, National 24-hour	37.6	83.2 µg/m^3	13	62.3 µg/m^3	25	71.7 µg/m^3
Turlock South Minaret Street	$PM_{2.5}$, National 24-hour	40.3	74.9 µg/m^3	25	58.4 µg/m^3	36.3	77.9 µg/m^3
Modesto 14th Street	$PM_{2.5}$, State Annual		14.3 µg/m^3		11.9 µg/m^3		14.6 µg/m^3
Turlock South Minaret Street	$PM_{2.5}$, State Annual		15.1 µg/m^3		14.8 µg/m^3		17.1 µg/m^3
Modesto 14th Street	$PM_{2.5}$, National Annual		14.3 µg/m^3		11.9 µg/m^3		14.6 µg/m^3
Turlock South Minaret Street	$PM_{2.5}$, National Annual		15.1 µg/m^3		14.8 µg/m^3		17.1 µg/m^3
Modesto 14th Street	PM_{10}, State 24-hour	57.7	77.5 µg/m^3	30.9	74.6 µg/m^3	ND	73.5 µg/m^3
Turlock South Minaret Street	PM_{10}, State 24-hour	73.7	82.9 µg/m^3	54.8	103.8 µg/m^3	ND	73.3 µg/m^3
Modesto 14th Street	PM_{10}, National 24-hour	0	73 µg/m^3	0	74.1 µg/m^3	0	6934 µg/m^3
Turlock South Minaret Street	PM_{10}, National 24-hour	0	79.2 µg/m^3	0	102.8 µg/m^3	0	69 µg/m^3
Modesto 14th Street	PM_{10}, State Annual		30.9 µg/m^3		25.6 µg/m^3		ND µg/m^3
Turlock South Minaret Street	PM_{10}, State Annual		35.9 µg/m^3		31 µg/m^3		ND µg/m^3
Modesto 14th Street	CO, State 1-hour	0	2.8 ppm	0	2.6 ppm	0	2.9 ppm
Turlock South Minaret Street	CO, State 1-hour	0	1.9 ppm	0	2.1 ppm	0	2 ppm
Modesto 14th Street	CO, State 8-hour	0	ND ppm	0	2.1 ppm	0	2.71 ppm
Turlock South Minaret Street	CO, State 8-hour	0	ND ppm	0	1.29 ppm	0	1.44 ppm
Modesto 14th Street	CO, National 8-hour	0	ND ppm	0	2.1 ppm	0	2.71 ppm
Turlock South	CO, National 8-hour	0	ND ppm	0	1.29 ppm	0	1.44 ppm

Site	Pollutant Standard	2013		2012		2011	
		# Exceed	Maximum Concentration	# Exceed	Maximum Concentration	# Exceed	Maximum Concentration
Minaret Street							
Turlock South Minaret Street	NO_2, State 1-hour	0	54 ppb	0	61 ppb	0	54 ppb
Turlock South Minaret Street	NO_2, National 1-hour	0	54 ppb	0	61 ppb	0	54 ppb

Source: CARB 2014 iADAM and CARB 2014 AQMIS2
Notes: ppm = parts per million; ppb = parts per billion; µg/m3 = micrograms per cubic meter

3.3.2 Regulatory Framework

This section describes laws and regulations at the federal, state, and local level that may apply to the project.

Federal Policies and Regulations

The EPA is responsible for establishing the NAAQS, enforcing the Federal Clean Air Act (CAA), and regulating transportation-related emission sources, such as aircraft, ships, and certain types of locomotives, under the exclusive authority of the federal government. The EPA also establishes vehicular emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet stricter emission standards established by CARB.

Clean Air Act The CAA governs air quality in the United States and is administered by the EPA. The EPA is responsible for setting and enforcing the NAAQS for atmospheric pollutants, which are presented in **Table 3.3-3**. It regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives. The EPA also has jurisdiction over emission sources outside state waters (outer continental shelf), and establishes various emissions standards for vehicles sold in states other than California. As part of its enforcement responsibilities, the EPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the SIP.

Table 3.3-3: State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
O_3	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
O_3	8 Hour	0.070 ppm (137 µg/m^3)	Ultraviolet Photometry	0.075 ppm (147 µg/m^3)	Same as Primary Standard	Ultraviolet Photometry
PM_{10}	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
PM_{10}	Annual Arithmetic Mean	20 µg/m^3	Gravimetric or Beta Attenuation	—	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
$PM_{2.5}$[13]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
$PM_{2.5}$[13]	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12 µg/m^3	15 µg/m^3	Inertial Separation and Gravimetric Analysis
CO	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
CO	8 Hour	9.0 ppm (10 mg/m^3)	NDIR	9 ppm (10 mg/m^3)	—	NDIR
CO	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	NDIR	—	—	NDIR
NO_2[8]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemilum-inescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
NO_2[8]	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	Gas Phase Chemilum-inescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
SO_2	1-hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
SO_2	3-hour	—	Ultraviolet Fluorescence	—	0.5 ppm (1300 µg/m^3)	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
SO_2	24-hour	0.04 ppm (105 µg/m^3)	Ultraviolet Fluorescence	0.14 ppm (for certain areas)[9]	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
SO_2	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (for certain areas)[9]	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Lead[10,11]	30-day average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
Lead[10,11]	Calendar quarter	—	Atomic Absorption	1.5 µg/m^3 (for certain areas)[11]	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Lead[10,11]	Rolling 3-month average	—	Atomic Absorption	0.15 µg/m^3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Visibility Reducing Particles[12]	8-hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	No National Standards	No National Standards	No National Standards
Sulfates	24-hour	25 µg/m^3	Ion Chromato-graphy	No National Standards	No National Standards	No National Standards
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence	No National Standards	No National Standards	No National Standards
Vinyl Chloride[10]	24-hour	0.01 ppm (26 µg/m^3)	Gas Chromato-graphy	No National Standards	No National Standards	No National Standards

Notes: ppm = parts per million; ppb = parts per billion; µg/m3 = micrograms per cubic meter

1. California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200, Title 17 of the California Code of Regulations.

2. National standards (other than O_3, particulate matter, and those based on 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 measured at each site 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/m3 is equal to or less than 1. 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. Contact EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25 degrees Celsius (°C) (77 ºF) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of CARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by EPA.

8. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in ppb. California standards are in ppm. To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

9. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

10. CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

11. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

12. In 1989, CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

13. In On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15.0 µg/m3 to 12.0 µg/m3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m3, as was the annual secondary standard of 15 µg/m3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

Source: CARB 2013a

Clean Air Act and Conformity Rule Pursuant to CAA Section 176(c) requirements, EPA promulgated Title 40 Code of Federal Regulations Part 51 (40 CFR Part 51), Subpart W and 40 CFR Part 93, Subpart B, “Determining Conformity of General Federal Actions to State or Federal Implementation Plans” (see 58 Federal Register 63214, [November 30, 1993], as amended; 75 Federal Register. 17253 [April 5, 2010]). These regulations, commonly referred to as the General Conformity Rule, apply to all federal actions, except for those federal actions which are excluded from review (e.g., stationary source emissions) or related to transportation plans, programs, and projects under Title 23 U.S. Code or the Federal Transit Act, which are subject to Transportation Conformity.

In states such as California that have an approved SIP revision adopting General Conformity regulations, 40 CFR Part 51, Subpart W, applies; in states that do not have an approved SIP revision adopting General Conformity regulations, 40 CFR Part 93, Subpart B, applies.

The General Conformity Rule is used to determine if federal actions meet the requirements of the CAA and the applicable SIP by ensuring that air emissions related to the action do not:

- Cause or contribute to new violations of NAAQS.
- Increase the frequency or severity of any existing violation of NAAQS.
- Delay timely attainment of NAAQS or interim emission reduction.

A conformity determination under the General Conformity Rule is required if the federal agency determines the following: the action will occur in a nonattainment or maintenance area; that one or more specific exemptions do not apply to the action; the action is not included in the federal

agency's "presumed to conform" list; the emissions from the proposed action are not within the approved emissions budget for an applicable facility; and the total direct and indirect emissions of a pollutant (or its precursors) are at or above the *de minimis* levels established in the General Conformity regulations (75 Federal Register 17255). The *de minimis* levels are shown in **Table 3.3-4**.

Conformity regulatory criteria are listed in 40 CFR Part 93.158. An action will be determined to conform to the applicable SIP if, for each pollutant that exceeds the *de minimis* emissions level in 40 CFR Part 93.153(b), or otherwise requires a conformity determination due to the total of direct and indirect emissions from the action, the action meets the requirements of 40 CFR Part 93.158(c). If on-site emissions reductions do not decrease emissions below the *de minimis* emissions level, then emissions must be off-set to zero for O_3 precursors through a combination of on-site and off-site mitigation.

In addition, federal activities may not cause or contribute to new violations of air quality standards, exacerbate existing violations, or interfere with timely attainment or required interim emissions reductions toward attainment. The NVRRWP is subject to review under the EPA General Conformity Rule. Since the area is classified as extreme nonattainment for O_3, the applicable *de minimis* level is 10 tons per year of NO_x or VOC. For CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ the applicable level is 100 tons per year. The level for lead is 25 tons per year.

Table 3.3-4: General Conformity *De Minimis* Levels

Pollutant	Area Type	Tons/Year
O_3 (VOC or NO_x)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	**10**
	Other areas outside an ozone transport region	100
O_3 (NO_x)	Marginal and moderate nonattainment inside an O_3transport region	100
	Maintenance	100
O_3 (VOC)	Marginal and moderate nonattainment inside an O_3 transport region	50
	Maintenance within an O_3 transport region	50
	Maintenance outside an O_3 transport region	100
CO, SO_2 and NO_2	**All nonattainment & maintenance**	**100**
PM_{10}	Serious nonattainment	70
	Moderate nonattainment and maintenance	**100**
$PM_{2.5}$ Direct emissions, SO_2, NO_x (unless determined not to be a significant precursor), VOC or ammonia (if determined to be significant precursors)	**All nonattainment & maintenance**	**100**
Lead	**All nonattainment & maintenance**	**25**

Source: EPA 2014.

Corporate Average Fuel Economy Standards The Corporate Average Fuel Economy (CAFE) standards were first enacted by Congress in 1975, requiring vehicle manufacturers to comply with the gas mileage or fuel economy standards. These standards are set and regulated by the National Highway Traffic Safety Administration (NHTSA), with testing and data support from the EPA.

The issued rules include fuel economy standards for both light- and heavy-duty vehicles. On September 15, 2011, EPA and NHTSA issued a final rule on greenhouse gas (GHG) emissions standards and fuel efficiency standards for medium- and heavy-duty engines and vehicles model years 2014 to 2018 (76 Federal Register 57106). On August 28, 2012, EPA and NHTSA issued a joint final rulemaking to establish 2017 through 2025 GHG emissions and CAFE standards for light-duty vehicles (77 Federal Register 62624). More fuel efficient vehicles result in lower air pollutant emissions.

Nonroad Emission Regulations EPA has adopted emissions standards for different types of nonroad engines, equipment, and vehicles. For nonroad diesel engines, EPA has adopted multiple tiers of emission standards.

EPA signed a final rule on May 11, 2004 introducing the Tier 4 emission standards, to be phased in between 2008 and 2015 (69 CFR 38957–39273, June 29, 2004). The Tier 4 standards require that emissions of PM and NO_x be further reduced by about 90 percent. Such emission reductions can be achieved through the use of control technologies, including advanced exhaust gas after-treatment. To enable sulfur-sensitive control technologies in Tier 4 engines, such as catalytic particulate filters and NO_x absorbers, EPA also mandated reductions in sulfur content in nonroad diesel fuels. In most cases, federal nonroad regulations also apply in California, which has only limited authority to set emission standards for new nonroad engines. The CAA preempts California's authority to control emissions from new farm and construction equipment under 175 horsepower (CAA Section 209[e][1][A]) and requires California to receive authorization from EPA for controls over other off-road sources (CAA Section 209[e][2][A]).

State Regulations and Policies

California Environmental Protection Agency The California Environmental Protection Agency (Cal-EPA) is a state agency that includes CARB, the SWRCB, nine Regional Water Quality Control Boards, the Integrated Waste Management Board, the Department of Toxic Substances Control, the Office of Environmental Health Hazard Assessment, and the Department of Pesticide Regulation. The mission of Cal-EPA is to restore, protect, and enhance the environment and to ensure public health, environmental quality, and economic vitality.

California Clean Air Act The California Clean Air Act (CCAA) requires nonattainment areas to achieve and maintain the health-based State Ambient Air Quality Standards by the earliest practicable date. The Act is administered by CARB at the state level and by local air quality management districts at the regional level, whereby the air districts are required to develop plans and control programs for attaining the state standards. **Table 3.3-3** above shows the CAAQS.

CARB is responsible for ensuring implementation of the CCAA, meeting state requirements of the federal CAA, and establishing the CAAQS. It is also responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB also establishes passenger vehicle fuel specifications.

In-Use Off-Road Diesel Vehicle Regulation In 2007, CARB adopted a regulation to reduce DPM and NO_x emissions from in-use off-road heavy-duty diesel vehicles in California. The regulation imposes limits on vehicle idling and requires fleets to reduce emissions by retiring, replacing, repowering, or installing exhaust retrofits to older engines. In December 2010, major amendments were made to the regulation, including a delay of the first performance standards compliance date to no earlier than January 1, 2014.

Truck and Bus Regulation On December 12, 2008, CARB approved a new regulation to substantially reduce emissions of DPM, NO_x, and other pollutants from existing on-road diesel vehicles operating in California. The regulation requires affected trucks and buses to meet performance standards and requirements between 2011 and 2023. Affected vehicles included on-road, heavy-duty, diesel-fueled vehicles with a gross vehicle weight rating great than 14,000 pounds. The regulation was updated in 2011, with revisions that provide more compliance flexibility and reflect the impact of the economic recession on vehicle activity and emissions. Heavy-duty trucks used in proposed project activities would have to comply with this regulation.

Commercial Vehicle Idling Regulation On October 20, 2005, CARB approved the Airborne Toxic Control Measure (ACTM) to limit diesel-fuel commercial motor vehicle idling. This regulation was a follow-up to previous idling ATCMs, and it consists of new engine and in-use truck requirements, as well as idling emission performance standards. The regulation requires 2008 and newer model year heavy-duty diesel engines to be equipped with a nonprogrammable engine shutdown system that automatically shuts down the engine after 5 minutes of idling or optionally meets a stringent NO_x idling emission standard (i.e., 30 grams/hour). The regulation also is applicable to the operation of in-use trucks, requiring operators of both in-state and out-of-state registered, sleeper berth-equipped trucks to manually shut down their engine when idling more than 5 minutes at any location within California, beginning in 2008. Affected vehicles include diesel-fueled commercial vehicles with a gross vehicle weight rating greater than 10,000 pounds. Trucks used for vendor delivery of materials for proposed project activities would comply with the commercial vehicle idling regulatory requirements.

Heavy-Duty On-Board Diagnostic System Regulations In 2004, CARB adopted a regulation requiring on-board diagnostic systems (OBD) on all 2007 and later model year heavy-duty engines used in vehicles with a gross vehicle weight rating greater than 14,000 pounds in California. CARB subsequently adopted a comprehensive on-board diagnostic regulation for heavy-duty vehicles model years 2010 and beyond. The heavy-duty OBD regulation was updated in 2010 and 2013, with revisions to enforcement requirements, testing requirements, and implementation schedules. Heavy-duty trucks used for proposed project activities would comply with the heavy-duty on-board diagnostic regulatory requirements.

Heavy-Duty Vehicle Inspection Program This program requires for heavy-duty trucks and buses to be inspected for excessive smoke and tampering, and engine certification label compliance. Any heavy-duty vehicle (i.e., vehicles with a gross vehicle weight rating greater than 6,000 pounds) traveling in California, including vehicles registered in other states and foreign countries, may be tested. Tests are performed by CARB inspection teams at border crossings, California Highway Patrol weigh stations, fleet facilities, and randomly selected roadside locations. Owners of trucks and buses found in violation are subject to minimum penalties, starting at $300 per violation. Heavy-duty trucks used for proposed project activities would be subject to the inspection program.

California Standards for Diesel Fuel Regulations These regulations require diesel fuel with sulfur content of 15 parts per million (ppm) or lower (by weight) to be used for all diesel-fueled vehicles that are operated in California. The standard also applies to non-vehicular diesel fuel, other than diesel fuel used solely in locomotives or marine vessels. The regulations also contain standards for the aromatic hydrocarbon content and lubricity of diesel fuels.

State Portable Engine Airborne Toxic Control Measure The California Portable Engine ATCM is designed to reduce the PM emissions from portable diesel-fueled engines rated at 50 brake horsepower or larger. Because backpack sprayer engines are assumed to be electric or gas-powered and vehicle-mounted pump engines, such as dewatering pumps, are assumed to be smaller than 50 brake horsepower, they are exempt from the State Portable Engine ATCM. No other portable engines are expected to be used under the proposed project.

Portable Equipment Registration Program The statewide Portable Equipment Registration Program establishes a system to uniformly regulate portable engines and portable engine-driven equipment units. After being registered in this program, engines and equipment units may operate throughout the state without the need to obtain individual permits from air districts. Owners or operators of portable engines and certain types of equipment can voluntarily register their units under this program, to operate their equipment anywhere in the state. Operation of registered portable engines still may be subject to certain district requirements for reporting and notification. Engines with less than 50 brake horsepower are exempt from this program; therefore, some of the engines used for the proposed project would be exempt.

Senate Bill 709 Senate Bill 709 amends the Health and Safety Code to give the SJVAPCD more responsibility in terms of permitting, fee implementation, and agricultural assistance, as well as the authority to require the use of Best Available Control Technology (BACT) for existing emission sources, promote cleaner-burning alternative fuels, and encourage and facilitate ridesharing. Senate Bill 709 also amends the Vehicle Code to allow the SJVAPCD to adopt a surcharge on motor vehicle registration fees.

Regional Regulations and Policies

San Joaquin Valley Air Pollution Control District The SJVAPCD is responsible for (1) implementing air quality regulations, including developing plans and control measures for stationary sources of air pollution to meet the NAAQS and CAAQS, (2) implementing permit programs for the construction, modification, and operation of sources of air pollution, and (3)

enforcing air pollution statutes and regulations governing stationary sources. With CARB oversight, the SJVAPCD administers local regulations.

The SJVAPCD also coordinates transportation and air quality planning activities with the eight SJV transportation planning agencies. The SJVAPCD and the transportation planning agencies coordinate on mobile emissions inventory development, transportation control measure development and implementation, and transportation conformity issues.

The SJVAPCD has implemented several regulations and rules that are relevant to the proposed action described below.

SJVAPCD Rule 2201, New and Modified Stationary Source Review Rule 2201 applies to new or modified stationary sources and requires that sources not increase emissions above the specified thresholds. If the post-project stationary source potential to emit equals or exceeds the offset threshold levels, offsets will be required. New emergency generators at the pump stations would need to be permitted by the SJVAPCD and would have to comply with BACT requirements

SJVAPCD Rule 2280, Portable Equipment Registration Portable equipment used at project sites for less than 6 consecutive months must be registered with SJVAPCD. The district will issue the registrations 30 days after the receipt of the application.

SJVAPCD Rule 4201 and Rule 4202, Particulate Matter Concentration and Emission Rates Rule 4201 and Rule 4202 apply to operations that emit or may emit dust, fumes, or total suspended particulate matter. Particulate emissions from the project must be less than the specified emissions limit.

SJVAPCD Rule 8011, General Requirements–Fugitive Dust Emission Sources Fugitive dust regulations are applicable to outdoor fugitive dust sources. Operations, including construction operations, must control fugitive dust emissions in accordance with SJVAPCD Regulation VIII. According to Rule 8011, the SJVAPCD requires the implementation of control measures for fugitive dust emission sources. The project would also implement the mandatory control measures listed in Table 6-2 in the *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI) (SJVAPCD 2002) to reduce fugitive dust emissions. These measures are not considered mitigation measures under CEQA because they are required by law.

The SJVAPCD Rule 8011 requirements (some of which are not applicable to the project) are listed below:

- All disturbed areas, including storage piles, which are not being actively used for construction purposes, will be effectively stabilized for dust emissions using water or a chemical stabilizer/suppressant, or covered with a tarp or other suitable cover or vegetative ground cover.
- All on-site unpaved roads and offsite unpaved access roads will be effectively stabilized for dust emissions using water or a chemical stabilizer/suppressant.

- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities will be effectively controlled of fugitive dust emissions by utilizing an application of water or by presoaking.
- With the demolition of buildings up to six stories in height, all exterior surfaces of the building will be wetted during demolition.
- All materials transported off site will be covered or effectively wetted to limit visible dust emissions, and at least 6 inches of freeboard space from the top of the container will be maintained.
- All operations will limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, piles will be effectively stabilized to prevent fugitive dust emissions utilizing sufficient water or a chemical stabilizer/suppressant.
- Within urban areas, trackout will be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- Any site with 150 or more vehicle trips per day will prevent carryout and trackout.

SJVAPCD CEQA Guidelines The SJVAPCD prepared the GAMAQI to assist lead agencies and project applicants in evaluating the potential air quality impacts of projects in the SJVAB (SJVAPCD 2002). The GAMAQI provides SJVAPCD-recommended procedures for evaluating potential air quality impacts during the CEQA environmental review process. The GAMAQI provides guidance on evaluating short-term (construction) and long-term (operational) air emissions. The GAMAQI is currently being updated, but the most recent version (2002) was used in this evaluation and contains guidance on the following:

- Criteria and thresholds for determining whether a project may have a significant adverse air quality impact.
- Specific procedures and modeling protocols for quantifying and analyzing air quality impacts.
- Methods to mitigate air quality impacts.
- Information for use in air quality assessments and environmental documents that will be updated more frequently, such as air quality data, regulatory setting, climate, and topography.

SJVAPCD Plans Planning documents for pollutants for which the study area is classified as a federal nonattainment or maintenance area are developed by SJVAPCD and CARB and approved by EPA. The SJVAB is presently guided by the California SIP (CARB 2011b) and other planning documents. The following lists the relevant SIP documents for the SJVAB:

- 2007 O_3 Plan (SJVAPCD 2010a).
- 2004 Extreme O_3 Attainment Demonstration Plan (SJVAPCD 2010b).
- 2012 $PM_{2.5}$ Plan (SJVAPCD 2012a)
- 2004 Revision to the California State Implementation Plan for CO (CARB 2004).

- 2007 PM_{10} Maintenance Plan and Request for Redesignation (SJVAPCD 2009c).

2007 O_3 *Attainment Plan* The 2007 8-hour O_3 Air Quality Plan contained a comprehensive list of regulatory and incentive-based measures to reduce emissions of O_3 and PM precursors throughout the SJV. On December 18, 2007, the SJVAPCD Governing Board adopted the plan with an amendment to extend the rule adoption schedule for organic waste operations. On January 8, 2009, EPA found that the motor vehicle budgets for 2008, 2020, and 2030 from the 2007 8-hour O_3 Plan were not adequate for transportation conformity purposes (SJVAPCD 2010a).

On May 5, 2010, EPA reclassified the 8-hour O_3 nonattainment of the SJV from "serious" to "extreme." The reclassification requires the State of California to incorporate more stringent requirements, such as lower permitting thresholds and implementing reasonably available control technologies at more sources (EPA 2010).

2004 Extreme O_3 *Attainment Demonstration Plan* The SJVAPCD is required to submit a plan to meet the 1-hour O_3 standard for the SJV (EPA 2008). On March 8, 2010, EPA approved the SJV's 2004 Extreme O_3 Attainment Demonstration Plan for 1-hour O_3. Effective June 15, 2005, EPA revoked the federal 1-hour O_3 standard for certain areas, including the SJVAB (SJVAPCD 2010b); however, SJVAPCD is still required to submit a plan. Due to subsequent litigation, EPA withdrew its plan approval in November 2012 and the SJVAPCD and CARB withdrew this plan from consideration. SJVAPCD adopted the 2013 Plan for the Revoked 1-hour O_3 Standard in September 2013.

2012 PM2.5 Plan EPA designated the SJVAB as nonattainment under the 2006 $PM_{2.5}$ national standard on October 8, 2009. The SJVAPCD Governing Board adopted the 2012 $PM_{2.5}$ Plan following a public hearing in December 2012. On January 24, 2013, CARB adopted the plan and subsequently submitted the plan to EPA as a revision to California's SIP (CARB 2013b). This far-reaching plan provides measures designed to reduce emissions such that the valley will attain the 2006 $PM_{2.5}$ federal standards and the state standard as soon as possible. This plan satisfies the SIP requirements for compliance with the 2006 $PM_{2.5}$ standard. The NAAQS for annual $PM_{2.5}$ has recently been revised by EPA, and on January 12, 2015, EPA published a proposal to classify the SJV as a serious nonattainment area for $PM_{2.5}$.

2004 Revision to California State Implementation Plan for CO On July 22, 2004, CARB approved an update to the SIP that shows how 10 areas, including the SJVAB, will maintain the CO standard through 2018; revises emission estimates; and establishes new on-road motor vehicle emission budgets for transportation conformity purposes (CARB 2004). On November 30, 2005, EPA approved and promulgated the Implementation Plans and Designation of Areas for Air Quality Purposes (EPA 2005). This revision provided a 10-year update to the CO maintenance plan and established new CO motor-vehicle emissions budgets for the purposes of determining transportation conformity.

2007 PM_{10} *Maintenance Plan and Request for Redesignation* CARB approved SJVAPCD's 2007 PM_{10} Maintenance Plan and Request for Redesignation with modifications to the

transportation conformity budgets. On September 25, 2008, EPA redesignated the SJV as attainment for the PM_{10} NAAQS and approved the PM_{10} Maintenance Plan (SJVAPCD 2009).

Local Regulations and Policies

The General Plans for the Cities of Modesto and Turlock and Stanislaus County have applicable air quality policies. Policies for Merced and San Joaquin Counties are not discussed because air quality related activities and emissions would not occur in these counties.

City of Modesto The City of Modesto General Plan has the following applicable air quality policies:

> *Air Quality Policies (f):* The City of Modesto shall work with neighboring jurisdictions and affected agencies to address cross-jurisdictional and regional transportation and air quality issues.
> *Air Quality Policies (g):* The City of Modesto shall coordinate with other jurisdictions and other regional agencies in the San Joaquin valley to establish parallel air quality programs and implementation measures (trip reduction ordinances, indirect source programs, etc.).
> *Air Quality Policies (h):* The City of Modesto shall implement measures to reduce emissions associated with future development through the CEQA review process.
> *Air Quality Policies (i):* To be consistent with the SJVAPCD's Air Quality Guidelines for General Plans, the City of Modesto should consult with the SJVAPCD during CEQA review for discretionary projects with the potential for causing adverse air quality impacts.
> *Air Quality Policies (l):* The City of Modesto should encourage new air pollution sources such as, but not limited to, industrial, manufacturing, and processing facilities to be located an adequate distance (based on pollutant dispersion characteristics, site orientation, prevailing winds, etc.) from residential areas and other sensitive receptors.
> *Air Quality Policies (m):* The City of Modesto should implement measures to reduce the temporary, yet potentially significant, local air quality impacts from construction activities.
> *Air Quality Policies (n):* The City of Modesto shall require residential development projects and projects categorized as sensitive receptors (hospitals, schools, convalescent homes, etc.) to be located an adequate distance from existing and potential sources of toxic and/or odorous emissions such as freeways, major arterials, industrial sites, refuse transfer or disposal sites, and hazardous material locations.
> *Air Quality Policies (hh):* The City of Modesto should work with the SJVAPCD to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible in accordance with the requirements of SJVAPCD Regulation VIII. Regulation VIII was adopted to reduce the amount of particulate matter suspended in the atmosphere as a result of emissions generated from anthropogenic (man-made) fugitive dust sources.
> *Air Quality Policies (ii):* The City of Modesto shall require all access roads, driveways, and parking areas serving new commercial and industrial development to be constructed with materials that minimize particulate emissions in accordance with the requirements of SJVAPCD Regulation VIII and are appropriate to the scale and intensity of use.

Air Quality Policies (jj): The City of Modesto should reduce PM_{10} emissions from City of Modesto–maintained roads to the maximum extent feasible.

The following controls are required to be implemented at all construction sites:

Air Quality Policies (kk): All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
Air Quality Policies (ll): All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
Air Quality Policies (mm): All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
Air Quality Policies (nn): With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.
Air Quality Policies (oo): When materials are transported off site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
Air Quality Policies (pp): All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday (the use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)
Air Quality Policies (qq): Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
Air Quality Policies (rr): Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
Air Quality Policies (ss): Any site with 150 or more vehicle trips per day shall prevent carryout and trackout.

The following measures should be implemented at construction sites when required to mitigate significant PM_{10} impacts (note, these measures are to be implemented in addition to Regulation VIII requirements):

Air Quality Policies (tt): Limit traffic speeds on unpaved roads to 15 mph; and
Air Quality Policies (uu): Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent (1%).

The following measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors, or which for any other reason warrant additional emissions reductions:

Air Quality Policies (vv): Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site;
Air Quality Policies (ww): Install wind breaks at windward side(s) of construction areas;
Air Quality Policies (xx): Suspend excavation and grading activity when winds exceed 20 mph (regardless of windspeed, an owner/operator must comply with Regulation VIII's 20 percent (20%) opacity limitation); and
Air Quality Policies (yy): Limit the area subject to excavation, grading, and other construction activity at any one time.

City of Turlock The City of Turlock General Plan has the following applicable air quality policies:

8.1-a Prioritize Air Quality in Local Planning. Continue efforts to improve air quality in Turlock by integrating air quality analysis and mitigation in land use and transportation planning, environmental review, public facilities and operations, and special programs.
8.1-b Participate in Regional Efforts. Cooperate with the SJVAPCD and Stanislaus Council of Governments in developing and implementing air quality regulations and incentives.
8.1-c Coordination with Other Agencies. Work with neighboring jurisdictions and affected agencies to address cross-jurisdictional and regional transportation and air quality issues.
8.1-g Reduce Roadway Dust. Improve City roads to reduce dust to the greatest extent feasible by planting shoulders and medians. Dust from roadways contributes to PM_{10} pollution.
8.1-i Protect Residential Uses from Noxious Odors. Continue the present policy of not permitting any residential uses within a one-half mile radius of the Turlock Regional Water Quality Control Facility. Require that any new potential odor source locating within project screening trigger levels of sensitive receptors, as established by the SJVAPCD, undertake a detailed odor analysis.
8.1-l Use Air District Guidance in Environmental Review. Continue to use the SJVAPCD's Guide for Assessing and Mitigating Air Quality Impacts for determining and mitigating project air quality impacts and related thresholds of significance for use in environmental documents. Coordinate with the Air District, project applicants, and other interested parties, during pre-development consultation and negotiation over CEQA preparation.
8.1-m Minimize Roadway Dust. Require all access roads, driveways, and parking areas serving new development to be constructed with materials that minimize particulate emissions and are appropriate to the scale and intensity of use. To balance the goals of dust reduction and water infiltration, encourage the use of permeable paving or well-maintained gravel for parking spaces.
8.1-n Construction-Related Air Emissions Impacts. Continue to require mitigation measures as a condition of obtaining permits to minimize dust and air emissions impacts from construction. Require contractors to implement dust suppression measures during excavation, grading, and site preparation activities. Techniques may include, but are not limited to:

- Site watering or application of dust suppressants.
- Phasing or extension of grading operations.
- Covering of stockpiles.
- Suspension of grading activities during high wind periods (typically winds greater than 25 miles per hour).
- Revegetation of graded areas.

County of Stanislaus The County of Stanislaus General Plan has the following applicable air quality policies:

Policy Eighteen: The County will promote effective communication, cooperation and coordination among agencies involved in developing and operating local and regional air quality programs.

Implementation Measure 1: Refer discretionary projects under CEQA review to the SJVAPCD, neighboring jurisdictions and other affected agencies for review and comment.

Implementation Measure 2. Work with other agencies in the San Joaquin Valley to establish coordinated air quality programs and implementation measures.

Policy Nineteen: The County will strive to accurately determine and fairly mitigate the local and regional air quality impacts of proposed projects.

Implementation Measure 1. Require all development proposals, where appropriate, to include reasonable air quality mitigation measures.

Implementation Measure 2. Minimize case-by-case analysis of air quality impacts through the use of standard criteria for determining significant environmental effects, a uniform method of calculating project emissions.

3.3.3 Environmental Consequences

This section evaluates whether construction and operation of the proposed project and its actions would result in significant impacts related to air quality and odors.

Methodology for Analysis

As required by SJVAPCD, the California Emission Estimator Model (CalEEMod) version 2013.2.2 was used to quantify criteria pollutant emissions from the proposed project construction and operation activities. CalEEMod incorporates numerous default assumptions and CARB emission factors for on-road and off-road vehicles (EMFAC 2013 and In-Use Off-Road Equipment Inventory Model 2011). Below is a brief summary of the CalEEMod site-specific inputs used to estimate emissions from the proposed project. Further CalEEMod inputs and outputs are available in **Appendix B**.

The proposed Action alternatives are assumed to take approximately 1.5 years to construct from summer of 2016 through spring of 2018. The anticipated construction schedules for the Combined Alignment and Single Alignment alternatives were provided (see Appendix C) and are summarized in **Table 3.3-5**. In general, it was assumed that five construction crews would be working simultaneously. Details of construction schedule and equipment have not been developed for the PID Conveyance Alternative, which would require construction of 30,100 feet of pipeline, less than half the length of the pipeline required for the Combined Alignment Alternative. The PID Conveyance Alternative would not require construction of a river crossing, but would require construction of an expanded intake facility and new pumps at the existing PID intake. Emissions during construction are thus conservatively estimated to be about half of the emissions associated with construction of the Combined Alignment Alternative.

Table 3.3-5: Construction Schedule

Phase Name	Phase Type	Phase Start Date	Phase End Date	Days per Week	Number of Days
Combined Alignment	**(Alternative 1)**				
Construction Weir	Site Preparation	6/20/2016	07/15/2016	5	20
Construction Weir	Grading	07/18/2016	09/09/2016	5	40
Construction Weir	Building Construction	09/12/2016	11/18/2016	5	50
Construction Weir	Paving	11/21/2016	12/02/2016	5	10
Construction Pipe	Site Preparation	6/20/2016	07/14/2016	5	19
Construction Pipe	Trenching	07/15/2016	10/25/2016	5	73
Construction Pipe	Building Construction	10/26/2016	12/30/2016	5	48
Construction Pipe	Paving	01/02/2017	02/08/2017	5	28
Pump Station	Construction	06/20/2016	09/09/2016	5	60
Pump Station	Equipment Installation	09/12/2016	12/02/2016	5	60
River Crossing	Site Preparation	06/20/2016	06/02/2017	5	240
Water Truck	Grading	06/20/2016	03/31/2018	5	450
Separate Alignment	**(Alternative 2)**				
Construction Weir Modesto	Site Preparation	06/20/2016	07/15/2016	5	20
Construction Weir Modesto	Grading	07/18/2016	09/09/2016	5	40
Construction Weir Modesto	Building Construction	09/12/2016	11/18/2016	5	50
Construction Weir Modesto	Paving	11/21/2016	12/02/2016	5	10
Construction Weir Turlock	Site Preparation	12/05/2016	12/23/2016	5	20
Construction Weir Turlock	Grading	12/26/2016	02/17/2017	5	40
Construction Weir Turlock	Building Construction	02/20/2017	04/28/2017	5	50
Construction Weir Turlock	Paving	05/01/2017	05/12/2017	5	10
Construction Pipe	Site Preparation	06/20/2016	07/14/2016	5	19
Construction Pipe	Trenching	07/15/2016	11/11/2016	5	86
Construction Pipe	Building Construction	11/14/2016	01/31/2017	5	57
Construction Pipe	Paving	01/2/2017	02/8/2017	5	28
Pump Station Modesto	Site Preparation	06/20/2016	09/09/2016	5	60
Pump Station Modesto	Building Construction	09/12/2016	12/02/2016	5	60
Pump Station Turlock	Site Preparation	06/20/2016	10/21/2016	5	90
Pump Station Turlock	Building Construction	10/24/2016	1/13/2017	5	60
River Crossing Modesto	Trenching	06/20/2016	6/2/2017	5	240
River Crossing Turlock	Trenching	06/05/2017	05/04/2018	5	240
Water Truck	Grading	06/20/2016	03/31/2018	5	450

Source: **Appendix B, Appendix C**

The equipment anticipated to be used during each construction phase is shown in **Table 3.3-6 and 3.3-7**. The equipment was mapped to an appropriate CalEEMod equipment type and default horsepower and load factors were utilized unless it was mapped to a general equipment category which used a typical equipment size that may be used for the proposed project construction activities.

The number of worker and material hauling trips is shown in **Table 3.3-8**. Worker trips were assumed to be 20 miles one-way and, because construction materials are expected to be available

within a 30-mile radius of the construction area, material hauling trips were assumed to be 30 miles one way.

Once the baseline construction emissions associated with the alternatives were estimated, mitigation options were evaluated to see if on-site mitigation would be possible to reduce emissions below the significance thresholds. First, the change in estimated impact by requiring phased trips for all trucks hauling trench spoil and backfill, such that all trucks importing backfill material to the site would leave with excavated material that needs to be exported, was investigated. This substantially reduced the number of trench material hauling trips originally envisioned. Second, the change in estimated impact of using newer engines was investigated. Under this scenario, it was assumed that all off-road vehicle engines above 50 horsepower would meet EPA Tier 3 engine standards. The use of newer Tier 3 engines compared to the average fleet mix resulted in lower emissions for several criteria pollutants, particularly NO_x.

Table 3.3-6: Construction Equipment Total Hours of Use Combined Alignment

Off-Road Equipment Type	Horse-power	Load Factor	Total Equipment Hours Phase Combined Alignment											
			Weir Site Prep	Weir Excava-tion	Weir Construc -tion	Weir Paving	Pipe Site Prep	Pipe Trench -ing	Pipe Installa-tion	Pipe Backfill and Paving	Pump Station Construc-tion	Pump Station Equip-ment Install	River Cross-ing	Water Truck
Air Compressors	78	0.48			50									
Bore/Drill Rigs	60	0.5											360	
Bore/Drill Rigs	205	0.5		240										
Cement and Mortar Mixers	9	0.56				240								
Concrete/Industrial Saws	81	0.73		320										
Cranes	226	0.29			200						240	240	960	
Excavators	162	0.38		80				1168			480		1920	
Forklifts	89	0.2			600									
Graders	174	0.41	160					1168	768					
Off-Highway Trucks	400	0.38								896			720	1800
Other Construction Equipment	104	0.42									480		480	
Other Construction Equipment	215	0.42											480	
Pavers	125	0.42				70								
Pumps	84	0.74			100									
Rollers	80	0.38				70				448				
Rubber Tired Dozers	255	0.4		40			304	1168			480		480	
Rubber Tired Loaders	199	0.36									480	120	480	
Scrapers	361	0.48					304	2336	1536					
Signal Boards	6	0.82					1520	5840	3840	2240				
Tractors/Loaders/Backhoes	97	0.37	160	480	800	70		2336	1536	896				
Trenchers	80	0.5							768					

Table 3.3-7: Construction Equipment Total Hours of Use Separate Alignment

Off-Road Equipment Type	Horse power	Load Factor	Total Equipment Hours Separate Alignment																		
			Weir Site Prep	Weir Excavation	Weir Construction	Weir Paving	Weir Site Prep Turlock	Weir Excavation Turlock	Weir Construction Turlock	Weir Paving Turlock	Pipe Site Prep	Pipe Trenching	Pipe Installation	Pipe Backfill and Paving	Pump Station Construction	Pump Station Equipment Install	Pump Station Construction Turlock	Pump Station Equipment Install Turlock	River Crossing Modesto	River Crossing Turlock	Water Truck Modesto	Water Truck Turlock
Air Compressors	78	0.48			50				50													
Bore/Drill Rigs	60	0.5																	360	360		
Bore/Drill Rigs	205	0.5		240				240														
Cement and Mortar Mixers	9	0.56				240				240												
Concrete/ Industrial Saws	81	0.73		320				320														
Cranes	226	0.29			200				200						240	240	360	240	960	960		
Excavators	162	0.38		80				80				1376			480		1440		1920	1920		
Forklifts	89	0.2			600				600													
Graders	174	0.41	160				160					1376	912									
Off Highway Trucks	400	0.38												896			972		720	720	1800	1800
Other Equipment	104	0.42													480		720		480	480		
Other Equipment	215	0.42																	480	480		
Pavers	125	0.42				70				70												
Pumps	84	0.74			100				100													
Rollers	80	0.38				70				70				448								
Rubber Tired Dozers	255	0.4		40				40			304	1376			480		243		480	480		
Rubber Tired Loaders	199	0.36													480	120	720	120	480	480		

Off-Road Equip-ment Type	Horse power	Load Factor	Total Equipment Hours Separate Alignment																			
			Weir Site Prep	Weir Exca-vation	Weir Cons truc-tion	Weir Pav-ing	Weir Site Prep Turlock	Weir Exca-vation Turlock	Weir Con-struc-tion Turlock	Weir Pav-ing Turlock	Pipe Site Prep	Pipe Tren-ching	Pipe Install-ation	Pipe Back-fill and Pav-ing	Pump Station Con-struc-tion	Pump Station Equip-ment Install	Pump Station Con-struc-tion Turlock	Pump Station Equip-ment Install Turlock	River Cross-ing Modesto	River Cross-ing Turlock	Water Truck Modesto	Water Truck Turlock
Scrapers	361	0.48									304	2752	1824									
Signal Boards	6	0.82									1520	6880	4560	2240								
Tractors/ Loaders/ Backhoes	97	0.37	160	480	800	70	160	480	800	70		2752	1824	896								
Trenchers	80	0.5											912									

Table 3.3-8: Worker and Material Hauling Trips

Phase Name	Worker Trips Per Day	Total Material Hauling Trips
Combined Alignment (Alternative 1)		
Construction Weir	14	128 unphased 64 phased
Construction Pipe	32	15,118 unphased 8,400 phased
Pump Station Construction	18	60 unphased 42 phased
River Crossing	24	(accounted for in construction pipe)
Water Truck	24	0
Separate Alignment (Alternative 2)		
Construction Weir	14	128 unphased 64 phased
Construction Weir Turlock	14	128 unphased 64 phased
Construction Pipe	32	22,996 unphased 12,778 phased
Pump Station Modesto	18	60 unphased 42phased
Pump Station Turlock	18	86 unphased 50 phased
River Crossing Modesto	24	(accounted for in construction pipe)
River Crossing Turlock	24	(accounted for in construction pipe)
Water Truck Modesto	2	0
Water Truck Turlock	2	0

Source: **Appendix B, Appendix C**

Regarding operational emissions, only sporadic vehicle trips would be needed for maintenance and inspection. Since the amount of trips is not known, but likely substantially less than the small project threshold established by SJVAPCD, no operational emissions from vehicles were estimated. The pumps would be electricity-driven, and electricity was conservatively assumed to be supplied by Modesto Irrigation District. While the NVRRWP facilities may use electricity from the TID, using the Modesto Irrigation District is more conservative since it has slightly higher GHG emissions per unit of electricity, and final determination of the source of electricity has not been made. No criteria pollutants are associated with electricity use, but indirect GHG emissions were estimated using CalEEMod. The single alignment alternative may also require an emergency generator at the Turlock Harding Drain Bypass Pipeline. This was not evaluated in CalEEMod since this a permitted stationary source and would undergo permitting procedures that are assumed to result in emissions below the significance thresholds.

Regarding other operational impacts associated with the proposed project and occurring in the project area, impact significance was determined qualitatively by considering the project emission sources and duration, and/or by applying the SJVAPCD's Small Project Analysis Level (SJVAPCD 2012b) trip generation rates. The SJVAPCD has established thresholds of significance for criteria pollutant emissions, which are based on SJVAPCD New Source Review

offset requirements for stationary sources. Using project type and size, the SJVAPCD has estimated emissions and determined a size below which it is reasonable to conclude that a project would not exceed applicable thresholds of significance for criteria pollutants.

Thresholds of Significance

Consistent with Appendix G of the *CEQA Guidelines* an air quality impact would be considered significant if the project would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard established by EPA or CARB, or contribute substantially to an existing or projected air quality violation, in comparison to the SJVAPCD thresholds below.
- Expose sensitive receptors to substantial air pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

GAMAQI Thresholds The SJVAPCD has developed quantifiable significance thresholds to address the potential impacts identified in the CEQA Guidelines. The 2002 SJVAPCD GAMAQI listed quantifiable thresholds for operational VOC and NO_x only, but it makes reference to SJVAPCD stationary source offset requirements. The Draft 2012 GAMAQI reiterates the use of stationary source requirements as a threshold and specifically lists the values. SJVAPCD states that a significant impact would occur if implementation of the proposed project would result in emissions that exceed the following SJVAPCD thresholds shown in **Table 3.3-9**.

Table 3.3-9: SJVAPCD CEQA Significance Thresholds

Pollutant	Construction Emissions (tons per year)	Operational Emissions (tons per year)	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
CO	100	100	100
NO_x	10	10	10
VOC	10	10	10
SO_x	27	27	27
PM_{10}	15	15	15
$PM_{2.5}$	15	15	15

Source: SJVAPCD 2014b.

These thresholds are applied separately to construction and operations emissions, even if there is overlap in the emissions. Therefore, for this analysis a comparison of project emissions to the thresholds shown in **Table 3.3-9** is used to determine whether the proposed Action alternatives would violate ambient air quality standards.

According to SJVAPCD's guidance, operation and construction emissions are considered to be a less-than-significant impact if fugitive dust (PM_{10} and $PM_{2.5}$) emissions are below the significance level listed above. In addition, SJVAPCD Regulation VIII requires all projects that involve earthmoving or travel on unpaved roads to implement fugitive dust control measures;

implementation of the control measures would constitute sufficient measures to reduce PM_{10} and $PM_{2.5}$ impacts to a level considered less than significant.

Quantitative TAC thresholds of significance identified in the GAMAQI include:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in a million.
- Ground-level concentrations of non-carcinogenic TACs would result in a Hazard Index greater than 1 for the MEI.

However, since locations of the specific emissions would be continually moving in time during pipeline construction and the project would not result in lifetime exposure to hazardous air pollutants, a qualitative analysis was performed to determine the impact significance of potential TAC emissions. For the proposed project construction and operation, health risks from TACs were evaluated by identifying the project's potential to generate TAC emissions and by determining whether sensitive receptors could be affected by those emissions.

To determine whether the project is consistent with existing air quality plans, the analysis examines whether the project is consistent with relevant general or specific plans upon which the air plans are based.

Small Project Analysis Level SJVAPCD has established screening levels based on project types (land use) and sizes (e.g., square footage, housing units). Projects below these sizes are considered to have emissions below the numeric thresholds of significance for criteria pollutants. The proposed project is categorized as General Light Industrial Land Use. Projects that are at or below these criteria would result in less-than-significant impacts:

- Industrial land uses: result in vehicle trips of 1,506 trips/day.
- General light industrial land uses: construct 510,000 square feet.

Impacts and Mitigation Measures

Impact AIR-1 Construction emissions of criteria pollutants and precursors

No Action Alternative Under the No Action Alternative there would be no construction required. There would be no construction emissions and therefore no impact on air quality.

Combined Alignment Alternative (Alternative 1) Under standard equipment assumptions including unphased material hauling trips, the anticipated construction emissions associated with this alternative are shown in **Table 3.3-10**. Based on comparison to the significance thresholds, all pollutants except NO_x are below the construction emission thresholds. Thus, NO_x emissions would be considered significant for the Combined Alignment Alternative construction without mitigation.

Table 3.3-10: Combined Alignment Alternative Construction Emissions (tons per year)

Year	Scenario[1]	VOC[2]	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
2016	Unmitigated	1.45	16.34	11.09	0.021	1.61	1.03
	Phased Reduction		(1.32)				
	Tier 3 Reduction		(7.67)				
	Mitigated Potential		7.35				
2017	Unmitigated	0.17	1.72	1.02	.0025	0.20	0.087
	Phased Reduction		(0)				
	Tier 3 Reduction		(0.69)				
	Mitigated Potential		1.03				
2018	Unmitigated	0.013	0.14	0.072	.00023	0.098	0.015
	Phased Reduction		(0)				
	Tier 3 Reduction		(.036)				
	Mitigated Potential		0.10				
Significance	Threshold-CEQA	10	10	100	27	15	15

Notes:

1. The amount of reduction that occurs as a result of mitigation (material hauling phasing or Tier 3 equipment) is shown in parentheses for NO_x only. There may be reductions in other pollutants as well and a minor increase in CO but that would not increase emissions above significance thresholds. Calculations are shown in **Appendix B**.

2. Reactive Organic Gases (ROGs) are a subset of VOCs. Emissions level for VOCs includes all project emissions of ROG; for purposes of this analysis they are considered equal.

Note: Lead emissions are not quantified as they are negligible due to fuel regulations limiting lead content in fuel.

Source: **Appendix B**

To determine if mitigation is available to reduce NO_x emissions through on-site measures to below the NO_x construction significance threshold of 10 tons per year, the emissions reduction associated with both phased material hauling trips and use of Tier 3 engines for all equipment above 50 horsepower was estimated using CalEEMod. Based on the reductions that would occur from these activities, shown in **Table 3.3-10**, emissions could be reduced with on-site measures to below the 10 tons per year NO_x significance threshold. However, because detailed design is not complete it is possible that there could be changes in the specific construction equipment required, with resulting changes in estimated emissions. Since this project would be subject to General Conformity, if emissions cannot be reduced to below 10 tons per year on-site, emissions would need to be off-set to **zero tons per year** according to acceptable conformity requirements. Thus, **Mitigation Measure AIR-1** would need to be implemented, if necessary, to mitigate emissions on-site to below 10 tons per year or to offset emissions to zero tons per year by funding SJVAPCD's Emission Reduction Incentive Program (ERIP) which provides verified pound-for-pound offsets within the SJVAB. With implementation of **Mitigation Measure AIR-1**, project impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Under standard equipment assumptions including unphased material hauling trips, the anticipated construction emissions associated with this alternative are shown in **Table 3.3-11**. Based on comparison to significance thresholds, all pollutants except NO_x would be below the construction emission thresholds. Thus, NO_x emissions would also be considered significant for the Separate Alignment Alternative construction. Based on the reductions that would occur from phased hauling and use of Tier 3 engines, as shown in **Table 3.3-11**, emissions for Alternative 2 could be reduced with on-site measures to below the 10 tons per year NO_x significance thresholds. To ensure General Conformity, **Mitigation Measure AIR-1** would also be implemented for Alternative 2, if necessary. With implementation of **Mitigation Measure AIR-1**, the project impacts would be less than significant.

PID Conveyance Alternative (Alternative 3) Alternative 3 would require construction of 30,100 feet of pipeline, which is less than half the length of the pipeline required for Alternative 1. Alternative 3 would not require construction of a river crossing, but would require construction of an expanded intake facility and new pumps at the existing PID intake. Emissions during construction are thus conservatively estimated to be about half of the emissions associated with construction of the Alternative 1. Because details of construction schedule and equipment have not been developed, although emissions are likely to be less than Alternative 1, it is assumed that mitigation may still be required to ensure that emissions are not significant.

Significance Determination before Mitigation Potentially significant for Alternatives 1, 2 and 3; no impact for the No Action Alternative.

Table 3.3-11: Separate Alignment Alternative Construction Emissions (tons per year)

Year	Scenario[1]	VOC	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
2016	Unmitigated	1.82	20.74	13.95	0.029	1.90	1.23
	Phased Reduction		(2.02)				
	Tier 3 Reduction		(9.14)				
	Mitigated Potential		9.58				
2017	Unmitigated	0.59	6.25	3.98	.0078	0.57	0.40
	Phased Reduction		(0)				
	Tier 3 Reduction		(2.88)				
	Mitigated Potential		3.37				
2018	Unmitigated	0.042	0.43	0.27	.00078	0.034	0.020
	Phased Reduction		(0)				
	Tier 3 Reduction		(0.16)				
	Mitigated Potential		0.27				
Significance	Threshold-CEQA	10	10	100	27	15	15

Notes:

1. The amount of reduction that occurs as a result of mitigation (material hauling phasing or Tier 3 equipment) is shown in parentheses for NO_x only. There may be reductions in other pollutants as well and a minor increase in CO but that would not increase emissions above significance thresholds. Calculations are shown in **Appendix B**.

Source: **Appendix B**

Mitigation Measures **Mitigation Measure AIR-1: Reduce NO_x Emissions (Alternatives 1, 2 and 3)** NO_x emissions associated with construction activities shall be reduced to 10 tons per year through on-site equipment and hauling vehicle mitigation measures to the extent feasible. All vehicles and equipment used during construction shall be maintained and properly tuned in accordance with the manufacturer's specifications to perform at EPA certification levels and to perform at verified standards applicable to retrofit technologies. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure CCR Title 13 Section 2485). Emissions reduction methods may be chosen from any combination of the following measures:

- Minimize the use and trips of construction equipment and trucks by consolidating trips and loads to the extent feasible.
- Minimize unnecessary idling by shutting off equipment and trucks when not in use to the extent feasible.

- Conduct periodic unscheduled inspections to ensure equipment is maintained properly and in accordance with manufacturer's recommendations and excessive idling is not occurring.
- Prepare inventory of all equipment prior to construction consistent with SJVAPCD Indirect Source Review Rule.
- Develop a construction, traffic, and parking management plan that minimizes traffic interference and maintains traffic flow.

The contractor will be encouraged to implement the following measures to the extent feasible before implementation of off-site mitigation measures and identify why the measures are infeasible if not implemented in particular due to economic infeasibility:

- Use of alternative fueled vehicles.
- Use of newer tier engines such as EPA Tier 4 exhaust emissions standards for heavy-duty nonroad compression ignition engines.
- Use of newer on-highway vehicles that meet the EPA exhaust emissions standards for model year 2010 and newer heavy-duty on-highway compression ignition engines
- Use of phased material hauling trips.
- Use of after-market pollution control devices to reduce emissions.
- Lengthening the construction schedule to reduce the annual intensity of construction activities.

If all feasible on-site measures have been implemented and annual emissions are anticipated to still be above 10 tons per year for NO_x, then the project proponents shall enter into a Voluntary Emissions Reduction Agreement (VERA) with SJVAPCD. The VERA would provide pound-for-pound mitigation of air emissions increases down to a net zero emissions per year as required under general conformity through a process that develops, funds, and implements emission reduction projects. SJVAPCD would serve as administrator of the emissions reduction projects and verifier of the successful mitigation effort.

Under the VERA, the project proponent shall agree to mitigate project-specific emissions by providing funds for the SJVAPCD's ERIP. The funds would be disbursed by ERIP in the form of grants for projects that achieve emission reductions. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of old farm tractors. The initial agreement would generally be based on the projected maximum emissions increases as calculated by a SJVAPCD-approved air quality impact assessment, and contain the corresponding maximum fiscal obligation. However, because the goal is to mitigate actual emissions, the SJVAPCD has designed flexibility into the VERA such that the final mitigation would be based on actual emissions related to the project as determined by actual equipment used, hours of operation, and duration of work. After the project is mitigated, the SJVAPCD would certify to the lead agency that the mitigation is completed, providing the lead agency with an enforceable mitigation measure demonstrating that project-specific emissions have been mitigated to less than significant.

Significance after Mitigation Less than significant for all Action Alternatives.

Impact AIR-2 Local community risks and hazards during construction

No Action Alternative Under the No Action Alternative, there would be no construction and no construction emissions. There would be no impact on air quality.

Combined Alignment Alternative (Alternative 1) The closest sensitive receptors to construction under this alternative consist of several residences located adjacent to the roadways along the pipeline alignments. No sensitive receptors are located near the pump station location. The pollutants of concern that would affect sensitive receptors would be particulates, specifically PM_{10} and $PM_{2.5}$ contained in fugitive dust, and DPM from construction equipment. The control of particulates and fugitive dust is discussed above in **Impact AIR-1** and SJVAPCD Regulation VIII, which would be implemented during construction activities to minimize exposure to fugitive dust. The construction period for the proposed Action Alternatives, including this one, is approximately 1.5 years. As the construction phase of this alternative would be continually moving in location along the pipeline alignment, would not involve the use of substantial quantities of construction equipment, it would not emit substantial quantities of DPM to any particular location. DPM exposure of 1.5 years from construction equipment is not quantified, as cancer potency factors are based on life-time exposure and there is considerable uncertainty in trying to evaluate the cancer risk from projects that would only last a small fraction of a lifetime (OEHHA 2012). Due to the short duration of the project, this alternative would not pose long-term or significant health risks to nearby residents and workers in the vicinity of the construction activities. Thus, the impact on sensitive receptors from fugitive dust and other pollutants would be less than significant.

Separate Alignment Alternative (Alternative 2) Emissions would be as described for the Alternative 1, though the specific receptors would be somewhat different. Residences along the northern alignment would be the same, but there would be additional residents along the southern alignment segment that would be affected by this alternative. However, similar to the Alternative 1, construction activities for this alternative would also be continually moving in location along the pipeline alignments, would not involve the use of substantial quantities of construction equipment, and would not emit substantial quantities of DPM to any particular location. Thus, this alternative would also not pose long-term or significant health risks to nearby residents and workers in the vicinity of proposed construction activities and the impact on sensitive receptors from fugitive dust and other pollutants would be less than significant.

PID Conveyance Alternative (Alternative 3) Impacts would be similar to those described above for the other two Action Alternatives. Thus, this alternative would also not pose long-term or significant health risks to nearby residents and workers in the vicinity of construction activities and the impact on sensitive receptors from fugitive dust and other pollutants would be less than significant.

Significance Determination before Mitigation Less than significant for Alternatives 1, 2 and 3; no impact for the No Action Alternative.

Mitigation Measures No mitigation required.

Impact AIR-3 Odors generated during project construction
No Action Alternative Under the No Action Alternative, there would not be any construction and therefore no additional odors could occur.

Combined Alignment Alternative (Alternative 1) Construction activities under this alternative would not result in the generation of permanent or long-term objectionable odors. Odors associated with the intermittent operation of diesel-powered equipment might be detected by nearby sensitive receptors, but these odors would be of short duration and would not affect a substantial number of people. Soil excavated or brought up from trenchless construction may contain organic material that is decaying that may create an objectionable odor. The intensity of the odor perceived by a receptor depends on the distance of the receptor from the construction activity and the amount and quality of the exposed soil material. The location of the construction activities would be limited and in rural areas not located near large numbers of receptors. Exposed soil would be either quickly reused on-site or hauled and disposed of properly off-site. Therefore any odor that could be produced would be short-term and temporary. This impact would be less than significant.

Separate Alignment Alternative (Alternative 2) Impacts would be the same as Alternative 1.

PID Conveyance Alternative (Alternative 3) Impacts would be the same as Alternative 1.

Significance Determination before Mitigation Less than significant for Alternatives 1, 2 and 3; no impact for the No Action Alternative.

Mitigation Measures No mitigation required.

Impact AIR-4 Direct emissions of criteria pollutants during project operation
No Action Alternative Under the No Action Alternative, treated waste water would continue to be discharged to the San Joaquin River or disposed of on land. There would be no change in operational emissions from current practices and thus no impact on air quality.

Combined Alignment Alternative (Alternative 1) Under Alternative 1, there would only be occasional trips associated with pipeline maintenance and inspection. The SJVAPCD's small project analysis level guidance states that general industrial activities generating less than 1,506 trips per day are assumed to have a less-than-significant impact on air quality, and criteria pollutant emissions associated with these activities would not need to be quantified. The proposed project's activities would result in a fraction of this truck trip significance threshold and these limited maintenance trips would not be expected to conflict with or obstruct implementation of the local air districts' air quality plans or increase criteria pollutant emissions above the significant thresholds. The impact would be less than significant.

Separate Alignment Alternative (Alternative 2) Under Alternative 2, similar to Alternative 1, there would also be occasional trips associated with pipeline maintenance and inspection. In addition, the pump station at the Harding Drain Bypass Pipeline would require an emergency generator that would be permitted under SJVAPCD stationary source permits, which require

sources to achieve BACT and offset any emissions above the significance thresholds. The only operational emissions that would routinely occur would be for periodic testing at this facility. Given the small number of maintenance trips and the limited use of the emergency generator for testing along with permit requirements, this alternative is not expected to increase criteria pollutant emissions above significant thresholds. The impact would be less than significant.

PID Conveyance Alternative (Alternative 3) Under Alternative 3, similar to the other two Action alternatives, there would be occasional trips associated with pipeline maintenance and inspection. In addition, the pump at the PID Intake may require an emergency generator that would be also be permitted under SJVAPCD stationary source permits. Similar to the Alternative 2, the only operational emissions that would routinely occur would be periodic testing of the emergency generator. This is also not expected to increase criteria pollutant emissions above significant thresholds and the impact would be less than significant.

Significance Determination before Mitigation Less than significant for Alternatives 1, 2 and 3; no impact for the No Action Alternative.

Mitigation Measures No mitigation required.

Impact AIR-5 Local community risks and hazards during project operation

No Action Alternative Under the No Action Alternative, treated waste water would continue to be discharged to the San Joaquin River or disposed of on land. There would be no change from current operations and thus no new operational emissions would be generated.

Combined Alignment Alternative (Alternative 1) DPM from truck exhaust represents the primary health risk from operation of the pipeline. Truck exhaust would only be emitted during maintenance and pipeline inspection activities for this alternative, which are anticipated to be minimal. Given the small number of trips and the fact that CARB regulations limit diesel truck idling to 5 minutes or less, would not expose any nearby residents or other sensitive receptors to significant health risks during project operation and impacts are considered less than significant.

Separate Alignment Alternative (Alternative 2) Impacts would be similar to Alternative 1. The emergency generator would only operate under emergency situations and for periodic testing. The emergency generator would be a permitted source under SJVAPCD regulations which require BACT standards and minimization of health risks to sensitive receptors. Given the minimal amount of trucks and permit requirements for the emergency generator, the impacts to the health of sensitive receptors are considered less than significant.

PID Conveyance Alternative Impacts under this alternative would be similar to the impacts for the Alternative 2. Given the minimal amount of trucks and permit requirements for the emergency generator, the impacts to the health of sensitive receptors are considered less than significant.

Significance Determination before Mitigation Less than significant for Alternatives 1, 2 and 3; no impact for the No Action Alternative.

Mitigation Measures No mitigation required.

Impact AIR-6 Odor emissions during project operation
No Action Alternative Under the no action alternative, treated waste water would continue to be discharged to the San Joaquin River or disposed of on land. Effluent proposed for discharge would undergo tertiary treatment. Water that has undergone this level of treatment generally does not have any offensive odors associated with it, and impacts would be less than significant.

Combined Alignment Alternative (Alternative 1) Effluent proposed for discharge into the DMC under this alternative would undergo tertiary treatment prior to discharge. Water that has undergone this level of treatment generally does not have any offensive odors associated with it. Therefore, impacts related to odor under this alternative would be considered less than significant.

Separate Alignment Alternative (Alternative 2) Impacts related to odor would be the same as Alternative 1.

PID Conveyance Alternative (Alternative 3) Effluent proposed for discharge into the San Joaquin River under this alternative would undergo tertiary treatment prior to discharge. Water that has undergone this level of treatment generally does not have any offensive odors associated with it. Therefore, impacts related to odor under this alternative would be considered less than significant.

Significance Determination before Mitigation Less than significant for Alternatives 1, 2 and 3 and the No Action Alternative.

Mitigation Measures No mitigation required.

Impact AIR-7 Consistency with applicable air quality plans
No Action Alternative Under the No Action Alternative, treated wastewater would continue to be discharged to the San Joaquin River or disposed of on land. There would be no change in emissions from current practice and current practice is consistent with SJVAPCD Air Quality Attainment Plan.

Combined Alignment Alternative (Alternative 1) Alternative 1 would result in construction of pipelines and modification of an existing pump station. Specific air quality impacts related to criteria pollutants are discussed in **Impact AIR-1** and **AIR-4**. The project includes relevant mitigation requirements that are contained within the SJVAPCD Air Quality Attainment Plan and would comply with SJVAPCD regulations. Therefore, Alternative 1 would not conflict with or obstruct the SJVAPCD Air Quality Attainment Plans and the impact would be less than significant.

Separate Alignment Alternative (Alternative 2) Alternative 2 would result in construction of pipelines, modification of an existing pump station, and construction of a new pump station. Impacts would be similar to those of Alternative 1. Alternative 2 would not conflict with or

obstruct the SJVAPCD Air Quality Attainment Plans and the impact would be less than significant.

PID Conveyance Alternative (Alternative 3) This alternative would result in construction of pipelines and modification of an existing intake, including construction of a new pump. Impacts would be similar to those of Alternatives 1 and 2, with slightly lower emissions during construction. This alternative would not conflict with or obstruct the SJVAPCD Air Quality Attainment Plans and the impact would be less than significant.

Significance Determination before Mitigation Less than significant for Alternatives 1, 2 and 3; no impact for the No Action Alternative.

Mitigation Measures No mitigation required.

Impact AIR-8 Cumulative Impact on Air Quality The SJVAB is currently designated as a nonattainment area for federal and state O_3 and $PM_{2.5}$ standards, and state PM_{10} standards. The SJVAPCD has adopted a cumulative threshold of significance of 10 tons per year for O_3 precursors (VOC and NO_x) and 15 tons per year for PM_{10} and $PM_{2.5}$.

No Action Alternative Past, present, and probable future projects could have a significant cumulative impact on air quality in the project area. However, since there would be no new emissions associated with the No Action Alternative, this alternative would not contribute to cumulative air quality impacts.

Combined Alignment Alternative (Alternative 1) Operation of this alternative would result in emissions of PM and exhaust gases that would not exceed applicable criteria. However, it is possible that construction activities associated with this alternative would exceed the criteria for NO_x, which is considered a considerable contribution to a significant cumulative impact. Implementation of **Mitigation Measure AIR-1** would reduce construction air emissions to levels below SJVAPCD's construction significance thresholds. Therefore, with implementation of **Mitigation Measure AIR-1**, the incremental contribution of this alternative would not be cumulatively considerable.

Separate Alignment Alternative Impacts under this alternative would be similar to Alternative 1. Implementation of **Mitigation Measure AIR-1** would reduce construction air emissions to levels below SJVAPCD's construction significance thresholds. Therefore, with implementation of **Mitigation Measure AIR-1**, the incremental contribution of this alternative would not be cumulatively considerable.

PID Conveyance Alternative (Alternative 3) Impacts would be similar to those of Alternatives 1 and 2, with slightly lower emissions during construction. Implementation of **Mitigation Measure AIR-1** would reduce construction air emissions to levels below SJVAPCD's construction significance thresholds. Therefore, with implementation of **Mitigation Measure AIR-1**, the incremental contribution of this alternative would not be cumulatively considerable.

Significance Determination before Mitigation Potentially significant for Alternatives 1, 2 and 3; no impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure AIR-1**.

Significance Determination after Mitigation Less than significant.

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3.4 Biological Resources

This chapter discusses the potential for the Proposed Action to affect wetland, riparian, and upland habitats, and the special-status plant, fish, and wildlife species that may utilize these habitats. Specifically, this section: (1) discusses federal, state, and local regulations relevant to vegetation and wildlife resources that may be affected by the Proposed Action; (2) describes the existing environmental setting in the Potentially Affected Area; (3) identifies plant, fish, and wildlife species potentially affected by the Proposed Action; and (4) proposes avoidance, minimization and compensation measures to reduce potentially significant impacts.
The following appendices support this section, unless otherwise specified in the text below:

- **Appendix D**: Supporting Documentation Related to Biological Resources.
- **Appendix F**: Assessment of Potential Effects of the NVRRWP Reductions in Freshwater Discharges into the San Joaquin River on Fisher Habitat and Juvenile Salmon Survival (Hanson 2013).
- **Appendix F:** Draft Sample Frac-out Prevention Plan for HDD

The following sections describe the environmental setting for biological resources in proximity to the project site. Emphasis is placed on biological communities and species that may be affected by construction of the Proposed Action. More general descriptions are provided for areas that would receive recycled water such as agricultural lands and refuges.

For the purposes of this section, the "Study Area" refers to the potential footprint of the Action alternatives including all construction areas, staging areas, access roads, and areas that would be temporarily or permanently disturbed. The Study Area for Alternatives 1 and/or 2 is shown in **Figure 3.4-1,** Sheets 1-17. Note that these figures distinguish preliminary locations where open-cut construction and trenchless construction techniques (e.g., HDD, micro-tunneling) would be employed. In general, trenchless construction techniques would be used in environmentally sensitive areas (e.g., stream crossings, riparian areas) to minimize the potential for disturbance of sensitive resources. The Study Area for Alternative 3 includes the PID intake and the pipeline alignment, which parallels the PID Main Canal and then travels along Bartch and Ward Avenues and is shown in **Figure 3.4-1,** Sheets 18-23.

For the purposes of this section, the "Potentially Affected Area" includes the geographic extent of project actions that may affect biological resources. The Potentially Affected Area includes the Study Area, land within the DPWD's service area, and the CVPIA-designated wildlife refuges that could receive water under the Proposed Action. Because the pipeline alignments cross the DPWD service area, environmental conditions in the agricultural lands that would receive water from NVRRWP are essentially the same as those within the construction footprint.

Figure 3.4-1: Biological Study Area for Alternatives 1 and 2 (1 of 23)

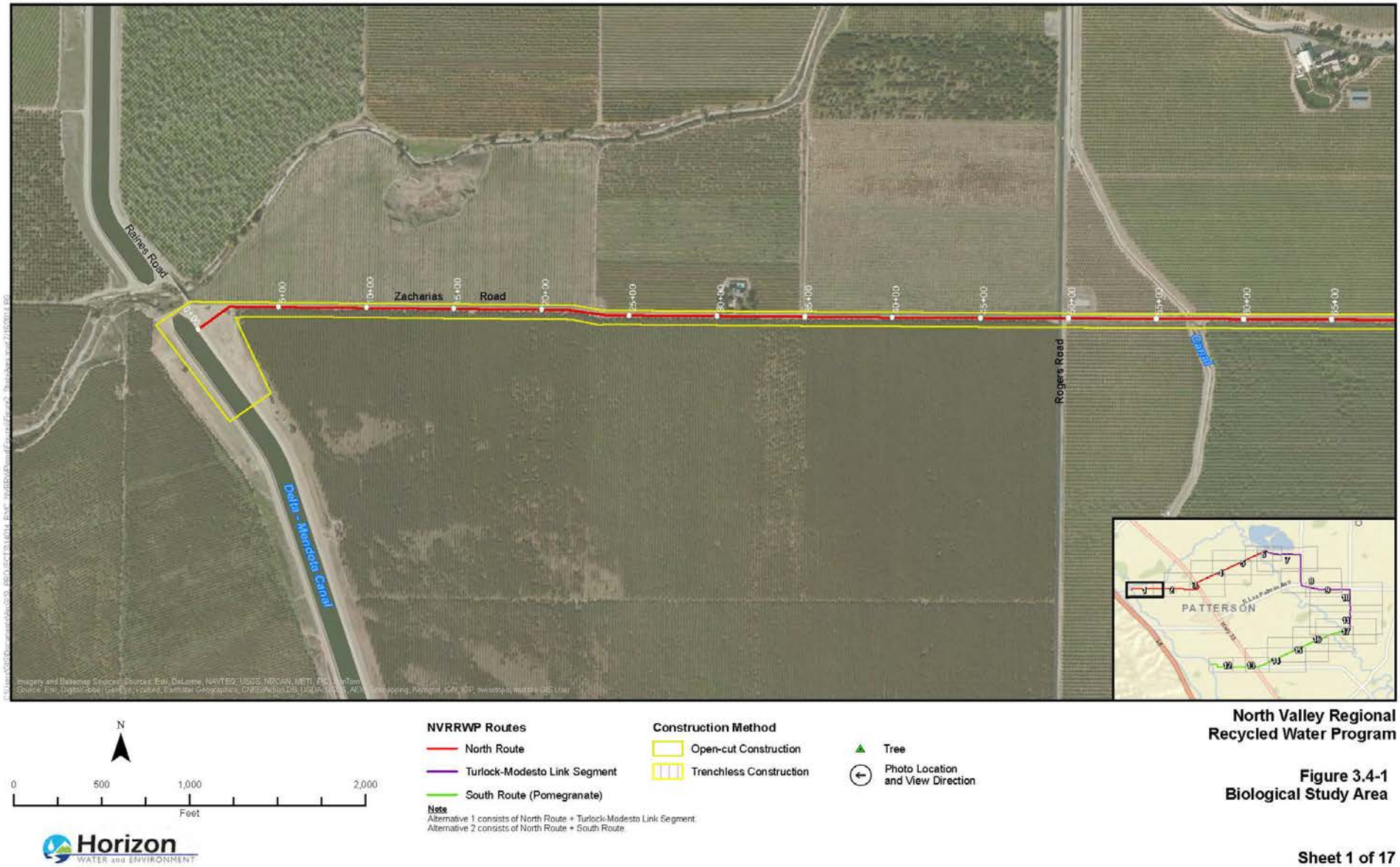


Figure 3.4-1: Biological Study Area for Alternatives 1 and 2 (2 of 23)

N

0 500 1,000 2,000
Feet

NVRRWP Routes
North Route
Turlock-Modesto Link Segment
South Route (Pomegranate)

Construction Method
Open-cut Construction
Trenchless Construction

Tree
Photo Location and View Direction

Note
Alternative 1 consists of North Route + Turlock-Modesto Link Segment.
Alternative 2 consists of North Route + South Route.

North Valley Regional Recycled Water Program

Figure 3.4-1
Biological Study Area

Horizon WATER and ENVIRONMENT

Sheet 2 of 17

Figure 3.4-1: Biological Study Area for Alternatives 1 and 2 (3 of 23)

N

0 500 1,000 2,000
Feet

NVRRWP Routes
- North Route
- Turlock-Modesto Link Segment
- South Route (Pomegranate)

Construction Method
- Open-cut Construction
- Trenchless Construction

- Tree
- Photo Location and View Direction

Note
Alternative 1 consists of North Route + Turlock-Modesto Link Segment.
Alternative 2 consists of North Route + South Route.

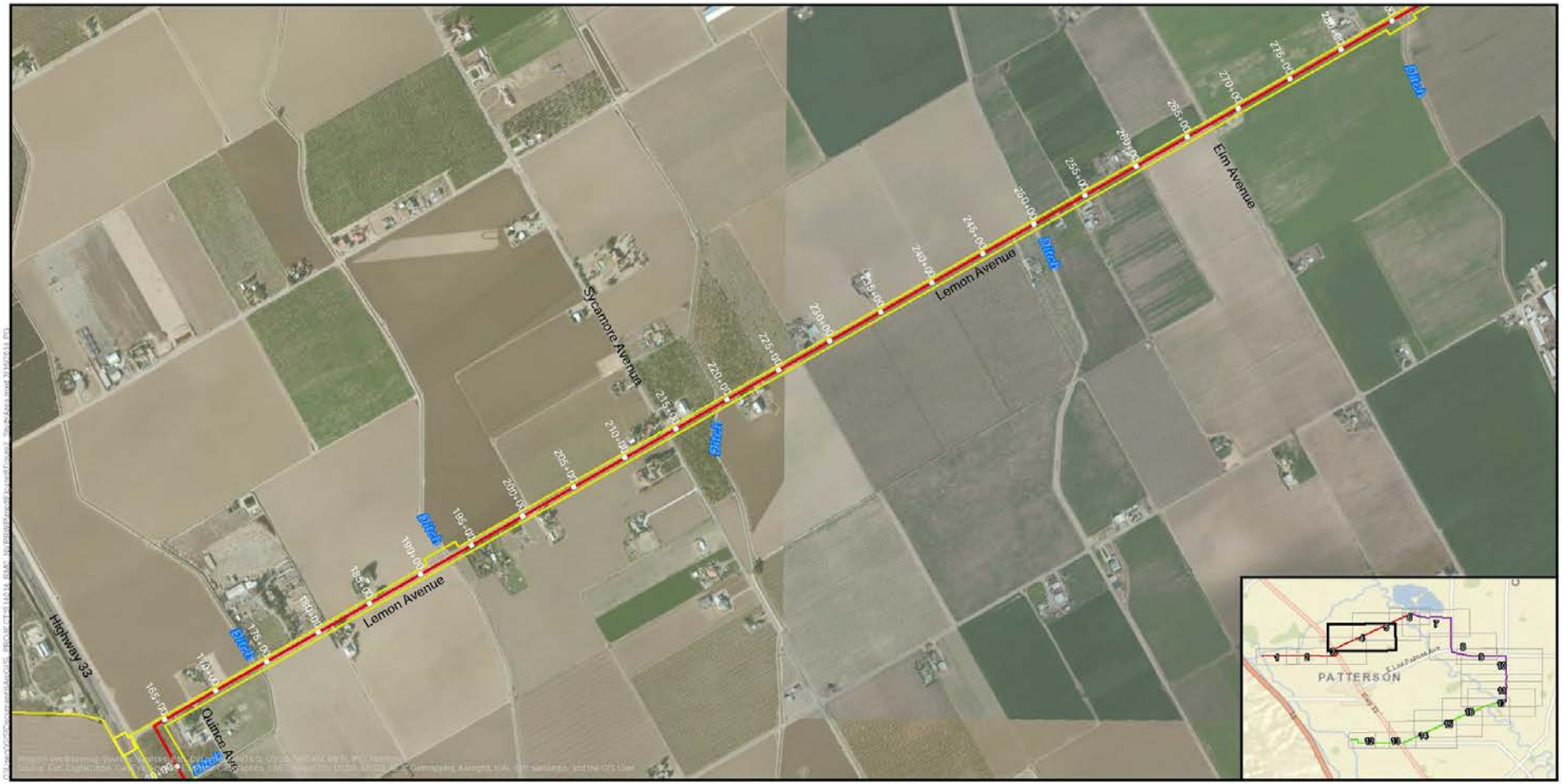
Horizon WATER and ENVIRONMENT

North Valley Regional Recycled Water Program

Figure 3.4-1
Biological Study Area

Sheet 3 of 17

Figure 3.4-1: Biological Study Area for Alternatives 1 and 2 (4 of 23)



N

0 500 1,000 2,000
Feet

NVRRWP Routes
- North Route
- Turlock-Modesto Link Segment
- South Route (Pomegranate)

Construction Method
- Open-cut Construction
- Trenchless Construction

- Tree
- Photo Location and View Direction

Note
Alternative 1 consists of North Route + Turlock-Modesto Link Segment.
Alternative 2 consists of North Route + South Route.

Horizon WATER and ENVIRONMENT

North Valley Regional Recycled Water Program

Figure 3.4-1
Biological Study Area

Sheet 4 of 17

Figure 3.4-1: Biological Study Area for Alternatives 1 and 2 (5 of 23)

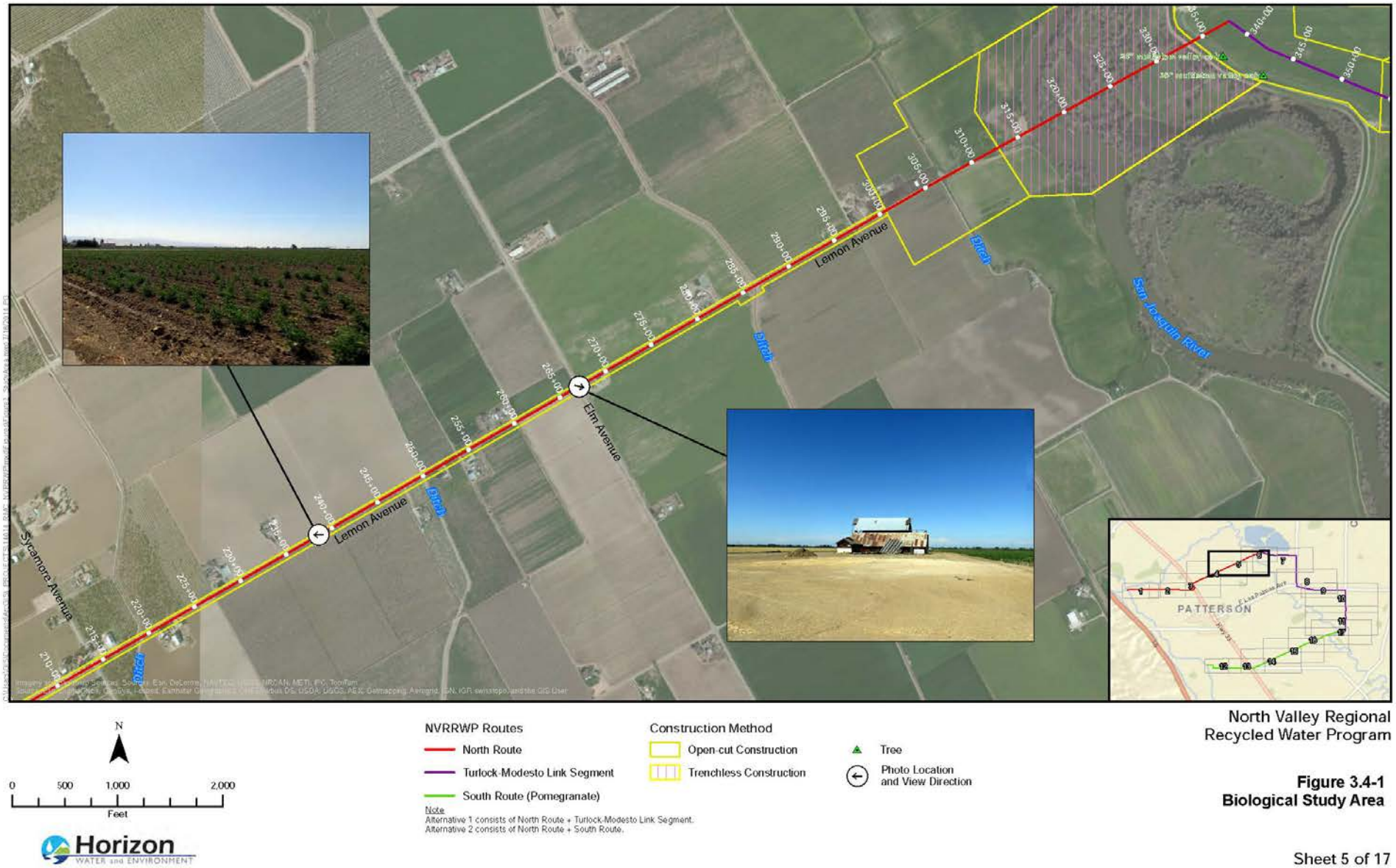


Figure 3.4-1: Biological Study Area for Alternatives 1 and 2 (6 of 23)

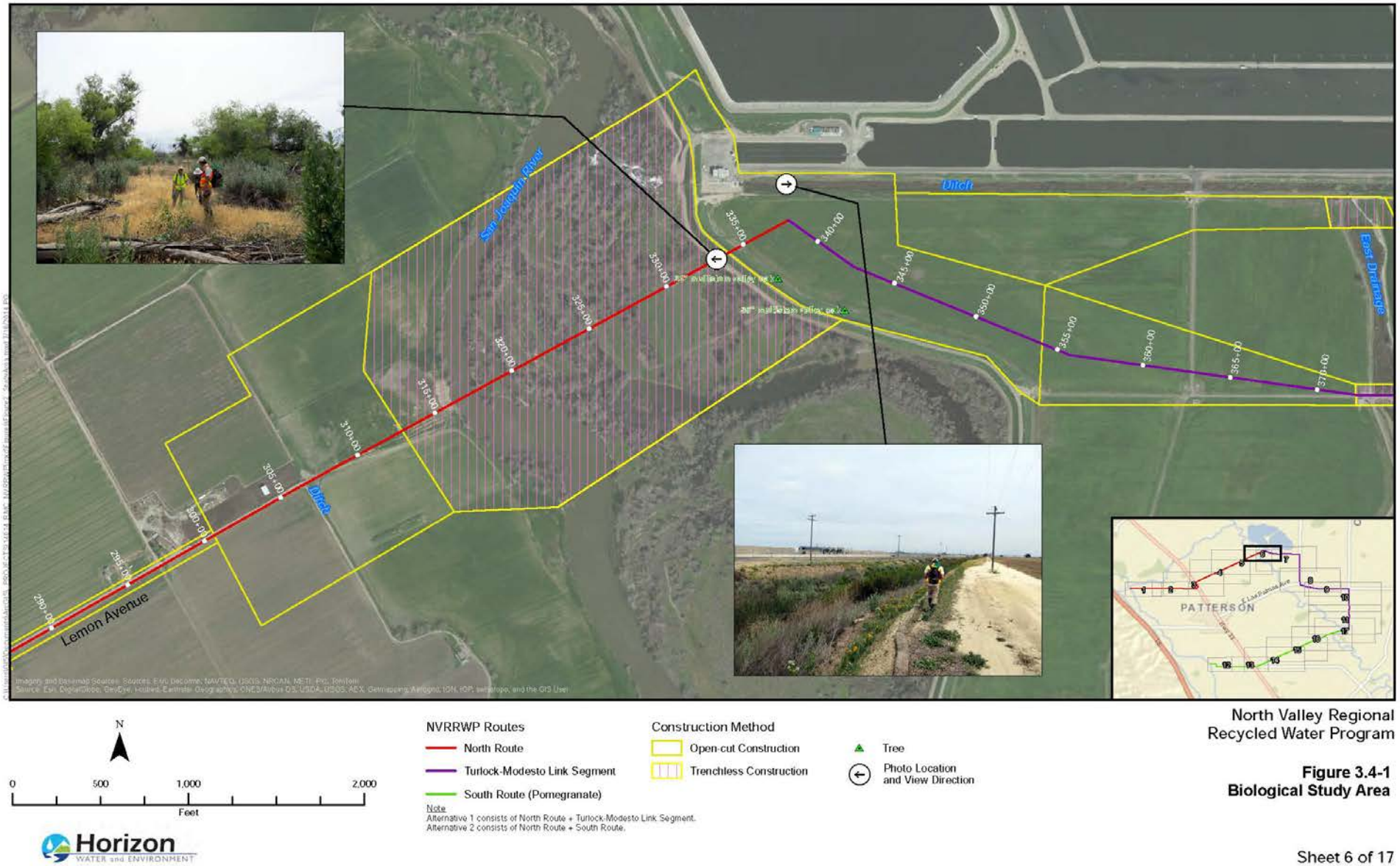


Figure 3.4-1: Biological Study Area for Alternatives 1 and 2 (7 of 23)

N

0 500 1,000 2,000
Feet

Horizon WATER and ENVIRONMENT

NVRRWP Routes
- North Route
- Turlock-Modesto Link Segment
- South Route (Pomegranate)

Note
Alternative 1 consists of North Route + Turlock-Modesto Link Segment.
Alternative 2 consists of North Route + South Route.

Construction Method
- Open-cut Construction
- Trenchless Construction

- Tree
- Tricolored Blackbird breeding colony
  Source: UC Davis 2014
- Photo Location and View Direction

North Valley Regional Recycled Water Program

Figure 3.4-1
Biological Study Area

Sheet 7 of 17

Figure 3.4-1: Biological Study Area for Alternative 1 (8 of 23)

N

0 500 1,000 2,000
Feet

Horizon WATER and ENVIRONMENT

NVRRWP Routes
- North Route
- Turlock-Modesto Link Segment
- South Route (Pomegranate)

Construction Method
- Open-cut Construction
- Trenchless Construction

- Tree
- Photo Location and View Direction

Note
Alternative 1 consists of North Route + Turlock-Modesto Link Segment.
Alternative 2 consists of North Route + South Route.

North Valley Regional Recycled Water Program

Figure 3.4-1
Biological Study Area

Sheet 8 of 17

Figure 3.4-1: Biological Study Area for Alternative 1 (9 of 23)

N

0 500 1,000 2,000
Feet

NVRRWP Routes
- North Route
- Turlock-Modesto Link Segment
- South Route (Pomegranate)

Construction Method
- Open-cut Construction
- Trenchless Construction

- Tree
- Photo Location and View Direction

Note
Alternative 1 consists of North Route + Turlock-Modesto Link Segment.
Alternative 2 consists of North Route + South Route.

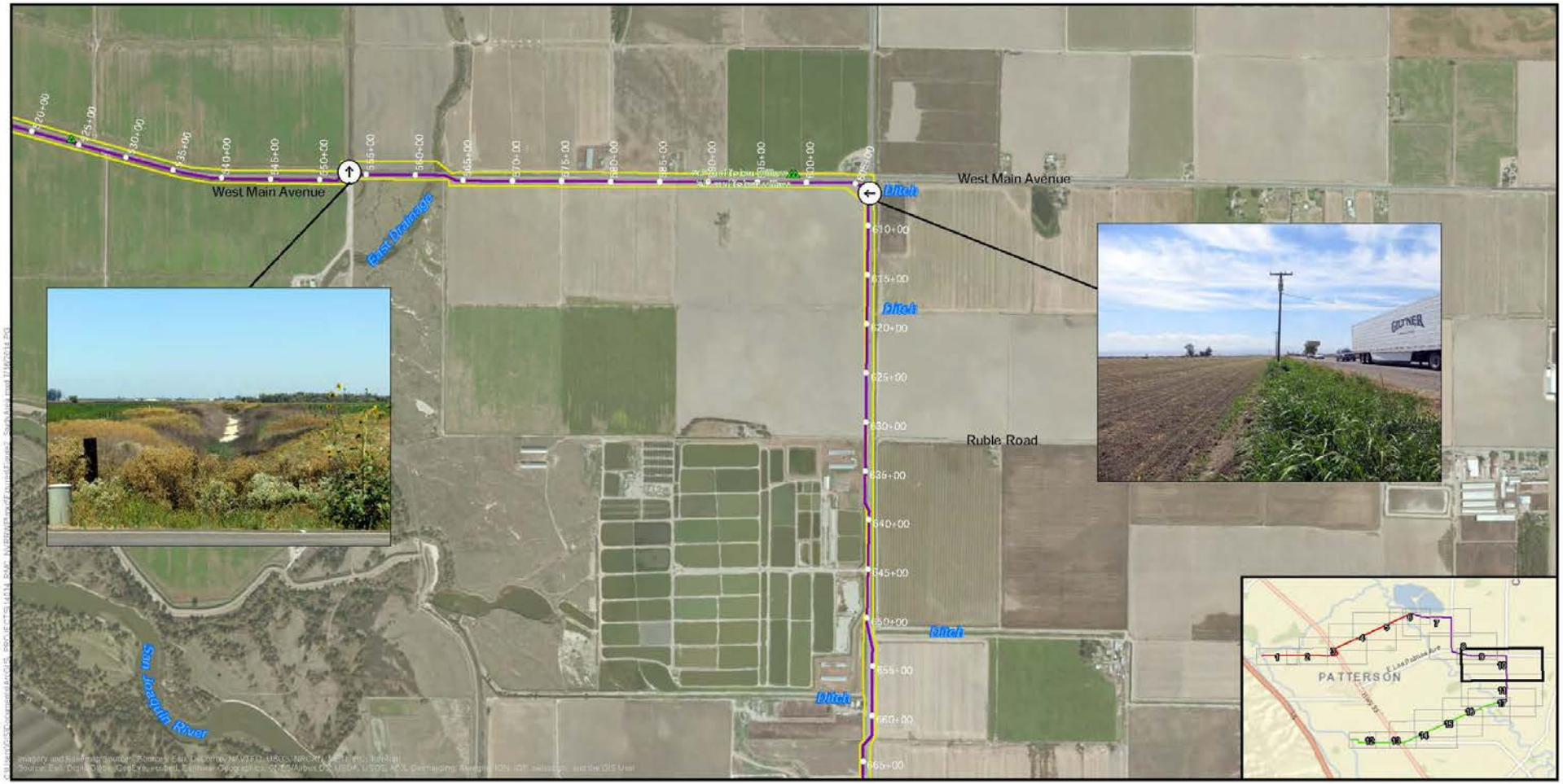
North Valley Regional Recycled Water Program

Figure 3.4-1
Biological Study Area

Horizon WATER and ENVIRONMENT

Sheet 9 of 17

Figure 3.4-1: Biological Study Area for Alternative 1 (10 of 23)



N

0 500 1,000 2,000
Feet

Horizon
WATER and ENVIRONMENT

NVRRWP Routes
- North Route
- Turlock-Modesto Link Segment
- South Route (Pomegranate)

Construction Method
- Open-cut Construction
- Trenchless Construction

- Tree
- Photo Location and View Direction

Note
Alternative 1 consists of North Route + Turlock-Modesto Link Segment.
Alternative 2 consists of North Route + South Route.

North Valley Regional Recycled Water Program

Figure 3.4-1
Biological Study Area

Sheet 10 of 17

Figure 3.4-1: Biological Study Area for Alternatives 1 and 2 (11 of 23)

N

0 500 1,000 2,000
Feet

Horizon WATER and ENVIRONMENT

NVRRWP Routes
- North Route
- Turlock-Modesto Link Segment
- South Route (Pomegranate)

Construction Method
- Open-cut Construction
- Trenchless Construction

- Tree
- Photo Location and View Direction

Note
Alternative 1 consists of North Route + Turlock-Modesto Link Segment.
Alternative 2 consists of North Route + South Route.

North Valley Regional Recycled Water Program

Figure 3.4-1
Biological Study Area

Sheet 11 of 17

Figure 3.4-1: Biological Study Area for Alternative 2 (12 of 23)

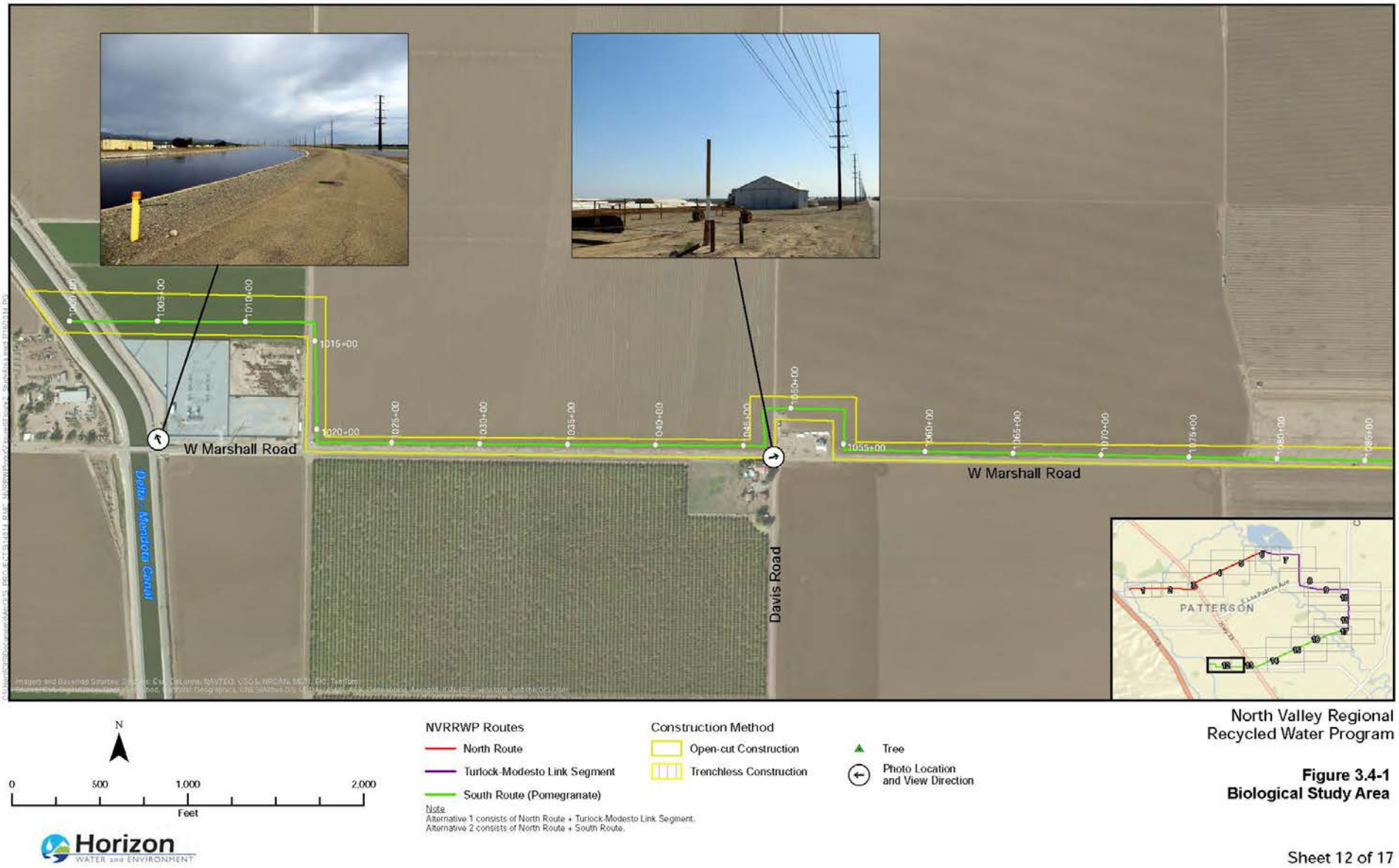


Figure 3.4-1: Biological Study Area for Alternative 2 (13 of 23)

N

0 500 1,000 2,000
Feet

Horizon WATER and ENVIRONMENT

NVRRWP Routes
- North Route
- Turlock-Modesto Link Segment
- South Route (Pomegranate)

Construction Method
- Open-cut Construction
- Trenchless Construction

- Tree
- Photo Location and View Direction

Note
Alternative 1 consists of North Route + Turlock-Modesto Link Segment.
Alternative 2 consists of North Route + South Route.

North Valley Regional Recycled Water Program

Figure 3.4-1
Biological Study Area

Sheet 13 of 17

Figure 3.4-1: Biological Study Area for Alternative 2 (14 of 23)

N

0 500 1,000 2,000
Feet

Horizon WATER and ENVIRONMENT

NVRRWP Routes
- North Route
- Turlock-Modesto Link Segment
- South Route (Pomegranate)

Construction Method
- Open-cut Construction
- Trenchless Construction

- Tree
- Photo Location and View Direction

Note
Alternative 1 consists of North Route + Turlock-Modesto Link Segment.
Alternative 2 consists of North Route + South Route.

North Valley Regional Recycled Water Program

Figure 3.4-1
Biological Study Area

Sheet 14 of 17

Figure 3.4-1: Biological Study Area for Alternative 2 (15 of 23)

N

0 500 1,000 2,000
Feet

Horizon WATER and ENVIRONMENT

NVRRWP Routes
- North Route
- Turlock-Modesto Link Segment
- South Route (Pomegranate)

Construction Method
- Open-cut Construction
- Trenchless Construction

- Tree
- Photo Location and View Direction

Note
Alternative 1 consists of North Route + Turlock-Modesto Link Segment.
Alternative 2 consists of North Route + South Route.

North Valley Regional Recycled Water Program

Figure 3.4-1
Biological Study Area

Sheet 15 of 17

Figure 3.4-1: Biological Study Area for Alternative 2 (16 of 23)

N

0 500 1,000 2,000
Feet

Horizon WATER and ENVIRONMENT

NVRRWP Routes
- North Route
- Turlock-Modesto Link Segment
- South Route (Pomegranate)

Construction Method
- Open-cut Construction
- Trenchless Construction
- Tree
- Photo Location and View Direction

Note
Alternative 1 consists of North Route + Turlock-Modesto Link Segment.
Alternative 2 consists of North Route + South Route.

North Valley Regional Recycled Water Program

Figure 3.4-1
Biological Study Area

Sheet 16 of 17

Figure 3.4-1: Biological Study Area for Alternative 2 (17 of 23)

N

0 500 1,000 2,000
Feet

Horizon WATER and ENVIRONMENT

NVRRWP Routes
- North Route
- Turlock-Modesto Link Segment
- South Route (Pomegranate)

Construction Method
- Open-cut Construction
- Trenchless Construction

Tree

Photo Location and View Direction

Note
Alternative 1 consists of North Route + Turlock-Modesto Link Segment.
Alternative 2 consists of North Route + South Route.

North Valley Regional Recycled Water Program

Figure 3.4-1
Biological Study Area

Sheet 17 of 17

Figure 3.4-1: Biological Study Area for Alternative 3 (18 of 23)

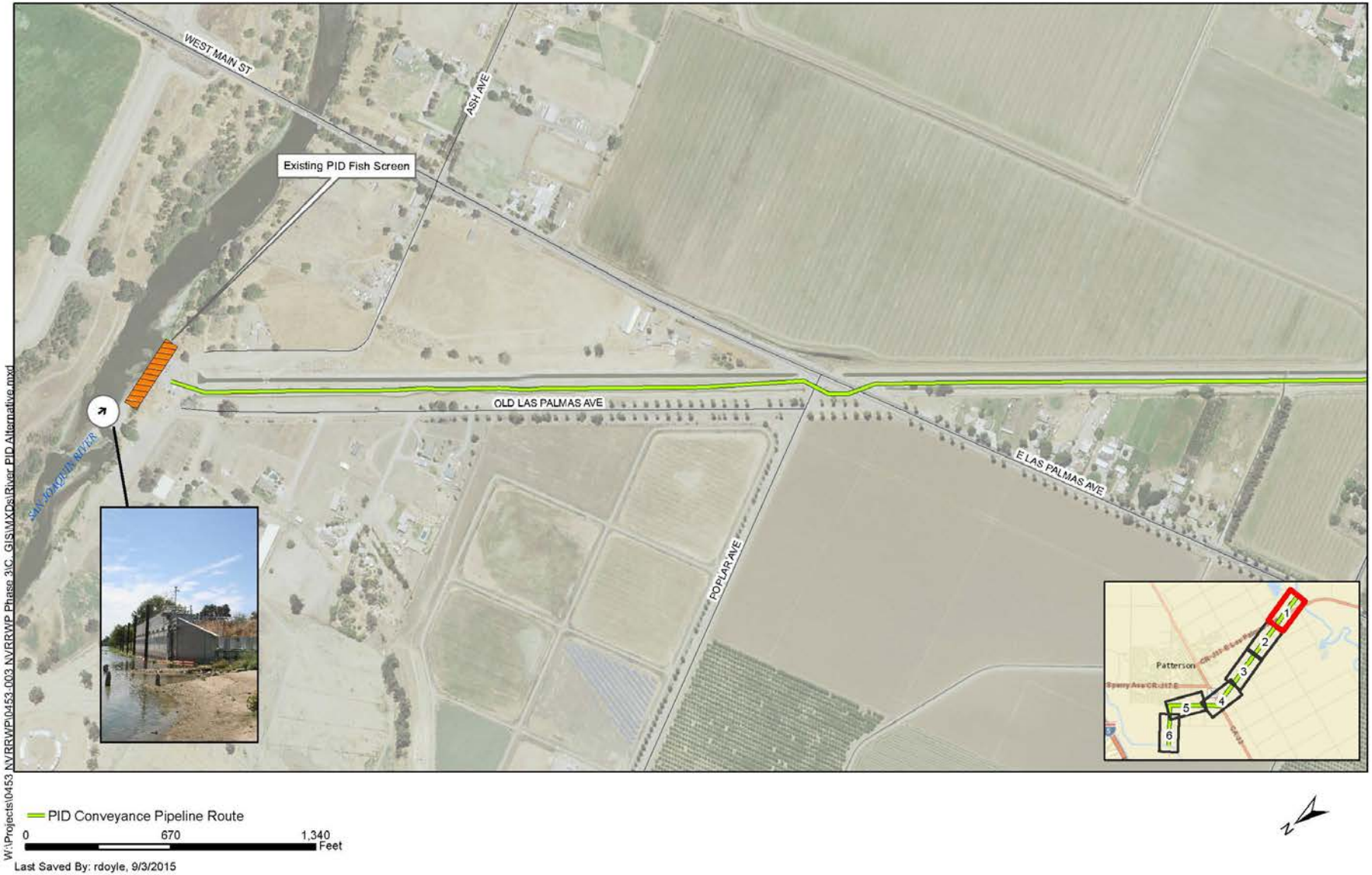


Figure 3.4-1: Biological Study Area for Alternative 3 (19 of 23)

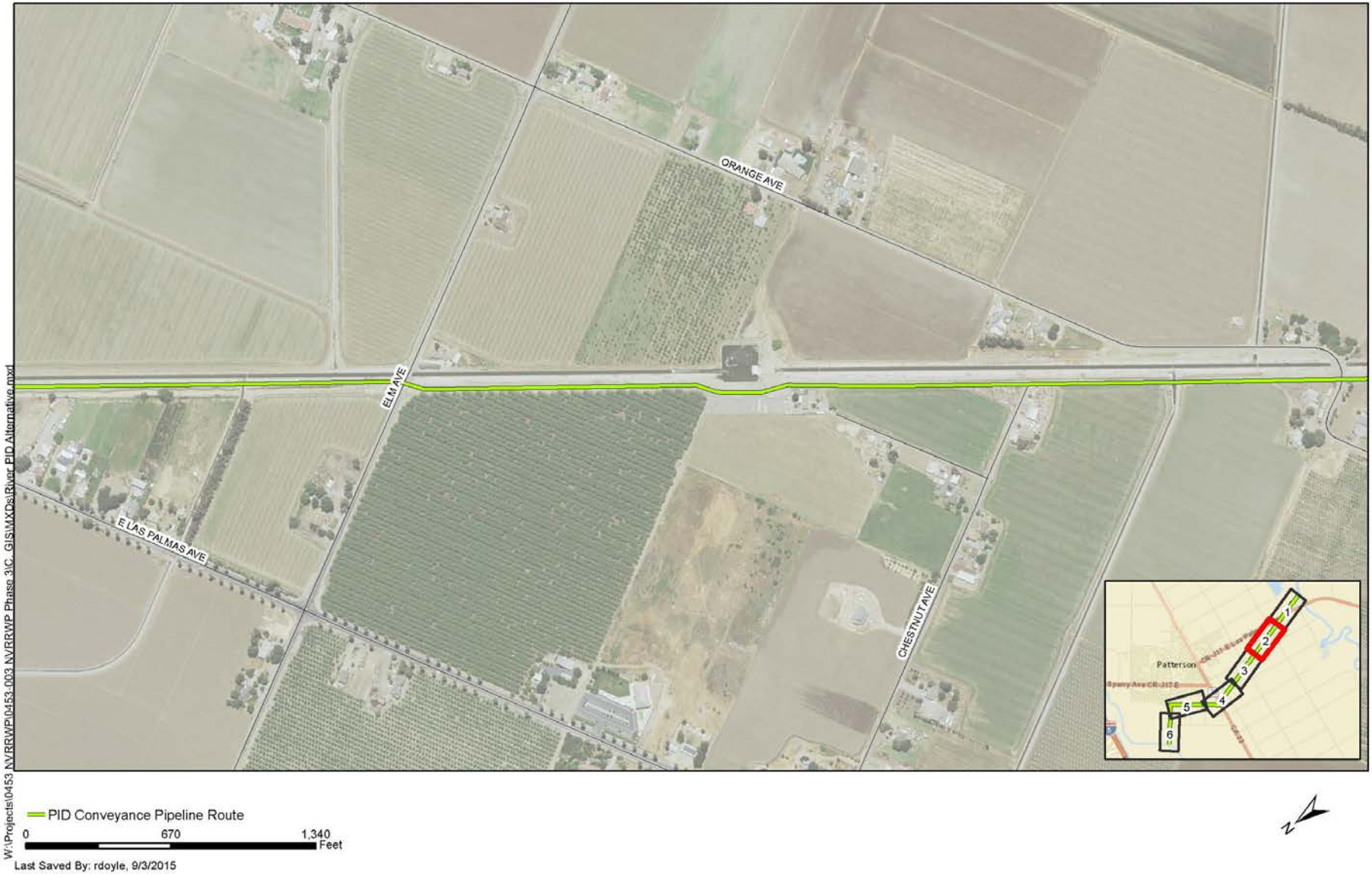


Figure 3.4-1: Biological Study Area for Alternative 3 (20 of 23)

Figure 3.4-1: Biological Study Area for Alternative 3 (21 of 23)

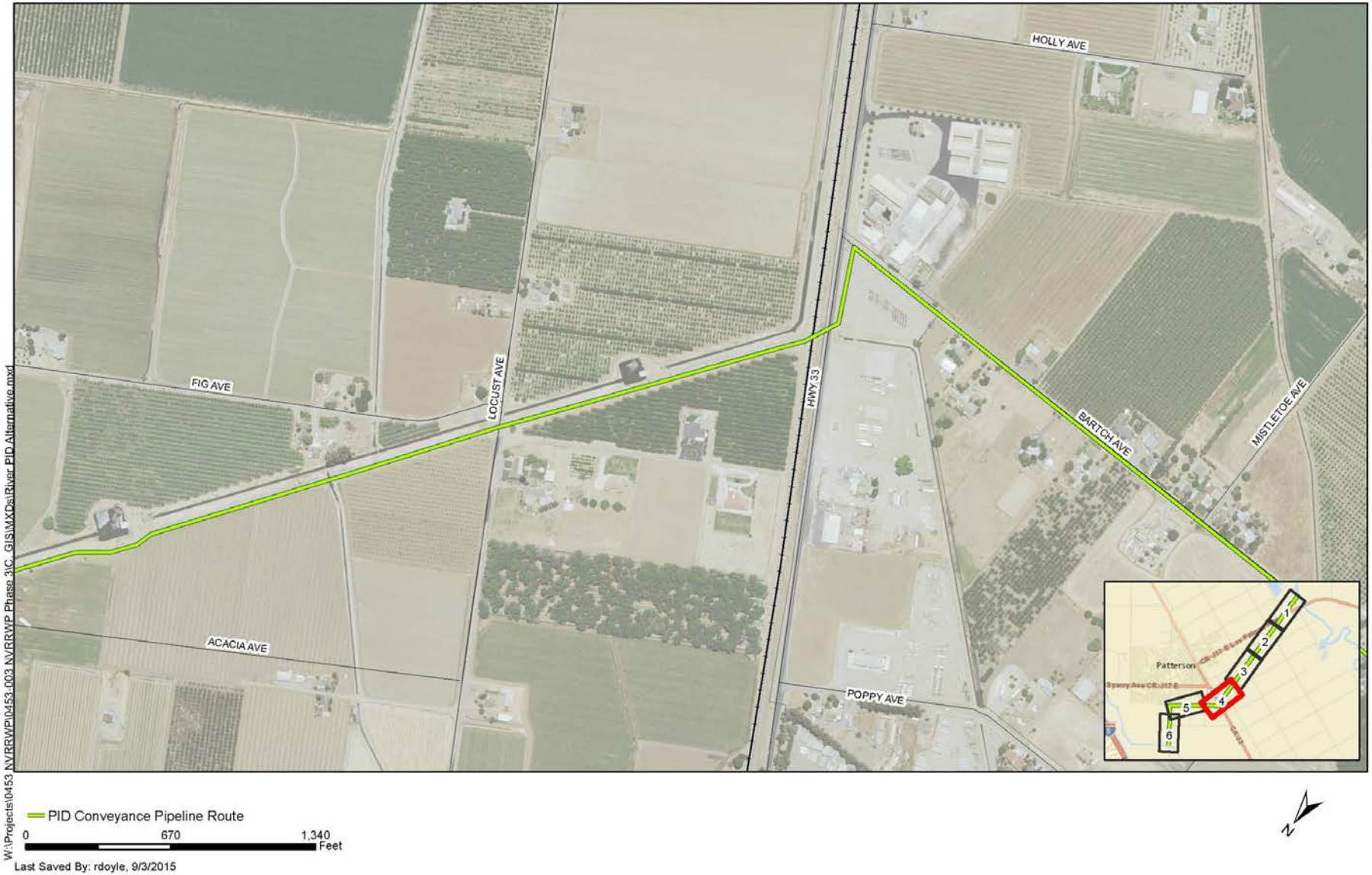


Figure 3.4-1: Biological Study Area for Alternative 3 (22 of 23)

Figure 3.4-1: Biological Study Area for Alternative 3 (23 of 23)

Descriptions of biological resources in the refuges can be found in the environmental document prepared for the refuge water supply program (Reclamation *et al.* 2001). Within the refuges recycled water would only be conveyed to existing habitats that receive water through the refuge water supply program, which includes stream channels, ponds, and wetlands that are seasonally inundated. Water would not be applied to uplands or any isolated wetland areas within those uplands such as vernal pools, which are thus excluded from the Potentially Affected Area.

Regional Setting

The Study Area is situated in the northwestern portion of the San Joaquin Valley and is bisected by the San Joaquin River. The Study Area generally has gently sloping terrain, with elevations around the San Joaquin River approximately 50 to 60 feet above mean sea level (msl), and gradually increases to approximately 180 feet above msl near the DMC.

Historically, land adjacent to the river was characterized by a complex network of sloughs and channels (USGS 1952), which supported a mosaic of habitats including riparian forest and scrub, freshwater wetlands, alkali scrub, and alkali flats (JSA 1998, FWUA and NRDC 2002, CDFW 2014). The completion of Friant Dam near Fresno in 1942 controlled the flow of the San Joaquin River, and within the decades that followed much of the land adjacent to the river was converted to agriculture. The landscape is now dominated by agriculture and agriculture-related business economies. Other land uses in the Study Area include rural residential, wastewater treatment facilities, flood control (levees), transportation, and open space.

The following section provides descriptions of biological communities in the Study Area. The descriptions presented below do not follow one specific classification system (e.g., Holland 1986, Sawyer et al. 2009), rather they draw from several resources to best communicate the characteristics of the resources present in the Study Area. Wildlife typically associated with these biological communities is also described below.

Terrestrial Communities

Agricultural Lands Agricultural lands within and adjacent to the Study Area include flood irrigated pastures, orchards, and row crops. Pastures are typically cultivated in alfalfa (*Medicago sativa*), rescue grass (*Bromus catharticus*), Johnson's grass (*Sorghum halepense*), tall fescue (*Festuca arundinaceae*), and Italian ryegrass (*Festuca perennis*). The primary orchard crops in the vicinity of the Study Area are apricot (*Prunus armeniaca*), English walnut *(Juglans regia*), and almond (*Prunus dulcis*) cultivars (City of Patterson 2010). Row crops include broccoli (*Brassica oleracea*), corn (*Zea mays*), and tomatoes (*Solanum lycopersicum*), among others**.**

Flood irrigated pastures provide food, cover, and nesting grounds for wildlife species; the value of the habitat varies with crop type and agricultural practices. Bird diversity can be high in irrigated pastures (Hartman and Kyle 2010). Species commonly utilizing pasture lands include red-winged blackbird (*Agelaius phoeniceus*), Brewer's blackbird (*Euphagus cyanocephalus*), western meadowlarks (*Sturnella neglecta*), European starling (*Sturnus vulgaris*), house finch (*Carpodacus mexicanus*), killdeer (*Charadrius vociferous*), American crow (*Corvus brachyrhynchos*), and American kestrel (*Falco sparverius*). Some pasture lands and crop fields provide suitable breeding habitat for northern harrier (*Circus cyaneus*). Small mammals in flood

irrigated pasture and row crops provide important prey resources for raptors such as red-tailed hawk (*Buteo jamaicensis*) and Swainson's hawk (*Buteo swainsoni*).

In orchards, the understory vegetation that provides food and cover for wildlife is generally removed, limiting the abundance and diversity of wildlife species. Species such as the side-blotched lizard (*Uta stansburiana*) can occur in this habitat type. American crow and yellow-billed magpies (*Pica nuttalli*), which forage on nut crops, are often present (City of Patterson 2010).

Ruderal Much of the Study Area is situated within access roads and road shoulders that support a ruderal vegetation community. This vegetation type is characterized by early colonizing species of disturbed and degraded areas. Community composition includes non-native annual grasses such as mouse barley (*Hordeum murinum* ssp. *leporinum*), rip-gut brome (*Bromus diandrus*), and red brome (*B. madritensis* ssp. *rubens*). Other species present within this community type include non-native, often invasive thistle species such as spiny sow's thistle (*Sonchus asper*), milk thistle (*Silybum marianum*), star thistles (*Centaurea* spp.) and Italian thistle (*Carduus pycnocephalus*). Although the ruderal plant community is generally limited to herbaceous species, there are several mature, native trees located in this community type along roadways, particularly along Jennings Road and West Main Avenue (**Figure 3.4-1**, Sheets 7 and 8).

Due to sparse vegetative cover and frequent disturbance, ruderal habitats provide limited value to wildlife. Species such as mourning dove (*Zenaida macroura*) and killdeer forage and nest in this community type. The mature trees along the roadways provide perches and nesting habitat for raptors such as red-tailed hawk.

Riparian Woodland

Valley Oak Riparian Forest In the Study Area, valley oak (*Quercus lobata*) riparian forest occurs on the topographically higher portions of the San Joaquin River floodplain (**Figure 3.4-1**, Sheet 17, Station 1310+00) and along the large natural drainage to the west of the San Joaquin River (**Figure 3.4-1**, Sheet 16, Station 1270+00, and Sheet 18, PID Intake). This community type is characterized by large, mature valley oaks in the overstory. The canopy is open to semi-closed. Understory vegetation is generally limited to herbaceous species and vines. Non-native grasses are dominant in the understory along the San Joaquin River. Perennial pepperweed (*Lepidium latifolium*) is dominant in the understory along the channel to the west of the river.

Willow Riparian Woodland Willow (*Salix* spp.) riparian woodland is the dominant community in the San Joaquin River corridor in the Study Area. This vegetation community can best be characterized as Black Willow thicket (Sawyer et al. 2009) or Willow Riparian (Moise and Hendrickson 2002). Black willow (or Gooding's willow, *Salix gooddingii*) composes a minimum of 50 percent of the canopy cover within this vegetation alliance (Sawyer et al. 2009). Fremont's cottonwood (*Populus fremontii*) may be a co-dominant in the overstory canopy. The shrub component of this vegetation type may be composed of willow species (*Salix lasiolepis*, *S. laevigata* and *S. lucida* ssp. *lasiandra*). Button willow (*Cephalanthus occidentalis*) may dominate along the river banks. Within the Study Area, black willow composes 70 percent or more of the overstory and button willow and young black willow dominate the shrub component;

arroyo willow is also abundant. Various wetland and mesic graminoids (grasses and grass-like plants including rushes and sedges) and forbs are present in the understory depending on the depth to ground water and proximity to the river. Saturated soils and areas with shallow stagnant water are dominated by bulrush (*Schoenoplectus* spp.). River banks and open water support the invasive water hyacinth (*Eichhornia crassipes*) and floating primrose willow (*Ludwigia peploides*). Unsaturated soils located outside the lower floodplain of the river are dominated by mugwort (*Artemisia douglasiana*), stinging nettle (*Urtica dioica*), and poison hemlock (*Conium maculatum*).

Riparian woodlands provide cover, food, and nesting habitat for a variety of wildlife species. Raptor species such as great horned owl (*Bubo virginianus*), red-tailed hawk, red-shouldered hawk (*Buteo lineatus*), Swainson's hawk, white-tailed kite (*Elanus leucurus*), and American kestrel may nest and forage in riparian woodland. Passerine species such as belted kingfisher (*Megaceryle alcyon*), downy woodpecker (*Picoides pubescens*), northern flicker (*Colaptes auratus*), ash-throated flycatcher (*Myiarchus cinerascens*), oak titmouse (*Baeolophus inornatus*), black phoebe (*Sayornis nigricans*), bushtit (*Psaltriparus minimus*), Bewick's wren (*Thryomanes bewickii*), lazuli bunting (*Passerina amoena*), blue grosbeak (*Passerina caerulea*), and species of goldfinches (*Carduelis* spp.) also commonly occur in this habitat. Mammals such as raccoon (*Procyon lotor*), desert cottontail (*Sylvilagus audubonii*), striped skunk (*Mephitis mephitis*), American beaver (*Castor canadensis*), and coyote (*Canis latrans*) are common in riparian woodlands.

Alkali Scrub/Alkali Flat In the Study Area, alkali scrub occurs on the river side of the flood control levee near the Harding Drain (**Figure 3.4-1**, Sheet 17, Station 1335+00). This area is dominated by Australian saltbush (*Atriplex semibaccata*) and big saltbush (*Atriplex lentiformis*). An alkali flat/scrub community occurs adjacent to the Study Area on the south side of West Main Avenue (Figure 3.4-1, Sheet 9, Station 553+00 to 563+00). Dominant species in this area include iodine bush (*Allenrolfea occidentalis*), alkali heath (*Frankenia salina*), saltgrass (*Distichlis spicata*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*) and tumbling saltweed (*Atriplex rosea*). These areas are remnant patches of the expansive alkali habitats that were once present in the San Joaquin Valley.

Alkali habitats support a diversity of wildlife and often rare species, but the alkali habitats in the Study Area are small and disconnected from large tracts of this habitat type. Thus, they are unlikely to support rare species associated with these habitats such as San Joaquin whipsnake (*Masticophis flagellum ruddocki*) and San Joaquin kit fox (*Vulpes macrotis mutica*). More common generalists such as desert cottontail, side-blotched lizard, and various passerine birds are likely to be present.

Aquatic and Wetland Communities

Riverine Riverine habitat in the Study Area includes the main channel of the San Joaquin River. In the Study Area, the river is a low gradient, sand/silt-bed channel with moderate to high sinuosity. Streamflow is perennial. The river is one of the most heavily dammed and diverted rivers in the state. While land use changes and water diversions have substantially reduced the flow and degraded habitat, the river remains an important wildlife corridor in the Central Valley. For example, Chinook salmon (*Oncorhynchus tshawytscha*) and a small number of steelhead

(*O. mykiss*) migrate through this portion of the river to reach spawning habitat in the Merced River (NMFS 2009). White sturgeon (*Acipenser transmontanus*), and possibly green (*Acipenser medirostris*), also occur in this reach of the San Joaquin River (Jackson and Van Eenennaam 2013). Other native fish species that likely occur in this portion of the river include hardhead (*Mylopharodon conocephalus*), Pacific lamprey (*Entosphenus tridentatus*), Kern brook lamprey (*Lampetra hubbsi*), and prickly scuplin (*Cottus asper*). However, reduced flows, high water temperatures in the summer, and degraded water quality have adversely affected the habitat quality for many native fish species, resulting in a greater number of introduced species that are tolerant of these conditions. Introduced species include common carp (*Cyprinus carpio*), channel catfish (*Ictalurus punctatus*), white catfish (*Ictalurus catus),* fathead minnow (*Pimephales promelas*), red shiner (*Cypriella lutrensis*), and largemouth bass (*Micropteras salmoides*) (San Joaquin River Restoration Program 2012). Herpetofauna that commonly use the river and off-channel aquatic habitats include western pond turtle (*Actinemys marmorata*), Sierran treefrog (*Pseudacris sierra*), and American bullfrog (*Lithobates catesbeianus*).

Sloughs and Natural Drainages As described previously in this section, land adjacent to the river was historically characterized by a complex network of sloughs and side channels. While most of these waterways have been filled, two large drainages that retain "natural" channel characteristics (e.g., sinuosity, non-uniform bed and banks) remain intact in the Study Area: one on the east side of the river, and one on the west. The drainage located east of the river flows adjacent to the City of Modesto Police Department shooting range, alkali habitat south of West Main Avenue, and the Modesto WTP spray fields (**Figure 3.4-1**, Sheets 7 to 10). In general, this drainage has steep banks, which are armored with rip-rap in many locations. Large stands of bulrush are dispersed throughout the drainage. Floating aquatic vegetation such as Ludwigia (*Ludwigia peploides*) is also common.

The drainage to the west of the river (**Figure 3.4-1**, Sheet 16) has the characteristic of a backwater channel or abandoned slough. Flow is likely slow or stagnant throughout most of the year. This channel does not have abundant emergent or aquatic vegetation, but there is a considerable amount of woody debris. Streambanks are gently sloped.

Natural drainages likely support an assemblage of fishes tolerant of warm water and low oxygen conditions such as mosquitofish (*Gambusia affinis*). Ducks and wading birds, such as great blue heron (*Ardea herodias*) and egrets, forage in these drainages. Both drainages provide potentially suitable habitat for western pond turtle, and the drainage on the east side of the river provides potentially suitable habitat for giant garter snake (*Thamnophis gigas*). These drainages are also used by semi-aquatic rodents such as nutria (*Myocastor coypus*) or muskrat (*Ondatra zibethicus*).

Constructed or Modified Drainages The project's proposed alignments cross numerous drainage facilities and irrigation ditches. These water conveyance features vary considerably in scale and character. Some of the larger drainage features, such as the Harding Drain, have channel widths of 10 to 20 feet and support tall emergent vegetation such as cattail (*Typha* spp.) and bulrush. The smaller drain facilities support less vegetation.

Wildlife species that may utilize the larger constructed drainage facilities are similar to those described for the natural drainages above. The large drainage facilities with tall emergent

vegetation support nesting of species such as red-winged blackbird and marsh wren (*Cistothorus palustris*). They provide only marginally suitable habitat for western pond turtle and giant garter snake. The smaller drainage facilities provide more limited wildlife habitat, but some support invertebrate production and avian foraging.

Canals Canals in the Study Area include the DMC and several small concrete-lined and un-lined irrigation canals. The DMC in the Study Area supports limited, if any, aquatic vegetation. Fish species such as striped bass (*Morone saxatilis*) and channel catfish are present in the canal. The DMC embankments support some ruderal vegetation. A small mammal burrow was observed along the embankment near Marshall Road (**Figure 3.4-1**, Sheet 12). No evidence of use by burrowing owls (*Athene cunicularia*) was observed during the reconnaissance survey, but this area is potentially suitable habitat for this species. Small concrete canals in the Study Area provide limited habitat for vegetation or wildlife (Horizon 2014b).

Alkaline Pool/Swale An alkaline pool and a swale exist within the alkali flat/scrub community that occurs adjacent to the Study Area on the south side of West Main Avenue (**Figure 3.4-1**, Sheet 9, Stations 555+00 to 557+00). The pool has been disturbed by grazing and supports limited vegetation (See photo on **Figure 3.4-1**, Sheet 9). The alkali swale is also partially barren, but it supports more vegetation than the pool. Dominant vegetation in the swale consists of iodine bush (*Allenrolfea occidentalis*) and alkali heath (*Frankenia salina*). These wetlands provide potentially suitable habitat for vernal pool branchiopods. While the alkali pool would provide suitable breeding habitat for California tiger salamander (*Ambystoma californiense*), the surrounding landscape lacks suitable upland habitat for this species.

DPWD Service Area

Land within the DPWD service area includes agricultural lands, constructed and modified drainage facilities, and canals. The characteristics of these areas and associated biological resources are similar to the descriptions provided for the Study Area.

South of the Delta CPVIA-designated Wildlife Areas

Multiple NWAs and SWAs, and one privately-managed complex in the Central Valley are designated as CVPIA units/refuges. These areas are generally open spaces containing habitat such as wetlands, native grasslands, riparian forests, and vernal pools that support a variety of fish and wildlife species and are an important part of the Pacific Flyway, a major migration route for migratory birds. A detailed description of the natural resources associated with the refuges is provided in the *San Joaquin River National Wildlife Refuge Final Comprehensive Conservation Plan* (USFWS 2006).

3.4.2 Regulatory Framework

This section describes laws and regulations at the federal, state, and local level that may apply to the Proposed Action.

Federal Policies and Regulations

Clean Water Act The Clean Water Act (CWA) is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands.

Section 401 Section 401 of the CWA allows for evaluation of water quality when a proposed activity requiring a federal license or permit could result in a discharge to waters of the U.S. In California, the SWRCB and its nine Regional Water Quality Control Boards issue water quality certifications. Each Regional Water Quality Control Board is responsible for implementing Section 401 in compliance with the CWA and its water quality control plan (also known as a Basin Plan). Applicants for a federal license or permit to conduct activities that may result in the discharge to waters of the U.S. (including wetlands) must also obtain a Section 401 water quality certification to ensure that any such discharge will comply with the applicable provisions of the CWA. Compliance with Section 401 is required for all projects that have a federal component and may affect state water quality.

Section 404 CWA section 404 regulates the discharge of dredged and fill materials into waters of the U.S., which include all navigable waters, their tributaries, and some isolated waters, as well as some wetlands adjacent to the aforementioned waters (33 CFR § 328.3). Areas typically not considered to be jurisdictional waters include non-tidal drainage and irrigation ditches excavated on dry land, artificially irrigated areas, artificial lakes or ponds used for irrigation or stock watering, small artificial water bodies such as swimming pools, and water-filled depressions (33 CFR Part 328). Areas meeting the regulatory definition of waters of the U.S. are subject to the jurisdiction of the USACE under provisions of CWA section 404. Construction activities involving placement of fill into jurisdictional waters of the U.S. are regulated by the USACE through permit requirements. No USACE permit is effective in the absence of state water quality certification pursuant to section 401 of the CWA.

Rivers and Harbors Act - Section 10 Section 10 of the Rivers and Harbors Act (33 U.S.C. § 401 et seq.) requires authorization from USACE for construction of any structure over, in, or under navigable waters of the U.S. The navigable length of the San Joaquin River currently includes 236 miles of the river from Sycamore Road (located 7 miles downstream from SR 99 in Fresno County) to San Francisco Bay.

Fish and Wildlife Coordination Act The Fish and Wildlife Coordination Act (FWCA) of 1934, as amended (16 U.S.C. § 661 *et seq*.) is intended to promote conservation of fish and wildlife resources by preventing their loss or damage, and to provide for development and improvement of fish and wildlife resources in connection with water projects. Federal agencies undertaking water projects are required to fully consider recommendations made by USFWS, NMFS, and State wildlife agencies when any waterbody is impounded, diverted, controlled, or modified for any purpose.

Due to the nature of the Proposed Action, Reclamation is coordinating with the USFWS pursuant to FWCA. Compliance with FWCA is being coordinated with Reclamation's Endangered Species Act (ESA) consultation.

Endangered Species Act The ESA of 1973 (16 U.S.C. § 1531–1544) provides protection for animal and plant species that are in danger of extinction (endangered) and those that may become so in the foreseeable future (threatened). The USFWS and NMFS have regulatory authority over projects pursuant to the ESA that may affect the continued existence of a federally listed (threatened or endangered) species. Section 9 of the ESA prohibits the take of federally

listed species. Take is defined under the ESA, in part, as killing, harming, or harassment of such species. Under federal regulations, take is further defined to include habitat modification or degradation where it actually results in death or injury to wildlife by substantially impairing essential behavioral patterns, including breeding, feeding, or sheltering. Several species listed under the ESA occur or have the potential to occur in the Study Area.

Section 7 of the ESA outlines procedures for federal interagency cooperation and participation in the conservation and recovery of federally listed species and designated critical habitat. Section 7(a)(2) requires federal agencies to consult with other federal agencies with regulatory authority to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or to destroy or adversely modify designated critical habitat. Critical habitat identifies specific areas that have the physical and biological features that are essential to the conservation of a listed species, and that may require special management considerations or protection.

Reclamation has been coordinating with USFWS and NMFS on an ongoing basis since early in the planning process to incorporate ESA section 7(a)(2) consultation for potential effects to listed species due to the Proposed Action. Reclamation will not initiate any action related to the NVRRWP without first completing the appropriate consultation(s) with USFWS or NMFS. Documentation of the completion of Section 7 consultation will be included in the Record of Decision issued by Reclamation for the Proposed Action.

Magnuson-Stevens Fishery Conservation and Management Act The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) of 1976 is the primary act governing federal management of fisheries in federal waters, from the 3-nautical-mile state territorial sea limit to the outer limit of the U.S. Exclusive Economic Zone. It establishes exclusive U.S. management authority over all fishing within the Exclusive Economic Zone, all anadromous fish throughout their migratory range except when in a foreign nation's waters, and all fish on the continental shelf. The Magnuson-Stevens Act establishes eight Regional Fishery Management Councils responsible for the preparation of fishery management plans to achieve the optimum yield from U.S. fisheries in their regions. The act also requires federal agencies to consult with NMFS on actions that could damage Essential Fish Habitat (EFH). EFH includes those habitats that support the different life stages of each managed species. A single species may use many different habitats throughout its life to support breeding, spawning, nursery, feeding, and protection functions. EFH can consist of both the water column and the underlying surface (e.g., streambed) of a particular area. The San Joaquin River in the Study Area is designated EFH for Chinook salmon. Reclamation is consulting with NMFS pursuant to the Magnuson-Stevens Act in coordination with its ESA consultation.

Migratory Bird Treaty Act The Migratory Bird Treaty Act (MBTA) (Title 16, U.S.C., Part 703) implements various treaties and conventions between the U.S., Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the MBTA, it is illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to federal regulations (16 U.S.C. 703). The regulatory definition of *take*, as defined by 50 CFR 10.12, *means to pursue, hunt, shoot, wound, kill, trap,*

capture, or collect, or attempt hunt, shoot, wound, kill, trap, capture, or collect. As such, *take* under the MBTA does not include the concepts of harm and harassment as defined under ESA. The MBTA defines migratory birds broadly; USFWS maintains a list of all covered birds that are considered migratory birds under the MBTA.

The USFWS is responsible for overseeing compliance with the MBTA. On December 8, 2004, the U.S. Congress passed the Migratory Bird Treaty Reform Act (Division E, Title I, Section 143 of the Consolidated Appropriations Act, 2005, PL 108–447), which excludes all migratory birds non-native or human-introduced to the U.S. or its territories. It defines a native migratory bird as a species present within the U.S. and its territories as a result of natural biological or ecological processes. The USFWS published a list of the bird species excluded from the MBTA on March 15, 2005 (70 Federal Register 12710).

Bald and Golden Eagle Protection Act The Bald and Golden Eagle Protection Act prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions (16 U.S.C. 668). Under the Bald and Golden Eagle Protection Act, it is a violation to "…take, possess, sell, purchase, barter, offer to sell, transport, export or import, at any time or in any manner, any bald eagle commonly known as the American eagle, or golden eagle, alive or dead, or any part, nest or egg, thereof…". *Take* is defined to include pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, and disturb. *Disturb* is further defined in 50 CFR Part 22.3 as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

Public Law 102-575, Title 34, Central Valley Project Improvement Act The CVPIA, a multipurpose water legislation, was signed into law October 30, 1992. Previously referred to as H.R. 429, Public Law 102-575 contains 40 separate titles providing for water resource projects throughout the West. Title 34 of the CVPIA mandates changes in management of the CVP, particularly for the protection, restoration, and enhancement of fish and wildlife.

Ten major water management areas of change include: 800,000 AF of water dedicated to fish and wildlife annually; tiered water pricing applicable to new and renewed contracts; water transfers provision, including sale of water to users outside the CVP service area; special efforts to restore anadromous fish populations by 2002; restoration fund financed by water and power users for habitat restoration and enhancement and water and land acquisitions; no new water contracts until fish and wildlife goals achieved; no contract renewals until completion of a Programmatic EIS; terms of contracts reduced from 40 to 25 years with renewal at the discretion of the Secretary of the Interior; installation of the temperature control device at Shasta Dam; implementation of fish passage measures at Red Bluff Diversion Dam; firm water supplies for Central Valley wildlife refuges; and development of a plan to increase CVP yield (Reclamation 2014).

Public Law 105-57, National Wildlife Refuge System Improvement Act of 1997 USFWS implements the mandates of Public Law 105-57, the National Wildlife Refuge System

Improvement Act of 1997. The Act amends the National Wildlife Refuge System Administration Act of 1966 in a manner that provides an "Organic Act" for the Refuge System. USFWS is responsible for developing comprehensive conservation plans to guide the management and resources of each individual refuge. More than 545 national wildlife refuges and thousands of waterfowl production areas across the U.S. teem with millions of migratory birds, serve as havens for hundreds of endangered species, and host an enormous variety of other plants and animals.

Executive Orders Several Executive Orders (EOs) have been issued providing direction to federal agencies regarding invasive species, floodplain management, and protection of wetlands, as discussed below.

EO 13112: Invasive Species EO 13112 directs all federal agencies to prevent and control introductions of invasive non-native species in a cost-effective and environmentally sound manner to minimize their economic, ecological, and human health impacts. As directed by this EO, a national invasive species management plan guides federal actions to prevent, control, and minimize invasive species and their impacts (NISC 2008).

EO 11990: Protection of Wetlands EO 11990 directs federal agencies to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in implementing civil works.

State Policies and Regulations

California Environmental Quality Act—Sections 15065 and 15380 Title 14, section 15065 of the California Code of Regulations (CEQA Guidelines) requires that a lead agency shall determine whether a project may have a significant effect on the environment and require an EIR to be prepared for the project if there is substantial evidence, in light of the whole record, that the project has the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, and/or substantially reduce the number or restrict the range of an endangered, rare or threatened species.

Title 14, section 15380 of the California Code of Regulations defines the terms "species", "endangered", "rare", and "threatened" as they pertain to CEQA. Section 15380 also provides a greater level of consideration for state-listed or federally-listed species, and for any species that can be shown to meet the criteria for listing, but which has not yet been listed. The criteria for considering a species endangered, rare, or threatened under CEQA are as follows:

- When its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors.
- Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens.

- The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as defined in the ESA.

Species that meet the criteria listed above are often considered “Species of Special Concern” by the CDFW. Species of Special Concern is an administrative designation and carries no formal legal status. Generally, Species of Special Concern should be included in an analysis of project impacts if they can be shown to meet the criteria of sensitivity outlined in section 15380 of the CEQA Guidelines. However, some older lists of Species of Special Concern were not developed using criteria relevant to CEQA, and the information used in generating those lists is out of date. Therefore, the current circumstances of each unlisted Species of Special Concern must be considered in the context of section 15380 criteria and not automatically assumed to be rare, threatened or endangered. As described in Chapter 1, the City of Modesto is the CEQA lead agency for the NVRWWP and has certified a Final EIR for the project.

California Fish and Game Commission The California Constitution establishes the California Fish and Game Commission (Commission) (California Constitution Article 4, § 20). The Fish and Game Code delegates the power to the Commission to regulate the taking or possession of birds, mammals, fish, amphibian and reptiles (Fish & G. Code, § 200). The Commission has adopted regulations setting forth the manner and method of the take of certain fish and wildlife in the California Code of Regulations, Title 14. Likewise, the Commission has exclusive statutory authority under the Fish and Game Code to designate species as endangered or threatened under the California Endangered Species Act (CESA) (Fish & G. Code, § 2070). Under the Commission’s general regulatory powers function, it establishes seasons, bag limits, and methods of take for game animals and sport fish (i.e., hunting and fishing regulations).

California Fish and Game Code

Section 700 - Species Protection The Fish and Game Code established the CDFW (Fish & G. Code, § 700) and states that the fish and wildlife resources of the state are held in trust for the people of the state by and through the CDFW (Fish & G. Code, § 711.7, subd. (a)). Fish and Game Code section 1802 states that CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. All licenses, permits, tag reservations, and other entitlements for the take of fish and game authorized by the Fish and Game Code are prepared and issued by CDFW (Fish & G. Code, § 1050, subd. (a)). Provisions of the Fish and Game Code establish special protection to certain enumerated species, such as section 5515, which lists fully protected fish species.

Section 1602 – Lake or Streambed Alteration Fish and Game Code section 1602 states that "an entity may not 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" unless CDFW receives written notification regarding the activity and the entity pays the applicable fee. If CDFW determines that the activity may substantially adversely affect an existing fish or wildlife resource, an agreement is issued to the entity that includes reasonable measures necessary to protect the resource.

Section 1900-1913 – Native Plant Protection Act The Native Plant Protection Act (NPPA) of 1977 (Fish & G. Code, §§ 1900-1913) directs CDFW to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this state." The NPPA authorizes the Commission to designate plants as 'endangered' or 'rare' and prohibits 'take' of any such plants, except as authorized in limited circumstances.

CDFW and the California Native Plant Society (CNPS), a non-governmental organization, jointly maintain California Rare Plant Rank lists. These lists include plant species of concern in California. Vascular plants included on these lists are defined as follows:

- List 1: Plants considered extinct or extirpated in California.
- List 1B: Plants that are rare, threatened, or endangered in California and elsewhere.
- List 2: Plants that are rare, threatened, or endangered in California, but more common elsewhere.
- List 3: Plants about which more information is needed - review list.
- List 4: Plants of limited distribution - watch list.

Plants appearing on Lists 1 and 2 are, in general, considered to meet the CEQA Guidelines section 15380(b) criteria and adverse effects to these species may be considered significant. Impacts to plants that are on Lists 3 and 4 are also considered during CEQA review, although because these species are typically not as rare as those on Lists 1 and 2, impacts to them are less frequently considered potentially significant.

Section 2050 et seq. – California Endangered Species Act CESA (Fish & G. Code, § 2050 et seq.) is intended to conserve, protect, restore, and enhance species designated as endangered or threatened, and their habitat (Fish & G. Code, § 2052). The Commission has exclusive statutory authority to designate species as endangered or threatened under CESA (California Constitution, article IV, § 20, subd. (b); Fish & G. Code, § 2070). Animal species designated as endangered or threatened under CESA are listed in California Code of Regulations, Title 14, section 670.5. Plant species designated as endangered or threatened under CESA, or designated as a rare plant species under the California Native Plant Protection Act (Fish & G. Code, § 1900 et seq.), are listed in California Code of Regulations, Title 14, section 670.2.

CESA directs all state agencies, boards, and commissions to seek to conserve endangered and threatened species, and to utilize their authority in furtherance of that policy (Fish & G. Code, § 2055). For purposes of CESA, "conserve," "conserving," and "conservation" mean to implement all methods and procedures necessary to increase the abundance of any endangered or threatened species to levels at which the protections provided by CESA are no longer necessary. These methods and procedures include, but are not limited to, all activities associated with scientific resources management, such as research; census; law enforcement; habitat acquisition; restoration and maintenance; propagation; live trapping; and transplantation; and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking (Fish & G. Code, § 2061). CESA emphasizes that state agencies should not approve projects as proposed that would jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species if there are reasonable and prudent

alternatives available consistent with conserving the species or its habitat that would prevent jeopardy (Fish & G. Code, § 2053).

Species designated as endangered or threatened under CESA, and species designated as candidates for listing or delisting under CESA, are subject to what is commonly known as CESA's "take" prohibition. In general, this prohibition provides that no person shall import into the state, or export out of the state, or take, possess, purchase, or sell within the state (or attempt to do any of those acts), any species, or any part or product thereof, designated by the Commission as protected under CESA, except as otherwise provided by law (Fish & G. Code, §§ 2080, 2085; see also Cal. Code Regs., Tit. 14, § 783.1). "Take" is defined specifically in the Fish and Game Code to mean "hunt, pursue, catch, capture, or kill," or an attempt to do any such act; violations of CESA's take prohibition are criminal misdemeanors under state law (Fish & G. Code, §§ 86, 12000; see also *Department of Fish and Game v. Anderson-Cottonwood Irrigation District* (1992) 8 Cal. App. 4th 1554). Unlike the ESA, CESA applies the take prohibitions to species under petition for listing (candidates) in addition to listed species. Section 2081 of the Fish and Game Code expressly allows CDFW to authorize, by permit, the incidental take of endangered, threatened, and candidate species if all of certain conditions are met. The City of Modesto and the Partner Agencies will be responsible for ensuring compliance with CESA and all other state and local laws and regulations, as applicable.

Other Sections Other sections of the Fish and Game Code describe protection for specific types of wildlife. For example, Fish and Game Code sections 3503, 3513, and 3800 (and other sections and subsections) protect native birds, including their active or inactive nests and eggs, from all forms of take ('take' means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill [Fish & G. Code, § 86]). Raptors (i.e., eagles, falcons, hawks, and owls) and their nests are specifically protected in California under Fish and Game Code section 3503.5, which states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Certain species are designated as fully protected under Fish and Game Code sections 3511 (birds), 5515 (fish), 4700 (mammals), and 5050 (amphibians) and it is illegal to take these species. Non-game mammals are also protected by Fish and Game Code section 4150.

Porter-Cologne Water Quality Act See *Section 3.11, Hydrology and Water Quality.*

National Pollutant Discharge Elimination System (NPDES) Permits See *Section 3.11, Hydrology and Water Quality.*

Local Policies and Regulations

Stanislaus County General Plan Stanislaus County has identified the following goals and policies in the Conservation/Open Space Element of the General Plan (1994) that are relevant to the Proposed Action:

GOAL ONE: Encourage the protection and preservation of natural and scenic areas throughout the County.

Policy One Maintain the natural environment in areas dedicated as parks and open spaces.
Policy Three Areas of sensitive wildlife and plant life (e.g., vernal pools, riparian habitats, flyways and other waterfowl habitats) including habitats and plant species listed in the General Plan Support Document or by state or federal agencies shall be protected from development.
Policy Four Protect and enhance oak woodlands and other native hardwood habitat.

*GOAL TWO***:** Conserve water resources and protect water quality in the County.

Policy Five Protect groundwater aquifers and recharge areas, particularly those critical for the replenishment of reservoirs and aquifers.
Policy Six Preserve vegetation to protect waterways from bank erosion and siltation.

*GOAL TEN***:** Protect fish and wildlife species of the County.

Policy Twenty-Nine Adequate water flows should be maintained in the County's rivers to allow salmon migration.

Implementation Measure 1. The County should continue to lobby the federal government to provide adequate water flow in the County's rivers to allow salmon migration.

Policy Thirty Habitats of rare and endangered fish and wildlife species shall be protected

City of Modesto General Plan The City of Modesto Urban Area General Plan was adopted on October 14, 2008 (City of Modesto 2008). The City of Modesto is currently conducting environmental review on amendments to the 2008 Urban Area General Plan. The Jennings Plant is not within the boundaries of the Urban Area General Plan. The 2008 Urban Area General Plan states that:

"*In the past, the city has relied upon Section 56742 a–b of the Government Code to annex properties noncontiguous to the city, for the purpose of establishing and expanding certain wastewater treatment facilities on Jennings Road, adjacent to the San Joaquin River. Annexation of all of the Wastewater Treatment Plant land is underway at the Jennings Road facilities. Because this site is approximately seven miles from the city limits it is not depicted graphically on the Land Use Diagram. Nevertheless, as long as Section 56742 a–b remains in effect, the city will continue to expand the treatment facilities, and annex the land to the city as appropriate and as needs dictate. The Sphere of Influence should reflect the ability of the City to take this action*."

The 2008 Urban Area General Plan goes on to state that:

"*The City will designate a riparian habitat preserve for the Jennings Road and Sutter Avenue wastewater facilities, where they adjoin the San Joaquin and Tuolumne Rivers,*

respectively, to foster the best conjunctive management of wastewater facilities. The Jennings Road and Sutter Avenue wastewater sites have been incorporated into the Tuolumne River Regional Park (TRRP) Master Plan, and the designation of riparian habitat preserves at these locations is consistent with provisions in the TRRP Master Plan. The designation of riparian preserves at these locations will help preserve open space and protect habitat for threatened and endangered species, including valley elderberry longhorn beetle and Swainson's hawk."

3.4.3 Special-status Species

Definitions and Methods of Assessment

Special-status plant and wildlife species refers to those species that meet one or more of the following criteria:

- Species that are listed as threatened or endangered under ESA (50 CFR 17.12 for listed plants, 50 CFR 17.11 for listed animals).
- Species that are candidates for possible future listing as threatened or endangered under ESA (76 Federal Register 66370).
- Species that are listed or proposed for listing by the State of California as threatened or endangered under CESA (14 CCR 670.5).
- Plants listed as rare under the California Native Plant Protection Act of 1977 (Fish & G. Code, § 1900 et seq).
- California Rare Plant Rank List 1 and 2 species.
- Species that meet the definitions of rare or endangered under CEQA (CEQA Guidelines, § 15380).
- Animals fully protected in California (Fish & G. Code, § 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

Background information on special-status plant and wildlife species with potential to occur in the Study Area was compiled from numerous sources including, but not limited to, the following:

- USFWS List of Federal Endangered and Threatened Species that Occur in or May Be Affected by Projects in Stanislaus County as well as in the U.S. Geological Survey (USGS) 7.5 minute quadrangles for the Study Area, including Patterson, Westley, Brush Lake, Crow's Landing (USFWS 2014, **Appendix D**).
- California Natural Diversity Database (CNDDB) and CNPS Inventory of Rare and Endangered Plants of California queries for USGS 7.5 minute quadrangles within the Proposed Action Area and quadrangles immediately adjacent to them: Patterson, Westley, Brush Lake, Crow's Landing, Copper Mountain, Solyo, Vernalis, Ripon, Salida, Riverbank, Ceres, Hatch, Gustine, Newman, Orestimba Peak and Wilcox Ridge (**Appendix D**).
- City of Turlock Draft and Final EIR for the Harding Drain Bypass Project (City of Turlock 2004, City of Turlock 2005).
- eBird.org records for the Modesto Wastewater Treatment Plant and spray fields.
- Horizon's field notes and reports from pre-construction surveys and construction monitoring for the Harding Drain Bypass Project (Horizon 2014a).

Reconnaissance level surveys were conducted on April 4, May 9 and 22, July 1, and August 8, 2014. **Tables 3.4-1 and 3.4-2** list the special-status plant and wildlife species known to occur in the vicinity of the Study Area for all three action alternatives, and **Figures 3.4-2** and **3.4.3** show the CNDDB occurrences of special-status plants and animals within a 5-mile radius of the Study Area. The potential for special-status species to occur in the vicinity of the Study Area was evaluated according to the following criteria:

- **None**: indicates that the area contains a complete lack of suitable habitat, the local range for the species is restricted, and/or the species is extirpated in this region.
- **Not Expected**: indicates situations where suitable habitat or key habitat elements may be present but may be of poor quality or isolated from the nearest extant occurrences. Habitat suitability refers to factors such as elevation, soil chemistry and type, vegetation communities, microhabitats, and degraded/significantly altered habitats.
- **Possible**: indicates the presence of suitable habitat or key habitat elements that potentially support the species.
- **Present**: indicates the species was either observed directly or its presence was confirmed by diagnostic signs (i.e. tracks, scat, burrows, carcasses, castings, prey remains) during field investigations or in previous studies in the area.

The Study Area was divided into two areas for the evaluation:

1. Potential for special-status species to occur in areas with open-cut construction.
2. Potential for special-status species to occur within trenchless construction areas or adjacent habitats.

In general, the Proposed Action intends to avoid the use of open-cut construction in areas with potentially sensitive biological or hydrologic resources (i.e. areas without wetlands and/or habitat for special-status species). As described previously, trenchless construction techniques would be used in environmentally sensitive areas. The impact analysis presented in *Section 3.4.4* considers the potential for direct and indirect impacts to special-status species and their habitats. Brief summaries of the life history for special-status species with the potential to be impacted by the Proposed Action are provided in **Appendix D**.

3.4.4 Impact Analysis/Environmental Consequence

Analysis Approach

The Proposed Action may impact biological resources through the direct or indirect disturbance, modification, or destruction of habitat such that it results in death, injury or harassment of individuals or populations of plant or animal species, or impedes or prevents the dispersal of individuals or populations of special-status species. Potential impacts on existing biological resources were evaluated by comparing the quantity and quality of habitats present in the Study Area under the No Action Alternative's baseline conditions to anticipated conditions after implementation of the Proposed Action. Direct and indirect impacts on special-status species were assessed based on the potential for the species or their habitat to be disturbed or enhanced by implementation of the Proposed Action.

In general, once construction is complete, operation and maintenance of the proposed facilities, as described in *Chapter 2, Alternatives and Proposed Action*, would not involve disturbance to biological resources. The Proposed Action would deliver tertiary-treated recycled water to the DMC, where it would blend with the other sources of water in the canal (including other waters of wastewater origin). Irrigation in the DPWD service area would continue to use water from the DMC, and irrigation practices would not change. Continued irrigation is not expected to affect biological resources. Supplemental water would be delivered to refuges via either existing turnouts from the DMC or through other existing private conveyance systems, as appropriate, and in accordance with the refuges' respective annual water delivery schedules. Water delivered to refuges would be managed for wetland and habitat purposes in accordance with the refuges' Reclamation-approved Refuge Water Management Plans. Water would not be applied to uplands or vernal pools and would thus not affect species or habitats in those areas. Unless otherwise stated below, impacts associated with operation and maintenance are considered unlikely or less than significant, and are not discussed further.

Criteria for Determining Significance/Consequence

For the purposes of this analysis, the Proposed Action would result in a significant impact or potential impact to biological resources if it would meet one or more of the following criteria:

- Have a substantial or potential adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW, USFWS, or NMFS.
- Have a substantial or potential adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW, USFWS, or NMFS.
- Have a substantial or potential adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially or potentially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with local policies or ordinances protecting biological resources, or conflict with the provisions of an adopted Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP).

The analysis considers both species and their habitats. A less than significant or unlikely to impact determination generally refers to a situation where there is a measurable impact, but the impact is not likely to result in an adverse outcome for the survival or fitness of a particular species, or a widespread or long-lasting adverse effect on a natural community. Conversely, an impact would be considered potentially significant or adverse if it may substantially decrease the likelihood of survival or fitness of a particular species (e.g., substantial decrease in a local population size or extirpation), or result in widespread or long-lasting adverse effects on a natural community. For impacts found to be "potentially significant", mitigation measures are proposed.

Table 3.4-1: Special-Status Plant Species

Name	Federal listing status	State listing status	Rare Plant Rank	General Habitat	Micro Habitat and Flowering Period	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
red-flowered bird's-foot trefoil *Acmispon rubriflorus*	None	None	1B.1	Cismontane woodland, valley and foothill grassland.	Known from only four disjunct occurrences. The closest occurrence is along Del Puerto Canyon Road, west of Interstate 5 at elevations between 200 - 425 m. Flowers April - June.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.
Sharsmith's onion *Allium sharsmithiae*	None	None	1B.3	Cismontane woodland, chaparral.	Rocky, serpentine slopes. 400 - 1200 m. Flowers March - May.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.
large-flowered fiddleneck *Amsinckia grandiflora*	FE	SE	1B.1	Cismontane woodland, valley and foothill grassland.	Annual grassland in various soils. 275 - 550 m. Flowers April - May.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.
alkali milk-vetch *Astragalus tener* var. *tener*	None	None	1B.2	Alkali playa, valley and foothill grassland, vernal pools.	Low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. 1-60 m. Flowers March to June.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Species is known to occur in the vicinity of the Project Area along the San Joaquin River for all three Action alternatives. Potential habitat for this species occurs in trenchless construction areas crossing the San Joaquin River and in alkaline flats adjacent to the Alternative 1 Project Area between Stations 553+00 to 563+00. Species was not observed during 2014 reconnaissance surveys (Horizon 2014b).
heartscale *Atriplex cordulata*	None	None	1B.2	Chenopod scrub, valley and foothill grassland, meadows.	Alkaline flats and scalds in the Central Valley, sandy soils. 1- 560 m. Flowers April - October.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Potential habitat for this species only occurs in alkaline flats adjacent to the Alternative 1 Project Area between Stations 553+00 to 563+00. Species was not observed during 2014 reconnaissance surveys (Horizon 2014b).

Name	Federal listing status	State listing status	Rare Plant Rank	General Habitat	Micro Habitat and Flowering Period	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
brittlescale *Atriplex depressa*	None	None	1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools.	Alkaline clay. Flowers April - October.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Potential habitat for this species only occurs in alkaline flats adjacent to the Alternative 1 Project Area between Stations 553+00 to 563+00. Species was not observed during 2014 reconnaissance surveys (Horizon 2014b).
lesser saltscale *Atriplex minuscula*	None	None	1B.1	Chenopod scrub, playas, valley and foothill grassland.	In alkali sink and grassland in sandy, alkaline soils. 20-100 m. Flowers May - October.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Potential habitat for this species only occurs in alkaline flats adjacent to the Alternative 1 Project Area between Stations 553+00 to 563+00. Species was not observed during 2014 reconnaissance surveys (Horizon 2014b).
vernal pool smallscale *Atriplex persistens*	None	None	1B.2	Vernal pools.	Alkaline vernal pools. 10-115 m. Flowers June to October.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Potential habitat for this species only occurs in alkaline pools/swales adjacent to the Alternative 1 Project Area between Stations 553+00 to 563+00. Species was not observed during 2014 reconnaissance surveys (Horizon 2014b).
big tarplant *Blepharizonia plumosa*	None	None	1B.1	Valley and foothill grassland.	Dry slopes in annual grassland. Clay to clay-loam soils; usually on slopes and often in burned areas. 30-505 m. Flowers July to October.	None. Suitable habitat is not present in Project Area for all three Action alternatives.	None. Suitable habitat is not present in Project Area for all three Action alternatives.
Chinese Camp brodiaea *Brodiaea pallida*	FT	SE	1B.1	Valley and foothill grassland in the North to Central Sierra Foothills.	In flat, rocky, intermittent streambed on serpentine soils. 160–390 m. Flowers May to June.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.
round-leaved filaree *California macrophylla*	None	None	1B.1	Cismontane woodland, valley and foothill grassland.	Clay soils. 15-1200 m. Flowers March to May.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Not expected. Marginally suitable habitat is only present in the San Joaquin River crossings and PID Intake areas for all three Action alternatives.

Name	Federal listing status	State listing status	Rare Plant Rank	General Habitat	Micro Habitat and Flowering Period	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
Santa Cruz Mountains pussypaws *Calyptridium parryi* var. *hesseae*	None	None	1B.1	Chaparral, cismontane woodland.	Sandy or gravelly openings. 305-1530 m. Flowers May to August.	None. Suitable habitat is not present. Project Area is not within species known elevation range for all three Action alternatives.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.
chaparral harebell *Campanula exigua*	None	None	1B.2	Chaparral.	Rocky sites, usually on serpentine in chaparral. 275-1250 m. Flowers May to June.	None. Suitable habitat is not present. Project Area is not within species known elevation range for all three Action alternatives.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.
succulent (=fleshy) owl's-clover *Castilleja campestris* ssp. *succulenta*	FT	SE	1B.2	Vernal pools, valley and foothill grassland.	Moist places, often in acidic soils. 25-750 m.	None. Suitable habitat is not present for all three Action alternatives.	None. Suitable habitat is not present for all three Action alternatives.
Lemmon's jewelflower *Caulanthus lemmonii*	None	None	1B.2	Valley and foothill grassland, chaparral and scrub vegetation. Coast ranges, San Francisco Bay Area and Southwestern San Joaquin Valley.	80-1220 m.Flowers March to May.	None. Suitable habitat is not present. Project Area is not within species known elevation range for all three Action alternatives.	None. Suitable habitat is not present. Project Area is not within species known elevation range.
Hoover's spurge *Chamaesyce hooveri*	FE	ST	1B.2	Vernal pools, valley and foothill grassland.	Vernal pools on volcanic mudflow or clay substrate. 25-130 m. Flowers July to September.	None. Suitable habitat is not present within Project Area for all three Action alternatives.	None. Suitable habitat is not present within Project Area for all three Action alternatives.
hispid bird's-beak *Chloropyron molle* ssp. *hispidum*	None	None	1B.1	Meadows and seeps, playas, valley and foothill grassland.	In damp alkaline soils, especially in alkaline meadows and alkali sinks with Distichlis. 1-155 m. Flowers June to September.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Potential habitat for this species only occurs in alkaline flats adjacent to the Alternative 1 Project Area between Stations 553+00 to 563+00. Species was not observed during 2014 reconnaissance surveys (Horizon 2014b).
slough thistle *Cirsium crassicaule*	None	None	1B.1	Chenopod scrub, marshes and swamps, riparian scrub.	Sloughs, riverbanks, and marshy areas. Primarily freshwater wetlands. 3-100 m. Flowers May to August.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Potential habitat for this species includes the San Joaquin River crossings, PID Intake, natural drainages, and alkali scrub.

Name	Federal listing status	State listing status	Rare Plant Rank	General Habitat	Micro Habitat and Flowering Period	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
Hospital Canyon larkspur *Delphinium californicum* ssp. *interius*	None	None	1B.2	Cismontane woodland, chaparral, coastal scrub.	In wet, boggy meadows, openings in chaparral and in canyons. 195-1,095 m. Flowers April to June.	None. Suitable habitat is not present. Project Area is not within species known elevation range for all three Action alternatives.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.
Santa Clara Valley dudleya *Dudleya setchelli*	FE	None	1B.2	Valley and foothill grassland, cismontane woodland.	On rocky serpentine outcrops and on rocks within grassland or woodland. 60-455 m. Flowers April to October.	None. Suitable habitat is not present. Project Area is not within species known elevation range for all three Action alternatives.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.
Delta button-celery *Eryngium racemosum*	None	SE	1B.1	Riparian scrub.	Seasonally inundated depressions in floodplains on clay soils. 3-30 m. Flowers from June to October.	None. Suitable habitat is not present in the Project Area for all three Action alternatives.	Possible. Potential habitat for this species includes the San Joaquin River crossings for all three Action alternatives; however, clay soil required for species was not observed during 2014 reconnaissance surveys (Horizon 2014b).
spiny-sepaled button-celery *Eryngium spinosepalum*	None	None	1B.2	Vernal pools, valley and foothill grassland.	Vernal pools, within grasslands, at some sites found on clay soil of granitic origin;. 80-1,025 m. Flowers April to May.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.
diamond-petaled California poppy *Eschscholzia rhombipetala*	None	None	1B.1	Valley and foothill grassland.	fallow fields and open places on alkaline, clay slopes and flats. 0 - 975 m. Flowers March to April.	Not expected. Minimal habitat is present in the Project Area for all three Action alternatives.	Not expected. Minimal habitat is present in the Project Area for all three Action alternatives.
San Joaquin spearscale *Extriplex joaquinana*	None	None	1B.2	Chenopod scrub, alkali meadow, playas, valley and foothill grassland.	In seasonal alkali wetlands or alkali sink scrub with *Distichlis spicata*, *Frankenia salina*, and other alkali species. 1-835 m. Flowers April to September.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Potential habitat for this species occurs in alkaline flats adjacent to the Alternative 1 Project Area between Stations 553+00 to 563+00. Species was not observed during 2014 reconnaissance surveys (Horizon 2014b).
Tehama County western flax *Hesperolinon tehamense*	None	None	1B.3	Chaparral, cismontane woodland.	Serpentine barrens in chaparral. 100-1,250 m. Flowers May to June.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.

Name	Federal listing status	State listing status	Rare Plant Rank	General Habitat	Micro Habitat and Flowering Period	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
Mt. Hamilton coreopsis *Leptosyne hamiltonii*	None	None	1B.2	Cismontane woodland.	On steep shale talus with open southwestern exposure. 530-1,300 m. Flowers March to May.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.
Hall's bush-mallow *Madia radiata*	None	None	1B.1	Valley and foothill grassland, cismontane woodland, chenopod scrub.	Grassy or open slopes, generally clayey soils or shale. 25-1,125 m. Flowers March to May.	None. Suitable habitat is not present within Project Area for all three Action alternatives.	None. Suitable habitat is not present within Project Area for all three Action alternatives.
showy golden madia *Malacothamnus hallii*	None	None	1B.2	Chaparral.	Some populations on serpentine. 10-550 m. Flowers May to October.	None. Suitable habitat is not present within Project Area for all three Action alternatives.	None. Suitable habitat is not present within Project Area for all three Action alternatives.
prostrate vernal pool navarretia *Navarretia prostrata*	None	None	1B.1	Coastal scrub, valley and foothill grassland, vernal pools.	Alkaline floodplains and vernal pools. 15-700 m. Flowers April to July.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Potential habitat for this species only occurs in alkaline flats/pool adjacent to the Alternative 1 Project Area between Stations 553+00 to 563+00. Species was not observed during 2014 reconnaissance surveys (Horizon 2014b).
Colusa grass *Neostapfia colusana*	FT	SE	1B.1	Vernal pools.	Usually in large, or deep vernal pool bottoms; adobe soils. 5-125 m. Flowers May to August.	None. Suitable habitat is not present within Project Area for all three Action alternatives.	None. Suitable habitat is not present within Project Area for all three Action alternatives.
San Joaquin Valley Orcutt grass *Orcuttia inaequalis*	FT	SE	1B.1	Vernal pools.	10-755m. Flowers April to September.	None. Suitable habitat is not present within Project Area for all three Action alternatives.	None. Suitable habitat is not present within Project Area for all three Action alternatives.
hairy Orcutt grass *Orcuttia pilosa*	FE	SE	1B.1	Vernal pools.	25-125 m. Flowers May to September.	None. Suitable habitat is not present within Project Area for all three Action alternatives.	None. Suitable habitat is not present within Project Area for all three Action alternatives.
Mt. Diablo phacelia *Phacelia phacelioides*	None	None	1B.2	Chaparral, cismontane woodland.	On rock outcrops and talus slopes; sometimes on serpentine. 500-1,370 m. Flowers April to June.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.

Name	Federal listing status	State listing status	Rare Plant Rank	General Habitat	Micro Habitat and Flowering Period	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
Hartweg's golden sunburst *Pseudobahia bahiifolia*	FE	SE	1B.1	Valley and foothill grassland, cismontane woodland.	Clay soils, often acidic. Predominantly on the northern slopes of knolls, but also along shady creeks or near vernal pools. 15-150 m. Flowers March to May.	None. Suitable habitat is not present within Project Area for all three Action alternatives.	None. Suitable habitat is not present within Project Area for all three Action alternatives.
Sanford's arrowhead *Sagittaria sanfordii*	None	None	1B.2	Marshes and swamps.	In standing or slow-moving freshwater ponds, marshes, and ditches. 0-650 m. Flowers May to October.	None. Suitable habitat is not present for all three Action alternatives in open-cut areas.	Possible. Natural drainages and some manmade drainages provide potentially suitable habitat within Project Area for all three Action alternatives.
prairie wedge grass *Sphenopholis obtusata*	None	None	2B.2	Cismontane woodland, meadows and seeps.	Open moist sites, along rivers and springs, alkaline desert seeps. 360-2,325m. Flowers April to July.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.
Suisun Marsh aster *Symphyotrichum lentum*	None	None	1B.2	Marshes and swamps (brackish and freshwater).	Most often seen along sloughs, ponds and ditches with *Phragmites sp.*, *Scirpus sp.*, *Rubus armeniacus, Typha*, etc. 0-3 m. Flowers May to November.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Not expected. Natural and some manmade drainages provide potentially suitable habitat within Project Area for all three Action alternatives, but this species does not typically occur in this portion of the San Joaquin River valley.
Greene's tuctoria *Tuctoria greenei*	FE	Rare	1B.1	Vernal pools, valley and foothill grassland.	Clay bottoms of drying vernal pools and lakes in valley grassland. 5-10 m. Flowers May to September.	None. Suitable habitat is not present within Project Area for all three Action alternatives.	None. Suitable habitat is not present within Project Area for all three Action alternatives.
Red Hills vervain *Verbena californica*	FT	ST	1B.1	Cismontane woodland, valley and foothill grassland.	Mesic sites on serpentine; usually serpentine seeps or creeks. 260-400 m. Flowers May to September.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.	None. Suitable habitat is not present. Project Area for all three Action alternatives is not within species known elevation range.

* List of Abbreviations for Federal and State Species Status follow below:

FE = Federal endangered
FP = State fully protected species
FT = Federal threatened
SE = State endangered
SSC = State species of special concern

ST = State threatened
California Native Plant Society, California Rare Plant Rank:
(1A) Presumed extinct in California
(1B) Rare, threatened, or endangered in California and elsewhere
(2) Rare, threatened, or endangered in California but common elsewhere
1 – Seriously endangered in California
2 – Fairly endangered in California
3 – Not very endangered in California

Table 3.4-2: Special-Status Wildlife Species

Scientific name	Federal listing status	State listing status	General Habitat	Micro Habitat	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
Invertebrates						
Conservancy fairy shrimp *Branchinecta conservatio*	FE	SE	Endemic to the grasslands of the northern two-thirds of the Central Valley; found in large, turbid pools.	Inhabit astatic pools located in swales formed by old, braided alluvium; filled by winter/spring rains, last until June.	None. Suitable habitat is not present in the Project Area for all three Action alternatives.	Possible. Marginally suitable habitat for this species only occurs in the alkaline pool adjacent to the Alternative 1 Project Area at Station 553+00.
longhorn fairy shrimp *Branchinecta longiantenna*	FE	None	Endemic to the eastern margin of the Central Coast mtns in seasonally astatic grassland vernal pools.	Inhabit small, clear-water depressions in sandstone and clear-to-turbid clay/grass-bottomed pools in shallow swales.	None. Suitable habitat is not present in the Project Area for all three Action alternatives.	Possible. Potential habitat for this species only occurs in alkaline pools/swales adjacent to the Alternative 1 Project Area between Stations 553+00 to 557+00.
vernal pool fairy shrimp *Branchinecta lynchi*	FT	None	Endemic to the grasslands of the Central Valley, Central Coast mtns, and South Coast mtns, in astatic rain-filled pools.	Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools. Also known in alkaline pools (Helm 1998).	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Potential habitat for this species only occurs in alkaline pools/swales adjacent to the Alternative 1 Project Area between Stations 553+00 to 557+00.
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	None	Occurs only in the central valley of California, in association with blue elderberry (*Sambucus mexicana*).	Not specifically defined.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Blue elderberry (host plant) was observed near the Harding Drain outlet at the San Joaquin River (San Joaquin River) and is potentially present in other parts of the Action area at San Joaquin River crossings, PID Intake and along other drainages.
vernal pool tadpole shrimp *Lepidurus packardi*	FE	None	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water.	Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Potential habitat for this species only occurs in alkaline pools/swales adjacent to the Alternative 1 Project Area between Stations 553+00 to 557+00.
Fish						
green sturgeon *Acipenser medirostris*	FT, CH	SSC	These are the most marine species of sturgeon. Abundance increases northward of Point Conception. Spawns in the Sacramento, Klamath, and Trinity Rivers.	Spawns at temps between 8-14 C. Preferred spawning substrate is large cobble, but can range from clean sand to bedrock. Occasionally reported in the San Joaquin River upstream from Stockton (Jackson, Z. J., and J. P. Van Eenennaam. 2013)	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Not expected. There are anecdotal reports of this species in the San Joaquin River downstream of the Project Area for all three Action alternatives (Jackson and Van Eenennaam 2013), but no confirmed accounts. NMFS believes this species would not be present in the Project Area (Pers. Comm. Gutierrez 2014).

Scientific name	Federal listing status	State listing status	General Habitat	Micro Habitat	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
Delta smelt *Hypomesus transpacificus*	FT, CH	SE	Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay.	Seldom found at salinities > 10 ppt. Most often at salinities < 2ppt.	None. Project Area is out of range of the species for all three Action alternatives.	None. Project Area is out of range of the species for all three Action alternatives.
San Joaquin roach *Lavinia symmetricus*	None	SSC	Primarily found in small, warm streams but are capable of thriving in larger, colder streams with diverse conditions	Extreme tolerance includes temperatures ranging from 85-95ºF and dissolved oxygen levels as low as 1-2 ppm	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. The San Joaquin River in the Project Area for all three Action alternatives provides potentially suitable habitat.
steelhead (Central Valley DPS) *Oncorhynchus mykiss*	FT, CH	None	Populations spawning in the Sacramento and San Joaquin rivers and their tributaries. Distribution of steelhead in the Central Valley has been significantly reduced in recent years.	Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient dissolved oxygen.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Present. Merced River, upstream of the Project Area for all three Action alternatives, supports a small run of steelhead and its designated critical habitat. Species uses San Joaquin River as migratory habitat.
Chinook salmon (Central Valley fall- late fall-run ESU) *Oncorhynchus tshawytscha*	FC	SSC	Populations spawn in the Sacramento and San Joaquin rivers and tributaries.	Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and high dissolved oxygen.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Present. Merced River, upstream of the Project Area, supports fall-run Chinook. Species uses San Joaquin River as migratory habitat.
Chinook salmon (Central Valley spring-run ESU) *Oncorhynchus tshawytscha*	FT, CH	ST	Populations spawning in Sacramento River tributaries.	Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient dissolved oxygen.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Not expected. Naturally spawned spring-run Chinook have been extirpated from the San Joaquin River drainage (Lindley et al. 2004). Strays from populations in the Sacramento River basin may occasionally occur in Project Area for all three Action alternatives.
Chinook salmon (Central Valley spring-run ESU) *Oncorhynchus tshawytscha*	Nonessential experimental population	See FGC 2080.2 to 2080.4.	All spring-run Chinook salmon, including those that have been released or propagated, naturally or artificially, within the experimental population area, which is defined as the San Joaquin River from Friant Dam downstream to its confluence with the Merced River (exclusive)].	Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient dissolved oxygen.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Present. A nonessential experimental population has recently been reintroduced to the San Joaquin River within the Project Area for all three Action alternatives (SJRRP 2014).

Scientific name	Federal listing status	State listing status	General Habitat	Micro Habitat	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
Chinook salmon (Sacramento River winter-run ESU) *Oncorhynchus tshawytscha*	FE	SE	Populations spawning in the Sacramento and San Joaquin Rivers and their tributaries.	Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient dissolved oxygen.	None. Project Area is outside of species range for all three Action alternatives.	None. Project Area for all three Action alternatives is outside of species range.
hardhead *Mylopharodon conocephalus*	None	SSC	Widely distributed in low to mid-elevation streams in the Sacramento and San Joaquin River tributaries	—	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Species has recently been observed in San Joaquin River near confluence with Stanislaus (Pers. Comm. Merz, 2014).
Sacramento splittail *Pogonichthys macrolepidotus*	None	SSC	Endemic to the lakes and rivers of the Central Valley, but now confined to the Delta, Suisun Bay and associated marshes.	Slow moving river sections, dead end sloughs. Requires flooded vegetation for spawning and foraging for young.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Present. Species distribution fluctuates. During wet years, species has been observed upstream of the Project Area for all three Action alternatives. During dry years, species is not common downstream of the Tuolumne River confluence (Moyle 2002).
Pacific lamprey *Lampetra tridentate*	FSC	None	Found in Pacific Coast streams north of San Luis Obispo Co., however regular runs in Santa Clara River. Size of runs is declining	Swift-current gravel bottomed areas for spawning with water temps between 12-18 C. Ammocoetes need soft sand or mud.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Species has been observed in San Joaquin River upstream and downstream of the Project Area for all three Action alternatives. Various lifestages maybe present year-round. Spawning habitat is not present.
Kern brook lamprey *Entospherus hubbsi*	None	SSC	San Joaquin River system and Kern River	Gravel-bottomed areas for spawning and muddy-bottomed areas where ammocoetes can burrow and feed.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Species has been observed in San Joaquin River upstream and downstream of the Project Area for all three Action alternatives. Various lifestages maybe present year-round. Spawning habitat is not present.
river lamprey *Lampetra ayresii*	None	SSC	San Joaquin River system and Kern River	Adults need clean, gravelly riffles, ammocoetes need sandy backwaters or stream edges, good water quality and temps < 25 C	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Species has been observed in San Joaquin River upstream and downstream of the Project Area. Various lifestages maybe present year-round. Spawning habitat is not present.
Amphibians and Reptiles						
California tiger salamander *Ambystoma californiense*	FT	ST	Central Valley DPS federally listed as threatened. Santa Barbara and Sonoma counties DPS federally listed as endangered.	Need underground refuges, especially ground squirrel burrows and vernal pools or other seasonal water sources for breeding	None. Suitable habitat is not present in the Project Area for all three Action alternatives.	None. The alkaline pool adjacent to the Alternative 1 Project Area at Station 553+00 provides potentially suitable breeding habitat, but the Project Area lacks suitable upland habitat.

Scientific name	Federal listing status	State listing status	General Habitat	Micro Habitat	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
Yosemite toad Bufo canorus	FC	SSC	Vicinity of wet meadows in central High Sierra, 6,400 to 11,300 feet in elevation	Primarily montane wet meadows; also in seasonal ponds associated with lodgepole pine and subalpine conifer forest.	None. Project Area for all three Action alternatives is outside of species range.	None. Project Area for all three Action alternatives is outside of species range.
western pond turtle *Actinemys (=Emys) marmorata*	None	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation below 6000 ft elevation.	Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Species is likely to occur in San Joaquin River, natural drainages, and some ditches within Project Area for all three Action alternatives.
Blunt-nosed leopard lizard *Gambelia sila*	FE	SE, FP	Resident of sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief.	Seeks cover in mammal burrows, under shrubs or structures such as fence posts; they do not excavate their own burrows	None. Project Area for all three Action alternatives is outside of species current range.	None. Project Area is outside of species current range.
San Joaquin whipsnake *Masticophis flagellum ruddocki*	None	SSC	Open, dry habitats with little or no tree cover. Found in valley grassland and saltbush scrub in the San Joaquin Valley	Needs mammal burrows for refuge and oviposition sites.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Saltbush scrub on the inboard side of San Joaquin River levee near Station 1335 (Alternative 2) is potentially suitable habitat. Species was not observed in this location during surveys conducted for the Harding Drain Bypass Project (Horizon 2014a).
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT	ST	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna and woodland habitats.	Mostly south-facing slopes and ravines, with rock outcrops, deep crevices or abundant rodent burrows, where shrubs form a vegetative mosaic with oak trees and grasses.	None. Project Area for all three Action alternatives is outside of species range.	None. Project Area for all three Action alternatives is outside of species range.
foothill yellow-legged frog *Rana boylii*	None	SSC	Shallow, flowing water in small to moderate-sized streams with at least some cobble-sized substrate	___	None. Suitable habitat is not present in the Project Area for all three Action alternatives.	None. Suitable habitat is not present in the Project Area for all three Action alternatives.
California red-legged frog *Rana draytonii*	FT	SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	Requires 11-20 weeks of permanent water for larval development. must have access to estivation habitat.	None. Species has been extirpated from Central Valley floor (USFWS 2002).	None. Species has been extirpated from Central Valley floor (USFWS 2002).

Scientific name	Federal listing status	State listing status	General Habitat	Micro Habitat	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
western spadefoot *Spea hammondii*	None	SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands.	Vernal pools are essential for breeding and egg-laying.	None. Suitable habitat is not present in Project Area for all three Action alternatives.	None. Suitable habitat is not present in Project Area for all three Action alternatives.
giant garter snake *Thamnophis gigas*	FT	ST	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches.	This is the most aquatic of the garter snakes in California.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Natural drainage on east side of San Joaquin River and freshwater wetlands within San Joaquin River provide marginal to potentially suitable habitat for all three Action alternatives. Harding Drain and other large ditches with emergent vegetation provide marginal habitat. Species was not observed during surveys conducted for the Harding Drain Bypass Project (Horizon 2014a). Closest known occurrences is approximately 13 miles south of the Study Area in Merced County near Gustine, CA.
Birds						
tricolored blackbird *Agelaius tricolor*	None	Emergency Protection Status as of 12/3/14 per FGC 2076.5, SSC	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California.	Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	Possible. Agricultural fields planted with silage or grain provide potential breeding habitat within Project Area for all three Action alternatives.	Present. In 2014, breeding was documented in natural channel in Modesto Jennings Plant spray fields (UC Davis 2014)
burrowing owl *Athene cunicularia*	None	SSC	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation.	Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Possible. Suitable habitat is present within the Project Area for all three Action alternatives. Evidence of species was not observed during reconnaissance surveys (Horizon 2014b). Most recent sighting in the vicinity of the Project Area is from 2003 (CDFW 2014, ebird.org 2014)	Possible. Suitable habitat is present within the Project Area for all three Action alternatives. Evidence of species was not observed during reconnaissance surveys (Horizon 2014b). Most recent sighting in the vicinity of the Project Area is from 2003 (CDFW 2014, ebird.org 2014)
golden eagle *Aquila chrysaetos*	None	FP	Tundra, through grasslands, forested habitat and woodland-brushlands, south to arid deserts.	—	Possible. Species is commonly observed in canyons/foothills to the west of the Project Area for all three Action alternatives (ebird.org 2014). Flyover possible; no suitable nesting habitat.	Possible. Species is commonly observed in canyons/foothills to the west of the Project Area for all three Action alternatives (ebird.org 2014). Flyover possible; marginal foraging and nesting habitat.

Scientific name	Federal listing status	State listing status	General Habitat	Micro Habitat	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
cackling goose *Branta hutchinsii leucopareia*	FD	None	Winters on lakes and inland prairies.	Forages on natural pasture or that cultivated to grain; loafs on lakes, reservoirs, ponds.	Present. Species may forage in agricultural fields throughout the Project Area for all three Action alternatives.	Present. Species is seasonally abundant in Modesto Jennings Plant ponds (ebird.org 2014).
Swainson's hawk *Buteo swainsoni*	None	ST	Breeds in grasslands with with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees.	Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Present. Species may forage in agricultural fields throughout the Project Area for all three Action alternatives.	Present. Nesting habitat is present in San Joaquin River corridor and the natural drainage to the west of the river for all three Action alternatives.
northern harrier *Circus cyaneus*	None	SSC	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland.	Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	Present. Species has been observed in Modesto Jennings Plant spray fields (ebird.org 2014). Flood irrigated pastures provide potential nesting habitat.	Present. Species has been observed in Modesto Jennings Plant spray fields (ebird.org 2014). Flood irrigated pastures provide potential nesting habitat.
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT	SE	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems.	Nests in riparian jungles of willow, often mixed with cottonwoods, w/ lower story of blackberry, nettles, or wild grape.	None. Project Area for all three Action alternatives is outside of species range.	None. Project Area for all three Action alternatives is outside of species' current breeding territory. Riparian tree/shrub cover is patchy (not dense) and limited in size. It is not typical of the preferred breeding habitat for this species.
yellow warbler *Dendroica petechia*	None	SSC	Riparian plant associations. Prefers willows, cottonwoods, aspens, sycamores, and alders for nesting and foraging.	Also nests in montane shrubbery in open conifer forests.	Possible. Species may forage in agricultural fields adjacent to the San Joaquin River within Project Area for all three Action alternatives.	Possible. Species may nest in San Joaquin River riparian areas within Project Area for all three Action alternatives.
white-tailed kite *Elanus leucurus*	None	FP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland.	Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	Present. Species has been observed in Modesto Jennings Plant spray fields (ebird.org 2014). Foraging possible; no suitable nesting habitat.	Present. Species has been observed in Modesto Jennings Plant spray fields (ebird.org 2014). Riparian areas in San Joaquin River and isolated mature trees in agricultural areas provide potential nesting habitat.
bald eagle *Haliaeetus luecocephalus*	FD	SE, FP	Permanent resident, and uncommon winter migrant, now restricted to breeding mostly in Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity Counties.	Requires large bodies of water, or free flowing rivers with abundant fish, and adjacent snags or other perches.	Possible. Species has been observed in canyons/foothills to the west of the Project Area for all three Action alternatives and at Modesto Jennings Plant (ebird.org 2014). Flyover and foraging possible; no suitable nesting habitat.	Possible. Species has been observed in canyons/foothills to the west of the Project Area for all three Action alternatives and at Modesto Jennings Plant (ebird.org 2014). San Joaquin River provides suitable foraging and roosting habitat; nesting unlikely.

Scientific name	Federal listing status	State listing status	General Habitat	Micro Habitat	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
loggerhead shrike *Lanius ludovicianus*	None	SSC	Broken woodlands, savannah, pinyon-juniper, joshua tree, and riparian woodlands, desert	Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and	Present. Species may forage in agricultural fields throughout the Project Area for all three Action alternatives.	Present. Species may nest in San Joaquin River riparian areas within Project Area for all three Action alternatives.
song sparrow (Modesto population) *Melospiza melodia*	None	SSC	Emergent freshwater marshes, riparian willow thickets. riparian forests, vegetated irrigation canals and levees	Inhabits cattails, tules and other sedges; also known to frequent tangles bordering sloughs.	None. Project Area for all three Action alternatives is outside of species range.	None. Project Area for all three Action alternatives is outside of species range.
California least tern *Sternula antillarum browni*	FE	SE, FP	Shallow estuaries and lagoons.	Nests on beaches or tidal flats.	None. Project Area for all three Action alternatives is outside of species range.	None. Project Area for all three Action alternatives is outside of species range.
least Bell's vireo *Vireo bellii pusillus*	FE	SE	Summer resident of southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft.	Not specifically defined.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Not expected. Species has recently been observed in restored riparian habitat at the San Joaquin River National Wildlife Refuge approximately 10 miles north of the Project Area for all three Action alternatives (Howell et al. 2010). Some riparian areas in the Project Area provide marginal breeding habitat. Due to the species rarity in the Central Valley and habitat quality, it is not expected to breed in the Project Area.
Mammals						
western red bat *Lasiurus blossevillii*	None	SSC	Roosts primarily in trees, 2-40 ft above ground, from sea level up through mixed conifer forests.	Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Possible. Roosting habitat is present in San Joaquin River corridor within Project Area for all three Action alternatives.
pallid bat *Antrozous pallidus*	None	SSC	Grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests	Prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Not expected. Minimal habitat is present within Project Area for all three Action alternatives.
Fresno kangaroo rat *Dipodomys nitratoides exilis*	FE	SE	Alkali sink-open grassland habitats in western Fresno County.	Bare alkaline clay-based soils subject to seasonal inundation, with more friable soil mounds around shrubs and grasses.	None. Project Area for all three Action alternatives is outside of species range.	None. Project Area for all three Action alternatives is outside of species range.

Scientific name	Federal listing status	State listing status	General Habitat	Micro Habitat	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
Riparian woodrat *Neotoma fuscipes riparia*	FE	SSC	Riparian areas along the San Joaquin, Stanislaus and Tuolumne rivers.	Need areas with mix of brush and trees. Need suitable nesting sites in trees, snags or logs.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Not expected. Known populations are limited to San Joaquin River National Wildlife Refuge and Caswell Memorial State Park (USFWS 2012d), which are approximately 9 and 12 miles north of the Project Area for all three Action alternatives, respectively. Habitat in the action area is considered marginally suitable for riparian woodrats due to lack of mature overstory. No woodrat houses were observed during field reconnaissance surveys (Horizon 2014b).
Riparian brush rabbit *Sylvilagus bachmani riparius*	FE	SE	Riparian areas on the San Joaquin River in northern Stanislaus county.	Dense thickets of wild rose, willows, and blackberries.	None. Suitable habitat is not present in open-cut areas for all three Action alternatives.	Not expected. Existing populations are limited to Caswell Memorial State Park and a region in the south Delta near Lathrop (Kelly et al. 2011). Riparian habitat in the Project Area for all three Action alternatives supports willow thickets, but generally lacks other vegetation species (e.g., wild rose, blackberry) commonly found in habitat occupied by riparian brush rabbits. Suitable habitat in the action area is not well connected to occupied habitat at Caswell Memorial State Park, thus potential for dispersal to the action area is uncertain.
American badger *Taxidea taxus*	None	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Not expected. Minimal habitat is present in open-cut areas for all three Action alternatives.	Possible. Drier portions of the San Joaquin River floodplain provide foraging and dispersal habitat within Project Area for all three Action alternatives. Denning is not expected.

Scientific name	Federal listing status	State listing status	General Habitat	Micro Habitat	Potential to Occur in Open-cut Construction Areas	Potential to Occur at PID Intake or in Trenchless Construction Areas or Adjacent Habitats
San Joaquin kit fox *Vulpes macrotis mutica*	FE	ST	Annual grasslands or grassy open stages with scattered shrubby vegetation.	Need loose-textured sandy soils for burrowing, and suitable prey base.	Not expected. Minimal habitat is present in the Project Area for all three Action alternatives. Lands to the west of the Project Area for all three Action alternatives provide linkages for populations to the south and north (USFWS 2009). Kit fox presence in the northern range may be dependent on occasional dispersing animals from populations to the south of Santa Nella (Constable et al. 2009). The closest occurrence is approximately 3 miles west of the Project Area for all three Action alternatives along I-5.	Not expected. Minimal habitat is present in the Project Area for all three Action alternatives. Lands to the west of the Study Area provide linkages for populations to the south and north (USFWS 2009). Kit fox presence in the northern range may be dependent on occasional dispersing animals from populations to the south of Santa Nella (Constable et al. 2009). The closest occurrence is approximately 3 miles west of the Project Area for all three Action alternatives along I-5.

* List of Abbreviations for Federal and State Species Status follow below:

CH = Critical Habitat
FC = Federal candidate for listing
FD = Federal delisted
FE = Federal endangered
FP = State fully protected species
FSC = federal species of concern
FT = Federal threatened
SE = State endangered
ST = State threatened
SSC = State species of special concern

Figure 3.4-2: CNDDB Plant Occurrences

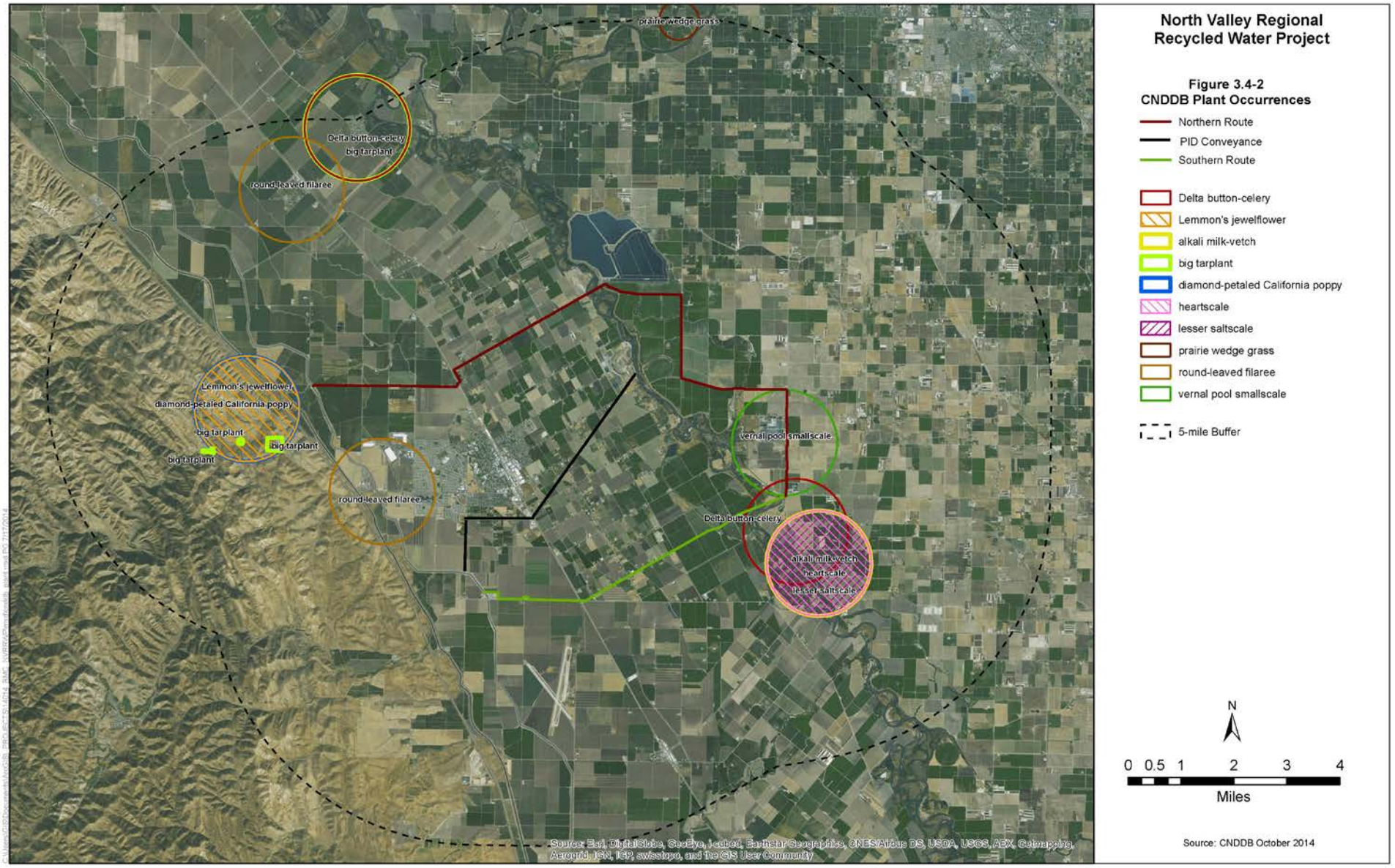
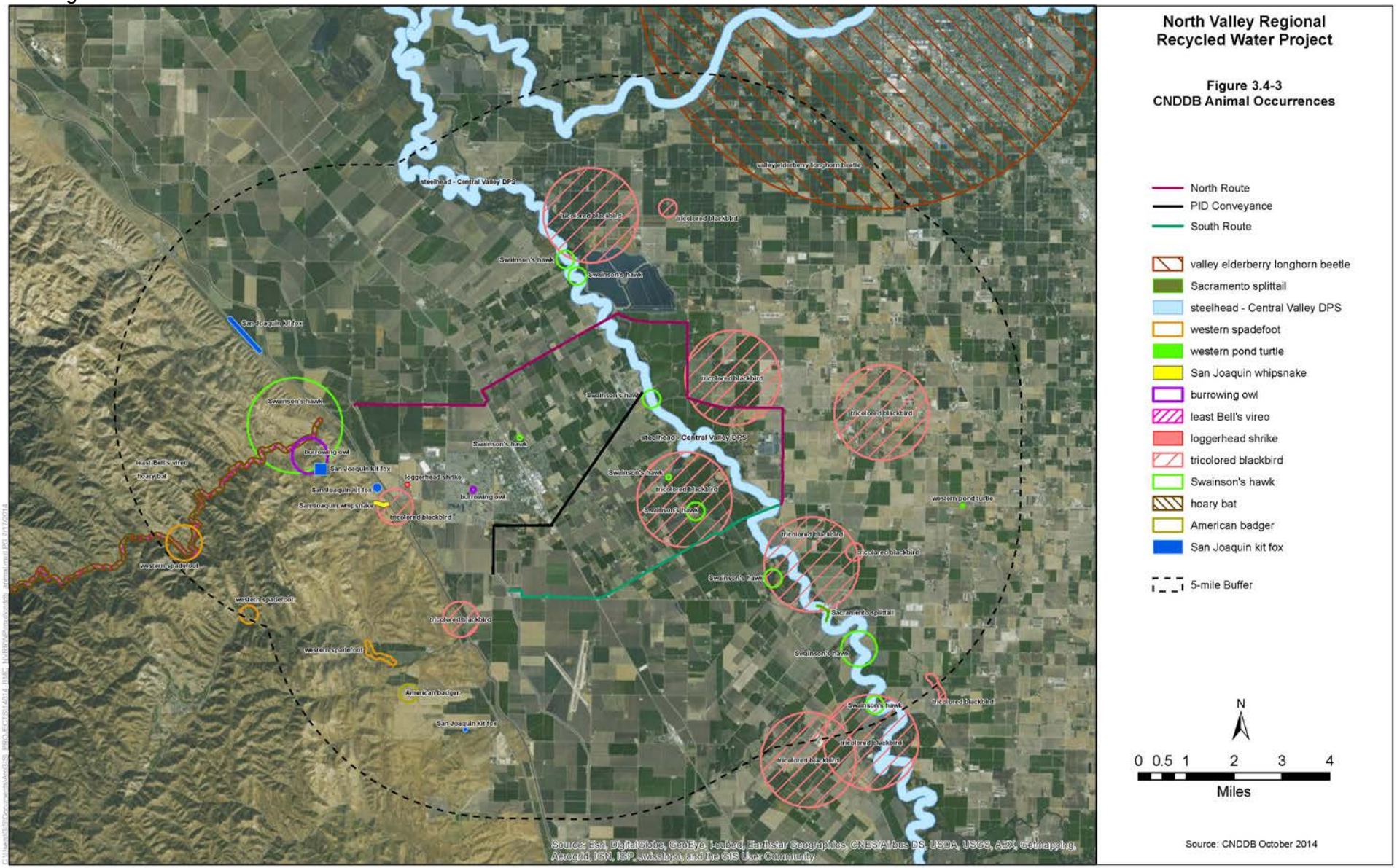


Figure 3.4-3: CNDDB Animal Occurrences



Impacts and Mitigation Measures

Impact BIO-1: Effects on special-status plants **Table 3.4-1** lists the special-status plant species known to occur in the vicinity of the Study Area, and **Figure 3.4-2** shows the CNDDB occurrences of special-status plants within a 5-mile radius of the Study Area. Two CNDDB records of special-status plants are located in the Study Area: one for vernal pool smallscale (*Atriplex persistens*) and one for Delta button celery (*Eryngium racemosum*).

According to the CNDDB (CDFW 2014), the record for vernal pool smallscale along Carpenter Road is from 1965 and the location was mapped as a "best guess" by CNDDB and this occurrence is considered "possibly extirpated". The only potentially suitable habitat for this species in the Study Area is in the alkaline pool/swale adjacent to the Stations 553+00 to 563+00 (**Figure 3.4-1**, Sheet 9). This species was not observed during the 2014 reconnaissance surveys (Horizon 2014b). The occurrence of Delta button celery is from 1968 and is also considered possibly extirpated. Potentially suitable habitat for this species in the Study Area occurs along the San Joaquin River and in refuges, where application of supplemental water is managed to avoid effects on Delta button celery.

Twenty-five of the 39 special-status plant species known to occur in the vicinity of the Study Area are considered to have no potential to occur in the Study Area (**Table 3.4-1**). These species are associated with habitats that are not present in the Study Area, or the Study Area is not within the current range of the species. An additional three special-status plant species are not expected to occur in the Study Area because only marginally suitable habitat is present and/or these species have not been recently observed in the vicinity of the Study Area. Eleven special-status plant species are considered to have the potential to occur in proposed trenchless construction areas or adjacent habitats. No special-status plants are considered to have the potential to occur in areas proposed for open-cut construction (**Table 3.4-1**).

Most of the special-status plants with the potential to occur in trenchless construction areas or adjacent habitats are associated with alkali flat or alkali scrub habitats. These species include: Alkali milk-vetch (*Astragalus tener* var. *tener)*, heartscale (*Atriplex cordulata*), brittlescale (*Atriplex depressa*), lesser saltscale (*Atriplex minuscula*), vernal pool smallscale (*Atriplex persistens*), Hispid bird's beak (*Chloropyron molle* ssp. *hispidum*), San Joaquin spearscale (*Extriplex joaquiniana*), and prostrate vernal pool navarretia (*Navarretia prostrata*). Several *Atriplex* species were observed within the alkali scrub/ alkali flat. One was immature, making identification to the species level impossible at that time. No special-status *Atriplex* species were confirmed.

Special-status plant species associated with riparian habitat or freshwater wetlands with the potential to occur in the Study Area include slough thistle (*Cirsium crassicaule*), Delta button celery (*Eryngium racemosum*), and Sanford's arrowhead (*Sagittaria sanfordii*). Potential habitat for slough thistle occurs in San Joaquin River crossings, natural drainages, and alkali scrub. Potential habitat for Delta button celery is present within the San Joaquin River crossings, however, the microhabitat conditions favored by this species were not observed during the 2014 reconnaissance surveys (Horizon 2014b). Freshwater wetlands within the San Joaquin River

crossings, natural drainages, and some drainage ditches provide potentially suitable habitat for Sanford's arrowhead.

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to special-status plants would occur.

Combined Alignment Alternative (Alternative 1) Potential adverse impacts to special-status plants would be minimized by using trenchless construction techniques and avoiding open-cut construction in sensitive habitats. However, potential impacts to special-status plants may result from erosion, sedimentation or alteration in drain patterns within suitable habitat. These impacts would be considered potentially significant. Several mitigation measures are proposed to avoid, reduce, or compensate for potential impacts. **Mitigation Measure BIO-1a** would minimize the area of potential disturbance to habitat for special-status plants. Where disturbance within special-status plant habitat cannot be avoided, **Mitigation Measure BIO-1b** would identify the extent to which special-status plants are present and could be adversely affected by the project. For special-status plants found to be present, **Mitigation Measure BIO-1c** would require monitoring to confirm avoidance of identified special-status plant populations, and compensatory mitigation should special-status plants be adversely affected. Finally, **Mitigation Measure BIO-1d** would be implemented to reduce impacts in the event of a frac-out, and a Draft Sample Frac-out Prevention Plan for HDD is included in **Appendix F**. With implementation of these mitigation measures, impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Alternative 2 would have similar impacts to Alternative 1, although there would be no potential impacts to special-status plants that may occur in alkali habitats between Stations 553+00 to 563+00 (**Figure 3.4-1**, Sheet 9) because the route for this alternative does not cross that area. This alternative would have a greater potential to impact special-status plants that may be associated with habitats in the San Joaquin River, such as slough thistle and Delta button celery. There is also a small patch of saltbush scrub on the inboard side of San Joaquin River levee near Station 1335 (**Figure 3.4-1**, Sheet 11) that could potentially support special-status plants.

Potential impacts to special-status plants would be minimized by using trenchless construction techniques and avoiding open-cut construction in sensitive habitats. However, potential impacts to special-status plants may result from erosion, sedimentation or alteration in drain patterns within suitable habitat, similar to Alternative 1. These impacts would be considered potentially significant. **Mitigation Measure BIO-1a, Mitigation Measure BIO-1b, Mitigation Measure BIO-1c,** and **Mitigation Measure BIO-1d** would be implemented as described for Alternative 1. With implementation of these mitigation measures, impacts would be less than significant.

PID Conveyance Alternative (Alternative 3) Alternative 3 would have similar impacts to Alternative 1, except there would be no potential impacts to special-status plants that may occur in alkali habitats adjacent to West Main Street because the route for this alternative does not cross that area. Unlike Alternatives 1 and 2, this alternative would require construction directly in the bank of the San Joaquin River to expand the existing PID intake. Although the river

provides habitat for special status plants such as slough thistle and Delta button celery, these species were not identified as present at the intake site (PID 2006).

However, Alternative 3 still has the potential to affect special-status plants either directly or from erosion, sedimentation or alteration in drain patterns within suitable habitat. These impacts would be considered potentially significant. **Mitigation Measure BIO-1a, Mitigation Measure BIO-1b,** and **Mitigation Measure BIO-1c** would be implemented as described for Alternatives 1 and 2. With implementation of these mitigation measures, impacts would be less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures See **Mitigation Measure HYD-1b**, which requires implementation of Best Management Practices (BMPs) to control erosion and sediment during construction, avoiding indirect impacts to plants for erosion or sedimentation during construction.

Mitigation Measure BIO-1a: Avoid or Minimize Impacts to Special-Status Plant Species (Alternatives 1, 2 and 3). To the extent feasible, project-related activities shall avoid habitats with the potential to support special-status plants, including alkali flats, alkali scrub, alkali pools, and freshwater wetlands. To the extent feasible, the Proposed Action shall minimize potential impacts to special-status plants by utilizing trenchless construction techniques within habitats with the potential to support special-status plants**.**

Mitigation Measure BIO-1b: Perform Focused Surveys for Special-Status Plant Species in Suitable Habitats (Alternatives 1, 2 and 3). Within one year prior to commencement of construction activities, a qualified botanist shall perform surveys for special-status plant species within potentially suitable habitat in the vicinity of open-cut construction areas (Survey areas for the Combined and Separate Alignment Alternatives are shown in **Table 3.4-3** and **Figure 3.4-1**; for the PID Conveyance Alternative surveys shall take place at the intake site). Floristic surveys shall be performed according to the *Protocols for Surveying and Evaluating Impacts to Specials Status Native Plant Populations and Natural Communities* (CDFG 2009 or current version). Floristic surveys shall include the use of a reference population, as reasonably feasible, to increase the likelihood of detection, and shall be performed during the appropriate bloom period(s) for each species. If special-status plants are detected within a 100-foot radius or within the microwatershed of an open-cut construction area (including pits that would be used for trenchless construction), **Mitigation Measure BIO-1c** shall be implemented.

Mitigation Measure BIO-1c: Monitor or Compensate for Impacts to Special-Status Plant Species (Alternatives 1, 2 and 3). The locations of special-status plants within the microwatershed or within 100 feet of construction areas shall be marked and the size of the population shall be recorded. Locations of special-status plant populations shall be clearly identified in the field by staking, flagging, or fencing. The plants shall be monitored throughout the duration of construction to determine if the project has resulted in adverse effects (direct or indirect), as determined by a qualified botanist.

If the botanist determines that special-status plants may have been adversely effected, then the Partner Agencies shall implement measures to compensate for the impact. Compensation measures may include transplanting perennial species, seed collection and dispersal for annual species, and other conservation strategies that shall restore and protect the viability of the local population. If minimization measures are implemented, monitoring of plant populations shall be conducted annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation shall be no net reduction in the size or viability of the local population.

Table 3.4-3: Survey Area for Special-Status Species and Sensitive Biological Resources

Mitigation Measure	Species	Location (Station Number)	Timing of Surveys
BIO-1b: Special-Status Plant Species	Alkali milkvetch (*Astragalus tener var. tener*) heartscale (*Atriplex cordulata*) brittlescale (*Atriplex depressa*) lesser saltscale (*Atriplex minuscula*) vernal pool smallscale (*Atriplex persistens*) Hispid bird's beak (*Chloropyron molle* ssp. *hispidum*) slough thistle (*Cirsium crassicaule*) San Joaquin spearscale (*Extriplex joaquiniana*) prostrate vernal pool navarretia (*Navarretia prostrata*)	553+00 to 563+00	Within 1 year prior to construction and during appropriate bloom periods
BIO-1b: Special-Status Plant Species	slough thistle (*Cirsium crassicaule*) Sanford's *arrowhead* (*Sagittaria sanfordii*)	335+00 to 345+00 373+00 to 376+00 436+00 to 438+00 563+00 to 564+00 Harding Drain 1265+00 to 1270+00	
BIO-3b: Minimize or Compensate for Impacts to Valley Elderberry Longhorn Beetle	Elderberry plants/Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus)*	Within 200 feet of all open-cut construction areas	No greater than two years and no less than 120 days prior to construction.
Bio-6: Avoid and Minimize Impacts to Giant Garter Snake	Giant garter snake (*Thamnophis gigas*)	Within 200 feet of: 335+00 to 345+00 373+00 to 376+00 436+00 to 438+00 563+00 to 564+00 Harding Drain	24 hours prior to construction and monitoring during construction within 200 feet of potential aquatic habitat.
Bio-8: Avoid and Minimize Impacts to Western Pond Turtle	Western pond turtle (*Actinemys marmorata*)	335+00 to 345+00 373+00 to 376+00 436+00 to 438+00 563+00 to 564+00 Harding Drain 1265+00 to 1270+00	14 days and 24 hours (survey twice)

Mitigation Measure	Species	Location (Station Number)	Timing of Surveys
Impact Bio-9: Avoid, Minimize, or Compensate for Impacts to Burrowing Owl	Burrowing owl (*Athene cunicularia*)	500-foot radius from all construction areas.	At least 24 hours but no more than 30 days
Impact Bio-10: Avoid and Minimize Impacts to Tricolored Blackbird Nesting Colonies	Tricolored blackbird (*Agelaius tricolor*)	Agricultural fields planted with silage or grain 320+00 to 345+00 373+00 to 376+00 436+00 to 438+00 563+00 to 564+00 Harding Drain 1265+00 to 1270+00	Within 15 days of construction for activities occurring between Feb.1 – Aug. 31
BIO-12: Avoid, Minimize, or Compensate for Impacts to Raptors including Special-status species	Swainson's hawk (*Buteo swainsoni*) White-tailed kite (*Elanus leucurus*)	0.5-mile radius from: San Joaquin River Turlock-Modesto Link Segment 1260+00 to 1275+00	See: *Recommended Timing and Methodology for Swainson's Hawk Nesting Survey's in California's Central Valley*
	Northern harrier (*Circus cyaneus*)	1,000-foot radius from all construction areas	
	Non-listed raptors	0.5-mile radius from all construction areas	
BIO-13: Avoid and Minimize Impacts to Special-status passerine species and other Birds Protected under the MBTA	Special-status passerines including least Bell's vireo (*Vireo bellii pusillus*)	Protocol surveys for least Bell's vireo in San Joaquin River crossing (s), and 500-foot radius from all construction areas.	For least Bell's vireo. see: Least Bell's Vireo Survey Guidelines (USFWS 2011a). At least 24 hours before construction for activities occurring between Feb.1 – Sept. 15 for other passerines
	Non-listed, MBTA protected passerines		
BIO-14: Avoid and Minimize Impacts to San Joaquin kit fox	San Joaquin kit fox (*Vulpes macrotis mutica*)	Within 200 feet of all construction areas	No less than 14 days and no more than 30 days prior to construction

Mitigation Measure BIO-1d: Develop and Implement a Frac-out Contingency Plan for Trenchless Construction (Alternatives 1 and 2 only). Prior to constructing a crossing(s) of the San Joaquin River, a Frac-out Prevention and Contingency Plan shall be developed and submitted by the City of Modesto to the CSLC for review. At minimum, the plan shall prescribe the measures to ensure protection of aquatic resources, a special status plants and wildlife, including:

- Procedures to minimize the potential for a frac-out associated with HDD.
- Procedures for timely detection of frac-outs.

- Procedures for timely response and remediation in the event a frac-out.
- Monitoring of drilling and frac-out response activities by a qualified biologist.

A Draft Sample Frac-out Prevention Plan for HDD is provided in **Appendix F**.

Significance after Mitigation Less than significant for all Action alternatives. No mitigation required for the No Action Alternative.

Impact BIO-2: Effects on vernal pool branchiopods Vernal pool branchiopods with the potential to occur in the Study Area include Conservancy fairy shrimp (*Branchinecta conservatio*), longhorn fairy shrimp (*Branchinecta longiantenna*), vernal pool fairy shrimp (*Branchinecta lynchi*), and vernal pool tadpole shrimp (*Lepidurus packardi*). Potentially suitable habitat for vernal pool branchiopods in the Study Area is limited to the alkali pool and swale on the south side of West Main Avenue adjacent to the project area (**Figure 3.4-1**, Sheet 9, Station 553+00 to 557+00). While vernal pool branchiopods most commonly occur in vernal pools, they may also inhabit other types of seasonal wetlands such as alkali pools and swales (Helm 1998).

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to vernal pool branchiopods would occur.

Combined Alignment Alternative (Alternative 1) The alkali pool and swale with the potential to support vernal pool branchiopods is located on the south side of West Main Avenue. The proposed route for Alternative 1 is on the north side of West Main Avenue (**Figure 3.4-1**, Sheet 9). This would likely avoid potential direct and indirect impacts to vernal pool branchiopods and their habitat because: (1) construction would not occur in the microwatershed of the pool or swale; (2) West Main Avenue functions as a hydraulic barrier for surface flow between the north and south sides of the road; and (3) construction is not likely to affect groundwater conditions on the south side of the road.

However, the precise pipeline alignment and construction methods are not known at this time. If construction occurs in the microwatershed of the alkali pool and swale, this could result in sedimentation, and alteration of hydrology and drainage patterns. These impacts are therefore considered potentially significant. Several mitigation measures are proposed to avoid, minimize, or compensate for potential impacts. **Mitigation Measure BIO-2a** would avoid impacts to suitable habitat for these species to the extent feasible. Where disturbance of habitat is unavoidable, **Mitigation Measure BIO-2b** would require that impacts be minimized through stormwater controls and site restoration, and compensatory mitigation be provided for impacts to the species or suitable habitat. With implementation of these mitigation measures, impacts would be less than significant.

Water deliveries to the DPWD service area and refuges are not anticipated to result in indirect effects to vernal pool branchiopods or their habitat. There are no vernal pools present in DPWD agricultural fields, and supplemental water provided to refuges would not be applied to areas containing vernal pools. There would thus be no effects on vernal pool branchiopods in either of these areas.

Separate Alignment Alternative (Alternative 2) Alternative 2 is not located in proximity to suitable habitat for vernal pool branchiopods species. Therefore, there would be no impacts to these species under this alternative.

PID Conveyance Alternative (Alternative 3) Alternative 3 is not located in proximity to suitable habitat for vernal pool branchiopods species. Vernal pools are not expected to occur at the PID intake site, along the Main Canal ROW, or along Bartch or Ward Avenues. Therefore, there would be no impacts to these species under this alternative.

Significance Determination before Mitigation No impact for the No Action Alternative, Alternative 2, or Alternative 3. Potentially significant for Alternative 1.

Mitigation Measures **Mitigation Measure BIO-2a: Avoid Impacts to Vernal Pool Branchiopods and Their Habitat** (Alternative 1). To the extent feasible, the project-related activities shall avoid impacts to habitat with the potential to support Conservancy fairy shrimp, longhorn fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp, including alkali pools and swales. Avoidance shall be defined as no direct or indirect effects to suitable habitat. This shall be accomplished by avoiding construction within the microwatershed of suitable habitat for vernal pool branchiopods.

Mitigation Measure BIO-2b: Minimize and Compensate for Impacts to Branchiopods and Their Habitat (Alternative 1). If direct or indirect impacts to habitat with the potential to support vernal pool branchiopods cannot be avoided then the following measures shall be implemented:

- Implement a storm water pollution prevention plan (SWPPP) to reduce the potential for sediments and contaminants to enter pools or depressions where vernal pool branchiopods may occur.
- After construction, restore surface topography and drainage to pre-construction conditions.
- Provide off-site compensation for permanent, temporary, and indirect impacts at ratios determined through consultation with USFWS. The performance standard shall be no net loss in acreage or habitat quality for vernal pool branchiopods, as determined through consultation with USFWS.

Significance after Mitigation Less than significant.

Impact BIO-3: Effects on valley elderberry longhorn beetle Valley elderberry longhorn beetles (VELB) (*Desmocerus californicus dimorphus*) are associated with its host plant elderberry (*Sambucus* spp.). An elderberry shrub was observed near the outlet of the Harding Drain at the San Joaquin River during a reconnaissance survey in 2014 (Horizon 2014b). Elderberry shrubs and VELB have the potential to occur in riparian habitat within the San Joaquin River crossings.

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to VELB would occur.

Combined Alignment Alternative (Alternative 1) Potential adverse impacts to VELB would be minimized by using trenchless construction techniques in areas where elderberry shrubs are most likely to occur. However, the precise pipeline alignment, construction methods, and locations of all elderberry shrubs are not known at this time. Impacts to VELB and individual elderberry shrubs may result from removal or damage of elderberry plants, fragmentation of habitat, sedimentation, erosion, or alteration in drainage patterns. These impacts are considered potentially significant. Several mitigation measures are proposed to avoid, minimize, or compensate for potential impacts. **Mitigation Measure BIO-3a** would avoid impacts to the host plant for this species to the extent feasible. If disturbance of the host plant is unavoidable, **Mitigation Measure BIO-3b** would require that impacts be minimized through site restoration and compensatory mitigation for this species. Finally, **Mitigation Measure BIO-1d** would be implemented to reduce impacts in the event of a frac-out. With implementation of these mitigation measures, impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Potential impacts to VELB would be similar to Alternative 1, but there would be a greater chance for impacts in riparian areas because there would be two crossings of the San Joaquin River. These impacts are considered potentially significant. **Mitigation Measure BIO-3a, Mitigation Measure BIO-3b,** and **Mitigation Measure BIO-1d** would be implemented as described for Alternative 1. With implementation of these mitigation measures, impacts would be less than significant.

PID Conveyance Alternative (Alternative 3) Surveys of the intake site at the San Joaquin River showed that there were no elderberry shrubs in the vicinity of the intake (PID 2006). However, the alignment of the pipeline along the Main Canal has not been surveyed, and it is possible that elderberry bushes have grown at the intake site since surveys were conducted in 2006. Alternative 3 would have similar impacts to Alternatives 1 and 2. **Mitigation Measure BIO-3a** and **Mitigation Measure BIO-3b** would be implemented as described for Alternatives 1 and 2. With implementation of these mitigation measures, impacts would be less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **See Mitigation Measure BIO-1d** (Alternatives 1 and 2). **Mitigation Measure BIO-3a: Avoid Impacts to Valley Elderberry Longhorn Beetle** (Alternatives 1, 2 and 3). To the extent feasible, the project shall adhere to avoidance measures outlined in USFWS' *Conservation Guidelines for Valley Elderberry Longhorn Beetle* (USFWS 1999). This shall include the following avoidance measures:

- No less than 120 days prior to commencing construction, the locations of elderberry plants within 200 feet of open-cut construction areas shall be identified.
- Fence and flag all areas to be avoided during construction activities including all established elderberry shrubs within 200 feet of open-cut construction that will not be impacted by construction activities.

- No open-cut construction within 100 feet of the dripline of elderberry plants containing stems measuring 1.0 inch or greater in diameter at ground level.
- Construction personnel shall participate in a Contractor Environmental Awareness Training (CEAT). The CEAT shall communicate the need to avoid damaging the elderberry plants and the possible penalties for not complying with these requirements. The CEAT will instruct work crews about the status of the beetle and the need to protect its elderberry host plant.
- Erect signs every 50 feet along the edge of the avoidance area with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs will be maintained for the duration of construction.
- No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant would be used within 100 feet of any elderberry plant.

Mitigation Measure BIO-3b: Minimize or Compensate for Impacts to Valley Elderberry Longhorn Beetle (Alternatives 1, 2 and 3). If elderberry plants occur within 100 feet of open-cut construction, their locations shall be reported to the USFWS. In areas where encroachment on the 100-foot buffer has been approved by USFWS, a minimum setback of at least 20 feet from the dripline of each elderberry plant shall be provided, as feasible. For any encroachment into the 100-foot buffer or removal of elderberry plants, the Partner Agencies shall implement measures to compensate for impacts to VELB. Compensation measures shall be consistent with USFWS' *Conservation Guidelines for Valley Elderberry Longhorn Beetle* (USFWS 1999). This shall include establishment of a project-specific VELB Conservation Area or purchase of credits at a USFWS-approved mitigation bank. If the Partner Agencies establish a project-specific Conservation Area, the population of VELBs, the general condition of the Conservation Area, and the condition of the elderberry and associated native plantings in the Conservation Area shall be monitored over a period of 10 years. Monitoring and reporting shall be conducted in accordance with the Conservation Guidelines for VELB (USFWS 1999). A minimum survival rate of at least 60 percent of the elderberry plants and 60 percent of the associated native plants shall be maintained throughout the monitoring period.

Significance after Mitigation Less than significant.

Impact BIO-4: Effects of project construction on special-status fishes In the Study Area, habitat for special-status fish species is generally limited to the San Joaquin River. During high flow events, some special-status fish species may occasionally enter natural drainages or ditches connected to the river. Several special-status fish species may occur in this reach of the San Joaquin River, including: Central Valley fall- and spring-run Chinook salmon, Central Valley steelhead, Sacramento splittail (*Pogonichthys macrolepidotus*), hardhead, San Joaquin roach (*Lavinia symmetricus*), and several species of lamprey (**Table 3.4-2**).

Adult Chinook salmon and steelhead migrate through the Study Area to reach spawning habitat in the Merced River. Juvenile salmonids pass through the Study Area on their way out to the Pacific Ocean. Sacramento splittail may be present in this portion of the river in wet years.

Hardhead have recently been captured downstream near the confluence with the Stanislaus (Pers. Comm. Merz 2014). The status of San Joaquin roach in the Study Area is not well documented, but this species may be present. Lamprey likely migrate through this reach of the river to spawn in upstream tributaries. Ammocetes (lamprey larva) may be dispersed into this reach of the river. There have been anecdotal accounts of green sturgeon in the vicinity of the Study Area (Jackson and Van Eenennaam 2013), but this species is not expected to be present (Pers. Comm. Gutierrez 2014).

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to special-status fish and their habitat would occur.

Combined Alignment Alternative (Alternative 1) Potential construction-related impacts to special-status fish and their habitat would be minimized by using trenchless construction techniques for crossing the San Joaquin River. If HDD is selected as the trenchless construction method, impacts to special-status fish and their habitat may result from a frac-out of drilling fluids. Drilling fluids typically consist of bentonite, which is non-toxic to aquatic life. However, a frac-out may result in a temporary increase in turbidity or sedimentation that can adversely affect aquatic organisms by covering spawning and feeding areas, and clogging fish gills. These impacts are considered potentially significant. **Mitigation Measure BIO-1d** would be implemented to reduce impacts in the event of a frac-out and a Draft Sample Frac-out Prevention Plan for HDD is included in **Appendix F**. With implementation of this mitigation measure, impacts would be less than significant.

Trenchless construction under the San Joaquin River is not expected to result in any noise or vibration impacts on fish in the river. Vibration from the drilling machinery is minimal and because the tunneling operation occurs from 15 to 50 feet below the river, it would be attenuated to an imperceptible level before it reaches the river bottom. No perceptible noise or vibration is expected to translate into the water (Pers. Comm. Glynn 2014). There would be no adverse effects from noise or vibration from drilling machinery.

Construction of launching and receiving pits for trenchless construction would likely require installation of sheet pile cofferdams in upland locations adjacent to the San Joaquin River. Installation of sheet piles may require the use of impact pile driving equipment. Land-based pile driving has the potential to generate underwater noise that could adversely affect special-status fish.

The NMFS Pile Driving Calculator (NMFS 2012) was used to estimate the potential underwater noise-related effects to fish species from construction of launching and receiving pits. The highest values for land-based pile driving activities reported in the *Final Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish Appendix I Compendium of Pile Driving Sound Data* updated October 2012 (ICF Jones & Stokes and Illingworth & Rodkin 2012) were used to iteratively develop thresholds for pile driving that would be protective of fish. **Mitigation Measure BIO-4a** would be implemented to minimize impacts associated with land-based pile driving by limiting the number of strikes that can be

made in a 24-hour period. With implementation of this mitigation measure, impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Potential impacts would be similar to Alternative 1, but there would be a greater chance for impacts to special-status fish and their habitat because there would be two crossings of the San Joaquin River. **Mitigation Measure BIO-1d and Mitigation Measure BIO-4a** would be implemented as described for Alternative 1. With implementation of these mitigation measures, impacts would be less than significant for this alternative.

PID Conveyance Alternative (Alternative 3) Construction would require work within the San Joaquin River to expand the existing PID intake facility and fish screen. This could affect the special status fish species described above. It is expected that construction of the expanded intake would require construction similar to that completed for the existing PID Intake, which began operation in 2011. Construction would require placement and removal of a sheet-pile cofferdam to isolate the work site from the rest of the river. Potential effects of cofferdam installation could include impacts from noise and vibration associated with pile driving in the river. In-river cofferdam construction would also result in a temporary localized disturbance with minor siltation of the water. It is expected that placement of the cofferdam would have to take place between July 1 and September 30 which would minimize effects on fish, especially salmonids, because this is outside of their migratory period for this portion of the San Joaquin River (PID 2006). Length of time required for construction of the expanded intake has not been determined, but it is likely that construction within the cofferdam would not be completed by September 30, which would require that removal of the cofferdam take place the following year in the July 1 to September 30 construction window. It is expected that an Incidental Take Permit from CDFW would be required for construction of this alternative by the Partner Agencies. If this alternative is chosen, Reclamation will complete Section 7 ESA consultation with NMFS. Completion of the Section 7 ESA consultation will be documented in the Record of Decision for the Proposed Action. **Mitigation Measure BIO-4b** would be implemented to reduce impacts of construction work within the San Joaquin River. With implementation of this mitigation measure, impacts would be less than significant for this alternative. Measures to protect water quality, as described in *Section 3.11, Hydrology and Water Quality*, would also be implemented, and would protect special status fish species in the San Joaquin River.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures See **Mitigation Measure BIO-1d** (Alternatives 1 and 2). **Mitigation Measure BIO-4a: Minimize Pile Driving-related Impacts to Special-status Fish** (Alternatives 1 and 2). If impact pile driving activities occur adjacent to the San Joaquin River between October 1 and May 31, the Partner Agencies shall adhere to the restrictions on the number of allowable strikes for a 24 hour period provided in **Table 3.4-4**.

Table 3.4-4: Impact Pile Strike Restrictions for Protection of Special-status Fish

Distance from San Joaquin River (Meters)	Distance from San Joaquin River (Feet)	Maximum Number of Strikes per 24 hours[1]
75	246	130
150	492	365
225	738	672
300	984	1035
375	1230	1447
450	1476	1902
>450	>1476	no limit

[1] Calculations based on NMFS Pile Driving Calculations (NMFS 2012). Assumed peak sound level of 204 decibel (dB) and sound exposure level (SEL) of 175 dB.

Mitigation Measure BIO-4b: Best Management Practices for In-River Intake Construction (Alternative 3). Prior to construction of the expanded intake in the San Joaquin River, the Partner Agencies and PID would develop a program of BMPs for in-river construction in consultation with CDFW and NMFS. At minimum, the plan shall prescribe the measures to ensure protection of aquatic resources and special-status plants, including:

- Project construction and operations shall result in no net loss of wetland resources at the intake site.
- Work within the San Joaquin River shall only take place between July 1 and September 30. Work within the cofferdam will not be considered to be in-river construction.
- All construction contracts shall specify a fish salvage program for all dewatered areas as part of construction. All trapped fish and aquatic species within a dewatered work site will be removed and returned unharmed to the San Joaquin River.

Significance after Mitigation Less than significant.

Impact BIO-5: Effects of project operations on special-status fishes
No Action Alternative. Under the No Action Alternative, no change in operations would occur. Therefore, there would be no new impacts to special-status fish and their habitat**.**

Combined and Separate Alignment Alternatives Currently, water from the Cities' Waste Water Treatment Plants is discharged to the San Joaquin River where it contributes to existing flows and therefore provides potential biological benefits to fishery resources. For example, studies have shown positive relationships between the flow in the San Joaquin River during the spring (e.g., March-May) and the survival of juvenile salmon as well as adult salmon escapement 2.5 years later (Hanson 2013). Under the Proposed Action, the Cities would redirect Waste Water Treatment Plant discharges out of the San Joaquin River, which would result in an incremental reduction in river flows relative to the baseline condition. Average annual flows in the San Joaquin River would be reduced by approximately 0.5 percent, which is considered insignificant

in comparison to the seasonal and annual variations in river flows. Between 1990 and 2014 flows at Vernalis ranged from about 585,000 AFY to 8,900,000 AFY. The percentage reduction varies depending on year type, but in dry years, due to restrictions in their discharge permit, the City of Modesto often cannot discharge to the river at all. Discharge is only allowed when river flows provide a flow ration equal to or greater than 20:1 (river to effluent), so the effect of discharge reductions in dry years is still minimal. For example, in 2014 Modesto only discharged a total of 1,139 AF to the river. Under the No Action Alternative very little water would be discharged during dry years so the discontinuation of this discharge has a minimal effect.

An assessment of the impacts of the reduction of Waste Water Treatment Plant discharges was conducted as part of the feasibility study for the proposed project. Hanson Environmental (Hanson) prepared a report titled *Assessment of Potential Effects of the North Valley Regional Recycled Water Program Reductions in Freshwater Discharges into the San Joaquin River on Fishery Habitat and Juvenile Salmon Survival* (Hanson 2013). This report is provided in **Appendix E**. The analysis focuses on the period from March through May because this is the critical time period when flows in the river can affect sensitive species. Flow reductions at other times in the year would not be expected to be biologically meaningful (see **Appendix E**).

The assessment report utilized Chinook salmon as the indicator species for evaluating the effects of the proposed project (Hanson 2013). Chinook salmon were selected as the indicator species because: (1) quantitative data on the relationships between San Joaquin River flows and habitat quality and availability, survival, and abundance are not available for other fish species inhabiting the river; and (2) Chinook salmon are a species sensitive to changes in instream flows and other environmental factors such as exposure to seasonally elevated water temperature when compared to the greater tolerance of many of the resident and other migratory fish that utilize the San Joaquin River as habitat (Kjelson et al. 1982, Mesick et al. 2007). The two primary conclusions from the assessment were:

- Redirection of discharges from the Modesto and Turlock Waste Water Treatment Plants away from the San Joaquin River would result in an incremental reduction in river flow from the point(s) of the existing discharge downstream. The reduction in San Joaquin River flow would contribute, based on the best scientific information available, to an incremental reduction in juvenile Chinook salmon survival during spring outmigration, a reduction in adult salmon escapement to the San Joaquin River tributaries, and an incremental reduction in habitat quality and availability in the lower river and estuary.
- The magnitude of predicted changes in juvenile salmon survival, adult escapement, and habitat conditions in the lower river and estuary was small (typically less than 1 percent when compared to current baseline conditions) and is well within the natural observed variation in the regression relationships used in these analyses. The magnitude of predicted changes in juvenile salmon survival and adult escapement, habitat quality and availability in the lower San Joaquin River, and the location of the estuarine low salinity zone (X2 location), would not be detectable in field studies and is considered to be less than significant.

Based on results of the assessment, redirection of the discharge of treated wastewater from the Waste Water Treatment Plants at Modesto and Turlock away from the San Joaquin River would not be expected to result in a measureable effect on the population dynamics of Chinook salmon. Since Chinook salmon are among the most sensitive fish species to changes in instream flows and other associated environmental factors (e.g., exposure to seasonally elevated water temperatures: Kjelson et al. 1982, Mesick et al. 2007) the potential effects of the proposed redirection of Waste Water Treatment Plant discharges away from the river would be expected to be less for other resident and migratory fish inhabiting the San Joaquin River (Hanson 2013).

PID Conveyance Alternative (Alternative 3) Similar to Alternatives 1 and 2, this alternative would slightly reduce flows in the San Joaquin River. The only difference is that the instead of discontinuing discharges, both Turlock and Modesto would continue to discharge at their existing discharge locations, and the water would be diverted at the PID intake. This would result in slightly more water in the river for the 3.6 miles between the Turlock discharge location at the Harding Drain Bypass pipeline and the intake, and slightly less water in the river between the PID intake and the existing Modesto discharge location, which is downstream of the intake. Downstream of the Modesto discharge, the amount of water in the river would be the same as for Alternatives 1 and 2. This alternative thus would result in the same incremental reduction in river flows relative to the baseline condition, and would not be expected to result in a measureable effect on the population dynamics of Chinook salmon or other resident and migratory fish inhabiting the San Joaquin River (Hanson 2013).

Significance Determination before Mitigation Less than significant for all Action alternatives. No impact for the No Action Alternative.

Impact BIO-6: Effects on giant garter snake The natural drainage on the east side of San Joaquin River (Figure 3.4-1, Sheets 7-10) and freshwater wetlands within the river provide potentially suitable aquatic habitat for giant garter snake (GGS). The Harding Drain and other large ditches with emergent vegetation also provide marginal aquatic habitat for this species. Uplands adjacent to these aquatic sites provide basking sites and refugia. GGS are also known to occur in the Volta Wildlife Area (USFWS 2012).

GGS were not observed in the Harding Drain or San Joaquin River during pre-construction surveys conducted for the Harding Drain Bypass Project (Horizon 2014a). The closest known occurrence is approximately 13 miles south of the Study Area in Merced County near Gustine, CA (CDFW 2014). The San Joaquin River may function as a dispersal corridor between GGS populations to the south and north.

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no direct impacts to GGS would occur. However, under the No Action Alternative GGS habitat could be adversely affected because of a lack of reliable water supply.

Combined Alignment Alternative (Alternative 1) Potential impacts to GGS would be minimized by using trenchless construction techniques in aquatic habitats where GGS may occur. Potential upland habitat adjacent to aquatic habitat in the San Joaquin River would be avoided because

entry and pullback pits for HDD construction would be on the land-side of the river levees and greater than 200 feet from suitable aquatic habitat. To the extent feasible, construction is expected to take place in the active season for GGS, which is from May 1 to October 1. The proposed pipeline alignment would cross the natural drainage on the east side of the San Joaquin River up to three times (**Figure 3.4-1**, Stations 373+00. 436+00, and 562+50). Approximately 54,000 square feet (1.24 acres) of potential GGS upland habitat would be temporarily disturbed during construction. This would temporarily reduce the amount and quality of upland habitat available to GGS. If GGS are present in upland areas during construction, injury or mortality to individuals could result while operating construction equipment for site preparation (i.e., clearing and grubbing). **Mitigation Measure BIO-6** would be implemented to avoid or minimize these potential impacts by avoiding suitable habitat for GGS to the extent feasible. Where disturbance of potentially suitable habitat is unavoidable, **Mitigation Measure BIO-6** would minimize impacts by requiring pre-construction surveys, on-site biological monitoring, restricting the location of certain construction activities, and restoration of impacted areas to pre-construction conditions. With implementation of this mitigation measure, impacts would be less than significant.

Provision of supplemental water to refuges would benefit GGS habitat, but would also increase the amount of water of wastewater origin in the DMC. However, water quality of the DMC is not expected to be adversely affected by discharge of recycled water. Water quality effects are evaluated in detail in *Section 3.11, Hydrology and Water Quality*, and in **Appendix I**, which contains the Antidegradation Analysis performed for the discharge. Water quality would meet Reclamation requirements for discharge of non-project water to the DMC, and modest increases in salinity would not be expected to affect GGS. All constituents would be below applicable aquatic life water quality criteria. GGS are particularly sensitive to selenium but levels of selenium in the DMC are not projected to change under the Proposed Action. Provision of supplemental water to refuges is thus projected to have an overall beneficial impact.

Separate Alignment Alternative (Alternative 2) Potential impacts to GGS would be similar to Alternative 1. There would be a greater chance for impacts to GGS that may occur in wetlands along the San Joaquin River because there would be two crossings of the San Joaquin River. There would be no potential for impacts in the natural drainage on east side of San Joaquin River because this alternative does not cross that drainage. These impacts are considered potentially significant. **Mitigation Measure BIO-6** would be implemented as described for the Alternative 1. With implementation of this mitigation measure, impacts would be less than significant.

PID Conveyance Alternative (Alternative 3) Potential impacts to GGS would be similar to Alternative 2. There would be a greater chance for impacts to GGS that may occur in wetlands along the San Joaquin River because work would be conducted both within the river and in adjacent upland habitat. Although PID has determined that habitat for GGS at their existing intake site is very limited because of a lack of vegetation and high level of human disturbance (PID 2006), these impacts are still considered potentially significant. **Mitigation Measure BIO-6** would be implemented as described for Alternatives 1 and 2. With implementation of this mitigation measure, impacts would be less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure BIO-6: Avoid and Minimize Impacts to Giant Garter Snake** (Alternatives 1, 2 and 3). The following measures shall be implemented to avoid or minimize impacts to GGS:

- Trenchless construction techniques shall be used to construct the pipeline crossing in potential aquatic habitat for GGS (applicable to Alternatives 1 and 2 only).
- Construction personnel shall participate in a CEAT. Under this program, workers shall be informed about GGS and habitat, the species life history, conservation goals, identification of the snake, and procedures to follow in the event of a possible sighting.
- Within 24-hours prior to commencement of construction activities, the site shall be inspected by a qualified biologist who is approved by the USFWS. The biologist shall provide the Service with a field report form documenting the monitoring efforts within 24-hours of commencement of construction activities. A qualified biologist shall be on-site during all construction activity within 200 feet of potential habitat for GGS (Survey areas for the Combined and Separate Alignment Alternatives are shown in **Table 3.4-3** and **Figure 3.4-1**; for the PID Conveyance Alternative surveys shall take place at the intake site). If a snake is encountered during construction activities, the biologist shall have the authority to stop construction activities until appropriate corrective measures have been completed or it is determined that the snake would not be harmed.
- Erosion control materials including silt curtains, silt fencing, and erosion control wattles shall be regularly inspected for entanglement or entrapment of the snake. No erosion control devices containing plastic netting (including photo- or biodegradable plastic netting) shall be used.
- Stockpiling of construction materials, portable equipment, vehicles, and supplies shall be restricted to the designated construction staging areas which shall be greater than 200 feet from GGS aquatic habitat.
- Clearing of wetland vegetation, if any, shall be confined to the minimal area necessary to construct the pipeline or intake.

- After completion of construction activities, any temporary fill and construction debris shall be removed. Disturbed areas shall be restored to pre-project conditions. Restoration work shall include replanting native emergent vegetation, where appropriate.

Significance after Mitigation Less than significant.

Impact BIO-7: Effects on San Joaquin whipsnake Potentially suitable habitat for San Joaquin whipsnake occurs in saltbush scrub on the river side of San Joaquin River levee near Station 1335 (**Figure 3.4-1**, Sheet 11). This species was not observed in this location during surveys conducted for the Harding Drain Bypass Project (Horizon 2014a). Lack of burrows or other refuge in alkali flat/scrub between Stations 553+00 to 563+00 make this area unsuitable for San Joaquin whipsnake.

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to San Joaquin whipsnake would occur.

Combined Alignment Alternative (Alternative 1) This alternative would not impact San Joaquin whipsnake because it does not cross potentially suitable habitat.

Separate Alignment Alternative (Alternative 2) Potential impacts to San Joaquin whipsnake would be minimized by using trenchless construction techniques in areas where this species may occur (i.e., river side of San Joaquin River levee near Station 1335). The potential for this species to be impacted by a frac-out is considered to be highly unlikely. Impacts are considered less than significant.

PID Conveyance Alternative (Alternative 3) This alternative would not affect San Joaquin whipsnake because it does not cross potentially suitable habitat.

Significance Determination before Mitigation Less than significant for all Action alternatives. No impact for the No Action Alternative.

Impact BIO-8: Effects on western pond turtle Potentially suitable habitat for western pond turtle occurs in the San Joaquin River and natural drainages. Irrigation ditches with emergent vegetation provide marginally suitable habitat because they generally lack basking sites, the banks are very steep, and they are not perennially inundated**.**

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to western pond turtle would occur.

Combined Alignment Alternative (Alternative 1) Potential impacts to western pond turtle would be minimized by using trenchless construction techniques in areas where this species is most likely to occur. However, the precise construction methods are not known at this time, and western pond turtle may occur in upland areas. Construction activities that directly impact

western pond turtle or their nests have the potential to result in significant impacts to this species. **Mitigation Measure BIO-8** would avoid impacts to suitable habitat for this species to the extent feasible. Where disturbance of suitable habitat is unavoidable, the mitigation measure would require that impacts be minimized through pre-construction surveys, establishment of buffers, and monitoring. With implementation of this mitigation measure, impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Potential impacts would be similar to Alternative 1, but there would be a greater chance for impacts to western pond turtle because there would be two crossings of the San Joaquin River. **Mitigation Measure BIO-8** would be implemented as described for Alternative 1. With implementation of this mitigation measure, impacts would be less than significant.

PID Conveyance Alternative (Alternative 3) Potential impacts would be similar to Alternative 1, but there would be a greater chance for impacts to western pond turtle because there would construction within the San Joaquin River, which contains moderate to low quality habitat for western pond turtle within and near the shores of the river. Impacts of construction of the expanded intake facility would be potentially significant. **Mitigation Measure BIO-8** would be implemented as described for Alternatives 1 and 2. With implementation of this mitigation measure, impacts would be less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure BIO-8: Avoid and Minimize Impacts to Western Pond Turtle** (Alternatives 1, 2 and 3). The following measures shall be implemented to avoid or minimize impacts to western pond turtle:

- To the extent feasible, trenchless construction techniques shall be used where pipelines cross potential aquatic habitat for western pond turtle.
- Construction personnel shall participate in a CEAT. Under this program, workers shall be informed about western pond turtle and their habitat, conservation goals, identification, and procedures to follow in the event of a possible sighting.
- Pre-construction surveys for western pond turtle shall be conducted by a qualified biologist 14 days before and 24 hours before the start of construction activities where suitable habitat exists (Survey areas for the Combined and Separate Alignment Alternatives are shown in **Table 3.4-3** and **Figure 3.4-1**; for the PID Conveyance Alternative surveys shall take place at the intake site). If western pond turtle or their nests are observed during pre-construction surveys, the following measures shall be implemented:
    - A qualified biologist shall be on site to monitor construction in suitable habitat. If a western pond turtle is present within 50 feet of a construction area, no vegetation clearing or ground disturbing activities shall be conducted until the turtle leaves the area on its own volition.
    - If western pond turtle nests are identified in the work area during pre-construction surveys, a 100-foot no-disturbance buffer shall be established

between the nest and any areas of potential disturbance. Buffers shall be clearly marked with temporary fencing. Construction shall not be allowed to commence in the exclusion area until hatchlings have emerged from the nest, or the nest is deemed inactive by a qualified biologist.

Significance after Mitigation Less than significant.

Impact BIO-9: Effects on burrowing owl Potential habitat for burrowing owls occurs in several locations throughout the Study Area, including unvegetated areas adjacent to the DMC and in ruderal and agricultural habitats with burrows. Evidence of this species was not observed during site reconnaissance and few burrows were observed in the Study Area (Horizon 2014b). However, this species may disperse and colonize suitable habitat within the Study Area.

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to burrowing owls would occur.

Combined Alignment Alternative (Alternative 1) If present in the vicinity of the Study Area, construction could disturb burrowing owls through noise, visual distraction, or direct impacts to occupied habitat. These impacts would be considered potentially significant. **Mitigation Measure BIO-9** is proposed to avoid impacts to this species, to the extent feasible. Where disturbance is unavoidable, impacts to burrowing owls would be minimized through establishing buffers around active burrows. If active burrows cannot be avoided, passive relocation techniques may be used. If relocation occurs, then compensation would be provided to offset impacts. With implementation of this mitigation measure, impacts would be less than significant.

S*eparate Alignment Alternative (Alternative 2)* Potential impacts would be similar to Alternative 1, but there would be a greater chance for impacts because this alternative crosses a larger area of potentially suitable habitat. **Mitigation Measure BIO-9** would be implemented as described for Alternative 1. With implementation of this mitigation measure, impacts would be less than significant.

PID Conveyance Alternative (Alternative 3) Potential impacts would be similar to Alternatives 1 and 2, as moderate to low quality habitat for burrowing owl occurs near the PID intake site and along the Main Canal. **Mitigation Measure BIO-9** would be implemented as described for Alternatives 1 and 2. With implementation of this mitigation measure, impacts would be less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure BIO-9: Avoid, Minimize, or Compensate for Impacts to Burrowing Owl** (Alternatives 1, 2 and 3). Prior to initiating ground-disturbing activities, surveys for burrowing owls shall be conducted in accordance with protocols established in the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012 or current version). If ground-disturbing activities are delayed or suspended for more than 30 days after the pre-construction survey, the site shall be resurveyed. If burrowing owls are detected, disturbance to

burrows shall be avoided during the nesting season (February 1 through August 31). Buffers shall be established around occupied burrows in accordance with guidance provided in the *Staff Report on Burrowing Owl Mitigation*, and at the discretion of a qualified wildlife biologist. Buffers around occupied burrows shall be a minimum of 656 feet (200 meters) during the breeding season, and 160 feet (100 meters) during the non-breeding season. Buffer distances shall be subject to the approval of CDFW.

If occupied burrows cannot be avoided, passive owl relocation techniques may be implemented outside of the nesting season (February 1 through August 31). Owls would be excluded from burrows within 160 feet of construction by installing one-way doors in burrow entrances. The work area shall be monitored daily for 1 week to confirm owl departure from burrows prior to any ground-disturbing activities. Where possible burrows shall be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe shall be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.

If occupied burrows are relocated, the Partners Agencies shall enhance or create burrows in adjacent habitat at a 1:1 ratio (burrows destroyed to burrows enhanced or created) one week prior to implementation of passive relocation techniques. If burrowing owl habitat enhancement or creation takes place, the Partners Agencies shall develop and implement a monitoring and management plan to assess the effectiveness of the mitigation. The plan shall be subject to the approval of CDFW.

Significance after Mitigation Less than significant.

Impact BIO-10: Effects on tricolored blackbird Potential habitat for tricolored blackbird occurs in the natural drainage on the east side of San Joaquin River (**Figure 3.4-1**, Sheets 7-10), freshwater wetlands within the river, and some agricultural fields planted with silage or grain. The Harding Drain and other large ditches with emergent vegetation provide marginal nesting habitat for this species. A tricolored blackbird breeding colony was documented in 2014 in the natural drainage on the east side of the San Joaquin River (**Figure 3.4-1**, Sheet 7, Station 375) (UC Davis 2014).

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to tricolored blackbirds would occur.

Combined Alignment Alternative (Alternative 1) Potential impacts to tricolored blackbird would be minimized by using trenchless construction techniques in areas that support emergent vegetation. However, this species may nest in agricultural fields and construction could disrupt nesting through noise, visual distraction, or otherwise cause behavioral modifications. While the Proposed Action would not permanently modify nesting habitat for tricolored blackbirds, nest failure would be considered a potentially significant impact. **Mitigation Measure BIO-10** would be implemented to avoid and minimize potential impacts to tricolored blackbird. This mitigation measure includes pre-construction surveys during the nesting season and establishing buffers around active nests. With implementation of this mitigation measure, impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Potential impacts would be similar to the Alternative 1 and are considered potentially significant. However, this alternative would not cross the natural drainage where a breeding colony was observed in 2014. **Mitigation Measure BIO-10** would be implemented as described for Alternative 1. With implementation of this mitigation measure, impacts would be less than significant.

PID Conveyance Alternative (Alternative 3) Surveys of the PID intake site determined that there was no suitable habitat for tricolored blackbird present at the intake (PID 2006). However, the pipeline alignment could traverse areas adjacent to silage and grain fields, which provide potential habitat for tricolored blackbird. Impacts would be similar to those for Alternatives 1 and 2. **Mitigation Measure BIO-10** would be implemented as described for Alternative 1 and 2. With implementation of this mitigation measure, impacts would be less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure BIO-10: Avoid and Minimize Impacts to Tricolored Blackbird Nesting Colonies** (Alternatives 1, 2 and 3). The following measures shall be implemented to avoid or minimize impacts to tricolored blackbird:

- To the extent feasible, trenchless construction techniques shall be used in areas that support emergent vegetation.
- During the breeding season (February 1 through August 31), pre-construction surveys for tricolored blackbird shall be conducted in suitable nesting habitat by a qualified biologist no more than 15 days prior to scheduled work. Suitable nesting habitat includes any of the following: (a) dense vegetation near open water; (b) emergent marsh vegetation, especially cattails and bulrush; (c) thickets of willow, blackberry, wild rose, or thistles; or (d) silage and other grain fields such as sorghum.
- If tricolored blackbird breeding is detected, a 500 foot no-disturbance buffer shall be established around the breeding site. The buffer shall be maintained until a qualified biologist has determined that young have fledged and are no longer reliant upon the nest or parental care for survival.

Significance after Mitigation Less than significant.

Impact BIO-11: Effects on golden eagle and bald eagle Golden eagles are commonly observed in the canyons/foothills to the west of the Study Area (ebird.org 2014). The grasslands and oak woodlands of the Diablo Range support a high density of nesting golden eagles. In central California, golden eagles nest primarily in large trees and cliffs within open grasslands and oak savanna, and occasionally in oak woodland and open shrublands (Hunt et al. 1999). The Study Area provides marginal foraging habitat and nesting is unlikely.

Bald eagles have been observed in canyons/foothills to the west of the Study Area and at Modesto WTP (ebird.org 2014). In California, the majority of bald eagles nest in conifer trees near reservoirs (Jackman and Jenkins 2004). Typically, bald eagles forage near open water

(rivers, lakes, reservoirs) where fish or waterfowl are abundant (USFS 2007).The San Joaquin River, and possibly the Jennings Plant, provide potential foraging habitat. Large trees along the San Joaquin River are potential roost sites. Bald eagles are generally winter visitors in the Central Valley; nesting within the vicinity of the Study Area is unlikely. There are no published reports of nest sites on the San Joaquin Valley floor.

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to golden and bald eagles would occur.

Combined Alignment Alternative (Alternative 1) Potential impacts to non-breeding golden and bald eagles may include visual distractions, noise, and possibly temporary displacement from suitable foraging areas. Project activities are not likely to reduce fitness, affect breeding, result in "take" of these species, or result in any substantial adverse impacts to eagles. Therefore, potential impacts to golden and bald eagles are considered to be less than significant.

Separate Alignment Alternative (Alternative 2) Potential impacts would be similar to Alternative 1. These potential impacts are considered to be less than significant.

PID Conveyance Alternative (Alternative 3) Potential impacts would be similar to Alternatives 1 and 2. These potential impacts are considered to be less than significant.

Significance Determination before Mitigation Less than significant for all Action alternatives. No impact for the No Action Alternative.

Impact BIO-12: Effects on raptors including special-status species Numerous raptors utilize habitats in the Study Area for nesting and foraging. Non-listed raptors commonly observed in the vicinity of the Study Area include red-tailed hawk, American kestrel, red-shouldered hawk, and merlin, among others. Special-status raptors (excluding bald eagle, golden eagle, and burrowing owls) known to occur in the vicinity of the Study Area include Swainson's hawk, white-tailed kite, and northern harrier (**Table 3.4-2**). These species have been observed in the Study Area and are known to nest locally. Riparian trees along the San Joaquin River and the natural drainage to the west provide potential nesting habitat for Swainson's hawk and white-tailed kite; isolated mature trees in adjacent fields may also be used for nesting. These raptors commonly forage in agricultural fields. Northern harriers nest on the ground in open areas, including some agricultural fields.

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to raptors would occur.

Combined Alignment Alternative (Alternative 1) Construction in the vicinity of raptor nest sites could disturb nesting raptors through generation of noise, visual distraction, or direct impacts to occupied nests (e.g., tree removal or ground disturbance). Potential impacts to Swainson's hawk and white-tailed kite would be minimized by using trenchless construction techniques for crossing of the San Joaquin River, where nesting is most likely to occur. However, construction of the San Joaquin River crossing is anticipated to take 8 to 10 months and special-status raptors

could nest in relatively close proximity to trenchless construction operations. Thus, there would be the potential for disturbance of nesting raptors. Impacts that result in nest abandonment, nest failure, or reduced health or vigor of nestlings are considered potentially significant.

Construction in agricultural lands could impact northern harrier nests and would cause temporary loss of suitable foraging habitat for Swainson's hawk and white-tailed kite. Given the amount of available foraging habitat, this is not likely to result in substantial adverse impacts to Swainson's hawk and white-tailed kite. Disturbance of a northern harrier nest is considered a potentially significant impact. Mitigation measures are proposed to avoid, minimize, or compensate for these potential impacts. **Mitigation Measure BIO-12** would avoid or minimize impacts to active nests for these species and require compensatory mitigation for impacts to nesting habitat. With implementation of this mitigation measure, impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Potential impacts would be similar to Alternative 1, but there would be two crossings of the San Joaquin River, and thus a greater chance for distractions, noise, and temporary displacement in higher quality nesting areas. This alternative would also temporarily impact a larger area of suitable foraging habitat for Swainson's hawk and white-tailed kite (although still not considered a substantial adverse impact) and potential nesting habitat for northern harrier. **Mitigation Measure BIO-12** would be implemented as described for Alternative 1. With implementation of this mitigation measure, impacts would be less than significant.

PID Conveyance Alternative (Alternative 3) Potential impacts would be similar to Alternative 1, but construction would take place within the San Joaquin River. This alternative would also potentially cause temporary impact to suitable foraging habitat for Swainson's hawk and white-tailed kite (although still not considered a substantial adverse impact) and potential nesting habitat for northern harrier. Implementation of **Mitigation Measure BIO-12** would reduce impacts to less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative**.**

Mitigation Measures **Mitigation Measure BIO-12: Avoid, Minimize, or Compensate for Impacts to Raptors including Special-status species** (Alternatives 1, 2 and 3):

- If ground and vegetation disturbing activities occur between February 1 and September 15, a nesting raptor survey, with a focus on Swainson's hawk and white-tailed kite, shall be conducted in accordance with *Recommended Timing and Methodology for Swainson's Hawk Nesting Survey's in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000, or current CDFW guidance). Surveys shall cover a minimum of a 0.5-mile radius around potentially suitable nesting habitat for Swainson's hawk and white-tailed kite (Survey areas for the Combined and Separate Alignment Alternatives are shown in **Table 3.4-3 and Figure 3.4-1**; for the PID Conveyance Alternative surveys shall take place at the intake site). Agricultural lands within 1,000 feet of open-cut construction areas shall be surveyed for northern harrier nests.

- If nesting raptors are detected, a no-disturbance buffer shall be established around the nest. Buffers shall be established by a qualified biologist with consultation with the CDFW and/or USFWS as appropriate. No construction activities shall be initiated within the buffer until fledglings are fully mobile and no longer reliant upon the nest or parental care for survival. Construction must either be started before nests are established, or if nesting birds are already present, construction within the buffer zone would have been delayed until nesting is done for the season.
- If an active Swainson's hawk or white-tailed kite nest is located within a 0.5-mile radius of an active work area, a biologist shall be on site daily to monitor the nest. The biologist shall monitor for behavioral changes that would suggest the birds are stressed by construction activity or the nest may be abandoned. Such behaviors may include excessive vocalization, a startled response coincident with a loud noise or changes in the viewshed, or prolonged absence from the nest by adults. If the biologists determines that nest success may be adversely impacted by construction, then construction shall be discontinued within 0.5 mile of the nest.
- Trees that would need to be removed for construction would be surveyed to determine if they are suitable for raptor nesting.
- If potential raptor nesting trees are to be removed during construction activities, removal shall take place outside of Swainson's hawk nesting season. Suitable nest trees for raptors shall be replaced at a ratio of 3:1 with appropriate species [e.g., valley oak, coast live oak (*Q. agrifolia*)., Fremont cottonwood]. The trees shall be planted within 5 miles of the removal location, in areas appropriate for raptor nesting, and on land owned or managed by one of the Partner Agencies. If replacement planting is implemented, monitoring shall be conducted annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation shall be 65 percent survival of all replacement plantings.

Significance after Mitigation Less than significant.

Impact BIO-13: Effects on special-status passerine species and birds protected under the MBTA Special-status passerines that may nest in the vicinity of the Study Area include tricolored blackbird (see **Impact BIO-9**), loggerhead shrike (*Lanius ludovicianus)*, and yellow warbler (*Dendroica petechia*). Historically, riparian habitat in the vicinity of the Study Area was important breeding habitat for least Bell's vireo (LBV) (*Vireo bellii pusillus*). In June 2005, a LBV nest was founded in a riparian restoration site at the San Joaquin River National Wildlife Refuge, which is approximately 10 mile north of the project area. Prior to 2005, no LBV nests had been confirmed in the Central Valley for over 50 years. There is a historic record of LBV from the late 1920s in Del Puerto Canyon, which is west of the project area. In the Study Area, riparian scrub in the vicinity of Stations 320+00 to 333+00 (**Figure 3.4-1**, Sheet 6) provides potentially suitable breeding habitat for LBV, though vegetation cover may not be quite as dense the species' preferred breeding habitat. Many species of birds protected under the MBTA may also nest in the Study Area.

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to special-status passerines or other birds protected under the MBTA would occur.

Combined Alignment Alternative (Alternative 1) Construction could disturb nesting passerines through generation of noise, visual distraction, or direct impacts to occupied nests (e.g., vegetation removal or ground disturbance). Potential impacts would be minimized by using trenchless construction techniques for crossing sensitive habitat (e.g., San Joaquin River), where nesting is most likely to occur. However, the potential for disturbance of nests remains, and nest failure or removal of a nest are considered potentially significant impacts. **Mitigation Measure BIO-13** would minimize potential impacts to passerines by conducting pre-construction surveys during the nesting season and establishing buffers around active nests. With implementation of this mitigation measure, impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Potential impacts would be similar to Alternative 1, but there would be two crossings of the San Joaquin River, and thus a greater chance for distractions, noise, and temporary displacement in higher quality nesting areas. **Mitigation Measure BIO-13** would be implemented as described for Alternative 1. With implementation of this mitigation measure, impacts would be less than significant.

PID Conveyance Alternative (Alternative 3) Potential impacts would be similar to Alternative 1. Implementation of **Mitigation Measure BIO-13** would reduce impacts to less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure BIO-13: Avoid and Minimize Impacts to Special-status passerine species and other Birds Protected under the MBTA** (Alternatives 1, 2 and 3):

- If ground and vegetation disturbing activities occur between February 1 and September 15, a survey for nesting birds shall be conducted within a 500-foot radius of the construction area. If nests are detected, buffers around nests shall be established. No-disturbance buffers around special-status passerine nests shall be 500 feet and 250 feet for non-listed birds protected under the MBTA and Fish and Game Code sections 3503 and 3513, unless a qualified CDFW and/or USFWS biologist determines that smaller buffers shall be sufficient to minimize impacts to nesting birds. Factors to be considered for determining buffer size shall include: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. Buffers shall be maintained until a qualified biologist has determined that young have fledged and are no longer reliant upon the nest or parental care for survival.
- Prior to commencing a crossing(s) of the San Joaquin River or construction of an expanded intake facility on the river, the Partner Agencies s shall conduct surveys for LBV in accordance with USFWS' Least Bell's Vireo Survey Guidelines (USFWS

2011a). If LBV are detected during the surveys, the Partner Agencies s shall consult with the USFWS to determine appropriate avoidance measures. The performance standard for avoidance shall be no potential impacts to an established LBV nest. This shall be accomplished by establishing a no-disturbance buffer around the active nest. The no-disturbance buffer shall be a minimum of 500 feet, but may be larger depending on site specific conditions and consultation with USFWS.

Significance after Mitigation Less than significant..

Impact BIO-14: Effects on special-status mammals Special-status mammals with the potential to occur in the Study Area include western red bat (*Lasiurus blossevillii*), American badger (*Taxidea taxus*), and San Joaquin kit fox (SJKF).

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to western red bat, American badger, or SJKF would occur.

Combined Alignment Alternative (Alternative 1) Western red bats may roost in trees along the San Joaquin River and large trees along the natural drainages to the west of the river. The drier areas of the San Joaquin River floodplain provide foraging and dispersal habitat for badgers. Habitat for badgers was not observed in open-cut portions of the Study Area. Potential impacts to western red bat and American badger would be minimized by using trenchless construction techniques in the riparian areas where these species may occur. Impacts to badger dens or trees that provide bat roost could result from a frac-out, but this is considered unlikely, and the effects to these species likely would be insubstantial. These impacts are considered to be less than significant.

The vast majority of the Study Area is comprised of roadways surrounded by intensively cultivated lands. These areas may be utilized by SJKF for dispersal and occasional foraging, but are not suitable for extended periods of occupation (USFWS 2010). A small remnant patch of alkali flat/scrub habitat is located on the south side of West Main Avenue (**Figure 3.4-1**, Sheet 9, Station 553+00 to 563+00). While this area is representative of typical habitat occupied by SJKF, it is small and isolated from large tracts of suitable habitat. Furthermore, no burrows were observed in the alkali flat/scrub habitat during 2014 reconnaissance-level surveys (Horizon 2014b), which suggests lack of ground squirrels (a principal prey resource) and den sites. Due to very limited extent of suitable habitat, this species is considered unlikely to occur in the Proposed Action area. However, construction activities could create temporary barriers to movement and dispersal of SJKF. Potential impacts to movement would be minimized by implementation of **Mitigation Measure TR-2**, which requires that trenches be covered at the end of each work day. Potential impacts to SJKF would be further minimized by implementing **Mitigation Measure BIO-14a**, which requires pre-construction surveys for SJKF dens and additional avoidance or minimization measures. Impacts to SJKF are considered unlikely, but would be potentially significant if the species is found in the project area. **Mitigation Measure BIO-14a** would reduce impacts to less than significant.

Separate Alignment Alternative (Alternative 2) Potential impacts would be similar to Alternative 1, but there would be a greater chance for impacts to bat roosts and badger dens in riparian areas because there would be two crossings of the San Joaquin River. Potential impacts to western red bat and American badger would be less than significant. **Mitigation Measure BIO-14a** would reduce potential impacts to SJKF to less than significant.

PID Conveyance Alternative (Alternative 3) Similar to Alternatives 1 and 2, **Mitigation Measure BIO-14a** would reduce potential impacts to SJKF to less than significant. Evaluation of the PID intake site determined that the area may be used by special status bats for foraging and night roosts. Bats may use buildings on site or trees, including large-diameter snags (dead trees), in the adjacent riparian area as day roosts (PID 2006). Implementation of **Mitigation Measure BIO-14b** would reduce impacts to bats to less than significant.

Operation and maintenance of any of the Action alternatives would not occur within riparian or alkali scrub habitats, and is thus not expected to adversely impact these species.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure BIO-14a: Avoid and Minimize Impacts to San Joaquin kit fox** (Alternatives 1, 2 and 3):

- Project-related activities will avoid affecting the alkali scrub/flat habitat in the Action area. Avoidance is defined as no direct or indirect effects to habitat.
- A qualified biologist will conduct preconstruction surveys no less than 14 days and no more than 30 days before the commencement of activities to identify potential dens more than 5 inches in diameter within 200 feet of ground disturbing activities. The Partner Agencies will implement USFWS' (2011b) *Standardized Recommendations for Protection of San Joaquin Kit Fox Prior to or During Ground Disturbance*. The Partner Agencies will notify Reclamation and the USFWS in writing of the results of the preconstruction survey within 30 days after these activities are completed prior to the start of construction.
- If potential dens are located within the proposed work area and cannot be avoided during construction activities, a USFWS-approved biologist will determine if the dens are occupied. If occupied dens are present within the proposed work area, their disturbance will be avoided. Exclusion zones will be implemented following the most current USFWS procedures (currently USFWS 2011b). The Partner Agencies will notify Reclamation and the USFWS immediately if a natal or pupping den is found in the survey area, and will present the results of pre-activity den searches within 5 days after these activities are completed and before the start of construction activities in the area.

Mitigation Measure BIO-14b: Avoid and Minimize Impacts to Special-status bats (Alternative 3):

- Construction at the PID intake site shall not take place after sunset or before sunrise.

- Any snags measuring at least 20 inches in diameter shall be inspected by a qualified biologist for potential bat use prior to removal. Should a bat roost be discovered in a snag, CDFW shall be notified to develop appropriate mitigation measures (such as exclusionary nets).

Significance after Mitigation Less than significant.

Impact BIO-15: Effects on riparian habitat and other sensitive natural communities
The majority of the project would be constructed in agricultural lands, road shoulders, or other disturbed and previously developed lands. However, portions of the alternative alignments cross through sensitive natural communities as identified by CDFW (CDFG 2010). Sensitive natural communities in the Study Area include:

- Black willow thickets – *Salix gooddingii* (Alliance code 71.040.05): This is the dominant natural community in the San Joaquin River floodplain.
- Great Valley Valley Oak Riparian Forest - *Quercus lobata*/grass (Alliance code 71.040.05): This community occurs on the high floodplain bench in the vicinity of Station 1310+00 (**Figure 3.4-1**, Sheet 17).
- Alkali heath marsh - F*rankenia salina / Distichlis spicata* (Alliance code 52.500.04): This community occurs on the south side of West Main Avenue (**Figure 3.4-1**, Sheet 9, Station 553+00 to 563+00).
- Valley Sink Scrub - *Allenrolfea occidentalis* (Alliance code 36.120.04): This community occurs on the south side of West Main Avenue (**Figure 3.4-1**, Sheet 9, Station 553+00 to 563+00).

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to sensitive natural communities would occur.

Combined Alignment Alternative (Alternative 1) Potential adverse impacts to riparian areas and sensitive natural communities would be minimized by using trenchless construction techniques in these areas. However, the precise pipeline alignment and construction methods are not known at this time. Impacts to riparian areas and sensitive natural communities may result from sedimentation or alteration in drainage patterns. These impacts are considered potentially significant. Implementation of **Mitigation Measure BIO-1d and Mitigation Measure BIO-2a** would reduce impacts to a level that is less than significant.

Separate Alignment Alternative (Alternative 2) Potential impacts to riparian areas and sensitive natural communities would be similar to Alternative 1, but there would be a greater chance for impacts in riparian areas because there would be two crossings of the San Joaquin River. There would be no potential impacts to Alkali health marsh and Valley Sink Scrub habitats between Stations 553+00 to 563+00 (**Figure 3.4-1**, Sheet 9) because the route for this alternative does not cross that area. Implementation of **Mitigation Measure BIO-1d** would reduce impacts to a level that is less than significant.

PID Conveyance Alternative (Alternative 3) Construction of the existing intake, which was completed in 2011, removed riparian habitat at the site, and the area adjacent to the intake now has less riparian vegetation than was present before construction of the new intake. However, there is a potential that expansion of the intake facility, which would require construction in the San Joaquin River channel, would result in loss of some of the remaining riparian vegetation at the site, which would be considered a significant impact. Expansion of the intake could affect riparian forest and mixed willow riparian habitat within this area. **Mitigation Measure BIO-16a** and **Mitigation Measure BIO-16b** would reduce impacts to less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures See **Mitigation Measures BIO-1d** (Alternatives 1 and 2), **BIO-2a** (Alternative 1), **BIO-16a** (Alternatives 1, 2, and 3), and **BIO 16b** (Alternatives 1, 2, and 3).

S*ignificance after Mitigation* Less than significant.

Impact BIO-16: Effects on federally protected wetlands Aquatic habitats and wetland communities in the Study Area are described in *Section 3.4.1*. Several of these habitats support wetlands and waters that are likely to be regulated by the USACE and the EPA under Section 404 the CWA. The San Joaquin River in the Study Area is considered Traditional Navigable Waters of the U.S. Other wetlands and waters with a “significant nexus” to the San Joaquin River would also be considered jurisdictional waters of the U.S. Drainages excavated wholly in uplands and draining only uplands are not likely to be jurisdictional features. Wetland within the Jennings Plant spray fields, if any, are also not likely to be considered jurisdictional because they are part of a permitted NPDES.

Based on preliminary site reconnaissance, features within and adjacent to the Study Area that are likely to be considered jurisdictional waters of the U.S. include: natural drainages to the east and west of the San Joaquin River, the Harding Drain, and the alkali pool and swale (Horizon2014b). Some large irrigations ditches with a significant nexus to the San Joaquin River may also be considered waters of the U.S. A jurisdictional wetland delineation has been conducted and has been submitted to USACE for verification.

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to federally protected wetlands would occur.

Combined Alignment Alternative (Alternative 1) Potential adverse impacts to federally protected wetlands would be minimized by using trenchless construction techniques in these areas. However, the precise pipeline alignment and construction methods are not known at this time. Impacts to federally protected wetlands may result from excavation, placement of fill, frac-out, sedimentation, or alteration in drainage patterns. These impacts are considered potentially significant. Several mitigation measures are proposed to avoid, reduce, or compensate for potential impacts. **Mitigation Measure BIO-16a** would avoid impacts to federally protected wetlands to the extent feasible and where disturbance of wetlands is unavoidable, require a

SWPPP and restoration of impacted areas to pre-construction conditions. **Mitigation Measure BIO-16b** would require compensatory mitigation consistent with the conditions of a CWA Nationwide Permit (NWP) and/or the Final Rule on Compensatory Mitigation for Losses of Aquatic Resources (Compensatory Mitigation Rule) (73 CFR 19594). Mitigation applied under the conditions of a NWP and/or the Compensatory Mitigation Rule would provide sufficient compensation for losses of aquatic resources such that impacts would be less than significant. Finally, **Mitigation Measure BIO-1d** would be implemented to reduce impacts in the event of a frac-out. With implementation of these mitigation measures, impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Potential impacts to federally protected wetlands would be similar to Alternative 1, but there would be a greater chance for impacts in riparian areas because there would be two crossings of the San Joaquin River. There would be no potential impacts to alkali pool/swale and the natural drainage on the east side of the river because the route for this alternative does not cross that area. **Mitigation Measure BIO-16a, Mitigation Measure BIO-16b,** and **Mitigation Measure BIO-1d** would be implemented as described for Alternative 1. With implementation of these mitigation measures, impacts would be less than significant.

PID Conveyance Alternative (Alternative 3) This alternative would result in permanent fill of riparian habitat and perennial stream habitat in the San Joaquin River. The San Joaquin River is a water of the U.S. and is therefore under the jurisdiction of USACE. The expansion of the intake would require a 404 Permit from the USACE and would require the Partner Agencies to enter in to a Streambed Alteration Agreement with the CDFW as required under Section 1601 of the State Fish and Game Code. Impacts would be significant. **Implementation of Mitigation Measure BIO-16a** and **Mitigation Measure BIO-16b** would reduce impacts to less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures See **Mitigation Measure BIO-1d** (Alternatives 1 and 2).

Mitigation Measure BIO-16a: Avoid and Minimize Impacts to Federally Protect Wetlands (Alternatives 1, 2 and 3). To the extent feasible, project-related activities shall avoid federally protected wetlands. To the extent feasible, the proposed project shall minimize potential impacts to federally protected wetlands by utilizing trenchless construction techniques. A SWPPP shall be implemented to reduce the potential for sediments and contaminants to enter wetlands and waters. After construction, surface topography and drainage shall be restored to pre-construction conditions. Where appropriate, revegetation shall be implemented with site-adapted native species.

Mitigation Measure BIO-16b: Obtain Regulatory Permits for Work Activities Taking Place in Wetlands and Waters of the United States and the State (Alternatives 1, 2 and 3). Work within areas defined as waters of the U.S. that includes placement of fill will require a CWA Section 404 permit and Section 401 Water Quality Certification. All work proposed in

jurisdictional waters of the U.S. shall be authorized under these permits, and the work shall comply with the general and regional conditions of the permits. In areas where disturbance to jurisdictional waters or wetlands occurs, the Partner Agencies shall implement mitigation consistent with the terms of a CWA NWP and/or the Compensatory Mitigation Rule (73 CFR 19594). Compensatory mitigation may include creation, re-establishment, or enhancement of wetlands in the Proposed Action area or at an off-site location. Compensatory mitigation may also include purchase of credits at an approved mitigation bank or contribution to an approved in-lieu fee program.

Significance after Mitigation Less than significant.

Impact BIO-17: Effects on movement of fish and wildlife and use of breeding sites As described in *Section 3.4.1*, several fish and wildlife species utilize the San Joaquin River and adjacent riparian habitat as breeding sites and a migration corridor. The majority of the project would be constructed in agricultural lands, road shoulders, or other disturbed and previously developed lands that do not function as a significant movement corridor for fish and wildlife. However, some wildlife breeding does occur in agricultural lands, natural drainages, and other wetlands.

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to breeding or movement of fish and wildlife would occur.

Combined Alignment Alternative (Alternative 1) Potential adverse impacts to breeding or movement of fish and wildlife would be minimized by using trenchless construction techniques for crossing the San Joaquin River. Impacts to breeding wildlife would be minimized by conducting pre-construction surveys during the respective breeding seasons (See **Mitigation Measures BIO-6, 8, 9, 10, 12** and **13**). Open-cut construction would create temporary barriers to wildlife movement in agricultural lands and ruderal habitat. Impacts of open-cuts on wildlife movement would be minimized by implementation of **Mitigation Measure TR-2**, which requires that trenches be covered at the end of each work day. Some mature trees which provide suitable nesting habitat for raptors may be removed during construction, but outside of the raptor nesting season. Impacts of tree removal would be mitigated by replanting trees (See **Mitigation Measures BIO-12)**. This alternative would not create any permanent barriers to wildlife movement or permanently disrupt breeding sites. Thus, impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Potential impacts would be similar to Alternative 1, but there would be two crossings of the San Joaquin River, and thus a greater chance for distractions, noise, and temporary displacement in higher quality breeding areas. This alternative would also temporarily impact a larger area of agricultural lands that may be used for movement or nesting. Similar to Alternative 1, impacts to breeding wildlife would be minimized by conducting pre-construction surveys during the respective breeding seasons (See **Mitigation Measures BIO-6, 8, 9, 10, 12** and **13**). Impacts to wildlife movement would be minimized by implementing **Mitigation Measure TR-2**. This alternative would not create any permanent barriers to wildlife movement or permanently disrupt breeding sites. Thus, impacts would be less than significant.

PID Conveyance Alternative (Alternative 3) Potential impacts would be similar Alternative 1, but there would be construction within the San Joaquin River, and thus a greater chance for distractions, noise, and temporary displacement in higher quality breeding areas, including effects on freshwater fish that use the San Joaquin River as a migratory corridor. Impacts to migratory fish, including salmonids would be minimized by measures to minimize impacts of in-river construction (see **Mitigation Measure BIO-4b**). Impacts to breeding wildlife would be minimized by conducting pre-construction surveys during the respective breeding seasons (See **Mitigation Measures BIO-6, 8, 9, 10, 12** and **13**). Impacts to wildlife movement would be minimized by implementing **Mitigation Measure TR-2**. This alternative would not create any permanent barriers to fish or wildlife movement or permanently disrupt breeding sites. Thus, impacts would be less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures See **Mitigation Measures BIO-6, 8, 9, 10, 12** and **13**, and **TR-2** (Alternatives 1, 2 and 3); and **Mitigation Measure BIO-4b** (Alternative 3).

Significance after Mitigation Less than significant.

Impact BIO-18: **Conflict with local ordinances or policies protecting biological resources**
As discussed in *Section 3.4.2*, the Stanislaus County General Plan establishes several policies to protect sensitive species and habitats such as vernal pools, riparian habitats, and oak woodlands. There is also a policy (Policy Twenty-nine) which indicates the County should continue to lobby the Federal Government to provide adequate water flows in the County's rivers to allow salmon migration.

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no conflicts to local ordinances or policies would occur.

Combined Alignment Alternative (Alternative 1) Potential conflicts with County policies that protect sensitive plants, wildlife and habitats would be minimized by using trenchless construction techniques and avoiding open-cut construction in sensitive habitats. However, the precise plan for use of various construction methods is not known and potential impacts to areas

that potentially support sensitive wildlife and plant life may result from sedimentation, or alteration in drainage patterns within suitable habitat. These impacts would be considered potentially significant. Implementation of **Mitigation Measures BIO-1d, BIO-2a,** and **BIO-16a** would reduce impacts to a level that is less than significant.

As discussed above under **Impact BIO-5**, the Proposed Action is not inconsistent with Stanislaus County Policy Twenty-Nine because reductions in discharge would have minimal effects on river flow and would not impair salmon migration in the San Joaquin River. Operational impacts would thus be less than significant.

Separate Alignment Alternative (Alternative 2) Potential conflicts with local ordinances or policies would be similar to Alternative 1, but there would be a greater chance for impacts in riparian areas because there would be two crossings of the San Joaquin River. There would be no potential impacts to sensitive habitats between Stations 553+00 to 563+00 (**Figure 3.4-1**, Sheet 9) because the route for this alternative does not cross that area. Implementation of **Mitigation Measures BIO-1d** and **BIO-16a** would reduce impacts to a level that is less than significant.

PID Conveyance Alternative (Alternative 3) Potential conflicts with local ordinances or policies would be similar to Alternative 1, but there would be a greater chance for impacts in riparian areas because there would be construction within the San Joaquin River. Implementation of **Mitigation Measures BIO-4b** and **BIO-16a** would reduce impacts to a level that is less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **See Mitigation Measures BIO-1d** (Alternatives 1 and 2), **2a** (Alternative 1), **4b** (Alternative 3), and **16a** (Alternatives 1, 2 and 3).

Significance after Mitigation Less than significant with mitigation.

Impact BIO-19: Effects on existing Habitat Conservation Plan (HCP)
No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction and operation would occur. Therefore, no impacts to an HCP would occur.

Combined and Separate Alignment Alternatives, PID Conveyance Alternative (Alternatives 1, 2 and 3) The PG&E San Joaquin Valley Operation & Maintenance HCP (PG&E O&M HCP) (PG&E 2006) covers specific PG&E activities throughout nine counties in the San Joaquin Valley, including Stanislaus County. The PG&E O&M HCP complies with the federal and state ESA and addresses multiple species and critical habitats. The PG&E O&M HCP outlines steps on minimizing, avoiding, and compensating for possible direct, indirect, and cumulative adverse effects on threatened and endangered species that could result from PG&E operation and maintenance activities in the San Joaquin Valley. The Proposed Action lies within the PG&E O&M HCP boundaries; however, the project is not a covered activity under the PG&E O&M HCP.

Plant species covered by the PG&E O&M HCP with the potential to be affected by the Proposed Action include: lesser saltscale, slough thistle Delta button-celery and Hispid bird's-beak. Wildlife covered by the PG&E O&M HCP with the potential to be affected by the Proposed Action include: vernal pool fairy shrimp, vernal pool tadpole shrimp, valley elderberry longhorn beetle, giant garter snake, Swainson's hawk, white-tailed kite, tricolored blackbird, and western burrowing owl. Because it would have no adverse effect on these species, the Proposed Action alternative would not conflict with the HCP's conservation strategy for these species. There may be some overlap with the Proposed Action and PG&E's San Joaquin Valley O&M activities, but this would mostly occur in developed or disturbed areas. Therefore, impacts are considered to be less than significant.

Significance Determination before Mitigation Less than significant for all Action alternatives. No impact for the No Action Alternative.

Impact BIO-CUM-1: Effects on terrestrial vegetation, wildlife, and sensitive communities
Less than 70 years ago, large portions of the Study Area supported a diverse assemblage of native plants and wildlife. This is inferred from historical topographic maps (USGS 1952), CNDDB records in the Study Area (CDFW 2014), and descriptions of historical habitat conditions along the San Joaquin River corridor (JSA 1998, FWUA and NRDC 2002). Anthropogenic activity, especially conversion to farmland and developed land use, and development of transportation infrastructure such as I-5 has substantially changed wildlife populations and vegetation communities in the Study Area. Additionally, construction and operation of the CVP and SWP, and the introduction of nonnative plant and animal species have resulted in overall significant adverse effects on the extent, species composition, and functioning of wetlands, riparian habitats, and other sensitive natural communities and the distribution and abundance of wildlife species. The threatened and endangered status of numerous plant and animal species, and the dramatic reductions in the extent of wetland and riparian vegetation are evidence of these overall significant cumulative impacts.

Special-status species with the potential to occur in the Study Area are listed in **Tables 3.4-1** and **3.4-2**. The population status and/or viability vary for each of these species. Declines in plant and wildlife populations are largely due to long-term degradation of environmental conditions, as described above. With few exceptions, the declines in the population of a species are the result of the synergistic effects of anthropogenic activities, and not a single causative agent or project. Thus, by definition, it is cumulative impacts that threaten the viability of these species. Non-project related activities that may impact these species either through direct disturbance or habitat alteration include, but are not limited to: agriculture, climate change, and competition with nonnative species, recreational activities, streambed alteration, water resources management, urbanization, and wildfire management.

As mentioned previously, the vast majority of the project would be constructed in agricultural lands, road shoulders, or other disturbed and previously developed lands. In general, these areas do not support rare species. Furthermore, potential adverse impacts to special-status species would be minimized by using trenchless construction techniques and avoiding open-cut construction in sensitive habitats. Mitigation **Measures BIO-1 through BIO-14** would further minimize potential impacts. It is highly unlikely that the Proposed Action alternatives would

contribute substantially to any foreseeable decline of any special-status plant or wildlife species. Therefore, the incremental contribution of the Proposed Action would not be cumulatively considerable, and is considered less than significant.

Similarly, the Proposed Action alternatives would avoid or have only minor impacts to sensitive natural community and federally protected wetlands. **Mitigation Measures BIO-16** would further minimize potential impacts. With implementation of the mitigation measures described above, the Proposed Action is not likely to result in substantial loss or degradation of habitats or have significant adverse effects on vegetation and wildlife. This conclusion is based on field surveys of the Study Area and the known distribution of these organisms and their habitats in relationship to anticipated actions under the Proposed Action alternatives. Thus, the incremental contribution of the Proposed Action would not be cumulatively considerable.

Significance Determination before Mitigation Less than significant for all Action alternatives.

Impact BIO-CUM-2: Effects on fish species and their habitats The fish assemblage and habitats of the San Joaquin River have been severely modified and degraded by upstream impoundments, reductions in instream flows, degradation of spawning and juvenile rearing habitat, increased occurrence of invasive aquatic vegetation and non-native predatory fish, unscreened water diversions, reduction of floodplain, armoring of streambanks, water quality degradation including exposure to elevated spring and summer water temperatures, dissolved oxygen depression in the Stockton Deep Water Shipping Channel, agricultural return flows, among other stressors. Under baseline conditions the impacts are already cumulatively substantial.

The cumulative impacts that have occurred on the San Joaquin River and its tributaries have raised significant concerns with resource management agencies (e.g., NMFS, CDFW, SWRCB). The San Joaquin River supports anadromous steelhead, which are listed as threatened under the ESA. The river is part of the Central Valley recovery plan for salmonids (NMFS 2014), is EFH for Chinook salmon, and the subject of ongoing restoration efforts to reintroduce spring-run and fall-run Chinook salmon downstream of Friant Dam.

The Proposed Action would contribute to a very small increment of reduced flows in the river by removing current discharges by the Cities of Modesto and Turlock. This reduction would further contribute to the already cumulatively substantial impacts that have occurred within the San Joaquin River and could therefore contribute to further degradation of habitat and potentially fish survival. Existing combined discharges from Modesto and Turlock average 25 cfs, and range from a low of 12.9 cfs in June and July when Modesto does not discharge to the river, to a high of 51.4 cfs in February when both cities are discharging (**Appendix E**). As noted in the discussion of **Impact BIO-5** above, the magnitude of predicted changes in juvenile salmon survival, adult escapement, and habitat conditions in the lower river and estuary would be well within the natural observed variation (also see **Appendix E**). Consequently, the redirection of the small amount of discharge of treated wastewater from the Waste Water Treatment Plants at Modesto and Turlock away from the San Joaquin River would not be expected to result in a measureable effect on the population dynamics of Chinook salmon, or on other fish in the San Joaquin River.

Previous studies have shown a relationship between flow in the San Joaquin River in the spring (March to May) and survival of juvenile salmon, as well as adult salmon escapement 2.5 years later (San Joaquin River Group Authority 2007). Effects of the reduction in discharge were thus estimated by evaluating the potential change in flows from March to May (see **Appendix E** for additional details). Reductions in flows were calculated and input into salmon survival models to predict how changes in flows might affect salmon survival and abundance. Reductions in flows would represent an estimated change in water surface ranging from about 0.25 to 1 inch, which represents a change of 0.8 percent or less and is not expected to represent a biologically meaningful reduction in wetted area of the river channel.

Although the project represents a minor reduction in flows, removal of the discharges to the river as proposed under Alternatives 1 and 2 would also remove nutrients and salinity, which would improve water quality, and thereby improve fisheries habitat in the river. Removal of discharges would remove 700 tons of nitrate (as nitrogen) and 9,300 tons of sodium from the river annually (Reclamation 2013). This reduction in nutrient and salt loading would be beneficial to species within the river.

Nevertheless, based on the current poor conditions for fish in the river and the sensitivity to further impacts to salmonids, the contribution of the Proposed Action could potentially be considered cumulatively considerable, even though the incremental change is not expected to be measurable. To address the potential for cumulative effects on salmonids in the San Joaquin River, the Partner Agencies would work with resource agencies, including NMFS, USFWS, and CDFW to assist in implementation of one or more of the recovery actions that have been identified in the Recovery Plan for Central Valley Chinook salmon and steelhead, which have been incorporated in **Mitigation Measure BIO-CUM-1**. This measure would reduce cumulative impacts to less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives.

Mitigation Measures **Mitigation Measure BIO-CUM-1: Assistance with Salmonid Recovery Plan Actions** (Alternatives 1, 2 and 3). The NVRRWP Partner Agencies would work with Reclamation and with resource agencies, including NMFS, USFWS, and CDFW to assist in implementation the following recovery actions from the Recovery Plan for Central Valley Chinook salmon and steelhead.

- *Implement projects that improve wastewater treatment in the San Joaquin River watershed*. The NVRRWP as designed would reduce the input of nutrients and salinity to the San Joaquin River, and as such the Alternatives 1 and 2 of the Proposed Action already address this recovery action.
- *Develop and implement a spawning gravel augmentation plan in the San Joaquin River*. The NVRRWP Partner Agencies would make a cash contribution to an existing restoration program or organization working to augment spawning gravels. The funding could assist in programs being implemented as part of Reclamation's San Joaquin River Restoration Program, the USFWS Anadromous Fish Restoration Program, or other relevant restoration program

Significance after Mitigation Less than significant for all Action alternatives.

3.4.5 References

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3.5 Cultural Resources

This section evaluates the potential impacts on cultural resources associated with implementation of the Proposed Action. The description of the cultural resources setting is based on findings of the Historic Property Survey Report (HPSR) prepared by Basin Research (2014).

3.5.1 Environmental Setting/Affected Environment

This section evaluates the environmental setting for prehistoric, historic, and ethnological resources.

Regional Setting

Prehistoric Cultural resources are traces of human occupation and activity. Native American occupation sites appear to have been selected for accessibility, protection from seasonal flooding, and the availability of resources. Archaeological sites include lithic and ground stone scatters, bedrock milling stations, house pits (abandoned villages sites), cemeteries and village habitations.

The San Joaquin Valley has been characterized as ". . . one of the least-known archaeological areas in California" although the archaeological research to date does "... indicate that populations expanded and settlements proliferated after circa A.D. 1500 in the southern and western portions of the San Joaquin Valley." The lower San Joaquin Valley provided a favorable environment for Native Americans despite the periodic flooding of the bottomlands, intense summer heat, and the ever-present annoyance of mosquitoes. In general, archaeological research has indicated that prehistoric archaeological resources tended to be located on benches and terraced areas adjacent to major drainages and springs with the majority of recorded sites clustering around potable water sources (Basin Research 2014).

Native American occupation and use of the general area appears to extend over 5000-7000 years and may be longer. Archaeological information suggests an increase in the prehistoric population over time due to more efficient resource procurement, storage and increasing political complexity. A tentative chronological sequence of four cultural complexes has been proposed for the general area: the Positas (ca. 3300-2600 B.C.), the Pacheco (ca. 2600 B.C.-A.D. 300), the Gonzaga (ca. A.D. 300-100); and, the Panoche (ca. A.D. 1500-1850) (Basin Research 2014).

Ethnographic The project on the west side of the San Joaquin River was within the territory of the Northern Valley Yokuts. Little is known of the aboriginal inhabitants of the lower or northern San Joaquin Valley as a result of introduced diseases, missionization and displacement by gold seekers. The Yokuts may have been fairly recent arrivals in the San Joaquin Valley. Settlements appear to have focused along the water courses of the San Joaquin Valley. The Yokuts were semi-sedentary and relied heavily on riverine resources and their abundance of fish and waterfowl. The Yokuts first came into contact with Europeans in the late 1700s and were affected by missions. Mission San Jose (present-day Fremont), Mission Santa Clara, and Mission San Juan Bautista appear to have had the most impact on the Yokuts (Basin Research 2014).

Historic The history of the San Joaquin Valley is divided into the Age of Exploration, the Hispanic Period (Spanish Period 1769-1821 and the Mexican Period 1822-1848), and the American Period (1848-onward). During the Hispanic Period, Spanish government policy in northwestern New Spain was directed at the founding of presidios (forts), missions and pueblos (secular towns) with the land held by the Crown whereas later Mexican policy (1822-1848) stressed individual ownership of the land with grants of vast tracts of land to individuals. The American Period focused on development and growth - a pattern that continues into the 21st Century. The American period covered the creation of Stanislaus County, the development of agriculture and transportation in the NVRRWP study area, the colony system, which was responsible for the settling San Joaquin Valley, and the passage of the Wright act in 1887 that permitted groups of farmers to form irrigation districts with the authority to divert river water to dry land for flood control and water conservation.

Project Vicinity

Archaeological Resources Setting For the purpose of evaluating the possible presence of resources that could be affected by the Proposed Action, an Area of Potential Effect (APE) was defined, which encompasses the area that could be disturbed by construction of project facilities. No prehistoric or combined prehistoric/historic era sites have been recorded or reported within or adjacent to the APE based on a review of 25 cultural resource compliance reports on file with the California Historical Resources Information System- Central California Information Center (CHRIS/CCIC)[1]. In addition, no Historic Period archaeological sites have been recorded or reported in or adjacent to the APE. The field inventory confirmed that there is no evidence of the presence of cultural resources in the project area.

Historic Resources Setting No known Hispanic Period expeditions, adobe dwellings, other structures, or features have been reported in or adjacent to the APE.
Four Historic American Period sites have been recorded within the APE or are within 0.25 miles:

- Two recorded linear historic period sites are within the APE along the proposed alignment:
  - P-50-000001/CA-STA-350H - the Southern Pacific Railroad (Tracy Branch) (crossed by Alternatives 1 and 2).
  - P-50-001904, the DMC (at the western terminus of Alternatives 1 and 2).
- Two recorded historic period sites have been recorded within 0.25 miles of the APE:
  - P-50-001882 - a dairy barn and associated milk house located at 2006 Lemon Avenue just east of Elm Avenue is adjacent to the APE (Alternatives 1 and 2).
  - P-50-002043 - former Crows Landing Naval Auxiliary Air Station is recorded to the south of W. Marshall Road (Alternative 2).

Local or state historically or architecturally significant structures, landmarks, or points of interest have been identified within or adjacent to the project as follows:

- The APE ends at the DMC. The DMC has been evaluated individually as eligible for inclusion on the National Register of Historic Places (National Register) under

[1] The compliance reports do not cover the entire proposed APE.

Criterion A (Basom Research 2014). The CVP, DMC (P-50-001904 in Stanislaus County) is listed on the Stanislaus County Historic Properties Directory as code 2S2 (i.e., determined eligible for separate listing by a consensus determination) under criteria A and C.

- The former alignment of the San Pablo and Tulare Extension Railroad Company (now used by the CFNR) with an inferred period of significance of 1887-1889 has been evaluated as not eligible for inclusion on the National Register but appears to be locally significant under National Register Criterion A due to ". . . its association with the settlement and town founding in the west side of the San Joaquin Valley" (Basin Research 2014).

No potentially significant architectural resources were observed during field inventory.

Ethnographic Resources Setting No known ethnographic, traditional or contemporary Native American use areas and/or other features of cultural significance have been identified in or adjacent to the APE based on research and a search of the Native American Heritage Commission (NAHC) Sacred Lands Inventory. Consultation with six Native American individuals/groups recommended by the NAHC did not result in any information about the APE or adjacent areas. No prehistoric or historic period archaeological materials were observed within the APE during field inventory.

Paleontological Resources As described in *Section 3.8, Geology and Soils*, there are three orders of soils represented within the project area, including Alfisols, Inceptisols, and Mollisols. Alfisols are typically found in semiarid to moist areas and are a result of weathering processes that leach clay minerals and other constituents out of the surface layer and into the subsoil. Inceptisols are found in semiarid to humid environments. These soils generally exhibit only moderate degrees of soil weathering and development that display a weak but noticeable soil profile. Mollisols are typically found in temperate grasslands at mid-latitudes. This soil type is characterized by a dark, organic-rich surface horizon. These soils in the San Joaquin Valley have been disturbed through decades of farming, and are not likely to contain paleontological resources. The proposed pipeline alignments would occur mainly through road rights-of-way, which have been disturbed for road construction and utilities installation and as such would not be expected to contain any paleontological resources. The area of the San Joaquin River where the PID intake would need to be expanded has already been disrupted by construction of the existing intake structure

3.5.2 Regulatory Framework

This section describes laws and regulations at the federal, state and local level that may apply to the project.

Federal Policies and Regulations

Federal laws and regulations for cultural resources include but are not limited to:

- National Historic Preservation Act (NHPA) of 1966, as amended: requires Federal agencies to consider the effects of their actions on historic properties.

- Archaeological Resources Protection Act of 1979: requires permitting for the excavation of cultural resources and identifies criminal and civil penalties for collecting and destruction of cultural resources on Federal land.
- Native American Graves Protection and Repatriation Act: addresses the rights on lineal descendants, Indian Tribes, and Native Hawaiian organizations to Native American cultural items, including human remains, funerary objects, sacred objects, and objects of cultural patrimony.
- EO 13007: requires Federal agencies responsible for the management of Federal lands to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites.

State Policies and Regulations

California Register of Historic Resources **"**Historical resource" is a resource listed in or determined to be eligible for listing in the California Register of Historical Resources (CRHR). The CRHR includes resources listed in or formally determined eligible for listing in the National Register as well as some California State Landmarks and Points of Historical Interest (Public Resources Code, Section 21084.1 and CEQA Guidelines, Section 15064.5 [a], [b]).

A "Unique Archaeological Resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

(1) Contains information need to answer important scientific research questions and that there is a demonstrable public interest in that information.
(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.
(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person. (Public Resources Code, Section 21083.2].

Properties of local significance that have been designated under a local preservation ordinance (e.g., local landmarks or landmark districts) or that have been identified in a local resources inventory may be eligible for listing in the CRHR and are presumed to be "historical resources" for purposes of CEQA (Public Resources Code, Section 5024.1 and California Code of Regulations, Title 14, Section 4850). A Lead Agency should consider a locally significant resource potentially eligible for the CRHR unless it has been demolished, lost substantial integrity, or there is other significant evidence indicating that it is not eligible for listing.

Lead agencies must evaluate any listed or potential cultural resources in accordance with the criteria of the CRHR. The CRHR (Public Resources Code Section 5024.1) is a listing of properties that are to be protected from substantial adverse change, and it includes properties that are listed, or have been formally determined to be eligible for listing in the NRHP, State Historical Landmarks, and eligible Points of Historical Interest. A historical resource may be listed in the CRHR if it meets one or more of the following criteria:

(1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or cultural heritage of California or the U.S.

(2) It is associated with lives of persons important in our past.
(3) It embodies distinctive characteristics of a type, period, or method of construction, or represents the work of a master or possesses high artistic values.
(4) It has yielded or has the potential to yield information important in the prehistory or history of the local area, California, or the nation.

A resource that is not listed in or determined to be eligible for listing in the CRHR, not included in local register or historic resources, or not deemed significant in a historical resource survey may nonetheless be historically significant. This provision is intended to give a Lead Agency discretion to determine that a resource of historic significance exists where none had been identified before and to apply the requirements of Public Resources Code Section 21084.1 to properties that have not previously been formally recognized as historic.

California State Lands Commission 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 CLSC. If any cultural resources are discovered on state sovereign lands during construction activities CSLC staff must be consulted.

Local Policies and Regulations

Stanislaus County Stanislaus County has identified the following goals and policies in the Conservation Element of the General Plan (1994):

GOAL EIGHT: Preserve areas of national, state, regional and local historical importance

Policy Twenty-four: The County will support the preservation of Stanislaus County's cultural legacy of historical and archeological resources for future generations.

City of Modesto The following policies in the City of Modesto Urban Area General Plan (City of Modesto 2008) are applicable to the project for the Partner Agencies:

> *Archaeological and Cultural Resources Policies (i):* Any project subject to CEQA that involves substantial earth-disturbing activities, where excavation/construction would occur outside of areas where previous development has occurred, or where excavation/construction would occur at depths greater than existing foundations, roads, and/or trenches in the immediate vicinity, shall require evaluation of the site by a qualified archaeologist retained by the project applicant, which would include at minimum a records search, a Phase I pedestrian survey, and preparation of an archaeological report containing the results of this cultural resources inventory identification effort for submittal to the Central California Information Center.
>
> *Archaeological and Cultural Resources Policies (j):* If Phase II archaeological evaluations are recommended, a report of all such surveys and excavations with recommendations shall be completed prior to project approval.
>
> *Archaeological and Cultural Resources Policies (k):* Any project subject to CEQA that involves substantial earth-disturbing activities shall require consultation by the applicant

for the purposes of determining archaeological and cultural resources impacts and creating appropriate mitigation to address such impacts.

3.5.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

This analysis evaluates anticipated changes in the physical environment resulting from the Proposed Action against the thresholds of significance identified below, to determine if direct and indirect changes from existing conditions would constitute potentially significant effects. Project changes are described and potential impacts, if any, are identified under each impact discussion. Where impacts would be considered potentially significant, mitigation measures are identified to reduce impacts to a less-than-significant level.

The inventory of cultural resources was performed by qualified archaeologists and historical resources specialists with Basin Research. Basin Research did an extensive review of background information, starting with a pre-field identification effort that included the following:

- A prehistoric and historic site record and literature search and review. The search included coverage for ¼ mile radius of the study area conducted by the CHRIS-CCIC.
- Review of literature (e.g., selected anthropological and historical publications and other documents) and maps on file at selected libraries and repositories.
- Communication with interested parties including the NAHC and interested Native Americans.
- Review of the shipwreck database search results through the CSLC. The search provides information regarding the presence/absence of shipwrecks around the river crossings.
- A pedestrian survey.

This inventory was used as the basis of the assessment of potential impacts presented below.

Thresholds of Significance

Cultural resource significance is evaluated in terms of eligibility for listing on the National Register.

Consistent with Appendix G of the *CEQA Guidelines* an impact on cultural resources would be considered significant if the project would:

- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5.
- Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5.
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
- Disturb any human remains, including those interred outside of formal cemeteries.

A project with an effect that may cause a substantial adverse change in the significance of a cultural resource is a project that may have a significant effect on the environment. Substantial adverse change in the significance of a cultural resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource would be materially impaired (CEQA Guidelines Section 15064.5). The significance of a cultural resource is materially impaired when a project:

- Demolishes or materially alters in an adverse manner those physical characteristics of a cultural resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the CRHR.
- Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of cultural resources pursuant to section Public Resources Code 5020.1(k) or its identification in a cultural resources survey meeting the requirements of PRC 5024.1(g), unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant.
- Demolishes or materially alters in an adverse manner those physical characteristics of a cultural resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a lead agency for purposes of CEQA.

Impacts and Mitigation Measures

Impact CUL-1 Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5 or disturb any human remains, including those interred outside of formal cemeteries

No Action Alternative If no action were taken, there would be no cultural resources-related impacts within the study area.

Combined Alignment Alternative (Alternative 1) Based on a review of relevant research and consultation, and the results of a pedestrian survey, it was determined that no prehistoric or combined prehistoric/historic era sites or historic period archaeological sites have been recorded or reported within or adjacent to the APE.

As described above, the archaeology of the San Joaquin Valley is not known as well as other areas of California; however, the potential for significant subsurface prehistoric archaeological resources within the project is considered low based on the review of the archival archaeological data and the development of an archaeological sensitivity map. Nevertheless, excavation and digging associated with construction activities could potentially disturb unknown archaeological sites or result in the inadvertent exposure of buried prehistoric or protohistoric (ethnographic) Native American human remains during construction activities. If encountered, construction activities could inadvertently damage these resources. **Mitigation Measures CUL-1** and **CUL-2** would reduce potential impacts associated with discovery of these resources to less than significant.

Separate Alignment Alternative (Alternative 2) Impacts would be the same as Alternative 1.

PID Conveyance Alternative (Alternative 3) Based on the information for the overall project area, it is expected that the potential for significant subsurface prehistoric archaeological resources within the project is low. The area of the PID intake has a moderate sensitivity because of its location on the San Joaquin River, but a survey of the site uncovered no archaeological material (PID 2006). Impacts would be similar to Alternatives 1 and 2, and excavation and digging associated with construction activities could potentially disturb unknown archaeological sites or result in the inadvertent exposure of buried prehistoric or protohistoric (ethnographic) Native American human remains during construction activities. If encountered, construction activities could inadvertently damage these resources. **Mitigation Measures CUL-1** and **CUL-2** would reduce potential impacts associated with discovery of these resources to less than significant.

Significance Determination Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure CUL-1: Discovery of previously unknown archaeological resources during construction** (Alternatives 1, 2 and 3). The following measures shall be implemented in the event of unexpected discovery of archaeological resources:

- The project proponent shall note on any construction plans that require ground disturbing excavation that there is a potential for exposing buried cultural resources.
- The project proponent shall retain a Professional Archaeologist to provide a pre-construction briefing to supervisory personnel of any excavation contractor to alert them to the possibility of exposing significant prehistoric archaeological resources within the study area. The briefing shall discuss any archaeological objects that could be exposed, the need to stop excavation at the discovery, and the procedures to follow regarding discovery protection and notification of the project proponent and archaeological team.
- The project proponent shall retain a Professional Archaeologist on an “on-call” basis during ground disturbing construction for the project to review, identify and evaluate cultural resources that may be inadvertently exposed during construction. The archaeologist shall review and evaluate any discoveries to determine if they are historical resource(s) and/or unique archaeological resources under CEQA.
- If cultural resources are encountered during the project, construction personnel shall avoid altering these materials and their context until a Professional Archaeologist has evaluated the situation. Project personnel shall not collect or retain cultural resources. Prehistoric resources include, but are not limited to, chert or obsidian flakes, projectile points, mortars, and pestles; and dark, friable soil containing shell and bone, dietary debris, heat-affected rock, or human burials. Historical resources include stone or adobe foundations or walls, structures and remains with square nails, and refuse deposits, often in old wells and privies.
- If the Professional Archaeologist determines that any cultural resources exposed during construction constitute a historical resource and/or unique archaeological resource, he/she shall notify the Partner Agencies and other appropriate parties of the evaluation and recommended measures to mitigate effects to a less-than significant impact. Mitigation measures may include avoidance, preservation in-place,

recordation, additional archaeological testing and data recovery, among other options. Treatment of any significant cultural resources shall be undertaken with the approval of Reclamation and other lead agencies.

- Any identified cultural resources shall be recorded on forms DPR 422 (archaeological sites) and/or DPR 523 (historic properties) or similar forms by a Professional Archaeologist.

Mitigation Measure CUL-2: Discovery of human burials during construction (Alternatives 1, 2 and 3). The treatment of human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity within the project shall comply with applicable State and federal laws. This shall include immediate notification of the Stanislaus County Coroner (Stanislaus County Sherriff's Office) and Reclamation.

In the event of the coroner's determination that the human remains are Native American, notification of the NAHC is required. The NAHC shall be notified by phone within 24 hours of the discovery and shall be afforded the opportunity to appoint a Most Likely Descendant (MLD) (Public Resources Code Section 5097.98). The archaeological consultant, project sponsor, and MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. California Public Resources Code allows 48 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the reburial method, the project will follow PRC Section 5097.98(b) which states that "the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."

Significance Determination after Mitigation Less than significant.

Impact CUL-2 Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5

No Action Alternative If no action were taken, there would be no cultural resources related impacts within the study area.

Combined Alignment Alternative (Alternative 1) As described above, two recorded linear historic period sites are within the APE: the Southern Pacific Railroad (Tracy Branch), and the DMC. As described in *Chapter 2, Alternatives and Proposed Action*, the Proposed Action would avoid the Southern Pacific Railroad through tunneling. Alternative 1 would construct a terminal weir at Milepost (MP) 37.32 on the DMC to facilitate discharge of recycled water. The facility would be adjacent to, but outside of the canal, and is not expected to affect the integrity of the DMC. The design of the discharge structure, which is shown in **Figure 2-8**, is intended to allow construction to be completed without any modifications to the canal, but if there are any effects on the canal during consruction the structure would be restored to its existing condition. As such, this alternative would not result in any impacts on historic resources.

Excavation and digging associated with construction activities could potentially expose and disturb previously unknown historical resources. Thus, construction operations could result in the inadvertent exposure of historical resources that could be eligible for inclusion on the CRHR (PRC Section 5024.1). Alteration and modification of historic resources could occur and would be considered potentially significant. **Mitigation Measure CUL-1**, described above, would reduce potential impacts to less than significant.

Separate Alignment Alternative (Alternative 2) Although there would be two new discharge locations under this alternative, installation would be the same for each as for Alternative 1. Consequently, impacts would be the same as Alternative 1.

PID Conveyance Alternative (Alternative 3) Although an APE has not been developed for this alternative, the same two historic resources would be affected by this alternative: the Southern Pacific Railroad and the DMC. Impacts would be the same as Alternatives 1 and 2.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alteranative.

Mitigation Measures See **Mitigation Measure CUL-1** above.

Significance after Mitigation Less than significant.

Impact CUL-3 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature

No Action Alternative If no action were taken, there would be no cultural resources-related impacts within the study area.

Combined Alignment Alternative (Alternative 1) The infrastructure improvements under this alternative would occur in previously disturbed road ROW, or on disturbed land on the Jennings Plant or near the Harding Drain Bypass Pipeline at the southwest corner of the intersection of South Carpenter Avenue and Harding Road. Because these areas have been previously disturbed, soils in these areas are not expected to contain fossils. However, in the unlikely event that fossils are encountered during construction impacts could be potentially significant. **Mitigation Measure CUL-3** would reduce potential impacts associated with discovery of these resources to less than significant.

Separate Alignment Alternative (Alternative 2) Impacts would be the same as Alternative 1.

PID Conveyance Alternative (Alternative 3) Similar to Alternatives 1 and 2, in the unlikely event that fossils are encountered during construction impacts could be potentially significant. **Mitigation Measure CUL-3** would reduce potential impacts associated with discovery of these resources to less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alteranative.

Mitigation Measures **Mitigation Measure CUL-3: Discovery of paleontological resources during construction** (Alternatives 1, 2 and 3). If paleontological resources are discovered during earthmoving activities, the construction crew would immediately cease work near the find. In accordance with Society of Vertebrate Paleontology guidelines (Society of Vertebrate Paleontology 2010), a qualified paleontologist would assess the nature and importance of the find and recommend appropriate salvage, treatment, and future monitoring and mitigation.

Significance after Mitigation Less than significant.

Cumulative Impact Analysis

The geographic scope of potential cumulative impacts related to cultural resources is the study area. There are three relevant projects within the vicinity of the Proposed Action that may contribute to cumulative impacts:

- Jennings Treatment Plant Phase 2 Upgrades: increase tertiary treatment capacity by 12.6 mgd.
- West Main Improvement Project: widen West Main Ave to 3 lanes from the San Joaquin River to Crows Landing Road (Stanislaus County Department of Public Works 2011).
- StanCOG South Corridor Study: study potential alignments and corridor options for an expressway from the City of Turlock on the east to I-5 on the west (Stanislaus County Department of Public Works 2011).

Construction of the cumulative projects also have the potential to result in the disturbance of previously unknown cultural resources (archaeological and historical) and human burials during excavation activities. However, with the implementation of **Mitigation Measures CUL-1, CUL-2**, and **CUL-3** the project's contribution to these cumulative impacts would not be cumulatively considerable. Thus, the project's contribution to cumulative impacts would not be cumulatively significant.

3.5.4 References

Society of Vertebrate Paleontology. 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources.

Stanislaus County. 1994. Stanislaus County General Plan: Chapter 3, Conservation Element. Available at: http://www.stancounty.com/planning/pl/gp/gp-chapter3.pdf.

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3.6 Energy Resources

This section presents the physical and regulatory setting for energy resources surrounding the Proposed Action. The impact analysis determines the potential for construction and operation of the NVRRWP to result in impacts related to wasteful, unnecessary, or inefficient use of energy resources.

3.6.1 Environmental Setting/Affected Environment

This section describes the environmental setting for energy resources within the study area, which includes the entire State of California. The sections below summarize energy resources within the state and regional setting.

California Setting

California generates more than 200,000 gigawatt hours of electricity every year, transporting that electricity over 32,000 miles of transmission lines throughout the state (CEC 2014a). In 2011, California imported just 30 percent of the electricity needed from the Pacific Northwest and the U.S. Southwest. Natural gas provides 53 percent of the in-state electric generation and is the main source for electricity generation within California. In 2010, the California electricity mix included natural gas (53.4 percent), nuclear (15.7 percent), large hydroelectric plants (14.6 percent), and coal (1.7 percent). The remaining 14.6 percent was supplied from renewable resources such as wind, solar, geothermal, biomass, and small hydroelectric facilities (CEC 2011). In-state electricity production at large hydroelectric facilities decreased by nearly 37 percent as compared to 2011, while wind facilities increased output by 31 percent (CEC 2013a).

The California Energy Commission (CEC) estimates that California's energy consumption between 2012 and 2024 will grow between 0.88 and 1.82 percent per year, with peak demand growing between 0.97 and 1.92 percent over the same period (CEC 2013b). Further, additional energy efficiency measures are needed to meet the Assembly Bill (AB) 32 GHG reduction goal of reducing statewide GHG emissions to 1990 levels by 2020. For a discussion on AB 32, please see *Chapter 3.10, Greenhouse Gas Emissions*.

In 2002, California established its Renewable Portfolio Standard program[1] with the goal of increasing the annual percentage of renewable energy in the state's electricity mix by the equivalent of at least 1 percent of sales, with an aggregate total of 20 percent by 2017. The California Public Utilities Commission (CPUC) subsequently accelerated that goal to 2010 for retail sellers of electricity (Public Utilities Code Section 399.15(b)(1)). Governor Schwarzenegger signed EO S-14-08 in 2008, increasing the target to 33 percent renewable energy by 2020.

[1] The Renewable Portfolio Standard is a flexible, market-driven policy to ensure that the public benefits of wind, solar, biomass, and geothermal energy continue to be realized as electricity markets become more competitive. The policy ensures that a minimum amount of renewable energy is included in the portfolio of electricity resources serving a state or country.

Regional Setting

TID provides power to the study area, and would likely supply energy required for project operation. TID has various generating facilities including small and large hydroelectric, natural gas power plants, wind, and solar. TID's Board of Directors adopted a goal of 20 percent renewable energy by 2017. As of 2010, TID's energy portfolio consists of 28 percent renewable (TID 2010a). In summer 2009, TID installed a 70.7 kilowatt solar facility atop their newly renovated parking structure which is expected to generate 132,460 kilowatt-hours per year (TID 2010b). Also, on May 28, 2009, the Tuolumne Wind Project began commercial operation. This project, located in Klickitat County, in Washington state, consists of 62 turbines which generate a total of 136.6 megawatts (TID 2010a). These two projects contributed to TID exceeding their goal 7 years earlier than planned. TID is also the majority owner and operating partner of the Don Pedro Hydroelectric Project, which can generate up to 203 megawatts from its four generators (TID 2010c).

In addition to renewables, TID also has several natural gas power plants. The Almond 2 Power Plant, opened in 2012, added 174 megawatts of output to TID's portfolio (TID 2013). The 250-megwatt Walnut Energy Center is among the cleanest power generating facilities of comparable size in the nation; its emissions are roughly 85 percent lower than similar facilities (TID 2013). The Almond and Walnut Power Plants jointly generated roughly 50 megawatts for distribution to TID's customers (TID 2013).

City of Modesto Urban Area General Plan The City of Modesto Urban Area General Plan serves as a blueprint for future growth within the City. The Plan outlines policies that focus on a community vision (City of Modesto 2008). The following policies in the Urban Area General Plan relating to energy resources would apply to the project:

> *Overall Energy Conservation Policy (e)***:** The City of Modesto shall coordinate with Modesto and Turlock Irrigation District (for electricity) and PG&E (for natural gas) on all new, large-scale, development proposals in the City.
>
> *Overall Energy Conservation Policy (r):* The City shall encourage new residential, commercial, and industrial development to reduce air quality impacts from area sources and from energy consumption.

3.6.2 Regulatory Framework

This section describes laws and regulations that may apply to the Proposed Action.

Federal Policies and Regulations

National Energy Conservation Policy Act The National Energy Conservation Policy Act serves as the underlying authority for federal energy management goals and requirements. Signed into law in 1978, it is regularly updated and amended by subsequent laws and regulations. This act is the foundation of most federal energy requirements.

National Energy Policy Act of 2005 The National Energy Policy Act of 2005 sets equipment energy efficiency standards and seeks to reduce reliance on nonrenewable energy resources and

provide incentives to reduce current demand on these resources. For example, under the Act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products, including hybrid vehicles; constructing energy-efficient buildings; and improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment. EO 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), signed in 2007, strengthens the key energy management goals for the federal government, and sets more challenging goals than the Energy Policy Act of 2005. The energy reduction and environmental performance requirements of EO 13423 were expanded upon in EO 13514 (Federal Leadership in Environmental, Energy, and Economic Performance) signed in 2009.

State Policies and Regulations

California Energy Action Plan California's Energy Action Plan II is the state's principal energy planning and policy document (CPUC and CEC 2005). The plan describes a coordinated implementation plan for state energy policies and refines and strengthens California's original Energy Action Plan I published in 2003. California Energy Action Plan II identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. It adopts a loading order of preferred energy resources to meet the state's needs and reduce reliance on natural gas and other fossil fuels, also important for achieving GHG emission reductions from the electricity sector.

Energy efficiency and demand response[2] are considered the first ways to meet the energy needs of California's growing population. Renewable energy and distributed generation are considered the best ways on the supply side. To the extent that energy efficiency, demand response, renewable resources, and distributed generation are unable to satisfy increasing energy and capacity needs, CEC supports clean and efficient fossil fuel-fired generation to meet California's energy needs. The 2008 Energy Action Plan Update provides a status update to the 2005 Energy Action Plan II and continues the goals of the original California Energy Action Plan (CPUC and CEC 2008).

State Alternatives Fuel Plan The State Alternatives Fuel Plan (CARB and CEC 2007) presents strategies and steps that California must take to increase the use of alternative fuels without adversely affecting air quality, water quality, or causing negative health effects. The plan recommends alternative fuel targets of 9 percent in 2012, 11 percent in 2017, and 26 percent by 2022. The plan also presents a 2050 Vision that extends the plan outcomes and presents a transportation future that greatly reduces the energy needed for transportation, provides energy through a diverse set of transportation fuels, eliminates over-dependency on oil, and achieves an 80 percent reduction in GHG emissions. With these goals, more than 4 billion gasoline gallon equivalents (20 percent) would be displaced by alternative fuels in 2020. CEC estimates that by 2050, alternative fuels could provide more than half of the energy needed to power California's transportation system.

[2] Demand response is the reduction of customer energy usage during peak periods in order to address system reliability and support the best use of energy infrastructure.

Local Policies and Regulations

Stanislaus County and the City of Modesto do not have any specific policies relating to energy resources that are applicable to the project.

3.6.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

This section evaluates whether construction and operation of the facilities associated with the Proposed Action would result in significant impacts related to energy resources. The analysis is based on a review of relevant project documentation.

Thresholds of Significance

For the purposes of this analysis, an impact to energy resources would be significant if the Proposed Action would:

- Result in inefficient, wasteful, or unnecessary consumption of fuels or other energy resources, especially fossil fuels such as coal, natural gas, and oil.

Impacts and Mitigation Measures

Impact ENE-1 Inefficient, Wasteful, or Unnecessary Use of Energy Resources

No Action Alternative If no action were taken, there would be no energy resource impacts within the proposed study area.

Combined Alignment Alternative (Alternative 1) As noted in the project description, operation would require 15,422 megawatt hours per year for pumping. Construction of this alternative would require the use of fuels (primarily gas, diesel, and motor oil) for a variety of construction activities, including excavation, grading, and vehicle travel. During these activities, fuel for construction worker commute trips would be minor in comparison to the fuel used by construction equipment. While the precise amount of construction and operation-related energy consumption is uncertain, use of these fuels would not be wasteful or unnecessary because their use is necessary to contribute to the long-term distribution, use, and reliability of water resources within the study area.

However, excessive idling and other inefficient site operations during construction could result in the inefficient use of fuels. Therefore, impacts related to the inefficient use of fuels during construction would be potentially significant. As discussed in *Chapter 3.3, Air Quality*, mitigation efforts would reduce the impacts related to the inefficient use of construction-related fuels to less than significant. Implementation of **Mitigation Measure AIR-1: Reduce NOx Emissions**, would ensure that equipment is properly tuned and that restrictions on idling are enforced.

Separate Alignment Alternative (Alternative 2) Operation of this alternative would require 17,898 megawatt hours per year for pumping. In addition to the impacts listed under Alternative 1, impacts would also include the energy associated with construction and operation of an additional pump station at the western end of the Harding Drain Bypass Pipeline, which would be required to pump water directly to the DMC. Because the amount of energy consumed during

operation for Alternative 1 and Alternative 2 are very similar, the only net increase in impacts would be as a result of constructing the additional pump station and river crossing. Implementation of **Mitigation Measure AIR-1: Reduce NOx Emissions**, would ensure that equipment is properly tuned and that restrictions on idling are enforced during construction.

PID Conveyance Alternative (Alternative 3) As stated in the project description, operation of the expanded pump facility would require an additional 20,063 megawatt hours per year for pumping. This alternative is expected to require less construction energy because of the shorter length of pipeline. Construction of the expanded intake facility would be a substantial construction effort, but is not expected to require more energy than construction of the two river crossings that are included in Alternative 2. Implementation of **Mitigation Measure AIR-1: Reduce NOx Emissions**, would ensure that equipment is properly tuned and that restrictions on idling are enforced during construction.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **See Mitigation Measure AIR-1: Reduce NOx Emissions (Alternatives 1, 2 and 3),** in *Chapter 3.3 Air Quality*.

Significance Determination after Mitigation Less than significant.

3.6.4 References

California Air Resources Board (CARB) and California Energy Commission (CEC). 2007. State Alternatives Fuels Plan Commission Report. December, 2007. Available at: http://www.energy.ca.gov/2007publications/CEC-600-2007-011/CEC-600-2007-011-CMF.PDF

California Energy Commission (CEC). 2014a. California Electricity Statistics & Data. Accessed on: 18 July 2014.

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California Energy Commission (CEC). 2013a. Total Electricity System Power, Total System Power for 2012: Changes from 2011. Accessed on: 18 July 2014.

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Turlock Irrigation District (TID). 2010a. Tuolumne Wind Project Fact Sheet. Available at: http://www.tid.org/sites/default/files/documents/tidweb_content/Tuolumne%20Wind%20Fact%20Sheet.pdf

Turlock Irrigation District (TID). 2010b. Power, Generation Facilities. Accessed on: 18 July 2014.

Turlock Irrigation District (TID). 2010c. Don Pedro Reservoir Fact Sheet. Available at: http://www.tid.org/sites/default/files/documents/tidweb_content/Don%20Pedro%20Reservoir%20Fact%20Sheet_Web.pdf

Turlock Irrigation District (TID). 2013. Natural Gas Power Plants, Generation Facilities. Accessed on: 15 July 2014.

3.7 Environmental Justice

The CEQ's guidance document on environmental justice under NEPA (1997), in referencing EO 12898, states that "each federal agency should analyze the environmental effects, including human health, economic, and social effects of Federal actions, including effects on minority populations, low-income populations, and Indian tribes, when such analysis is required by NEPA."

The Proposed Action would be limited to pipelines and appurtenances, including a new pump station, for conveyance of recycled water at locations generally distant from people. The study area is a sparsely populated area of unincorporated Stanislaus County dominated by agricultural fields. Construction-related impacts of the Proposed Action would be temporary, lasting only for the estimated 1.5-year construction period, and would not disproportionately affect any portion of the population. This would be true of all three Action alternatives.

As a result, detailed analysis of environmental effects on minority populations, low-income populations and Indian tribes is not considered necessary, as there is no potential for significant adverse environmental effects. All three Action alternatives would more likely benefit low-income and minority populations by providing a long-term source of water and thereby stabilizing the agricultural labor market. The Proposed Action would also generate short-term employment opportunities during construction.

3.7.1 References

Council on Environmental Quality. 1997. Environmental Justice: Guidance Under the National Environmental Policy Act. Available: http://www.epa.gov/environmentaljustice/resources/policy/ej_guidance_nepa_ceq1297.pdf.

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3.8 Geology and Soils

This section presents the physical and regulatory setting for geology and soils within and surrounding the Proposed Action. The impact analysis evaluates the potential adverse impacts of the NVRRWP related to local geology, existing soil conditions, or seismicity that could result from the implementation of the Proposed Action. The analysis is based on a review of geologic maps and reports including geologic and geotechnical reports and information from state and local agencies.

3.8.1 Environmental Setting/Affected Environment

This section describes the environmental setting for geologic resources and hazards within study area, which includes the project construction footprint and geologic features in the project vicinity that could affect project facilities.

Regional Geology

The proposed project is located within California's San Joaquin Valley, approximately 13 miles west of the City of Turlock and 15 miles southwest of the City of Modesto. The study area falls to the east of I-5 and to the west of California Highway 99 in an area referred to as the Great Valley geomorphic province (California Geologic Survey [CGS] 2002). The Great Valley province is roughly 50 miles wide and 400 miles long and runs down the middle of California. The Sacramento Valley, drained by the Sacramento River, forms the northern part of the province and the San Joaquin Valley, drained by the San Joaquin River, forms the southern portion. The Great Valley region largely consists of Quaternary deposits from the Pleistocene and Holocene epochs. These deposits are largely non-marine consolidated and unconsolidated alluvium, lake, playa, and terrace deposits that have been accumulating over millions of years (CGS 2010).

Known for its rich soils, the region has become California's center for agricultural activities, and includes all three counties served by DPWD. The topography of the region is also very flat, which makes the area further suitable for agriculture and other farming activities (refer to *Chapter 3.2 Agriculture and Forestry Resources*). The land begins to increase in elevation west of the project area and I-5.

Soils

Soil Types The National Resources Conservation Service (NRCS) has a system of soil classification. At the highest level of classification are 12 orders of soil taxonomy (NRCS 2013). Subsequent levels include suborders and great groups. There are three orders represented within the project area, including Alfisols, Inceptisols, and Mollisols. General descriptions of each of these orders are presented below.

Alfisols are typically found in semiarid to moist areas and are a result of weathering processes that leach clay minerals and other constituents out of the surface layer and into the subsoil (NRCS 2013). Thus, this soil type has a high base saturation and an enriched subsoil that supplies nutrients and moisture to plants. These characteristics make this soil type very productive for agricultural activities.

Inceptisols are found in semiarid to humid environments. These soils generally exhibit only moderate degrees of soil weathering and development that display a weak but noticeable soil profile (NRCS 2013). Because of their low degree of development, Inceptisols include a diverse collection of soils. Generally, this soil type occurs in areas that are, from a geomorphic perspective, relatively young. This includes areas such as the Great Valley.

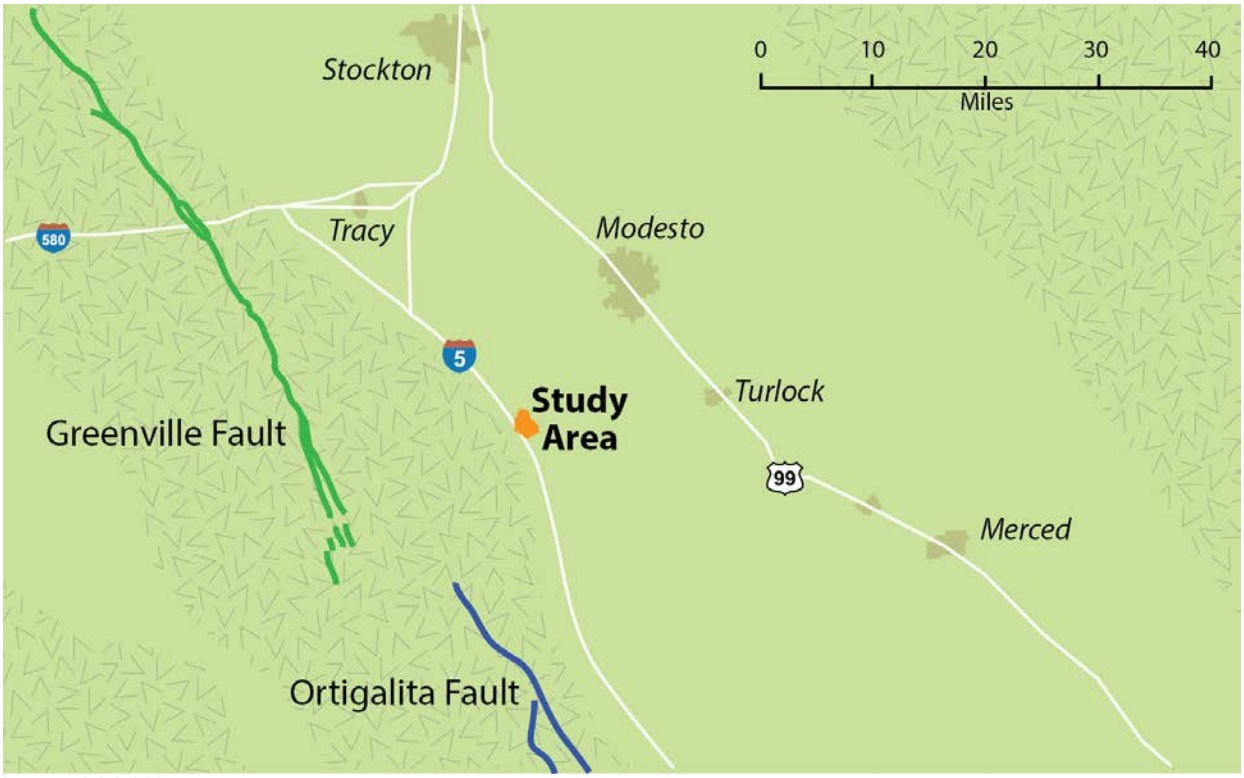
Mollisols are typically found in temperate grasslands at mid-latitudes. This soil type is characterized by a dark, organic-rich surface horizon (NRCS 2013). In relatively dry areas such as the study area, leaching is not a dominant force. As such, there is likely calcium carbonate accumulation, calcium carbonate cementation, or silica cementation, which is evident by a white layer just below the surface layer. The soil profile is generally organic-rich throughout with high base nutrients which makes Mollisols highly productive and suitable for agricultural production.

Potential for Expansive Soils Expansive soils are soils capable of absorbing high amounts of water. As more water is absorbed by the soil, the soil begins to expand, thus potentially damaging structures, including pipelines. Some soil in the project area is characterized as clay with slight to moderate swelling potential (USGS 1989).

Seismicity, Landslides, and Liquefaction

There are several known faults within the region, including the Greenville and Ortigalita faults (see **Figure 3.8-1**). The Greenville fault runs from central Contra Costa County, down through the eastern portion of Alameda County and ends in the northeastern tip of Santa Clara County, next to the border of Santa Clara and Stanislaus Counties. The Greenville fault last ruptured in 1980, resulting in a magnitude 5.6 earthquake (CGS 2007). The Ortigalita fault begins in the southwestern part of Stanislaus County and runs the length of Merced County, ending at the border of Merced and Fresno Counties. There has been no historic surface rupture of the Ortigalita fault (CGS 2007).

Figure 3.8-1: Principal Faults Zoned under Alquist-Priolo Earthquake Fault Zoning Act 1974-2007



Source: CGS 2007

Strong ground motions can worsen existing unstable slope conditions, particularly if coupled with saturated ground conditions. Although numerous types of earthquake-induced landslides have been identified, the most widespread type generally consists of shallow failures involving surface soils and the uppermost weathered bedrock in moderate to steep hillside terrain. Rock falls and rock slides on very steep slopes are also common. While there are areas west of I-5 that are susceptible to landslides, the study area is flat and therefore the risk of landslides is negligible (CGS 2011; CDOC 2007).

Liquefaction typically occurs in loose, saturated sediments consisting primarily of sandy composition in the presence of ground accelerations caused by earthquakes. When liquefaction occurs, the sediments involved have a total or substantial loss of shear strength and behave like a liquid or semi-viscous substance. Three general conditions must be met for liquefaction to occur: (1) strong seismic ground-shaking of relatively long duration; (2) loose, or unconsolidated, recently deposited sediments consisting primarily of silty-sand and sand; and (3) water-saturated sediments within about 50 feet of the surface. While no specific liquefaction hazards have been identified in Stanislaus County, certain locations within the study area may be susceptible to liquefaction due to higher water tables and unconsolidated, granular soils (CDOC 2007). Areas with sandy, saturated soils, such as the areas adjacent to the San Joaquin River, may be at increased risk for liquefaction.

3.8.2 Regulatory Framework

This section describes laws and regulations that may apply to the Proposed Action. There are no federal policies or programs associated with geology and soils that would apply to the Proposed Action.

State Policies and Regulations

Alquist-Priolo Earthquake Fault Zoning Act The Alquist-Priolo Earthquake Fault Zoning Act was adopted in 1972, and is designed to restrict certain development along active faults. The Act requires that the State Geologist delineate earthquake fault zones around the surface traces of active faults and to maintain maps outlining these zones. Active faults are defined as faults that have been active within the last 11,000 years. The purpose of these zones is to prevent the construction of buildings used for human occupancy within an earthquake fault zone. In addition to delineating earthquake fault zones, the Act requires disclosure of properties located within an earthquake fault zone when buying or selling a property. The Act was first designated as the Alquist-Priolo Geologic Hazard Zones Act, but was later changed to the Alquist-Priolo Special Studies Zones Act in 1975 and changed again in 1994 to the Alquist-Priolo Earthquake Fault Zoning Act (CGS 2007). The Proposed Action is not located within a Fault-Rupture Hazard Zone designated by the Alquist-Priolo Earthquake Fault Zoning Act of 1972 and Special Publication 42.

California Building Code The California Building Code (CBC), which is codified in CCR Title 24, Part 2, was promulgated to safeguard the public health, safety, and general welfare by establishing minimum standards related to structural strength, egress facilities, and general building stability. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/ occupancy, location, and maintenance of all building and structures within its jurisdiction. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable.

The CBC is based on the International Building Code. The 2007 CBC is based on the 2006 International Building Code published by the International Code Conference. In addition, the CBC contains necessary California amendments that are based on the American Society of Civil Engineers (ASCE) Minimum Design Standards 7-05. ASCE 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion in building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, all of which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E/F (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the

SDC. Compliance with the CBC would be necessary for the new Harding Drain Bypass Pipeline pump station and possibly for certain grading activities on the project site.

Local Policies and Regulations

Stanislaus County General Plan The Stanislaus County General Plan guides development for the County with a 20-year planning horizon. The following policies outlined in the Agricultural and Safety elements of the County's General Plan would apply to the project:

> *Policy Three Point Six*– The County shall encourage the conservation of soil resources (Agriculture Element).
> *Policy Three*—Development should not be allowed in areas that are particularly susceptible to seismic hazard (Safety Element).

3.8.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

This section evaluates whether construction and operation of the facilities associated with the Proposed Action would result in significant impacts related to geology and soils. The analysis is based on a review of geologic maps and reports including geologic and geotechnical reports and information from state and local agencies.

Thresholds of Significance

Consistent with Appendix G of the *CEQA Guidelines,* a geology and soils impact would be considered significant if the project would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
    - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42).
    - Strong seismic ground-shaking.
    - Seismic-related ground failure, including liquefaction.
    - Landslides.
- Result in substantial soil erosion or loss of topsoil.
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
- Be located on soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to actions associated with the Proposed Action are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Rupture of a Known Earthquake Fault* – The Proposed Action is not located within a Fault-Rupture Hazard Zone designated by the Alquist-Priolo Earthquake Fault Zoning Act of 1972 and Special Publication 42. The two nearest active faults are the Greenville and Ortigalita faults, which are located approximately 17 and 15 miles away, respectively (CGS 2007). Since there are no known faults in the project vicinity, there would be no impact associated with the rupture of a known earthquake fault.
- *Landslides* – The study area is located in an agricultural valley, and is relatively flat. As such, the study area is not located on or adjacent to a hillside, exposed rock face, or cliff. According to California Geologic Survey, the study area is in the lowest class for susceptibility to landslides (CGS 2011). The California State Department of Conservation also indicates that the study area is not at risk for landslides (CDOC 2007). Therefore, there would be no impacts related to risk of loss, injury, or death involving landslides as a result of the Proposed Action.
- *Soils Incapable of Adequately Supporting the Use of Septic Tanks or Alternative Wastewater Disposal Systems* – The Proposed Action would not generate wastewater, and would not require the installation of septic tanks or alternative wastewater disposal systems. Therefore, there would be no impacts related to adequate support of septic tanks or alternative wastewater disposal systems.

Impacts and Mitigation Measures

Impact GEO-1 Facility Damage and Exposure of People to Hazards from Strong Seismic Groundshaking and Liquefaction

No Action Alternative If no action were taken, there would be no geology or soils impacts within the study area.

Combined Alignment Alternative (Alternative 1) Most structures, including buildings and pipelines, are subject to damage from earthquakes. The intensity of such an event would depend on which fault the earthquake occurs, the distance of the epicenter from the project site and the duration of shaking. While the Proposed Action is not located within a Fault-Rupture Hazard Zone designated by the Alquist-Priolo Earthquake Fault Zoning Act of 1972 and Special Publication 42, there are two active faults within 20 miles of the study area. The Greenville fault is located approximately 17 miles northwest of the study area and Ortigalita fault is located to the southwest roughly 15 miles away (CGS 2007). These faults could cause groundshaking of an intensity approaching 10 on the Modified Mercalli Scale, which would cause considerable damage to the proposed facilities under this alternative, including the pump station and pipelines, and pose a significant threat to public safety if a pipe were to burst and cause flooding (Stanislaus County 1994).

As mentioned above in *Section 3.8.1*, the study area may be susceptible to liquefaction. The high groundwater table and unconsolidated soils, while good for agriculture, may contribute to the liquefaction risk. Additionally, the sandy, saturated soils adjacent to the San Joaquin River could potentially experience liquefaction. With implementation of **Mitigation Measure GEO-1**, these seismic-related impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Impacts would be the same as Alternative 1.

PID Conveyance Alternative Impacts would be the same as Alternatives 1 and 2.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure GEO-1: Perform Design-Level Geotechnical Evaluations for Seismic Hazards** (Alternatives 1, 2 and 3). During the design phase for the Proposed Action, perform site-specific, design-level geotechnical evaluations to identify potential secondary ground failure hazards (i.e., seismically-induced settlement) associated with the expected level of seismic ground shaking. A geotechnical memorandum shall be prepared to detail the findings of the evaluations. The geotechnical analysis will provide recommendations to mitigate those hazards in the final design and, if necessary, during construction. The design-level geotechnical evaluations, based on the site conditions, location, and professional opinion of the geotechnical engineer, may include subsurface drilling, soil testing, and analysis of site seismic response to determine appropriate feasible measures to be incorporated into the project design. The performance standard to be used in the geotechnical evaluations will be minimization of the hazards associated with liquefaction and seismic groundshaking. The geotechnical engineer will review the seismic design criteria of facilities to ensure that facilities are designed to withstand the highest expected peak acceleration, set forth by the CBC for each site, and ensure that secondary ground failures, such as liquefaction, are minimized. Recommendations resulting from findings of the geotechnical study will be incorporated into the design and construction of proposed facilities.

Significance Determination after Mitigation Less than significant.

Impact GEO-2 Risk to Property and Life from Expansive Soils
No Action Alternative If no action were taken, there would be no geology or soils impacts within the study area.

Combined Alignment Alternative (Alternative 1) While repurposing the existing Jennings Plant outfall pump station would not increase the risk from expansive soils, the proposed pipelines may be affected by expanding soils. With implementation of **Mitigation Measure GEO-2**, this impact would be less than significant.

Separate Alignment Alternative (Alternative 2) Impacts would be the same as Alternative 1.

PID Conveyance Alternative (Alternative 3) Impacts would be the same as Alternatives 1 and 2.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure GEO-2: Perform Design-Level Geotechnical Evaluations for Soil Expansion** (Alternatives 1, 2 and 3). During the design phase for all components of the project, a design-level geotechnical evaluation to determine the presence and characteristics of potentially compressible and expansive soils, the engineering properties of the foundation material, and the depth and thickness of soil layers will be completed. The results of the investigations will include measures that would reduce soil expansion to a less-than-significant level. Feasible mitigation measures could include removal and replacement of soil, deep foundations, or deep mixing of compressible or expansive soils with stabilizing agents. All mitigation measures included in the geotechnical evaluation will be incorporated into the project design specifications.

Significance Determination after Mitigation Less than significant.

Impact GEO-3 Result in Substantial Soil Erosion or Loss of Topsoil
No Action Alternative If no action were taken, there would be no geology or soils impacts within the study area.

Combined Alignment Alternative (Alternative 1) Construction activities associated with this alternative are anticipated to disturb more than 1.0 acre of soil. As such, construction of the proposed project would be required to comply with the Construction General Permit (Order No. 2009-0009-DWQ), which is issued by the SWRCB (refer to *Chapter 3.11, Hydrology and Water Quality*).The Construction General Permit requires development of a SWPPP, which outlines BMPs the discharger would use to reduce erosion and topsoil loss from storm water runoff. Compliance with the Construction General Permit would ensure construction of facilities follows mandated BMPs, and therefore would not result in substantial soil erosion or the loss of topsoil. Impacts are considered less than significant and no mitigation is required.

Separate Alignment Alternative (Alternative 2) Impacts would be the same as Alternative 1.

PID Conveyance Alternative (Alternative 3) Impacts would be the same as Alternatives 1 and 2.

Significance Determination before Mitigation Less than significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures No mitigation measures are required.

Cumulative Impacts
The geographic scope of potential cumulative impacts related to geology and soils encompasses the project site and immediate vicinity. There are three relevant projects within the immediate vicinity of the proposed project that may contribute to cumulative impacts:

- Jennings Treatment Plant Phase 2 Upgrades: increase tertiary treatment capacity by 12.6 mgd;

- West Main Improvement Project: widen West Main Ave to 3 lanes from the San Joaquin River to Crows Landing Road (Stanislaus County Department of Public Works 2011);
- StanCOG South Corridor Study: study potential alignments and corridor options for an expressway from the City of Turlock on the east to I-5 on the west (Stanislaus County Department of Public Works 2011).

While potential cumulative impacts related to geology, seismicity, and soils are generally site-specific and depend on local geologic and soil conditions, there may be cumulative impacts associated with the Proposed Action and the projects listed above, particularly related to seismically induced groundshaking and ground failures (expansive soils). However, these impacts would be less than significant with implementation of **Mitigation Measures GEO-1** and **GEO-2**, which require geotechnical evaluations for these seismic hazards.

3.8.4 References

California Department of Conservation (CDOC). 2007. Regulatory Maps: Fault zones, Landslides, and Liquefaction Zones. Accessed on: 18 July 2014. Available at: http://www.quake.ca.gov/gmaps/WH/regulatorymaps.htm

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3.9 Greenhouse Gas Emissions

This section evaluates the potential adverse impacts related to GHG emissions that could result from implementation of the Proposed Action. The analysis is based on a review of current GHG conditions, inventory of the proposed project GHG emissions, and information from state and local agencies.

3.9.1 Environmental Setting/Affected Environment

Study Area

Climate change is a global issue and planning surrounding it has been conducted at the state level. Accordingly, the study area for the purposes of GHG emissions considers global GHG emissions in the context of statewide GHG emissions reduction targets that will allow California to do its share in reducing GHG emissions globally.

Global Climate Change Global warming and global climate change are terms that describe changes in the Earth's climate. Global climate change is a broader term, used to describe any worldwide, long-term change in the Earth's climate. This change could be, for example, an increase or decrease in temperatures, the start or end of an ice age, or a shift in precipitation patterns. The term global warming is more specific and refers to a general increase in temperatures across the Earth. Although global warming is characterized by rising temperatures, it can cause other climatic changes, such as a shift in the frequency and intensity of rainfall or hurricanes. Global warming does not necessarily imply that all locations will be warmer. Some specific, unique locations may be cooler even though the Earth, on average, is warmer. All of these changes fit under the umbrella of global climate change.

Because GHGs persist and mix in the atmosphere, they have impacts on a global scale, rather than locally or regionally like most air pollutants. Consequently, GHG emissions that contribute to global climate change result in a worldwide cumulative impact (global warming) rather than a local or regional project-specific impact typically associated with criteria pollutants. Impacts related to GHG emissions are discussed in the context of the Proposed Action's contribution to statewide and global GHG emissions.

Although natural processes can cause global warming, general scientific consensus is that present-day global warming is the result of human activity on the planet (IPCC 2007, 2013). This human-made, or anthropogenic, warming is caused primarily by increased GHG emissions, which keep the Earth's surface warm, known as "the greenhouse effect." The greenhouse effect and the role GHG emissions play in it are described below.

The Greenhouse Effect and Other Climate Change Effects The Earth's atmosphere functions like a greenhouse, allowing sunlight in and trapping some of the heat that reaches the Earth's surface. When solar radiation from the sun enters the Earth's atmosphere, a small portion is reflected back toward space, although a majority of it is absorbed by the Earth's surface. The solar radiation that is absorbed by the Earth's surface then is re-emitted as heat in the form of

low-frequency infrared radiation. Although GHGs in the atmosphere do not absorb solar radiation, they do absorb the lower frequency infrared radiation, thereby trapping it within the Earth's atmosphere and resulting in the warming of the Earth's surface.

The Earth's greenhouse effect has existed far longer than humans have, and it has played a key role in the development of life. Concentrations of major GHGs (discussed in further detail under Greenhouse Gases and their Emissions below) such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and water vapor (H_2O) have been naturally present for millennia at relatively stable levels in the atmosphere, adequate to keep temperatures on the Earth hospitable. Without these GHGs, the Earth's temperature would be too cold for life to exist. However, as human industrial activity has increased, atmospheric concentrations of certain GHGs have grown dramatically. Anthropogenic sources are responsible for GHG emissions in excess of naturally occurring concentrations, thereby intensifying the greenhouse effect and resulting in global climate change.

The Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report: Climate Change 2007 stated that scientific consensus concurs that the global increases in atmospheric concentrations of GHGs since 1750 mainly have resulted from human activities such as fossil fuel use, land use change (e.g., deforestation), and agriculture (IPCC 2007, IPCC 2013). In addition, the report stated that it is likely that these changes in GHG concentrations have contributed to global warming. Confidence levels of claims in this report have increased since 2001, because of the large number of simulations run and the broad range of available climate models (IPCC 2013).

Global climate change is particularly important when discussing water infrastructure and supply. Changes in the climate are expected to cause more severe droughts and changes in annual rainfall and snowpack. Thus, it is important that the water infrastructure and supply be adaptable to meet climate change impacts.

Greenhouse Gases and Their Emissions GHGs includes gases that contribute to the natural greenhouse effect as well as gases that are human-generated and are emitted by modern industrial products, such as perfluorocarbons (PFCs), hydro fluorocarbons, (HFCs), and sulfur hexafluoride (SF_6). These last two families of gases, although not naturally present, have properties that also cause them to trap infrared radiation when they are present in the atmosphere, thus making them GHGs. The effect each of these gases has on global warming is a combination of the volume of their emissions and their global warming potential (GWP). GWP indicates, on a pound for pound basis, how much a gas will contribute to global warming (its potential to trap heat) relative to how much warming would be caused by the same mass of CO_2. **Table 3.9-1** shows the six GHGs and their respective GWPs.

Table 3.9-1: Greenhouse Gas Overview and Global Warming Potential

GHG	GWP 100-year[1]	Brief Description
CO_2	1/1	Released into the atmosphere through burning fossil fuels (coal, natural gas and oil), solid waste, trees and wood products, and also because of certain chemical reactions; removed from the atmosphere when it is absorbed by plants and the ocean; remains in the atmosphere for 50 to more than 100,000 years.
CH_4	28/21	Emitted during production and transport of coal, natural gas, and oil; methane emissions also result from livestock and other agricultural practices and by decay of organic waste in municipal solid waste landfills; remains in the atmosphere for about 10 years.
N_2O	265/310	Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste; remains in the atmosphere for about 100 years.
HFCs	4-12,400/ 650–11,700	Typically used in refrigeration and air conditioning equipment, as well as in solvents; emissions primarily generated from use in air conditioning systems in buildings and vehicles; remain in the atmosphere from 10 to 270 years.
PFCs	6,630-11,100/ 6,500–9,200	Emitted as by-products of industrial and manufacturing sources; remain in the atmosphere from 800 to 50,000 years.
SF_6	23,500/23,900	Used in electrical transmission and distribution; remain in the atmosphere approximately 3,200 years.

Notes:

1. As scientific understanding of global warming potentials of GHGs improves over time, GWP values are updated in the IPCC scientific assessment reports. However, for regulatory consistency, the Kyoto Protocol fixed the use of GWP values to those published in the IPCC 1996 Second Assessment Report (SAR). The table above shows GWP values for 100 years from both the IPCC 2013 and SAR.

Sources: EPA 2013 and IPCC 2007.

These six gases are the major GHGs that were recognized by the Kyoto Accords. Other GHGs were not recognized by the Kyoto Accords, chiefly because of the smaller role that they play in global climate change or the uncertainties surrounding their effects. One GHG not recognized by the Kyoto Accords is atmospheric H_2O, because an obvious correlation does not exist between H_2O and specific human activities. H_2O appears to act in a feedback manner; higher temperatures lead to higher H_2O concentrations, which in turn cause more global warming (IPCC 2003). A second GHG not recognized in the initial Kyoto Accords but subsequently included by the United Nations Framework Convention on Climate Change and recognized in California as a GHG is nitrogen trifluoride.

The most important GHG in human-induced global warming is CO_2. Although many gases have much higher GWPs than the naturally occurring GHGs, CO_2 is emitted in such vastly higher quantities that it accounts for 85 percent of the GWP of all GHGs emitted by the U.S. (EPA 2006). Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO_2 emissions over time and, thus, substantial increases in atmospheric CO_2 concentrations. In 2005, atmospheric CO_2 concentrations were about 379 ppm, over 35 percent higher than the pre-industrial concentrations of about 280 ppm (IPCC 2007). In addition to the sheer increase in the volume of its emissions, CO_2 is a major factor in human-induced global warming because of its long lifespan in the atmosphere of 50 to 200 years.

California Climate Impacts Global temperature increases and other climate changes may have a series of substantial negative effects on the health of California residents and California's

economy. These include changing precipitation, snow pack levels, and reduced water supply; reduced air quality; higher risk of infestations by pests and pathogens in agricultural and forest environments; increased wildfire risk; alterations in the coastline and coastal habitats; and increased flood risk (CAT 2006). With respect to compromised air quality, warmer temperatures can cause more ground-level O_3, a pollutant that causes eye irritation and respiratory problems. With regard to water supply, California primarily relies on snowmelt for its drinking water and much of the water used in irrigation during the summer. Global warming could alter, and may already be altering, the seasonal pattern of snow accumulation and snowmelt, and reduce snow pack overall, affecting water supplies.

California GHG Emission Inventory Since 2000, GHG emissions have decreased by 1.6 percent, after reaching a peak in 2004. In 2012, total California GHG emissions were 459 million metric tons of CO_2 equivalent (CO_2e)[1]. This represents a 1.7 percent increase in total GHG emissions from 2011 and the first emissions increase since 2007. This increase was driven primarily by strong economic growth in the state, the unexpected closure of the San Onofre Nuclear Generating Station, and drought conditions that limited in-state hydropower generation. In 2012, the transportation sector was the largest source of emissions, accounting for approximately 37 percent of the total emissions. On-road vehicles accounted for more than 90 percent of emissions in the transportation sector. The industrial sector accounted for approximately 22 percent of the total emissions. Emissions from electricity generation were about 21 percent of total emissions.

Per capita emissions in California have decreased by 12 percent from 2000 to 2012, even though population increased by 11.4 percent during this period. Per capita emissions from in-state electricity generation have declined by 22 percent from 2000 to 2012.

Climate Change Adaptation As described above, global climate change is already affecting ecosystems and society throughout the world. Climate change adaptation refers to the efforts undertaken by ecosystems and society to adjust to and prepare for current and future climate change, thereby reducing vulnerability to those changes. Plant and animal species adapt over time to changing conditions; they migrate or change behaviors in accordance with changing climates, food sources, and predators. Similarly, human adaptation has occurred naturally over history; people move to more suitable living locations, adjust food sources, and more recently, change energy sources.

Many national, as well as state and regional, governments, are implementing adaptive practices to address changes in climate, as well as planning for expected future impacts from climate changes. Some examples of adaptations that already are in practice or under consideration include: conserving water and minimizing runoff with climate-appropriate landscaping, capturing excess rainfall to minimize flooding and maintain a constant water supply through dry spells, protecting valuable resources and infrastructure from flood damage, developing new water supply strategies such as water reuse, aquifer storage and recovery, and desalination, and use of water efficient appliances (EPA 2014).

[1] CO_2e is a metric measure used to compare the emissions from various GHGs based upon their GWP compared to CO_2. The CO_2e for a gas is derived by multiplying the tons of the gas by the associated GWP. For instance using a GWP of 21 for CH_4, 1 ton of CH_4 is equal to 21 tons of CO_2e.

3.9.2 Regulatory Framework

This section describes laws and regulations at the federal, state, and local level that may apply to the project.

Federal Policies and Regulations

U.S. Supreme Court and Endangerment Ruling The U.S. Supreme Court ruled for the first time in 2007 that GHG emissions are air pollutants, covered under the CAA, in *Massachusetts v. The Environmental Protection Agency.* The Court found that the EPA has a mandatory duty to enact rules regulating mobile GHG emissions pursuant to the CAA. The Court held that GHGs fit the definition of an air pollutant causing and contributing to air pollution, which reasonably may be anticipated to endanger public health or welfare. In 2009, the EPA Administrator determined that existing and projected concentrations of GHGs threaten public health and welfare of present-day and future generations, and that combined emissions from motor vehicles contribute to GHG pollution. EPA's endangerment finding covers emissions of six key GHGs: CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6.

Corporate Average Fuel Economy and Greenhouse Gas Emission Standards In 2009, the NHTSA and EPA issued the first joint ruling to establish a national program to regulate model year 2012 through 2016 passenger cars and light trucks, to improve fuel economy and reduce GHG emissions. NHTSA previously had set Corporate Average Fuel Economy standards for vehicle fuel efficiency, but the joint rule was the first coordinated effort between federal programs for fuel economy and GHGs. Since then, NHTSA and EPA have issued new fuel efficiency and GHG emission standards. On August 9, 2011, standards were issued to reduce GHG emissions and improve fuel efficiency for heavy-duty trucks and buses. On October 15, 2012, NHTSA and EPA established a program to reduce GHG emissions and improve fuel economy standards for new cars and light trucks through 2025 (EPA 2012).

Federal Leadership in Environmental, Energy, and Economic Performance On October 5, 2009, EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* was signed by CEQ. The EO required federal agencies to set a 2020 GHG emissions reduction target within 90 days, increase energy efficiency, reduce fleet petroleum consumption, conserve water, reduce waste, support sustainable communities, and leverage federal purchasing power to promote environmentally responsible products and technologies.

GHG in NEPA Documents On February 18, 2010, CEQ released draft guidance on the consideration of GHGs in NEPA documents for federal actions. The draft guidelines include a presumptive threshold of 25,000 metric tons of CO_2e emissions from a proposed action to trigger a quantitative analysis. CEQ has not established when GHG emissions are "significant" for NEPA purposes, but rather poses that question to the public (CEQ 2010).

On December 18, 2014, CEQ released revised draft guidance on the consideration of GHG emissions and climate change in NEPA review. This is an update to the guidance previously issued in draft form in February 2010. The Guidance encourages agencies to include a quantitative assessment of GHG emissions for projects expected to have direct GHG emissions of 25,000 metric tons or more on an annual basis. The guidance states that the assessment of

direct and indirect climate change effects should account for upstream and downstream emissions and includes guidance on biogenic sources of GHG emissions from land management actions. The guidance recommends that if a cost-benefit analysis is relevant to the analysis, the Federal social cost of carbon estimates are useful in providing a meaningful NEPA review.

State Policies and Regulations

California Global Warming Solutions Act CARB is the lead agency for implementing AB 32, the California Global Warming Solutions Act, adopted by the State Legislature in 2006. AB 32 set a statewide target to reduce GHG emissions to 1990 levels by 2020. AB 32 also required CARB to prepare a Scoping Plan with the main strategies to be used to achieve reductions in GHG emissions in California.

After receiving public input on their discussion draft of the Proposed Scoping Plan (released in June 2008), CARB issued its Climate Change Proposed Scoping Plan in October 2008, and adopted the plan in December 2008 (CARB 2011b). This plan contains an outline of the proposed State strategies to achieve the 2020 GHG emission limits. Key elements of the Scoping Plan include the following recommendations:

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards.
2. Achieving a statewide renewables energy mix of 33 percent.
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system.
4. Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets.
5. Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel standard.
6. Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

Under the Scoping Plan, approximately 85 percent of the state's emissions are subject to a cap-and-trade program, where covered sectors are placed under a declining emissions cap. Emissions reductions are to be achieved through regulatory requirements and the option to reduce emissions further or purchase allowances to cover compliance obligations. Emission reductions from this cap-and-trade program are expected to account for a large portion of the reductions required by AB 32.

CARB recently released the First Update of the Climate Change Scoping Plan to reflect progress since 2005, additional reduction measures, and plans for reductions beyond 2020 (CARB 2014). In this update CARB notes the progress toward the 2020 goal to reach 1990 levels established in AB 32. CARB emphasizes the importance of establishing a mid-term target beyond 2020 to reach the goals of executive orders S-03-05 and B-16-2012 to reduce emissions to 80 percent below 1990 levels by 2050 (as described below). This mid-term target will be critical in helping to frame additional policy measures, regulations, planning efforts, and investments in clean

technologies that are needed to continue to reduce emissions. Sector-specific actions that would be needed in order to reach long-term goals are outlined for: energy; transportation, land use, fuels, and infrastructure; agriculture; water; waste; and natural and working lands; short-lived climate pollutants; and green buildings. With respect to water, the Plan encourages development of state policy and regulatory frameworks that allow for effective regional integrated planning and implementation with measures to reduce GHG emissions and maintain water supply reliability during drought periods.

Executive Order S-03-05 and B-16-2012 In 2005, EO S-03-05 was issued, calling for statewide GHG reductions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. The EO also called for the creation of a "Climate Action Team," which was to report to the Governor every 2 years on progress toward meeting the targets and the effects of GHG emissions on the state. The latest of these reports, Climate Action Team Biennial Report, was published in December 2010 (Cal EPA 2010). In March 2012, EO B-16-2012 was issued, affirming the long-range climate goal for California to reduce GHGs to 80 percent below 1990 levels by 2050.

Low Carbon Fuel Standard EO S-1-07, the Low Carbon Fuel Standard (LCFS), was issued in January 2007. The order called for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. The LCFS was approved by CARB in 2009, and it became effective in April 2010. The regulation established annual performance standards for fuel producers and importers, applicable to all fuels used for transportation in California (CARB 2011a).

Assembly Bill 1493 With the passage of AB 1493 in 2002, California launched an innovative and pro-active approach for dealing with GHG emissions and climate change at the State level. AB 1493 required CARB to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards apply to automobiles and light trucks beginning with the 2009 model year. Litigation was filed by automakers, challenging these regulations. EPA initially denied California's related request for a waiver to allow California to regulate vehicle emissions beyond EPA requirements, but a waiver subsequently was granted (CARB 2013).

Renewable Portfolio Standard Established in 2002 under Senate Bill 1078, California's Renewables Portfolio Standard (RPS) was accelerated in 2006 under Senate Bill 107 by requiring that 20 percent of electricity retail sales be served by renewable energy resources by 2010. Subsequent recommendations in California energy policy reports advocated a goal of 33 percent by 2020. Senate Bill X1-2, which implemented the 33 percent by 2020 for electricity sales from renewable energy resources, was signed in April 2011. This new RPS applies to all electricity retailers in the state including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators (local communities that offer procurement service to electric customers within their boundaries). All of these entities must adopt the new RPS goals of 20 percent of retail sales from renewables by the end of 2013, 25 percent by the end of 2016, and the 33 percent requirement being met by the end of 2020.

Senate Bill 1368 Senate Bill 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. Senate Bill 1368 required the CPUC to establish a GHG emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The CEC was required to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards were not to exceed the GHG emission rate from a baseload combined-cycle natural gas fired plant. The legislation further required that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC.

Senate Bill 375 Senate Bill 375, the Sustainable Communities and Climate Protection Act of 2008, enhanced California's ability to reach its AB 32 goals, by promoting good land use and transportation planning with the goal of more sustainable communities. Sustainable Communities requires CARB to develop regional GHG emission reduction targets for 2020 and 2035 for each region covered by one of the state's 18 metropolitan planning organizations (MPOs). EO G-11-024 set these targets in 2011. The MPOs were tasked with developing Sustainable Communities Strategies, integrating land use and transportation planning and demonstrating an ability to attain the 2020 and 2035 reduction targets.

Regional Policies and Regulations

SJVAPCD Climate Change Action Plan The SJVAPCD's Climate Change Action Plan, adopted in 2008, directed the District Air Pollution Control Officer to develop guidance to assist lead agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project specific GHG emissions on global climate change (SJVAPCD 2014). On December 17, 2009, the SJVAPCD adopted *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* (Guidance) (SJVAPCD 2009). The Guidance establishes a streamlined process that can be used to evaluate the significance of project-specific GHG emission impacts on global climate change, based on the use of Best Performance Standards (BPS) (SJVAPCD 2009). The SJVAPCD defines BPS as "the most effective achieved-in-practice means of reducing or limiting GHG emissions from a GHG emissions source." Types of BPS include equipment type, equipment design, operational and maintenance practices, measures that improve energy efficiency, and measures that reduce vehicle miles traveled (SJVAPCD 2009).

SJVAPCD Zero Equivalency Policy The SJVAPCD has not developed CEQA significance thresholds for construction-related GHG emissions. However, the SJVAPCD has adopted a Zero Equivalency Policy for GHGs that establishes a level (230 metric tons of CO_2e/year) below which project-specific increases in GHG emissions are considered equivalent to zero for CEQA and District permitting purposes (SJVAPCD 2012b).

Local Policies and Regulations

The City of Modesto and Stanislaus County do not have any specific GHG policies applicable to the Proposed Action. Policies for Merced and San Joaquin Counties are not discussed because no GHG related activities and emissions would occur in these counties.

City of Turlock The City of Turlock General Plan has the following applicable GHG policies:

8.2-a Reduce Greenhouse Gas Emissions. Reduce greenhouse gas emissions to support statewide GHG reduction goals under the California Global Warming Solutions Act (AB 32).
8.2-b Decrease Vehicle-Miles Travelled. Promote a broad range of transportation, land use, and site design measures that result in a decrease in the number of automobile trips and vehicle-miles traveled per capita.
8.2-c Facilitate Energy-Efficient Buildings. Encourage energy efficiency through good urban design and site-planning practices, as well as through building design, maintenance and retrofit.
8.2-d Promote Energy Conservation. Support understanding of the relationship between energy consumption, air quality, and greenhouse gases, and promote energy-saving practices.
8.2-e Reduce Waste. Reduce per capita landfill waste generation by promoting reuse, recycling, and composting.
8.2-f GHG Emissions Reduction Implementation. Within three years of General Plan adoption, prepare a strategic plan for reducing greenhouse gas emissions, focusing on technically and financially feasible implementation measures that can be taken by the City. The Plan will guide the City to lower emissions from its buildings, fleet, and operations.
8.2-n Wastewater and Water System Efficiency. Maximize the efficiency of City-operated wastewater treatment, water treatment, pumping, and distribution equipment. This measure may be part of the GHG Emissions Reduction Plan described in 8.2-f.
8.2-o Outdoor Lighting. Establish outdoor lighting standards to minimize energy use while ensuring appropriate light levels. Standards could include:

- Photocells or astronomical time switches.
- Directional and shielded LED lights.
- Security lights with motion detectors.
- Prohibition against continuous all-night outdoor lighting unless required for security reasons.

8.2-s Require Energy Efficiency for Projects Receiving Public Assistance. Require that projects receiving assistance from the City of Turlock, including but not limited to infrastructure projects and affordable housing, include energy efficiency measures beyond the minimum standards of Title 24.
8.2-t Encourage Solar Power Generation. Encourage the use of passive and active solar devices such as solar collectors, solar cells, and solar heating systems into the design of buildings and parking areas by participating in existing incentive programs and considering new incentives for Turlock property owners.
8.2-u Encourage Other Onsite Renewable Energy Systems. Encourage the installation of other renewable energy systems in new or existing development. Renewable power generation may count toward the Air District's proposed BPS for projects with systems capable of generating at least 2.5 percent of their energy need.
8.2-v Methane Capture. Produce energy through methane capture at the Regional Water Quality Control Facility. Explore opportunities to enhance waste-to-energy generation if feasible.

3.9.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

This section evaluates whether construction and operation of the Proposed Action alternatives would result in significant impacts related to GHG emissions.

As required by SJVAPCD, the CalEEMod version 2013.2.2 was used to quantify GHG emissions from the Proposed Action construction and operation activities. Modeling was completed for Alternatives 1 and 2, but because detailed information about construction is not available for Alternative 3, emissions were evaluated qualitatively. CalEEMod incorporates numerous default assumptions and CARB emission factors for on-road and off-road vehicles (EMFAC 2013 and In-Use Off-Road Equipment Inventory Model 2011). Below is a brief summary of the CalEEMod site-specific inputs used to estimate emissions from the Proposed Action, which are the same as the assumptions used in the analysis of air quality impacts (see *Section 3.3, Air Quality*). Further CalEEMod inputs and outputs are available in **Appendix B**.

The Proposed Action alternatives are assumed to take approximately 1.5 years to construct from summer of 2016 through spring of 2018. Assumptions regarding construction of Alternatives 1 and 2 are shown in **Table 3.3-5** in *Section 3.3, Air Quality*, and in **Appendix C**. In general, it was assumed that five construction crews would work simultaneously.

The equipment anticipated to be employed during each construction phase is shown in **Table 3.3-6 and 3.3-7** in *Section 3.3, Air Quality*. The equipment was mapped to an appropriate CalEEMod equipment type and default horsepower and load factors were applied unless it was mapped to a general equipment category, which used a typical equipment size that may be appropriate for the proposed construction activities.

The number of worker and material hauling trips is shown in **Table 3.3-8** in *Section 3.3, Air Quality*. Worker trips were assumed to be 20 miles one-way and material hauling trips were assumed to be 30 miles one way.

Once the baseline construction emissions associated with the Alternatives 1 and 2 were estimated, mitigation options were evaluated to see if on-site mitigation would be possible to reduce emissions below the significance thresholds. The impact of requiring phased trips for all trucks hauling trench spoil and backfill, such that all trucks importing backfill material to the site would leave with excavated material that needs to be exported, was estimated. This significantly reduces the number of material hauling trips.

With respect to operational emissions, only sporadic vehicle trips would be needed for maintenance and inspection. Since the amount of trips is not known, but likely substantially less than the small project threshold of 1,707 trips per day established by SJVAPCD, no operational emissions from vehicles were estimated. The pumps for all of the action alternatives would be electricity-driven, and electricity was conservatively assumed to be supplied by Modesto Irrigation District. While the NVRRWP may use electricity from TID, using the Modesto Irrigation District is conservative since it has slightly higher GHG emissions per unit of

electricity, and the electricity provider has not yet been determined. No criteria pollutants are associated with electricity use, but the indirect GHG emissions were also estimated using CalEEMod. Alternative 2 may also require an emergency generator at the proposed new pump station located at the Harding Drain Bypass Pipeline. This was not evaluated in CalEEMod since this would be a permitted stationary source and would undergo permitting procedures that are assumed to result in emissions below significance thresholds.

Thresholds of Significance

Consistent with Appendix G of the *CEQA Guidelines* a GHG emissions impact would be considered significant if the project would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs.

Construction emissions have been considered less than significant if GHG emissions are less than SJVAPCD's zero equivalency threshold of 230 metric tons of CO_2e per year. Construction emissions are typically amortized over the life of the project, which is assumed to be 40 years. For operational emissions, SJVAPCD has adopted a BMP threshold for GHG emissions based on an achievable-in-practice analysis of improvement over a business-as-usual scenario, or 29 percent improvement. However, at this time there is not an approved BMP for this type of project, nor has suitable data to establish a business-as-usual scenario been provided by the SJVAPCD. Therefore, the published California air district mass emissions thresholds were reviewed and considered in developing an appropriate threshold. Both Santa Barbara Air Pollution Control District and the South Coast Air Quality Management District have established a 10,000 metric ton CO_2e per year threshold for industrial sources. This is lower than the CEQ-suggested presumptive 25,000 metric tons of CO_2e emissions from a proposed action to trigger a quantitative analysis in NEPA documents. Thus, a 10,000 metric ton CO_2e per year threshold for operational sources seems appropriate and conservative.

The applicable plans and policies for operational-related emissions were determined to be CARB's Scoping Plan. Specifically, if a project activity does not conflict with CARB's GHG emission reduction policies, it would have a less than significant impact. For construction-related GHG emissions, the applicable significance threshold is compliance with the SJVAPCD's zero equivalency policy, which is considered to be consistent with CARB's Scoping Plan and associated regulations. The zero equivalency policy is used for construction emissions to designate the temporary and low level of emissions that when considered against the total GHG emissions emitted in California is considered *de minimis* and equivalent to no substantial long-term change in the overall amount of emissions.

Impacts and Mitigation Measures

Impact GHG-1 Construction Emissions of GHGs

No Action Alternative Under the No Action Alternative, recycled water would continue to be discharged to the San Joaquin River and or applied to land and there would be no construction required, therefore no construction emissions and no impact on GHG emissions.

Combined Alignment Alternative (Alternative 1) Estimates of construction emissions associated with this alternative were estimated using CalEEMod with assumptions specified above and in **Appendix B**. The total construction emissions are then amortized over a 40-year project life. Under standard equipment assumptions including unphased material hauling trips, the anticipated construction emissions associated with this alternative are shown in **Table 3.9-2**. The amortized construction emissions would be below the SJVAPCD zero equivalency threshold of 230 metric tons of CO_2e per year. Thus, the construction emissions associated with Alternative 1 would have a less than significant impact.

Table 3.9-2: Combined Alignment Alternative GHG Construction Emissions

Scenario	GHG Emissions (metric tons CO2e) – Unphased Truck	GHG Emissions (metric tons CO2e) – Phased Truck
Total Construction Emissions	2,175	1,830
Amortized Emissions	54.4	45.8

Notes:
Emissions are amortized over an assumed 40 year project life.
Source: **Appendix B.**

Table 3.9-2 also shows the construction GHG emissions that would be a result of phased material hauling truck trips since this is an option presented in *Section 3.3, Air Quality*, as a potential mitigation measure for criteria pollutant emissions. Phased truck emissions would result in an overall reduction in GHG emissions compared to unphased truck trips of 15.8 percent. Because this scenario would further reduce emissions below the zero equivalency threshold, impacts under this scenario would also have a less than significant impact.

Separate Alignment Alternative (Alternative 2) Under standard equipment assumptions including unphased material hauling trips, the anticipated construction emissions associated with this alternative are shown in **Table 3.9-3**. The amortized construction emissions would be below the SJVAPCD zero equivalency threshold of 230 metric tons of CO_2e per year. Thus, the construction emissions associated with Alternative 2 would have a less than significant impact.

Table 3.9-3: Separate Alignment Alternative GHG Construction Emissions

Scenario	GHG Emissions (metric tons CO2e) – Unphased Truck	GHG Emissions (metric tons CO2e) – Phased Truck
Total Construction Emissions	3,396	2,869
Amortized Emissions	84.2	71.7

Notes:
Emissions are amortized over an assumed 40 year project life.
Source: **Appendix B.**

Table 3.9-3 also shows the construction GHG emissions that would be a result of phased material hauling truck trips since this is an option presented in *Section 3.3 Air Quality*, as a potential mitigation measure for criteria pollutant emissions. Phased truck emissions would result in an overall reduction in GHG emissions compared to unphased truck trips of 14.8 percent. Because this scenario would further reduce emissions below the zero equivalency threshold, impacts under this scenario would also have a less than significant impact.

PID Conveyance Alternative (Alternative 3) Because this alternative would require somewhat less construction than Alternatives 1 and 2, it is expected that construction emissions would also be below the SJVAPCD zero equivalency threshold of 230 metric tons of CO_2e per year. Thus, the construction emissions associated with this alternative would be less than significant under phased and unphased scenarios.

Significance Determination before Mitigation Less than significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures No mitigation required.

Impact GHG-2 Operational Emissions of GHGs

No Action Alternative Under the No Action Alternative, recycled water would continue to be discharged to the San Joaquin River or applied to land. There would be no change in operational emissions from current practices and thus no impact on GHG emissions.

Combined Alignment Alternative (Alternative 1) Under this alternative, only occasional trips would be needed for pipeline maintenance and inspection; thus their GHG emissions were not quantified. In addition, GHG emissions associated with periodic testing and maintenance of any emergency generators was not quantified as it was also assumed to be minimal. The main source of GHG emissions during the proposed project operation would be from the electricity used to run the pumps that would transport the water to the DMC. The electricity used by the pumps would result in indirect GHG emissions and was quantified using CalEEMod with the details contained in **Appendix B**.

Based on the estimated pumping requirements to deliver water under this alternative, 15,442 megawatt hours of electricity would be used per year, and the resulting GHG emissions would be 5,855 metric tons of CO_2e per year. This is below the 10,000 metric ton CO_2e per-year threshold for industrial sources, and therefore emissions would be less than significant. Furthermore, this calculation would be an overestimate for future years, since the renewable portfolio standards require emissions associated with electricity to decrease with the incorporation of up to 33 percent renewable energy sources which have zero GHG emissions.

Separate Alignment Alternative (Alternative 2) Based on the calculated total of 17,898 megawatt hours of electricity used per year for the two pump stations needed for this alternative, the resulting GHG emissions would be 6,786 metric tons of CO_2e per year. This is below the 10,000 metric ton CO_2e per year threshold for industrial sources and therefore emissions would be less than significant.

PID Conveyance Alternative (Alternative 3) Based on the calculated energy requirement of 20,063 megawatt hours of electricity used per year, the resulting GHG emissions would be 7,607 metric tons of CO_2e per year. This is below the 10,000 metric ton CO_2e per year threshold for industrial sources and therefore emissions would be less than significant.

Significance Determination before Mitigation Less than significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures No mitigation required.

Impact GHG-3 Consistency with applicable GHG reduction plans

No Action Alternative Under the No Action Alternative, recycled water would continue to discharge to the San Joaquin River. There would be no change in emissions from current practices, which are consistent with CARB's Scoping Plan, and as a result, there would be no impact. However, the No Action Alternative does not move toward ensuring adequate water supplies during droughts, which was identified in the First Scoping Plan Update as a future direction for GHG and climate adaptation policies and regulations.

All Action Alternatives The Proposed Action alternatives would not conflict with any regulations or policies in CARB's Scoping Plan. Furthermore, the Proposed Action would be consistent with CARB's First Scoping Plan Update that suggests the need for future infrastructure planning of water resources to ensure adequate supplies during droughts. One of the main goals of the Proposed Action is to utilize recycled water that is currently discharged to the river to provide irrigation water to areas that are in need of water and to protect wildlife refuges. The GHG emissions would be below significance thresholds, as the project would use electric pumps, with the exception of necessary emergency backup generators. The indirect emissions associated with the use of electricity by the pumps would decrease over time as a result of existing regulations that require the electricity suppliers to increase the percentage of renewable electricity generating sources to 33 percent by 2020.

Significance Determination before Mitigation No impact for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures No mitigation required.

Cumulative Impacts

Because GHG emissions and their contribution to global climate change is a global issue, the criteria above address the cumulative impacts of the project's contributions to GHG emissions. As noted above, the SJVAPCD's Climate Change Action Plan was developed to reduce the

impacts of project specific GHG emissions on global climate change. Because emissions from the Action alternatives would not exceed the applicable SJVAPCD significance thresholds for GHG emissions, the project's GHG emissions are not considered to be cumulatively considerable.

3.9.4 References

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3.10 Hazards and Hazardous Materials

This section presents the physical and regulatory setting for hazards and hazardous materials surrounding the Proposed Action area. The impact analysis considers the potential for the NVRRWP to release hazardous materials into the surrounding environment at levels that would create substantial risk to neighboring areas.

3.10.1 Environmental Setting/Affected Environment

This section describes the environmental setting for current hazards and hazardous materials within the study area, which includes the Proposed Action construction site and adjacent areas.

Known Contamination Sites

Two online databases were searched for known contamination sites within the study area, including EnviroStor (DTSC Hazardous Waste and Substances Site List) and GeoTracker (SWRCB).

The EnviroStor database identifies sites that have known contamination or sites for which there may be reasons for further investigation. Specifically, it lists the following site types: Federal Superfund sites (National Priority List); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. Sites that are in the Hazardous Waste and Substances Site List - Site Cleanup (Cortese List)[1] are also identified.

The GeoTracker is an online tool that provides regulatory data regarding sites that impact groundwater, particularly those that require groundwater cleanup, as well as permitted facilities such as those operating underground storage tanks and land disposal sites (SWRCB 2010).

A search of these two databases shows four known contamination sites within 1,000 feet of the Proposed Action alternative pipeline alignments, and the associated pump station and intake facilities. These sites are detailed below.

PRC Patterson, Inc. (CAD083166728) (T0609900147) The PRC (Petroleum Recycling Corporation) Patterson site is a 10-acre triangular lot located at 13331 North SR 33. The northern pipeline alignment runs west along Lemon Ave where it briefly heads south on SR 33 before turning west again on Zacharias Road. The site is located roughly 0.10 miles northwest of the corner of Lemon Ave and SR 33. The site was home to the Enviropur West Oil Recycling Facility, formerly known as the Petroleum Recycling Corporation Patterson facility, which was an oil recycling facility and hazardous waste generator from the early 1970s until 1996, when the facility was abandoned due to bankruptcy (DTSC 2014a). Prior to the 1970s, the site was used as a pump station for transporting heavy crude oil from Bakersfield to the Bay Area, at which time the site managed an estimated 29 aboveground storage and process tanks. The site is currently owned by the Balock Family Industrial/Commercial Property Trust. Verification monitoring was being conducted in 2003 (SWRCB 2014). Currently, the site is undergoing closure activities, and

[1] Cortese List sites are those that are compiled pursuant to Government Code Section 65962.5.

State Department of Toxic Substances (DTSC) has requested that the owner provide a Corrective Action and a Closure and Post-Closure Plan (DTSC 2014).

AL Castle, Inc. (60001557) The site is located at 1607 W. Marshall Road and is directly adjacent to the southern pipeline alignment as it runs west along W. Marshall Road. An agricultural company, AL Castle, Inc. provided agricultural spraying services for herbicides, pesticides, and fertilizers (DTSC 2014b). The site was used for storage of farm machinery and spraying equipment from the 1950s to the late 1980s. There is potential soil and surface and groundwater contamination from truck washing activities, which would have generated runoff water potentially containing pesticides, herbicides, and fertilizers. This runoff was drained into a ditch that carried the water to an unlined settling pond south of the site. From the settling pond, the water was pumped into the DMC. In 1989, AL Castle's discharge permit was revoked by the Reclamation and the pump was locked (DTSC 2014b). As of June 27, 2012, the site is considered inactive and further evaluation by the DTSC was recommended. Thus, the extent of the contamination is not known.

De Lash Enterprises (T0609939467) This site is located at 16561 SR 33, and is adjacent to the pipeline alignment for the PID Conveyance alternative where it crosses SR 33. The site was formerly a trucking yard that operated a small gas station. Three underground storage tanks were removed from the site, but it was subsequently determined that there was residual contamination of soil and groundwater. The site has been cleaned up and the case has been closed since 2009 (SWRCB 2014).

Campbell Ranch (T0609991946) This site is located at 16521 Ward Avenue, and is adjacent to the portion of the PID Conveyance Alternative pipeline alignment where it runs along Ward Avenue. The site is an open remediation case with known contamination from fuel or other petroleum hydrocarbons affecting groundwater. Although the leak was stopped in 1990, at which time contaminated soils were excavated, the site is still identified as active (SWRCB 2014).

Wildland Fire

The Proposed Action construction footprint is in an area designated for agricultural use by Stanislaus County. Fires within Stanislaus County are generally limited to the foothills in the very eastern and western portions of the County (Stanislaus County 1994). The construction area is located in a Locally Responsible Area (LRA), indicating that neither the state nor the federal government is responsible for fire protection in that area (for more information on fire districts within the region, please see Chapter 3.16, Public Services and Utilities). California Department of Forestry and Fire Protection (CAL FIRE) has developed a Fire Hazard Severity Zone ranking system that predicts the likelihood of an area burning. The model is based on vegetation, topography, weather, crown fire potential, and ember production and movement. Areas identified as LRA in the construction area are mostly designated "LRA Unzoned" with small pockets designated LRA Moderate Fire Hazard Severity Zone, generally south of West Main Avenue and west of South Carpenter Road and around the San Joaquin River in that area (CAL FIRE 2007a).

The area to the west of I-5 is designated as a State Responsibility Area (SRA), indicating that CAL FIRE is responsible for fire management in that area. Within this SRA, the areas west of I-

5, adjacent to the construction footprint are designated as Medium and High Fire Hazard Severity Zones (CAL FIRE 2007b). The closest Very High Fire Hazard Severity Zone is located approximately six miles to the northwest of the northernmost proposed pipeline. While fires have, in the past been as close as 1 mile from the study area, there have been no wildfires reaching the study area (Stanislaus County 2010). The Jennings Plant and Harding Drain Bypass pump stations and the PID intake are all located at least 12 miles away from the nearest Very High Fire Hazard Severity Zone. In addition, past wildfires have not been within 5 miles from any of these facilities.

3.10.2 Regulatory Framework

Hazardous materials and wastes can result in public health hazards if released to soil, groundwater, or air. Hazardous materials as defined in Section 25501(o) of the California Health and Safety Code are materials that, because of their "quantity, concentration, or physical or chemical characteristics, pose a significant present or potential hazard to human health and safety or to the environment if released to the workplace or environment." Hazardous materials have been and are commonly used in commercial, agricultural, and industrial applications, as well as to a limited extent in residential areas.

A waste is any material that is relinquished, recycled, or inherently waste-like. CCR Title 22 Section 66261.1, et seq. contains regulations for the classification of hazardous wastes. Article 3 criteria classify waste as hazardous if it is toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases). Article 4 also lists specific hazardous wastes, while Article 5 identifies specific waste categories, including Resource Conservation and Recovery Act (RCRA) hazardous wastes, non-RCRA hazardous wastes, extremely hazardous wastes, and special wastes. If improperly handled and released to soil, groundwater, or air (in the form of vapors, fumes, or dust), hazardous materials and wastes can result in public health hazards.

This section describes laws and regulations that may apply to the Proposed Action.

Federal Policies and Regulations

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
CERCLA, also referred to as the Superfund law, regulates the potential for liability for cleanup of hazardous substances, provides for defense against liability, identification of contaminated sites, defines hazardous substances, petroleum products, and petroleum exclusions. The Superfund Amendments and Reauthorization Act, includes emergency planning and community right-to-know. Under CERCLA, facilities must report where toxic chemicals are transferred, chemical-specific information, and supplemental information, along with identification information for their facility to the EPA. Hazardous substances must be reported, and releases to the environment accounted for.

Resource Conservation and Recovery Act (RCRA) RCRA regulates potential health and environmental problems associated with solid waste hazards and nonhazardous waste. RCRA defines solid waste as garbage or refuse, sludge from wastewater treatment plant, water supply treatment plant, or air pollution control facility, and other discarded materials. Solid waste can be either hazardous or non-hazardous. Hazardous waste is waste that burns readily, is corrosive, or

reactive, or if it contains certain amounts of toxic chemicals, or has been included on the EPA's list of hazardous wastes. RCRA regulates the disposal of waste and aims to reduce waste generation. It restricts which facilities can receive hazardous wastes and regulates facilities to ensure proper handling of materials.

Emergency Planning and Community Right-To-Know Act (EPCRA) EPCRA was passed in 1986 and requires federal, state, and local governments to create chemical emergency response plans for releases of hazardous substances. It also requires reporting on hazardous and toxic chemicals to increase awareness and access to information on chemical and individual facilities. It requires that facilities report accidental releases of certain chemicals and hazardous substances, and provide such information to the public. Facilities must create and make available Material Safety Data Sheets (MSDS) that describe the chemicals in question and health effects associated with them. Chemical inventories must also be reported if they require an MSDS.

Hazardous Materials Worker Safety Requirements The federal Occupational Safety and Health Administration (OSHA) is the federal agency responsible for ensuring worker safety. The federal regulations for worker safety are contained in CFR Title 29, as authorized in the Occupational Safety and Health Act of 1970; these regulations provide standards for safe workplaces and work practices, including those relating to hazardous materials handling.

Preliminary Remediation Goals EPA has published screening levels, referred to as Regional Screening Levels (RSLs), for the evaluation of chemicals commonly found in soil or groundwater where a release of hazardous materials has occurred (EPA 2014). For an industrial worker, these screening levels are conservative estimates of safe levels of a chemical that a worker could be exposed to in soil and groundwater. If the concentration of a chemical in the soil or groundwater is below the RSL, then it can be assumed that the chemical would not pose a health risk to the worker. Screening levels would generally be lower for industrial workers than construction workers because the industrial worker would be exposed to the hazard over a lifetime while the construction worker would only be exposed for the duration of construction. Therefore, safe levels of chemicals in soil and groundwater would generally be higher for construction workers than industrial workers.

State Policies and Regulations

California Health and Safety Code The California Health and Safety Code contains statewide regulations designed to protect public health and safety. Sections of the state code relevant to the Proposed Action include the Cortese List, which is developed under Section 65962.5 of the California Government Code. The list is compiled and maintained by the DTSC under the Cal-EPA. The Cortese List is a list of all sites identified as having hazardous waste releases.

Facilities that handle, store, use, treat, dispose of, or generate hazardous materials are required to create hazardous-waste management programs under Division 20, Chapter 6.5, section 25100 et seq. Facilities that generate hazardous wastes in excess of 26,400 pounds per year, or extremely hazardous wastes in excess of 26.4 pounds per year, must adhere to California Health and Safety Code Section 25244.12 et seq. This section of the code requires facilities to determine the types and amounts of wastes generated, identify procedures to reduce waste generation, develop written documentation that addresses waste reduction, develop a source-reduction evaluation

review and plan, prepare a plan summary and hazardous waste management report, and a report summary. Hazardous materials handling, reporting requirements, and local agency surveillance programs are regulated under the California Health and Safety Code, Section 25500 et seq.

Local Policies and Regulations

Stanislaus County General Plan The following policy in the Stanislaus County General Plan, Safety Element would apply to the project:

> *Policy Thirteen:* The Department of Environmental Resources shall continue to coordinate efforts to identify locations of hazardous materials and prepare and implement plans for management of spilled hazardous materials as required.

Stanislaus County Hazardous Materials Business Plan As required under the California State Health and Safety Code, businesses that use, handle, or store a hazardous material or an extremely hazardous material are required to submit Hazardous Materials Business Plans to Stanislaus County (Stanislaus County 2014a). Business Plans contain information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of within the County. The Hazardous Materials Division of the Department of Environmental Resources at Stanislaus County performs routine inspections at businesses required to submit Business Plans to ensure compliance with existing laws and regulations, to identify existing safety hazards, and to suggest preventative measures.

The Hazardous Materials Business Plan must be recertified every year and a copy of the current certification must be kept on the business site (Stanislaus County 2014a). The County also must be notified within 30 days if there is any increase in quantity of a hazardous material at the business, if there is any handling of a previously undisclosed hazardous material, if there is any change in the storage, location or use of hazardous materials, or if there is any change to the business details, including a change in the site map.

City of Modesto Urban Area General Plan The following policy in the Urban Area General Plan relating to hazards and hazardous materials would apply to the project:

> *Hazardous Materials Management Policies (a)*: The City shall comply with all existing federal and state laws that regulate the generation, transportation, storage, and disposal of hazardous materials.
> *Hazardous Materials Management Policies (c)*: In the event that site inspection or construction activities uncover chemical contamination, underground storage tanks, abandoned drums, or other hazardous materials or wastes at a parcel, the inspection report preparer shall so notify the City. The City shall notify the County Health Services Department. Under the direction of these agencies, a site remediation plan shall be prepared by the project applicant.
> The plan would (1) specify measures to be taken to protect workers and the public from exposure to potential site hazards and (2) certify that the proposed remediation measures would clean up the wastes, dispose the wastes, and protect public health in accordance

with federal, state, and local requirements. Permitting or work in the areas of potential hazard shall not proceed until the site remediation plan is on file with the City.
If a parcel is found to be contaminated to a level that prohibits the proposed use, the potential for reduction of the hazard should be evaluated. Site remediation is theoretically capable of removing hazards to levels sufficiently low to allow any use at the site. In practice, both the technical feasibility of the remediation and its cost (financial feasibility) should be evaluated in order to determine the overall feasibility of locating a specific use on a specific site. In some cases, it may require restriction to industrial use or a use that involves complete paving and covering of the parcel.
In accordance with OSHA requirements, any activity performed at a contaminated site shall be preceded by preparation of a separate site health and safety plan (prepared by the project applicant and filed with the City) for the protection of workers and the public. All reports, plans, and other documentation shall be added to the administrative record.
Hazardous Materials Management Policies (d): For each specific project that would generate hazardous waste, the City shall require as a condition of building permit and/or business license approval that the project sponsor prepare a hazardous material transportation program. The transportation program shall identify the location of the new facility or use and designate either (1) specific routes to be used for transport of hazardous materials and wastes to and from the facility, or (2) specific routes to be avoided during transport of hazardous materials and wastes to and from the facility. Routes would be selected to minimize proximity to sensitive receptors to the greatest practical degree. Passage through residential neighborhoods should be minimized, and parking of waste haulers on residential streets should be prohibited. The City Fire Department shall review and approve the applicant's hazardous materials transportation program or, working with the applicant, modify it to the satisfaction of both parties.
Fire Hazard Policies, Peak Load Water Supply: The City shall ensure that adequate water fire-flows are maintained throughout the City and shall regularly monitor fire-flows to ensure adequacy. New development shall comply with the minimum fire-flow rates, as presented in Appendix B of the California Fire Code.
Fire Hazard Policies, Miscellaneous (3): Require all new development to have adequate water to meet the established fire-flow standards.

3.10.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

This section evaluates whether construction and operation of the facilities associated with the Proposed Action would result in significant hazards and hazardous materials impacts. Impacts are evaluated based on the known potentially hazardous materials that would be used or stored on site during construction and operation, potential for accidental hazardous substance release, and presence of other health-threatening factors in the Proposed Action vicinity.

Thresholds of Significance

Consistent with Appendix G of the *CEQA Guidelines*, a hazard or hazardous materials impact would be considered significant if the project would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- 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
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- Be located on a site which is included on a list of hazardous materials site compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area.
- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Expose 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.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to actions associated with the Proposed Action are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials* – The Proposed Action would not involve the routine transport, use or disposal of hazardous materials. Thus, the Proposed Action would not create any significant hazards to the public or the environment.
- *Handling and use of hazardous substances within one quarter-mile of an existing or proposed school* – There are no schools or proposed schools located within one quarter-mile of the Proposed Action construction footprint. The closest school, Northmead Elementary School, is located approximately 1.25 miles south of the northern pipeline alignment in the City of Patterson. Patterson High School is located 1.5 miles south of the northern pipeline alignment. Thus, there would be no impact and no further evaluation is required.
- *Be located on a site which is included on a list of hazardous materials site compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment* – The Proposed Action is not located on a site included on a list of hazardous materials site compiled pursuant to Government Code Section 65962.5 (Cortese List). Three Cortese List sites are located within Stanislaus County, and the nearest site to the construction area (Gallo Glass – Sisk Ranch) is located more than 4 miles northeast of the eastern extent of the northern

pipeline alignment. As such, the Proposed Action would not create a significant hazard to the public or the environment.

- *Be located within an airport land use plan or within two miles of a public airport and result in a safety hazard for people residing or working in the project area, or for a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area* – The Proposed Action construction footprint is not located within an airport land use plan, nor is it within two miles of a public airport. The Crows Landing Airport, a private landing facility, is located roughly a mile south of the southern pipeline alignment that runs west along East Marshall Road. This facility was formerly named the Naval Auxiliary Landing Field Crows Landing when it was operated by the U.S. Navy. The parcels undergoing remediation activities are owned by NASA, but property ownership is being transferred to Stanislaus County once cleanup of a parcel is complete (DTSC 2014). Due to the distance of the airstrip from proposed construction areas and the nature of construction within road ROW, project construction would not result in safety hazards for people residing or working in the construction area.

Impacts and Mitigation Measures

Impact HAZ-1 Create a Hazard through Reasonably Foreseeable Upset and Accident Conditions Involving Release of Hazardous Materials into the Environment

No Action Alternative If no action were taken, there would be no hazardous materials impacts within the study area.

Combined Alignment Alternative (Alternative 1) Construction of this alternative could create a hazard to the public or the environment involving the release of hazardous materials used in construction, which include diesel fuel and minor amounts of paints, fuels, solvents and glues. These materials would generally be used in excavation equipment, generators, and other construction equipment and would be contained within vessels engineered for safe storage. These materials would be stored at the construction sites. Where construction activities are adjacent to waterways (i.e., San Joaquin River and the DMC), accidental release of hazardous materials could degrade water quality. Thus, impacts associated with accidental release of hazardous materials are considered potentially significant. **Mitigation Measure HAZ-1a** would reduce the risk of this kind of exposure to less than significant.

The PRC Patterson site is a known hazardous materials site located at 13331 North SR 33, roughly 0.10 miles to the northwest of the proposed pipeline alignment under this alternative at the corner of Lemon Ave and SR 33. Groundwater within the underlying Delta-Mendota sub-basin has historically flowed northwest, but more recent data indicates groundwater flowing to the north and eastward (DWR 2006). Because this flow is away from the construction footprint for this alternative, risks associated with uncovering contaminated soil or contaminated groundwater are not anticipated and the potential for accidental release of hazardous materials into the environment and subsequent exposure to the public is considered less than significant.

Separate Alignment Alternative (Alternative 2) In addition to the impacts listed under Alternative 1, the southern pipeline is located 0.10 miles from the AL Castle, Inc. site. The site is

located on the west side of the DMC, southwest of where this alternative would discharge to the DMC at MP 43.05. Groundwater within the region flows north and eastward (DWR 2006). As such, there is a potential for encountering contaminated groundwater during construction activities if dewatering is needed. Contaminated soil may also be present depending on the extent of past contamination. In such an event, contaminated material would need to be stored for classification prior to transportation and proper disposal. **Mitigation Measure HAZ-1b** would reduce the risk of an accidental release of hazardous materials to less than significant.

PID Conveyance Alternative (Alternative 3) This alternative would have the same potential for release of hazardous materials during construction as described for Alternative 1. **Mitigation Measure HAZ-1a** would reduce the risk of this kind of exposure to less than significant.

According to the Geotracker database (SWRCB 2014), there are two known contamination sites within 1,000 feet of the pipeline alignment for this alternative. De Lash Enterprises, located at 16561 SR 33, was the site of a leaking underground fuel tank, which caused contamination of soil and groundwater. The site has been cleaned up and the case has been closed since 2009. Campbell Ranch, located at 16521 Ward Avenue, is another site of a known leak of fuel or other petroleum hydrocarbons affecting groundwater. This case is still open, and the site is on a parcel that is immediately adjacent to the pipeline alignment. This alternative thus also has the potential for uncovering contaminated soil or groundwater during construction. **Mitigation Measure HAZ-1b** would reduce the risk of an accidental release of hazardous materials to less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure HAZ-1a: Hazardous Materials Management and Spill Prevention Control Plan** (Alternatives 1, 2 and 3). Prior to the start of construction, the construction contractor shall be required to prepare a Hazardous Materials Management Spill Prevention and Control Plan that includes a project-specific contingency plan for hazardous materials and waste operations. The Plan shall be applicable to construction activities, and shall establish policies and procedures according to applicable codes and regulations, including but not limited to the California Building and Fire Codes, and federal and California OSHA regulations. Elements of the Plan shall include, but not be limited to, the following:

- A discussion of hazardous materials management, including delineation of hazardous material storage areas, access and egress routes, waterways, emergency assembly areas, and temporary hazardous waste storage areas.
- Notification and documentation of procedures.
- Spill control and countermeasures, including employee spill prevention/response training.

Mitigation Measure HAZ-1b: Conduct Phase I Study along Pipeline Segments (Alternatives 2 and 3) Prior to the start of construction, a Phase I hazardous waste/hazardous materials study for soil and groundwater contamination shall be completed for Alternative 2 in the area where

the southern pipeline alignment would connect with the DMC, and for Alternative 3, along Bartch and Ward Avenues. The recommendations set forth in the Phase I assessment shall be implemented to the satisfaction of applicable agencies before construction begins. If Phase I assessments indicate the potential for contamination within the construction zone of the pipelines, Phase II studies shall be completed before construction begins. Phase II studies will include soil and groundwater sampling and analysis for anticipated contaminants. The Phase II sampling is intended to identify how to dispose of any potentially harmful material from excavations, and to determine if construction workers need specialized personal protective equipment while constructing the pipeline through that area. If soil or groundwater contaminated by potentially hazardous materials is exposed or encountered during construction that was not identified in the Phase I assessment, the appropriate hazardous materials agencies will be notified.

Significance Determination after Mitigation Less than significant.

Impact HAZ-2 Expose People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires

No Action Alternative If no action were taken, there would be no wildland fire-related impacts within the study area.

Combined Alignment Alternative (Alternative 1) This alternative is located in an agricultural area and is not considered wildlands. Agricultural areas that have been designated by CAL FIRE within the LRA area exist within the project area in the vicinity of West Main Avenue and South Carpenter Road and along San Joaquin River. Wildlands with Fire Hazard Severity Zone rating of Medium and Very High are located at least 0.5 miles west of the proposed project area, on the west side of I-5. The use of spark-producing construction machinery adjacent to Medium and Fire Hazard Severity Zones could potentially create hazardous fire conditions that could increase the risk of exposing people or structures to a significant risk of loss, injury or death. As such, construction of this alternative would result in a potentially significant impact. **Mitigation Measure HAZ-2** would reduce this potential risk to less than significant.

Once construction is complete, maintenance activities would not be expected to pose a high risk of fire. Pipelines would be buried and would not be exposed to fire and the risk of damage will be less than significant.

Separate Alignment Alternative (Alternative 2 This alternative is also located in an agricultural area and is not considered wildlands. Impacts would be the same as Alternative 1.

PID Conveyance Alternative (Alternative 3) This alternative is also located in an agricultural area and is not considered wildlands. Impacts would be the same as Alternatives 1 and 2.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure HAZ-2: Prevention of Fire Hazards** (Alternatives 1, 2 and 3). During construction of the proposed project, the construction contractor shall require staging areas, welding areas, or areas slated for construction be cleared of dried vegetation or other materials that could ignite. Construction equipment that includes a spark arrestor shall be maintained in good working order. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, such as accidental sparks. Other construction equipment shall be kept in good working order and used only within cleared construction zones. During construction of the proposed project, contractors shall require vehicles and crews working at the project site to have access to functional fire extinguishers.

Significance Determination after Mitigation Less than significant.

Impact HAZ-3 Conflict with Any Adopted Emergency Response Plan or Emergency Evacuation Plan

No Action Alternative If no action were taken, there would be no emergency response plan conflicts.

Combined Alignment Alternative (Alternative 1) This alternative would not conflict with Stanislaus County's Multi-Jurisdictional Hazard Mitigation Plan. Goals of the Plan include: "minimizing the effects of hazardous conditions that might cause loss of life and property; reducing the economic impact of wildfires; promoting a sustainable economy; and increasing public preparedness for disasters." Objectives include ensuring that "future growth shall not exceed the capacity to provide services such as water and public safety" and to "discourage development in areas susceptible to wildfire." With implementation of **Mitigation Measures HAZ-1a, HAZ-1b,** and **HAZ-2**, the Proposed Action would not cause loss of life and property or economic impacts associated with hazardous conditions. As such, impacts are considered less than significant.

Long-term operation of the project would not result in any hazards that would conflict with the Multi Multi-Jurisdictional Hazard Mitigation Plan because this project would only involve conveyance and discharge of recycled water to the DMC.

Refer to *Section 3.19, Transportation*, Impact TR-3, for a discussion of impacts associated with the potential for construction to interfere with the accessibility of roadways to emergency vehicles. **Mitigation Measure TR-1** would reduce impacts associated with interference with emergency access and circulation to less than significant.

Separate Alignment Alternative (Alternative 2) Impacts would be the same as Alternative 1.

PID Conveyance Alternative (Alternative 3) Impacts would be the same as Alternatives 1 and 2.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures See **Mitigation Measures HAZ-1, HAZ-1a,** and **HAZ-2** above**.**

Significance Determination after Mitigation Less than significant.

Cumulative Impacts

The geographic scope of potential cumulative impacts related to hazards and hazardous materials is the project construction sites and immediate surrounding area. There are three relevant projects within the vicinity of the Proposed Action that may contribute to cumulative impacts:

- Jennings Treatment Plant Phase 2 Upgrades: increase tertiary treatment capacity by 12.6 mgd.
- West Main Improvement Project: widen West Main Ave to 3 lanes from the San Joaquin River to Crows Landing Road (Stanislaus County Department of Public Works 2011).
- StanCOG South Corridor Study: study potential alignments and corridor options for an expressway from the City of Turlock on the east to I-5 on the west (Stanislaus County Department of Public Works 2011).

Cumulative projects would use hazardous materials during construction activities and thus could result in similar impacts associated with the accidental release of chemicals and exposure to public and the environment. In addition, construction could overlap and thus increase the risk of hazards. However, with the implementation of **Mitigation Measures HAZ-1a**, **HAZ-1b** and **HAZ-2,** the project's contribution to these cumulative impacts would not be cumulatively considerable. Thus, the project's contribution to cumulative impacts would be less than cumulatively significant.

3.10.4 References

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3.11 Hydrology and Water Quality

This section presents the physical and regulatory setting for hydrology and water quality for the Proposed Action. The impact analysis considers the potential for the Proposed Action to result in excess surface runoff or flooding, exceed water quality standards, or interfere with groundwater recharge. The following appendix supports this section: **Appendix G**: **Evaluation of NVRRWP Impact on Groundwater**.

3.11.1 Environmental Setting/Affected Environment

The following sections describe the environmental setting for hydrology and water quality in proximity to the project construction sites. For the purposes of this section, the "Study Area" refers to the potential footprint of the Action alternatives including all construction areas, staging areas, access roads, and areas that would be temporarily or permanently disturbed.

Hydrology

The Proposed Action is located in the San Joaquin Valley, which is characterized by cool, wet winters and dry, warm summers. The majority of the annual precipitation occurs from December through April, with approximately 11 inches of rainfall per year.

Surface Water The project area is located within the San Joaquin River Basin (Basin). The Basin covers 15,880 square miles, with its major river systems consisting of the San Joaquin River and its larger tributaries, the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno rivers (RWQCB 2011). The surface water bodies potentially affected by the Proposed Action include the San Joaquin River, the DMC, and the San Luis Reservoir.

San Joaquin River The 366-mile San Joaquin River starts in the high Sierra Nevada, and flows in a mostly northerly direction to the Delta. As discussed in *Chapter 1, Introduction*, Modesto's Jennings Plant and the City of Turlock's RWQCF both discharge treated effluent to the San Joaquin River. Currently, the Turlock RWQCF discharges to the San Joaquin River via the Harding Drain Bypass Pipeline, a single source pipeline owned by the City of Turlock. Discharge via the Harding Drain Bypass Pipeline began on or about October 8, 2014, in accordance with the City of Turlock's NPDES permit requirements.

Figure 3.11-1 below shows a schematic of the San Joaquin River including inflows, outflows and monitoring points. The Vernalis gage and the Newman gage are the most important gages in relation to the Proposed Action. With respect to the Jennings Plant and the City of Turlock RWQCF, the Vernalis gage is downstream and the Newman gage is upstream. The Crows Landing gage is also upstream of both treatment plants but it has a more limited data history than the Newman gage. **Figure 3.11-2** shows monthly flow data for the San Joaquin River as measured at the Vernalis gage.

Figure 3.11-1: Schematic of San Joaquin River Inflows, Outflows and Monitoring Points

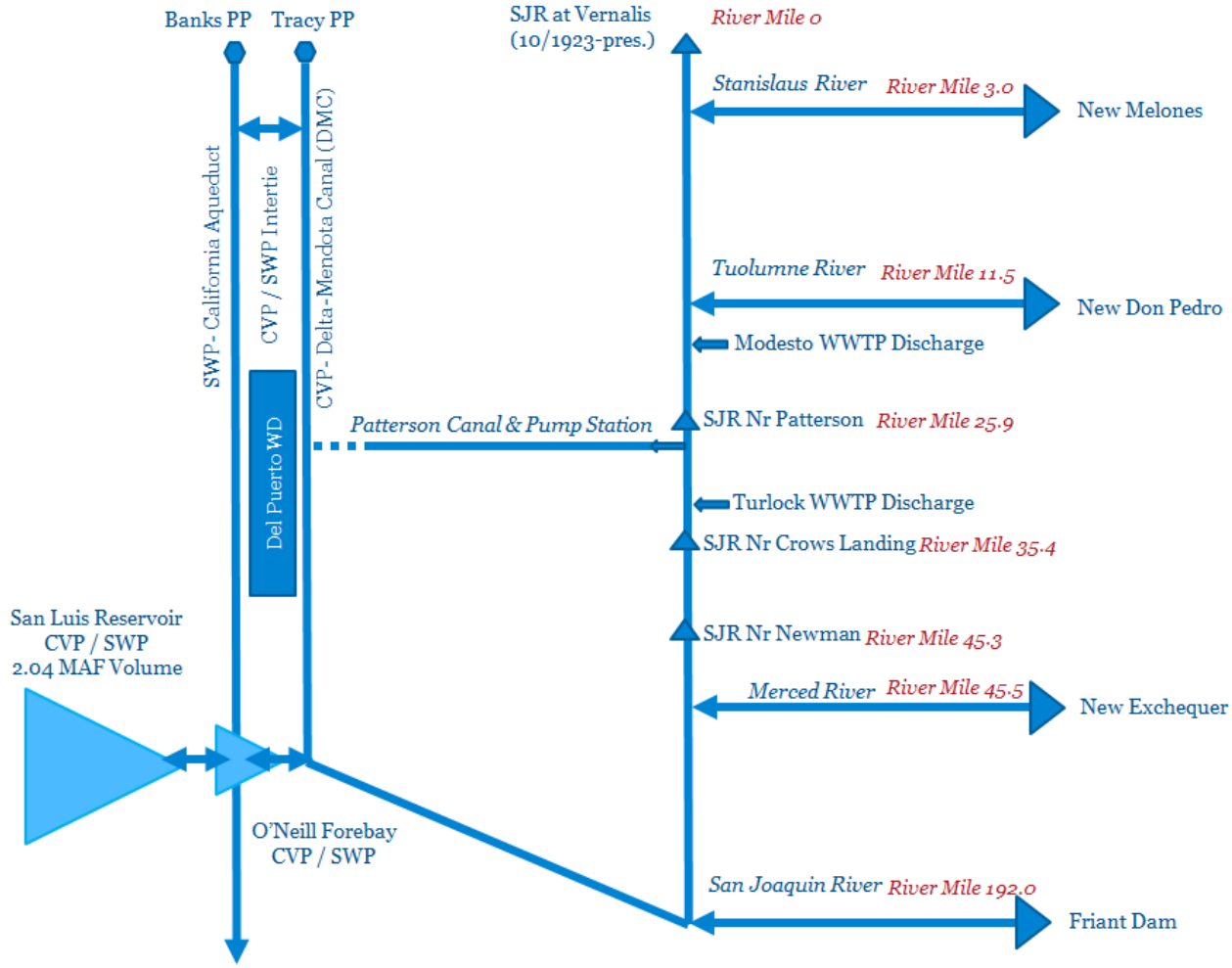
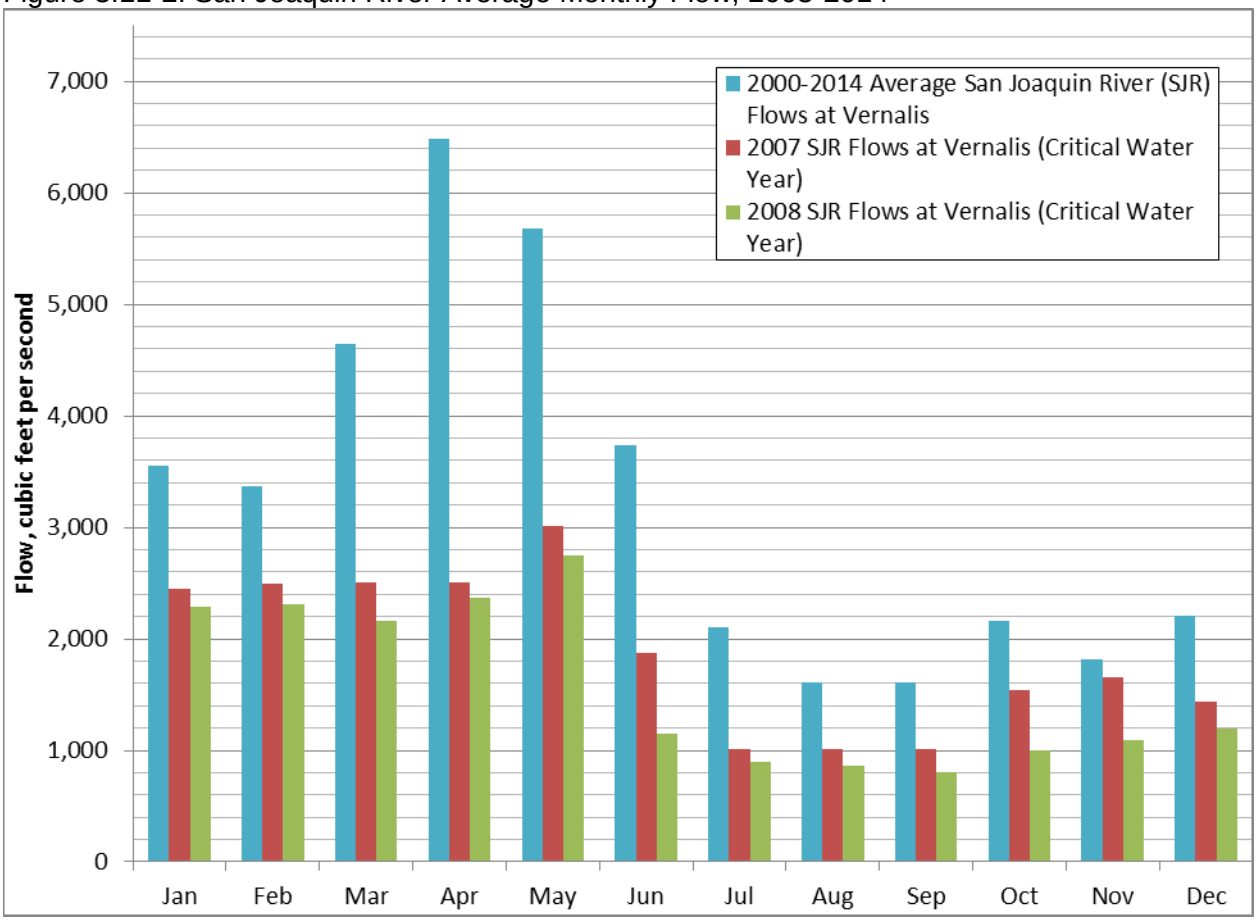


Figure 3.11-2: San Joaquin River Average Monthly Flow, 2003-2014



Reclamation's Long-Term CVP Operational Criteria and Plan (Reclamation 2004) defines flow objectives at the Vernalis gage intended to maintain minimum flows in the San Joaquin River and to maintain a specific salinity balance in the Delta. The flow objectives, shown in Table **3.11-1**, include a higher and lower flow objective; the higher objective is used for more strict Delta salinity requirements.

Table 3.11-1: Base Vernalis Minimum Monthly Average Flow Rate[1]

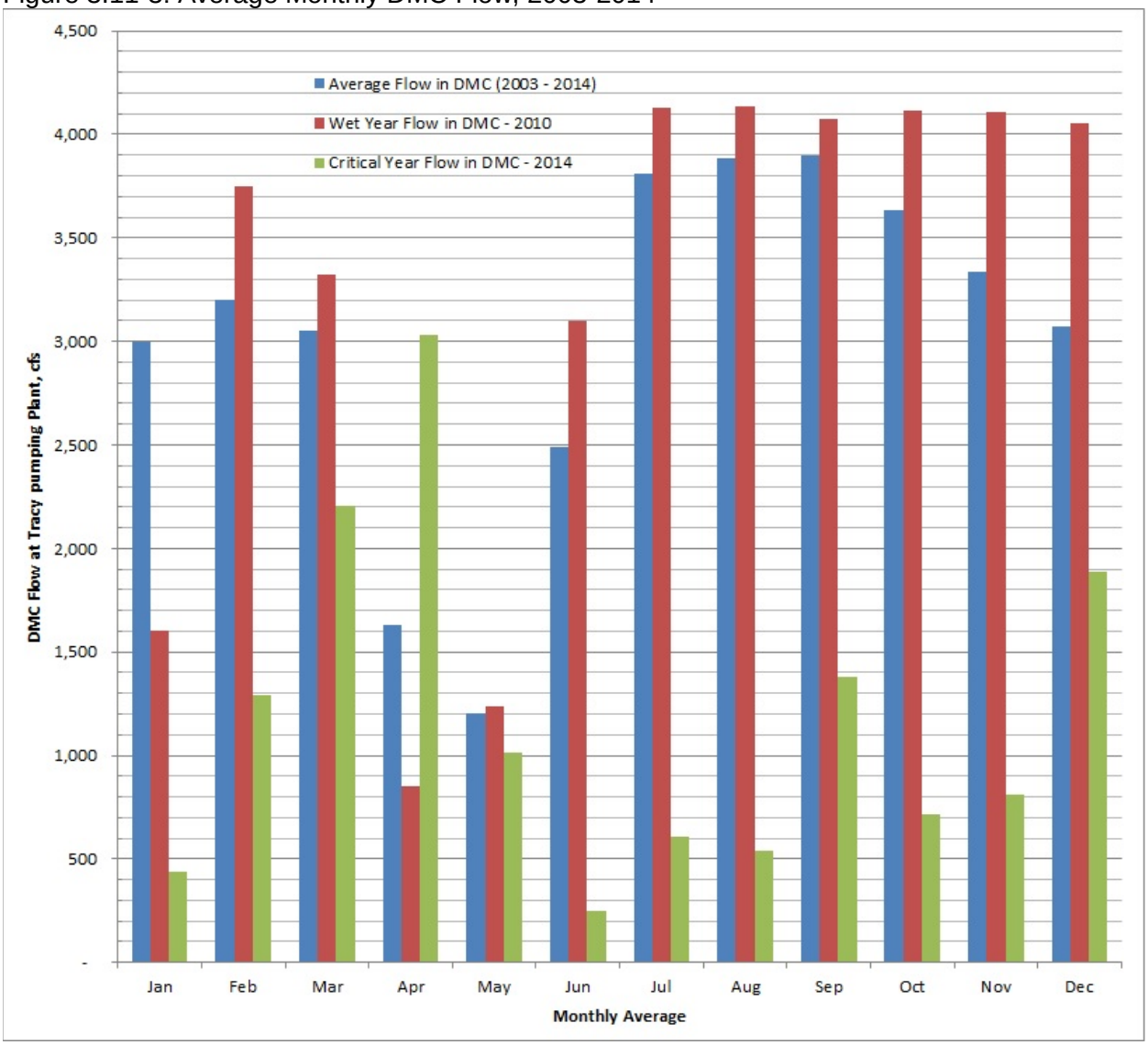
Year Type	All Years	Wet Year	Above Normal Year	Below Normal Year	Dry Year	Critical Year
Flow Standards for Feb – Apr 14 and May 16 - Jun	N/A	2,130 or 3,420 cfs	2,130 or 3,420 cfs	1,420 or 2,280 cfs	1,420 or 2,280 cfs	710 or 1,140 cfs

Source: Reclamation 2004

Delta-Mendota Canal The DMC is a CVP facility operated and maintained by the SLDMWA under contract with Reclamation. The 117 mile concrete-lined canal begins at the Jones Pumping Plant (formerly named the Tracy Pumping Plant), which pumps water from the Delta. The canal runs south along the western edge of the San Joaquin Valley, parallel to the California Aqueduct

for much of its length, but diverges to the east after passing San Luis Reservoir, which receives a portion of its water from the DMC (the remaining portion of water flowing into San Luis Reservoir comes from the California Aqueduct). The water is pumped from the canal into O'Neill Forebay, and then is pumped into San Luis Reservoir by the Gianelli Pumping-Generating Plant. Occasionally, water from O'Neill Forebay is released into the canal. The DMC ends at the Mendota Pool, a small reservoir created by Mendota Dam on the San Joaquin River near the town of Mendota, approximately 30 miles west of Fresno. **Figure 3.11-3** shows average monthly flow in the DMC.

Figure 3.11-3: Average Monthly DMC Flow, 2003-2014



The DMC conveys water for irrigation, wetlands, and municipal/industrial use. The DMC has an inter-connection to the California Aqueduct via an intertie located west of the City of Tracy (Reclamation 2013), and connects with the SWP at O'Neill Forebay.

Reclamation has historically accepted non-Project water in the DMC to supplement the supply of CVP water. This water is primarily from wells located along the canal, as well as surface water pumped from the San Joaquin River. The largest connection to the DMC is a discharge point owned by West Stanislaus Irrigation District located at MP 31.31L.

San Luis Reservoir The DMC is connected to the San Luis Reservoir via O'Neill Forebay midway along the length of the canal. The 2 million AF reservoir is an artificial lake on San Luis Creek in the eastern slopes of the Diablo Range of Merced County that is jointly owned and operated by Reclamation and DWR and is one of California's largest reservoirs (SCVWD 2013). During the summer or dry season, water in San Luis Reservoir is used by CVP contractors (as well as SWP contractors). Under the Action alternatives, recycled water conveyed in the DMC during low-demand periods could be stored in San Luis Reservoir.

San Joaquin River Water Quality The San Joaquin River in the project area carries a high salt load at certain times of year and two river segments downstream of the project area from the Merced River to the Tuolumne River and Tuolumne River to Stanislaus River are listed as impaired water bodies for boron[1], electrical conductivity, mercury, water temperature and several pesticides[2]. Water quality in the lower San Joaquin River near Patterson was evaluated as part of a water supply study that was conducted to determine the feasibility of providing recycled water to refuges (Reclamation 2013). The analysis of available water quality data provided information on a variety of constituents and compared water quality in the San Joaquin River and DMC. **Table 3.11-2** shows representative water quality data for the San Joaquin River and the DMC, and shows expected quality of blended recycled water from the Modesto and Turlock treatment plants.

Groundwater The Proposed Action is within the San Joaquin Valley Groundwater Basin. As shown in **Figure 3.11-4**, the DPWD service area overlies the Tracy and Delta Mendota subbasins of the San Joaquin Valley Groundwater Basin. The Turlock RWQCF is located in the Turlock subbasin and treats water that originates from that subbasin. The Modesto Jennings Plant is located in the Turlock subbasin and treats water that originates from the Modesto and Turlock subbasins. The discharge point for both plants is located in the Turlock subbasin. The pipelines for the Proposed Action alternatives are located within the Delta-Mendota subbasin. In general, groundwater quality throughout the region is suitable for most urban and agricultural uses. However, there are localized areas where groundwater quality is impaired with high chloride, boron, nitrate, iron, and manganese (DWR 2003).

[1] The San Joaquin River from the Merced River to Tuolumne River is listed for boron, but the segment from the Tuolumne River to the Stanislaus River is not.
[2] Segments of the San Joaquin River are listed for chlorpyrifos, DDT (dichloropenyltrichloroethane), DDE, (dichlorodiphenyldichloroethylene), diazinon, alpha–BHC (Benzenehexachloride or alpha-HCH), and group A pesticides.

Table 3.11-2: Average Water Quality of San Joaquin River, DMC and Recycled Water

Constituent	San Joaquin River Near Patterson[1]	DMC[2]	Estimated Recycled Water Quality
Boron (mg/L)	0.59	0.19	0.20
Nitrate (as N) (mg/L)	13.3	3.6	8.4
Selenium (µg/L)	1.9	0.8	1
Arsenic (µg/L)	4	5	3
Sodium (mg/L)	138	51	116
Total Dissolved Solids (mg/L)	679	275	551

Source: Reclamation 2013

1. Water quality data for the San Joaquin River was compiled from the California Environmental Data Exchange Network (CEDEN) stations "SJR @ Patterson" for the period covering 1995-2011, and from station "San Joaquin River @ PID Pumps".
2. DMC water quality data were obtained from the California Data Exchange Center (CDEC28) and the Reclamation Mid-Pacific Region's Environmental Monitoring Database, Water quality data from the DMC are from CDEC at the Tracy Pumping Plant (Station ID: TRP) and DMC Headworks (Station ID: DMC), covering the period 2003-13. Data from the Reclamation Environmental Monitoring Database are from samples collected between 1991 and 2013 at three stations representing the Upper DMC: MP 9.87, the DMC at McCabe near MP 68, and the O'Neill Forebay Inlet Bridge.

3.11.2 Regulatory Framework

This section describes laws and regulations at the federal, state, and local level that may apply to the project.

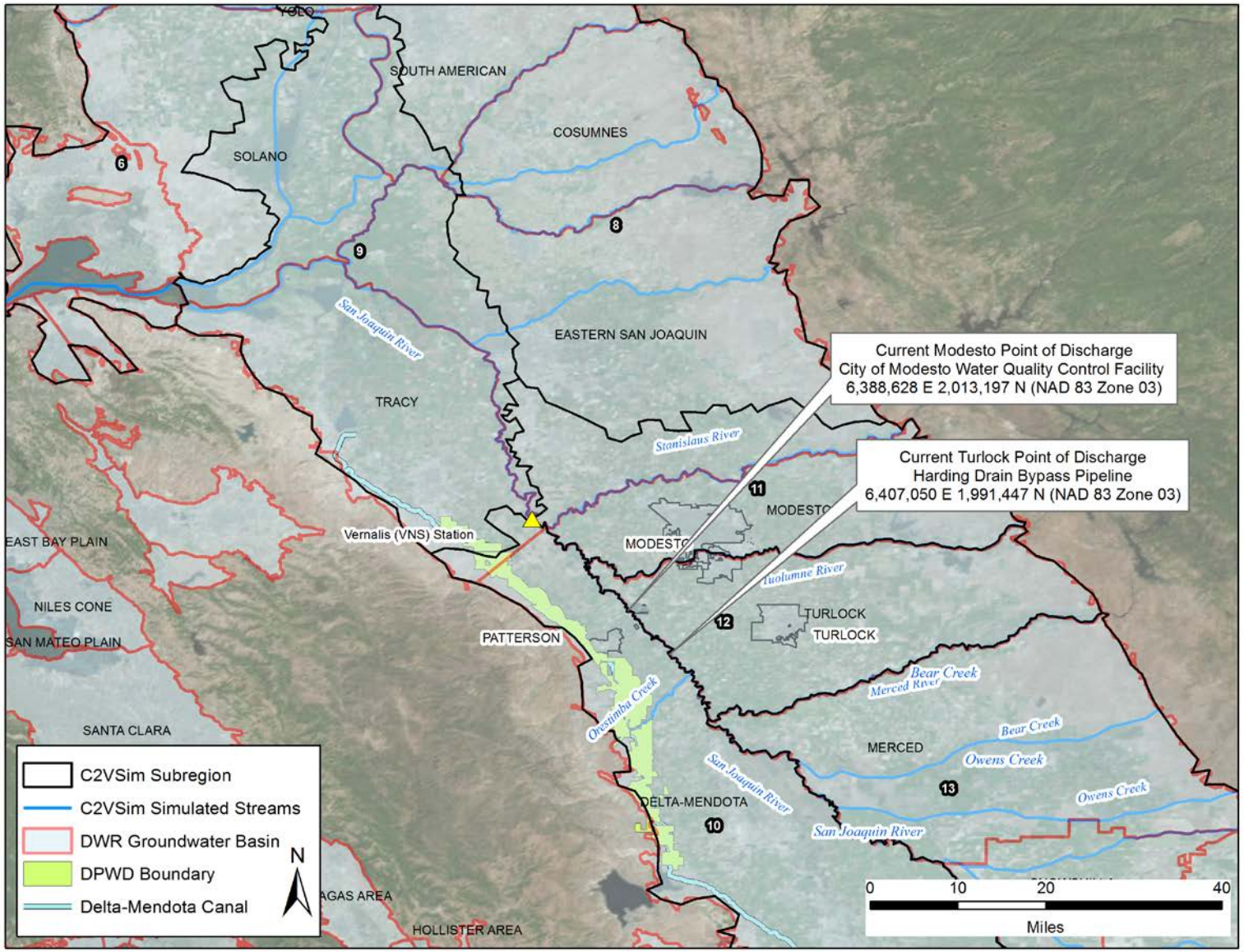
Federal Policies and Regulations

Clean Water Act Originally titled the Federal Water Pollution Control Act of 1972, the CWA is administered by EPA. The CWA allowed the EPA to delegate the NPDES Permit Program to state governments, enabling states to perform many of the permitting, administrative, and enforcement aspects of the NPDES Program. In California, these functions are performed by the SWRCB and the nine Regional Water Quality Control Boards. The CWA serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The CVRWQCB has jurisdiction over the Study Area as well as over the entire lengths of the San Joaquin River and the DMC.

Section 303(d) CWA Section 303(d) requires states to develop lists of water bodies that will not attain water quality standards after implementation of technology-based effluent limitations by point-source dischargers. Section 303(d) further requires states to develop a Total Maximum Daily Load (TMDL) for each of the listed pollutants and water bodies. A TMDL is the amount of pollutant loading that the water body can receive and still meet water quality standards.

In 2011, the EPA gave final approval to a revised list of impaired water bodies (hereinafter referred to as the 303(d) list) prepared by the State. The San Joaquin River is listed for several constituents and TMDLs have been approved for some constituents including specific organic pesticides, salt, and boron (SWRCB 2010). The San Luis Reservoir is listed for mercury but a corresponding TMDL has not yet been developed (SWRCB 2010). The DMC is not on the 303(d) list.

Figure 3.11-4: CV2SIM Subregions and DWR Bulletin 118 Groundwater Basins in the NVRRWP Area



Section 401 Section 401 of the CWA allows for evaluation of water quality when a proposed activity requiring a federal license or permit could result in a discharge to waters of the U.S. Compliance with Section 401 is required for all projects that have a federal component and may affect water quality. See *Chapter 3.4 Biological Resources* for further discussion of CWA Section 401.

Section 402 Section 402 of the CWA specifically required EPA to develop and implement the NPDES program. In California, EPA authorizes the SWRCB to oversee the NPDES program through the Regional Water Quality Control Boards. There are several types of NPDES permits relevant to the Proposed Action.

Individual NPDES Permits (including discharge permits for Publicly-Owned Treatment Works) All point source dischargers to waters of the U.S. not governed by a general permit are required to apply for an individual NPDES permit with the Regional Water Quality Control Board, unless a specific exemption or waiver is provided. The Regional Water Quality Control Board then issues an individual NPDES permit and waste discharge requirements (for any requirements specific to discharges into waters of the State), along with monitoring provisions to ensure compliance. The City of Modesto Jennings Plant and the City of Turlock RWQCF operate under existing individual NPDES permits (CVRWQCB 2010 and CVRWQCB 2012). As noted in *Chapter 1, Introduction,* the Cities of Modesto and Turlock are pursuing revised NPDES permits to allow relocation of their respective discharges from the San Joaquin River to the DMC. The CVRWQCB would address the full range of beneficial uses of the DMC as delineated in the Basin Plan for the Sacramento and San Joaquin River when considering issuance of an NPDES permit. See discussion below of the Porter-Cologne Water Quality Control Act for further information about the Basin Plan.

General Permit for Discharges of Storm Water Associated with Construction Activity In 2009, the SWRCB adopted an amended *General Permit for Discharges of Storm Water Associated with Construction Activity,* NPDES Order No. CAS000002, Order No. 2009-0009-DWQ (Construction General Permit). Effective July 1, 2010, the amended General Construction Permit requires the development and implementation of a SWPPP. The SWPPP must include a site map(s) showing the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the site. The SWPPP must list BMPs the discharger will use to protect stormwater runoff; a visual monitoring program; a chemical monitoring program for “non-visible” 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 listed on the 303(d) list for sediment (Note: The San Joaquin River is not 303(d) listed for sediment). Because the Proposed Action would disturb more than one acre, coverage under the General Construction Permit and development of a SWPPP would be required.

Waste Discharge Requirements for Dewatering and Other Low Threat Discharges to Surface Waters On May 31,2013, the CVRWQCB adopted *Waste Discharge Requirements for Dewatering and Other Low Threat Discharges to Surface Waters,* Order R5-2013-0074 NDPES No. CAG995001 (General Order for Dewatering). Individuals, public agencies, private businesses, and other legal entities discharging relatively pollutant-free wastewaters that pose

little or no threat to the quality of surface waters, for a duration of either 4 months or less in duration or have an average dry weather flow less than 0.25 mgd, may obtain authorization under this General Order to discharge. This General Order covers certain categories of dewatering and other low threat discharges to waters of the U.S., which are either 4 months or less in duration or have a daily average discharge flow that does not exceed 0.25 mgd. As discussed in *Chapter 2, Alternatives and Proposed Action,* dewatering will likely sometimes be employed in the pipeline trenches. It is expected that dewatering would not exceed 0.25 mgd and that the Proposed Action would be eligible for coverage under the General Order. If dewatering were to exceed 0.25 mgd, an alternative NPDES permit would be needed in order to discharge water from dewatering operations. This same permit would be expected to cover discharges that would be required for hydrostatic testing of the pipeline at the completion of construction.

Section 404 CWA section 404 regulates the discharge of dredged and fill materials into waters of the U.S. Areas meeting the regulatory definition of waters of the U.S. are subject to the jurisdiction of the USACE under provisions of CWA section 404. Construction activities involving placement of fill into jurisdictional waters of the U.S. are regulated by the USACE through permit requirements. No USACE permit is in effect in the absence of state water quality certification pursuant to section 401 of the CWA. See *Chapter 3.4 Biological Resources* for further discussion of CWA Section 404.

Rivers and Harbors Act - Section 10 Section 10 of the Rivers and Harbors Act (33 U.S.C. § 401 et seq.) requires authorization from USACE for construction of any structure over, in, or under navigable waters of the U.S. The navigable length of the San Joaquin River currently includes 236 miles of the river from Sycamore Road (located 7 miles downstream from Highway 99 in Fresno County) to the San Francisco Bay. The Proposed Action would need authorization from USACE as two of the alternatives involve installing a pipeline under the navigable portion of the San Joaquin River.

National Flood Insurance Program (NFIP) The NFIP was created to promote flood awareness and reduce flood losses of properties within Special Flood Hazard Areas. Drainage and related flooding hazards are managed in response to requirements established by the National Flood Insurance Act of 1986 and the Flood Disaster Protection Act of 1973, as amended. Requirements of the NFIP are included in the Building Code and through overall City and interagency programs for flood management. In implementing NFIP, the Federal Emergency Management Agency (FEMA) requires that new construction in a flood hazard area meet minimum design standards to place occupied structures above flood hazard areas.

Portions of the Study Area are within the 100-year flood hazard area (generally in areas adjacent to the San Joaquin River), however, no occupied structure would be constructed as part of the Proposed Action. Above-ground facilities would be limited to air valves along the new pipelines (housed in 4 foot by 4 foot steel cages), modifications to the existing Jennings Plant Pump Station, and, in the case of Alternative 2, a small building (building footprint 40 feet by 50 feet) that would house a new pump station at the Harding Drain Bypass Pipeline. Maintenance staff would visit the pump stations periodically but they would not be regularly occupied.

Reclamation Guidelines for Accepting Non-Project Water into the DMC In the *Delta-Mendota Canal Non-Project Surface Water Pump-in Program 2014 Water Quality Monitoring Plan* (Reclamation 2014), Reclamation has established guidelines for accepting non-Project water in the DMC. Specifically, such water must meet water quality standards before introduction to the canal; (i.e. dilution in the canal is not considered in determining whether non-Project water meets water quality standards), and non-Project water must not cause alterations of existing water quality parameters outside of standards established by the then-current guidelines. The current water quality standards for non-Project surface water are based on statewide domestic water quality regulations[3], and are listed in the January 2014 Monitoring Plan. In 2015, these standards will apply to recycled water that may be introduced into the DMC. Similar to the 2014 Monitoring Plan, the 2015 monitoring plan will measure changes in the quality of water in the DMC caused by the introduction of the NVRRWP's non-CVP recyceled water, and confirm that the blended water is suitable for downstream water users. All introductions are required to meet Reclamation's then-current water quality standards prior to introduction into the DMC.

State Policies and Regulations

Porter-Cologne Water Quality Control Act The Porter-Cologne Water Quality Control Act is California's statutory authority for the protection of water quality. Under this act, the State must adopt water quality policies, plans, and objectives that protect the State's waters. The act sets forth the obligations of the SWRCB and Regional Water Quality Control Boards pertaining to the adoption of Basin Plans and establishment of water quality objectives. Unlike the CWA, which regulates only surface water, the Porter-Cologne Act regulates both surface water and groundwater.

The Basin Plan (CVRWQCB 2011) is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the Basin Plan:

1) Designates beneficial uses for surface and ground waters.
2) Sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's antidegradation policy.
3) Describes implementation programs to protect the beneficial uses of all waters in the Region.
4) Describes surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan [California Water Code Sections 13240 thru 13244, Section 13050(j)].

The Basin Plan is used as the regulatory authority for water quality standards established in local NPDES permits and other CVRWQCB decisions. The Basin Plan designates beneficial uses for the San Joaquin River, the DMC, and the San Luis Reservoir.

Title 22 Regulations for Recycled Water Wastewater reclamation or recycling in California is regulated under Title 22, Division 4, of the California Code of Regulations. The intent of these regulations is to ensure protection of public health associated with the use of recycled water. The

[3] California Health and Safety Code (Sections 4010-4037) and Administrative Code (Sections 64401 et sq.). July 2013. Title 22 Domestic Water Quality and Monitoring Regulations.

SWRCB, Division of Drinking Water has jurisdiction over the distribution of recycled wastewater and the enforcement of Title 22 regulations.

Title 22 sets water quality standards based on types of contact expected between the public and the recycled water, outlining applications for which disinfected tertiary treatment is required and also applications for which three levels of secondary treatment would suffice. Disinfected tertiary treated recycled water, such as that to be produced for the proposed project, is suitable for almost all currently allowed uses for recycled water including irrigation of public parks and all food crops and some industrial processes.

Recycled water treatment criteria vary depending on the application of the recycled water and its contact potential with the public. California Title 22 regulations for tertiary recycled water require that the 7-day median concentration of total coliform bacteria measured in the disinfected effluent does not exceed 2.2 most probable number (MPN) per 100 milliliter (mL), 23 MPN/100 mL more than once in any 30-day period, and 240 MPN/100 mL in any single sample.

Policy for Water Quality Control for Recycled Water (Recycled Water Policy) The SWRCB adopted the Recycled Water Policy in May 2009. The purpose of the Recycled Water Policy is to provide direction to the Regional Water Quality Control Boards, proponents of recycled water projects, and the public regarding the appropriate criteria to be used in issuing permits for recycled water projects. The Recycled Water Policy describes permitting criteria that are intended to streamline the permitting of the vast majority of recycled water projects (SWCRB 2013). While the Recycled Water Policy does not explicitly address the main component of the Proposed Action, which is recycled water conveyance, it does, however, strongly encourage the expanded use of recycled water in California. In April 2013, the SWRCB adopted an amendment to the Recycled Water Policy that provided monitoring requirements for Constituents of Emerging Concern (CECs) for groundwater recharge projects using recycled water. Although the Proposed Action is not a groundwater recharge project, the CEC monitoring requirements established by this amendment are to date the most robust regulatory guidance related to CECs and recycled water.

There are eight CECs for which the Recycled Water Policy requires monitoring, at least in the initial assessment phase of projects that include surface application of recycled water for groundwater recharge of a groundwater basin designated for municipal use. For four of these CECs, monitoring trigger levels have been developed (**Table 3.11-3**). The recycled water policy specifies different monitoring scenarios depending on the ratio of the detected levels of the CEC in the recycled water to the monitoring trigger level.

Table 3.11-3: CECs to be included in Baseline Monitoring for Groundwater Recharge Project Including Surface Application of Recycled Water

Constituent	Constituent Group	Relevance/ Indicator Type	Monitoring Trigger Level (µg/L)
17β-estradiol	Steroid hormones	Health	0.009
Caffeine	Stimulant	Health & Performance	0.35
N-Nitrosodimethylamine	Disinfection byproduct	Health	0.01
Triclosan	Antimicrobial	Health	0.35

Local Policies and Regulations

The discussion of existing land use policies and regulations focuses on Stanislaus County, which is the location for all construction of new physical facilities.

Stanislaus County General Plan The following goals/policies in the Stanislaus County General Plan, Conservation/Open Space Element would apply to the project:

GOAL TWO: Conserve water resources and protect water quality in the County.

Policy Five: Protect groundwater aquifers and recharge areas, particularly those critical for the replenishment of reservoirs and aquifers.

Policy Six: Preserve vegetation to protect waterways from bank erosion and siltation.

City of Modesto Urban Area General Plan The City of Modesto Urban Area General Plan outlines policies that focus on a community vision (City of Modesto 2008). There are no policies in the Urban Area General Plan relating to hydrology and water quality that would apply to the project.

3.11.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

This section evaluates whether construction and operation of the facilities associated with the Proposed Action would result in significant impacts related to hydrology and water quality. The analysis is based on a review of the hydrology and water quality studies referenced herein that have been developed for the NVRRWP.

Thresholds of Significance

Consistent with Appendix G of the *CEQA Guidelines* an impact to hydrology and water quality would be significant if the proposed project would:

- Violate any water quality standards and/or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

- 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 which would result in substantial erosion or siltation on or off site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site.
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality (erosion potential).
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Expose 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.
- Result in inundation by seiche, tsunami, or mudflow.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to actions associated with the Proposed Action are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *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 which would result in substantial erosion or siltation on or off site* – The Proposed Action would not alter the course of a stream or river nor increase erosion or siltation. Recycled water would be conveyed to the concrete-lined DMC via a pipeline. See **Impact HYD-1** below for a discussion of erosion and siltation during project construction.
- *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site, or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff* – The Proposed Action would add very little impervious surface to the landscape as the above-ground facilities are limited to air valves along the proposed pipeline routes (housed in 4 foot by 4 foot steel cages), potential modifications to the existing Jennings Plant Pump Station that would not increase the total footprint of the pump station, potential installation of a small building (building footprint 40 feet by 50 feet) under Alternative 2 that would house a new pump station at the end of the Harding Drain Bypass Pipeline, and potential expansion of the PID intake under Alternative 3. These facilities are too small to have any appreciable impact on surface runoff and flooding.

- *Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map* – There is no construction of housing associated with the Proposed Action.
- *Place within a 100-year flood hazard area structures which would impede or redirect flood flows* – Portions of the facilities that would be constructed as part of the Proposed Action would be located within a 100-year flood hazard area. Generally, portions of the Study Area that are within the 100 year flood hazard area are in locations adjacent to the San Joaquin River. The pump station that would be constructed at the end of the Harding Drain Bypass Pipeline as part of Alternative 2 is within the 100 year flood hazard area. The new above-ground facilities that would be constructed at as part of Alternative 1 within the 100-year flood hazard area are limited to air valves along the underground pipeline. The structures are too small to have any appreciable impact on flood flows. The expanded PID intake that is included in Alternative 3 would be located within the 100-year floodplain. However, the intake structure would be submerged and the pump motors would be similar to existing facilities, which are located on an elevated deck grating above the 100-year flood even elevation. Because the expanded intake would have to be designed so as to not impede or redirect flood flows, the impact is considered less-than-significant impact.
- *Expose 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* – The Proposed Action would include very limited above ground structures and would not appreciably impact flood flows or runoff volumes. The Proposed Action would have no impact on any levees or dams and would not increase the risk of failure of any levee or dam. The Proposed Action would redirect the treated effluent of the City of Modesto Jennings Plant and the City of Turlock RWQCF to the DMC either directly (Alternatives 1 and 2) or through the San Joaquin River and PID's intake facilities (Altenative 3). Flows in the DMC are carefully managed and flooding emanating from the DMC due to these additional flows would not occur.
- *Result in inundation by seiche, tsunami, or mudflow* – Tsunamis originating in the Pacific Ocean would dissipate in the San Francisco Bay and pose a negligible hazard to the Study Area. The risk of tsunami in the project area is low enough that California Department of Conservation does not publish a tsunami inundation map for Stanislaus County and all other counties not bordering the Pacific Ocean or the San Francisco Bay. The probability of a seiche occurring in the San Joaquin River is considered minimal as seiches, rare in any circumstance, generally occur only in lakes and enclosed seas.

Impacts and Mitigation Measures

Impact HYD-1 Violation of Water Quality Standards and/or Waste Discharge Requirements (Due to Construction Activities) Activities involving soil disturbance, excavation, cutting/filling, stockpiling, dewatering and grading activities could result in increased erosion and sedimentation to surface waters during construction of the Proposed Action. If precautions are not taken to contain contaminants, construction could produce contaminated stormwater runoff (nonpoint source pollution), a major contributor to the

degradation of water quality. In addition, hazardous materials associated with construction equipment could adversely affect surface and groundwater quality if spilled or stored improperly.

No Action Alternative Under the No Action Alternative, no new pipeline or pump station construction would occur. Therefore, no water quality impacts or erosion/sedimentation associated with construction of these facilities would occur.

Combined Alignment Alternative (Alternative 1) Alternative 1 would consist of two reaches of one pipeline totaling 69,800 linear feet, involve one crossing under the San Joaquin River, and cross under a total of five irrigation canals (along the Lemon Avenue portion of the alignment). In accordance with the Construction General Permit, a SWPPP would be developed for this alternative that would detail BMPs for all project construction activities including excavation, dewatering, and stockpiling.

During construction of this alternative, dewatering would be conducted to remove excess groundwater from excavations created for installation of the. Dewatering operations would be conducted in accordance with the General Order for Dewatering or other appropriate NPDES permit. The discharge from the dewatering operations would be evaluated and made part of the project SWPPP.

Construction of the pipeline crossing the San Joaquin River would be performed using trenchless technology as described in *Chapter 2, Alternatives and Proposed Action*. This type of construction can be accomplished without surface disturbance of the river; however, trenchless construction must be performed carefully to avoid risk of an uncontrolled release of drilling fluids from construction of the pipeline under the river, which is called “frac-out”. **Mitigation Measure BIO-1d** would be implemented to protect against frac-out.

Once the pipeline is constructed, hydrostatic testing would be conducted, and water from the testing would also need to be discharged. Water from testing would be discharged in accordance with the General Order for Dewatering or other appropriate NPDES permit.

The Construction General Permit and the General Order for Dewatering are well established regulatory processes that effectively limit threats to water quality from construction activities such as those that would be conducted as part of the Proposed Action, with implementation of **Mitigation Measures HYD-1a**, **HYD-1b**, and **HYD-1c**, potential impacts would be reduced to less than significant.

Separate Alignment Alternative (Alternative 2) Alternative 2 would consist of two pipelines totaling 64,000 linear feet, the construction of a pump station at the end of Harding Drain Bypass Pipeline, involve two crossings under the San Joaquin River, and cross under a total of nine irrigation canals. The extent of ground disturbance and potential for construction-related water quality impacts from pipeline construction under this alternative would be similar to Alternative 1. Additionally, construction of the pump station at the Harding Drain Bypass would also require dewatering that could affect water quality. **Mitigation Measure BIO-1d** would be implemented to protect against frac-out.

Similar to Alternative 1, hydrostatic testing would be conducted once the pipelines are installed. Discharged water from testing would be done in accordance with the General Order for Dewatering or other appropriate NPDES permit as applicable.

The Construction General Permit and the General Order for Dewatering are well established regulatory processes that effectively limit threats to water quality from construction activities such as those that would be conducted as part of the Proposed Action, with implementation of **Mitigation Measures HYD-1a**, **HYD-1b**, and **HYD-1c**, potential impacts would be reduced to less than significant.

PID Conveyance Alternative (Alternative 3) Alternative 3 would consist of one reach of pipeline totaling about 30,100 linear feet, involve construction of a pump station, expansion of PID's intake facility in the San Joaquin River, and would cross under a total of five irrigation canals along the PID Main Canal. The extent of ground disturbance for pipeline construction would be less than Alternative 1 and 2. However, water quality impacts could still occur during construction activities. Similar to Alternatives 1 and 2, implementation of **Mitigation Measures HYD-1a**, **HYD-1b**, and **HYD-1c** would reduce these impact to less than significant**.**

Construction of the expanded PID intake facility would require construction within the San Joaquin River. This would be accomplished by placing a sheet pile cofferdam to isolate the construction activities from the river. During both construction and removal of the cofferdam, there is potential for temporary increases in turbdity and sedimentation downstream of the construction area. These activities would not be expected to contribute any of the 303(d) listed impairments of the San Joaquin River in the project area or downstream of the intake (alpa-BHC, boron, chlorpyrifos, DDT, DDE, diazinon, diuron, *E. coli*, electrical conductivity, Group A pesticides, mercury, toxaphene, temperature, and unknown toxicity) (SWRCB 2010) as they would be required to comply with Sections 401 and 404 of the CWA and would be subject to mitigation described bleow, including preparation of a SWPPP, compliance with General Orders for Dewatering or other appropriate NPDES Permit. With implementation of **Mitigation Measures HYD-1a, HYD-1b,** and **HYD-1c,** potential impacts from expansion of the PID intake facility would be reduced to less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure HYD-1a: Comply with the Construction General Permit** (Alternatives 1, 2 and 3). To minimize the impacts to water quality from construction activities, the proposed project shall implement measures contained in the Construction General Permit including the development of a SWPPP.

Mitigation Measure HYD-1b: Implement BMPs to Control Erosion and Sediment During Construction (Alternatives 1, 2 and 3). The SWPPP shall specify that all construction activities shall implement multiple BMPs to provide effective erosion and sediment control. These BMPs shall be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable. BMPs to be implemented as part of this mitigation measure shall include, but are not limited to, the following measures:

- Temporary erosion control measures, such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover, shall be employed for disturbed areas.
- Dirt and debris shall be swept from paved streets in the construction zone on a regular basis, particularly before predicted rainfall events.
- Grass or other vegetative cover will be re-established on unpaved areas of the construction site as soon as possible after disturbance. In paved areas, any removed paving will be replaced as soon as possible.
- Soil stockpiling sites will be located such that they do not drain directly into the San Joaquin River or irrigation canals.

Multiple BMPs used in combination, properly installed and maintained, can achieve significant sediment removal. BMPs proposed by the project contractor shall be subject to approval by Reclamation and the project proponent, and the project proponent shall require that all parties performing construction under the proposed project incorporate into contract specifications the requirement that the contractor(s) comply with and implement these provisions. The contractor shall also include provisions for monitoring during and after construction activities to verify that these standards are met.

Mitigation Measure HYD-1c: Comply with the General Order for Dewatering or Other Appropriate NPDES Permit (Alternatives 1, 2 and 3). To minimize the impacts to water quality from dewatering activities, the proposed project shall implement measures contained in the General Order for Dewatering or other appropriate NPDES permit or Waste Discharge Requirement. See **Mitigation Measure BIO-1d - Develop and Implement a Frac-out Contingency Plan for Trenchless Construction** regarding potential water quality impacts due to frac-out.

Significance after Mitigation Less than significant.

Impact HYD-2 Violation of Water Quality Standards and/or Waste Discharge Requirements (at Project Implementation)

No Action Alternative Under the No Action Alternative, recycled water from Modesto and Turlock would not be discharged to the DMC. Therefore, no changes in DMC water quality would occur. Discharges to the San Joaquin River would continue. As discharges by both cities

under this alternative would be required to meet existing and future water quality requirements pursuant to NPDES permits, impacts would be less than significant.

Combined Alignment Alternative (Alternative 1) Alternative 1, does not include any changes to the treatment processes at either treatment plant and the two plants have good compliance histories with their current treatment processes. As described previously, the CVRWQCB would consider the change in discharge location in the re-issuance of the NPDES permits for both treatment plants. Like all wastewater treatment plant NPDES permits, the NPDES permits for the Jennings Plant and the City of Turlock RWQCF include monitoring requirements for water quality parameters and a wide range of chemical constituents to ensure that the permitted effluent limitations are met and that the discharge does not degrade the water quality of receiving waters. Future re-issuances of these NPDES permits will consider the results of recent effluent data (data collected over approximately the last five years) in establishing future effluent limitations and monitoring requirements. Discharge into the DMC would require issuance of an NPDES permit, which would establish allowable water quality for discharge and define monitoring requirements for the recycled water.

In addition, Reclamation's current water quality criteria and monitoring plan (Reclamation 2014) includes two sets of water quality criteria – criteria for the quality of the "pumped-in" non-Project water (Reclamation 2014, Table 5) and a more limited set of criteria, which the water in the DMC must meet after the addition of non-Project water (Reclamation 2014, Table 8). Any introductions under this alternative would have to meet Reclamation's then-current water quality criteria before introduction into the DMC.

Reclamation's 2013 Refuge Recycled Water Supply Study calculated flow-weighted average concentrations of constituents of interest for the combined recycled water from the Jennings Plant and the City of Turlock RWQCF based on available water quality data from both treatment plants. This study also calculated estimated water quality parameters in the DMC after the addition of the recycled water. Complete blending/mixing was assumed. **Table 3.11-4** shows the estimated quality of the recycled water as compared to the water quality standards for acceptance of non-Project water.

Table 3.11-4: Estimated Recycled Water Quality Compared to Reclamation Standards for Acceptance of Non-Project Water

Constituent[1]	Estimated Recycled Water Quality[2]	Water Quality Standard for Acceptance of Non-Project Water into the DMC[3]
Primary		
Aluminum (mg/L)	0.09	1
Antimony (mg/L)	0.0006	0.006
Arsenic (mg/L)	0.003	0.01
Barium (mg/L)	0.08	1
Beryllium (mg/L)	0.00002	0.004
Boron (mg/L)	0.20	0.70
Cadmium (mg/L)	0.00004	0.0005
Chromium (mg/L)	0.001	0.05
Lead (mg/L)	0.0002	0.02
Mercury (mg/L)	2E-6	0.002
Nickel (mg/L)	0.002	0.1
Nitrate (as N) (mg/L)	8.4	10
Nitrate + Nitrite (sum as N) (mg/L)	8.6	10
Nitrite (mg/L)	0.2	1
Selenium (mg/L)	0.0007	0.002
Thallium (mg/L)	0.0005	0.002
Secondary		
Chloride (mg/L)	152	250
Copper (mg/L)	0.003	1
Iron (mg/L)	0.1	0.3
Manganese (mg/L)	0.02	0.05
Molybdenum (mg/L)	0.01	0.01
Silver (mg/L)	0.001	0.1
Sodium (mg/L)	**116**	**69**
Specific Conductance (µS/cm)	945	2,200
Sulfate (mg/L)	61	250
Total Dissolved Solids (mg/L)	551	1,500
Zinc (mg/L)	0.05	5
Organic Chemicals		
Chlordane (µg/L)	Not Detected	0.1
Chlorpyrifos (µg/L)	Not Detected	0.025
Diazinon (µg/L)	Not Detected	0.16

1. Constituents listed are those for which recycled water quality data is available.
2. Reclamation 2013
3. Reclamation 2014, Table 5

Existing quality of water in the DMC, estimated water quality in the DMC after discharge of recycled water, and the standards for the change that the addition of the non-Project water is allowed to cause (based on Table 8 of Reclamation's 2014 Monitoring Plan [Reclamation 2014]) are shown in **Table 3.11-5.**

As shown in **Table 3.11-4**, sodium is the only constituent within the recycled water expected to exceed Reclamation's standards for acceptance of non-Project water into the DMC, however the standards for this constituent are met when measured as a part of total dissolved solids or specific conductance (**Table 3.11-4)**. When recycled water is blended with water in the DMC, the sodium level is expected to be 57 milligram per liter (mg/L) (Reclamation 2013), which is below the standards of 69 mg/L. Futhermore, as shown in **Table 3.11-5,** the addition of the recycled water to the DMC would not increase any of the water quality parameters beyond the amount specified in Table 8 of Reclamation's 2014 Monitoring Plan (Reclamation 2014).

Table 3.11-5: Estimated Water Quality in the DMC after Addition of Recycled Water

Constituent	Estimated Recycled Water Quality	Average DMC Water Quality	Estimated Quality of Recycled Water Blended with DMC	Increase After Blending	Maximum Increase Allowed After Blending
Specific Conductance (µS/cm)	945(1)	419(1)	463(1)	44	50(4)
Turbidity (NTU)	1.1(2)	16.9(3)	15.6	-1.3	5(4)
Selenium (µg/L)	0.7(1)	0.8(1)	0.8(1)	0.0	1(4)

NTU = Nephelometric Turbidity Units

1. Refuge Recycled Water Supply Study (Reclamation 2013). Calculation of blended water quality assumed recycled water flow of 82 cfs and DMC flow of 900 cfs, which roughly corresponds to the 10th percentile flow rate for the Tracy Pumping Plant. This is conservatively large amount of recycled water (9 percent) as a percentage of the total DMC flow.
2. The existing NPDES permit for the City of Turlock RWQCF specifies that the turbidity of the teritiary effluent (recycled water) shall not exceed 2 NTU within any 24 hour period (CVRWQCB, 2010). The existing NPDES permit for the Jennings Plant specifies that the turbidity of the tertiary effluent shall not exceed 0.2 NTU as a daily average (CVRWQCB, 2012).
3. Reclamation Mid-Pacific Environmental Monitoring Branch, DMC @ McCabe Road (5/2001 – 11/2014)
4. Reclamation 2014, Table 8

Selenium, a constituent of concern for recycled water use at wildlife refuges, is present in NVRRWP recycled water. However, as shown in **Table 3.11-4** and **3.11-5**, estimated selenium concentrations are less than those of existing DMC water quality (0.8 µg/L). The same is true for boron and arsenic (Reclamation 2013). Introduction of the recycled water would be blended with DMC water prior to delivery to the refuges and is not expected to exceed water quality standards for these consituents.

The recycled water from the Jennings Plant and the City of Turlock RWQCF must comply with effluent limitations for BOD as per the NPDES permits for those facilities (CVRWQCB 2010, CVRWQCB 2012). For both treatment facilities, the BOD effluent limitations are 10 mg/L average monthly, 15 mg/L average weekly, and 20 mg/L maximum daily for tertiary effluent. Because of the low BOD effluent concentrations, the discharge of recycled water to the DMC would not significantly impact dissolved oxygen concentrations in the DMC. Reclamation has not developed dissolved oxygen water quality standards for the DMC because the DMC, as a concrete-lined water supply channel, does not provide habitat for fish or other species. Generally,

an open channel such as the DMC will not have low dissolved oxygen unless there is a significant source of BOD.

As operation of the project under this alternative is required to meet existing and future water quality requirements pursuant to NPDES permits and Reclamation's then-current water quality criteria and monitoring plan, impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Impacts under this alterantive would be the same as Alternative 1.

PID Conveyance Alternative (Alternative 3) Under this alternative, recycled water would be discharged into the San Joaquin River and then diverted through the PID expanded intake facility before being conveyed through PID's conveyance facilities for discharge into the DMC. Discharge of recycled water to the river would be pursuant to NPDES permits and is not expected to violate water quality standards as both the City of Modesto Jennings Plant and the City of Turlock RWQCF have good histories of compliance with their NPDES Permits, and both cities would discharge tertiary treated recycled water to the river. As with Alternatives 1 and 2, introduction of this water into the DMC would be required to meet Reclamation's then-current water quality standards both prior to and during introduction periods. As operation of the project under this alternative is required to meet existing and future water quality requirements pursuant to NPDES permits and Reclamation's then-current water quality criteria and monitoring plan, impacts would be less than significant.

Significance Determination before Mitigation Less than significant for all Action alternatives. Less than significant for No Action Alternative.

Mitigation Measures No mitigation measures are required.

Impact HYD-3 Substantial Depletion of Groundwater Supplies or Substantial Interference with Groundwater Recharge

No Action Alternative Under the No Action Alternative, recycled water from the Cities of Modesto and Turlock would not be directed to the DMC. While the Cities of Modesto and Turlock currently discharge to the San Joaquin River, they could pursue other options for use of the recycled water that would reduce stream flows in the San Joaquin River similar to what would occur under under the Proposed Action.

Under the No Action Alternative, DPWD would not have an additional water supply and would continue to be reliant on the CVP as its primary water supply. To offset reductions in CVP allocations, the District would continue to execute water transfers /exchanges and to pump groundwater from private wells as available. Additional groundwater pumping would adversely impact already depleted groundwater levels beneath DPWD even though extraction of groundwater would be conducted within the bounds of existing regulations, including recently passed legislation, specifically Senate Bill 1168, Assembly Bill 1739, and Senate Bill 1319, which together enacted the Sustainable Groundwater Management Act providing a framework for improved management of groundwater supplies by local authorities.

Combined Alignment Alternative (Alternative 1) Under this alternative, both cities would retain permits to discharge to the river; however, the discharges would only occur under unusual or extreme circumstances such as when the DMC was not available due to capacity constraints or some type of failure, thus the proposed project would result in a slight reduction of stream flows in the San Joaquin River as the current discharges from the Cities of Modesto and Turlock to the San Joaquin River no longer would occur on a regular basis. The average annual flow of the San Joaquin River between 1924 and 2011 was 3.3 million AF/year (**Appendix G**). As a result of the proposed project under this alternative, the average annual stream flows at Vernalis station would be reduced by approximately 18,000 AF/year, or approximately 0.5 percent of the average annual flows (**Appendix G**).

As documented in **Appendix G**, **Evaluation of NVRRWP Impact on Groundwater**, the impact of the proposed project's reductions in the San Joaquin River stream flows on groundwater storage was analyzed using the C2VSim groundwater simulation model developed and maintained by DWR. The analysis considered groundwater in the vicinity of the San Joaquin River from the project construction area to the Delta, including areas downstream of the Vernalis station (located approximately 25 miles downstream from the Harding Drain Bypass Pipeline). This entire area is within the San Joaquin River groundwater basin and includes the subbasins shown in **Table 3.11-6** below. The simulation period for this version of C2VSim-FG is 88 years incorporating historical hydrology from 1922 to 2009.

The model showed that the reduction of stream flows would increase stream gains (reduce groundwater storage) from the aquifer when the stream is a gaining stream (i.e. groundwater levels are higher than stream levels). Correspondingly, the model showed that reduction of stream flows would reduce stream losses to the aquifer (increase groundwater storage) when the stream is a losing stream (i.e. groundwater levels are lower than stream levels) (see **Figure 3.11-5**). Because the river is a gaining stream from September to March groundwater storage would be reduced during this period (when irrigation demands are low); however, groundwater storage would increase from April to August when the river is a losing stream (and when irrigation demand are high).

The estimated changes in groundwater storage over the 88 years of simulation along with the cumulative change in groundwater storage are shown in **Figure 3.11-5** and **Figure 3.11-6**. The change in groundwater storage varies from approximately -280 AF/year to approximately 150 AF/year (**Figure 3.11-6**) and results in an estimated 2,420 AF less groundwater in storage over the 88 year simulation period. This equates to an average annual reduction in groundwater storage of 27 AF/year (**Table 3.11-6)**, which represents approximately 0.15 percent - 0.2 percent of the annual stream/groundwater interaction. This is within the potential margin of error of the groundwater simulation model, and the impact is considered less than significant.

Figure 3.11-5: Average Monthly Change in Groundwater Storage for Groundwater Basin C2VSim Subregions 8 to 12

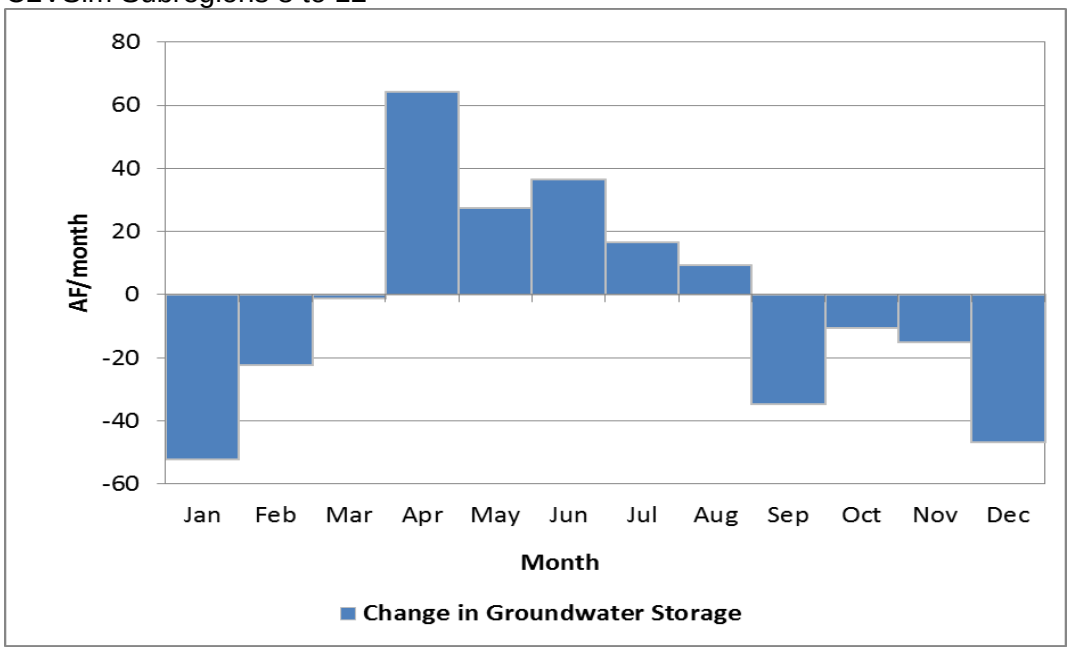


Figure 3.11-6: Estimated Cumulative Change in Groundwater Storage C2VSim Subregions 8 to 12

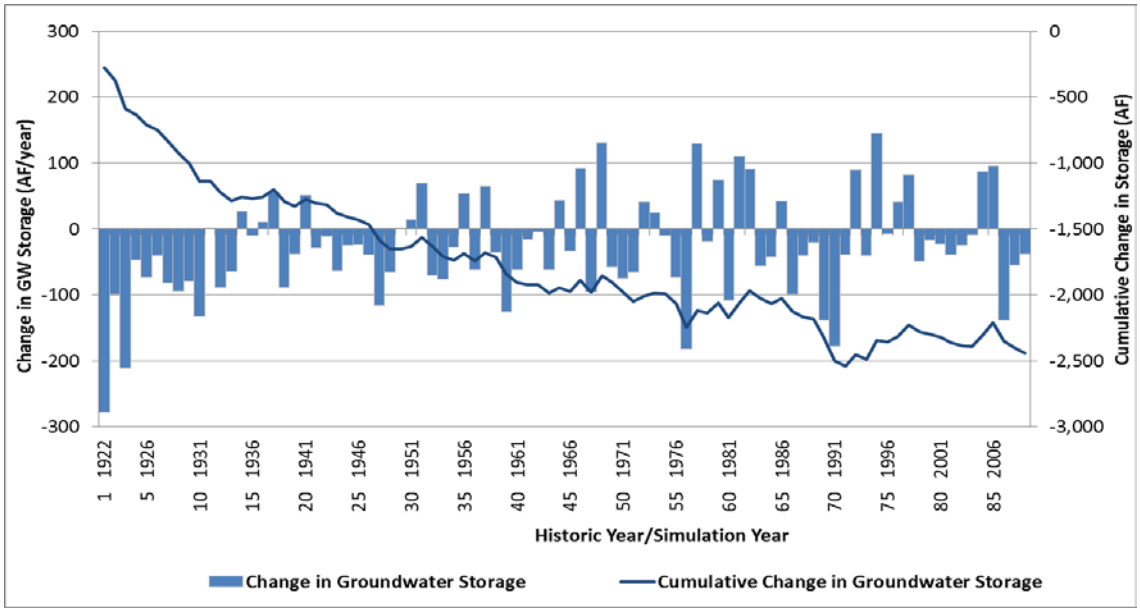


Table 3.11-6: Change in Groundwater Storage for Groundwater Subregions Downstream of the City of Modesto WPCF and the City of Turlock

C2VSim Subregion	DWR Bulletin 118 Groundwater Basin	Change in Groundwater Storage	
		Average Annual (AF/year)	Cumulative (AF)
8	Eastern San Joaquin, Cosumnes, South American	-7	-630
9	Tracy, Solano, Eastern San Joaquin, South American	-10	-900
10	Delta-Mendota	-5	-450
11	Modesto, Eastern San Joaquin	-3	-230
12	Turlock	-2	-210
Total		**-27**	**-2,420**

Separate Alignment Alternative (Alternative 2) Impacts under this alternative would be the same as Alternative 1.

PID Conveyance Alternative (Alternative 3) Under this alternative, recycled water would still be discharged to the river, but then diverted at the expanded PID intake facility. Recycled water from the City of Turlock would thus be in the river for 3.6 miles before being diverted. A volume of water matching the amount discharged by the City of Modesto would also be diverted at the PID intake, but this would occur upstream of the Modesto discharge location. Thus there would be slightly more water in the river between the Turlock discharge and the PID intake, and slightly less water in the river between the PID intake and the Modesto discharge location. The net impact on amount of groundwater recharge would not be expected to be measurably different than the estimates presented above for Alternatives 1 and 2, because downstream of the Modesto discharge location the volume of water in the river would be the same for all three Action alternatives. Because impacts would be essentially the same as those for Alternatives 1 and 2, which have a minimal effect on groundwater, impacts would be considered less than significant.

Significance Determination before Mitigation Less than significant for all Action alternatives. Potentially significant for the No Action Alternative.

Mitigation Measures No mitigation measures are required for the Action alternatives. No mitigation is possible for the No Action Alternative.

Impact HYD-4 Otherwise substantially degrade water quality (Constituents of Emerging Concern)

No Action Alternative Under the No Action Alternative, recycled water from Modesto and Turlock would not be discharged to the DMC. Therefore, no changes in DMC water quality would occur, and thus there would be no impact.

Combined Alignment Alternative (Alternative 1) One common concern with the use of recycled water involves CECs, which include classes of chemicals such as pharmaceuticals, current use pesticides, and industrial chemicals. Many CECs are potentially present in recycled water, surface waters, and groundwater, but the ability to detect many of these chemicals at low concentrations is so recent that a robust framework for interpreting their potential human or

ecosystem health effects is unavailable. Although there is currently no applicable regulatory guidance regarding CECs in recycled water used as part of a project such as the NVRRWP, in California, the most well-established regulations and policies related to CECs in recycled water are associated with the Recycled Water Policy (SWRCB 2013). The SWRCB adopted the Recycled Water Policy in May 2009 and in April 2013 adopted an amendment to the Recycled Water Policy that provided CEC monitoring requirements for surface application of recycled water for groundwater recharge of a groundwater basin designated for municipal use.

Reclamation's 2013 Refuge Water Quality Supply Study (Reclamation 2013) included analysis for CECs in samples collected from City of Turlock RWQCF tertiary effluent, the City of Modesto Jennings Plant secondary effluent (the tertiary treatment facility was not operational at the time), the DMC, PID Main Canal, and a delivery point for DMC water to the refuges (the China Island Delivery Point). Analytical results for the CECs for which the Recycled Water Policy specifies monitoring trigger levels are shown in **Table 3.11-7** below:

Table 3.11-7: 2013 Refuge Recycled Water Supply Study Analytical Results for CECs in Recycled Water Policy for Jennings Plant and Turlock RWQCF

Constituent	Monitoring Trigger Level	Modesto Jennings Plant Effluent (µg/L)	Turlock RWQCF Effluent (µg/L)	
17β-estradiol	0.009	<0.004	<0.004	<0.004
Caffeine	0.35	0.073	**0.920**	**0.700**
N-Nitrosodimethylamine (NDMA)	0.01	<0.002	0.0024	0.0025
Triclosan	0.35	<0.01	<0.01	<0.01

While the samples of City of Turlock RWQCF effluent contained levels of caffeine above the monitoring trigger level, it should be noted that:

- The CEC monitoring trigger levels in the Recycled Water Policy were developed for groundwater recharge projects for which the end use of the recharged water included municipal use (drinking water use). The proposed project is not a groundwater recharge project.
- The ratios of the detected levels of caffeine in the City of Turlock RWQCF to the monitoring trigger levels are 2.6 and 2.0. At these ratios, the Recycled Water Policy specifies only continued monitoring for CECs.

Caffeine and other CECs were also detected in the China Island, DMC and PID main canal samples (Reclamation 2013). The detection of CECs in the China Island, DMC and PID Main Canal samples was to be expected as other wastewater treatment plants also discharge to the source waters for each. The source water in the DMC is drawn from the Delta and multiple wastewater treatment plants discharge treated effluent to the Delta or to waterways that flow to the Delta. The SWP Watershed Sanitary Survey 2011 Update (State Water Project 2012) estimated that the discharge from the Sacramento, Stockton, and Manteca wastewater treatment plants (three of the largest wastewater dischargers to Delta tributaries) can comprise up to approximately 3 percent of the flow at the Jones Pumping Plant (Delta intake for the DMC).

Similarly, the water pumped into the PID Main Canal is sourced from the San Joaquin River. Upstream of the PID diversion, there are a number of wastewater treatment plants that discharge into the San Joaquin River, including the City of Turlock.

Because the proposed project under this alternative would not significantly change the extent of CECs in the DMC, this impact is considered less than significant.

Separate Alignment Alternative (Alternative 2) Impacts under this alternative would be the same as Alternative 1.

PID Conveyance Alternative (Alternative 3) This alternative would discharge recycled water into the San Joaquin River where it would be diverted through PID's expanded intake and conveyed through PID's existing system prior to discharge into the DMC. As described above, CECs are already present in the San Joaquin River and Delta from existing approved wastewater treatment dischages, including those currently being done by the Cities pursuant to their NPDES permits. As discharge of the recyceled water would not change what is already being done in the river, and diversion would include CECs that are already present in the river, the impacts of this alternative would be similar to Alternatives 1 and 2, and would be less than significant.

Significance Determination before Mitigation Less than significant for all Action alternatives. Less than significant for the No Action Alternative.

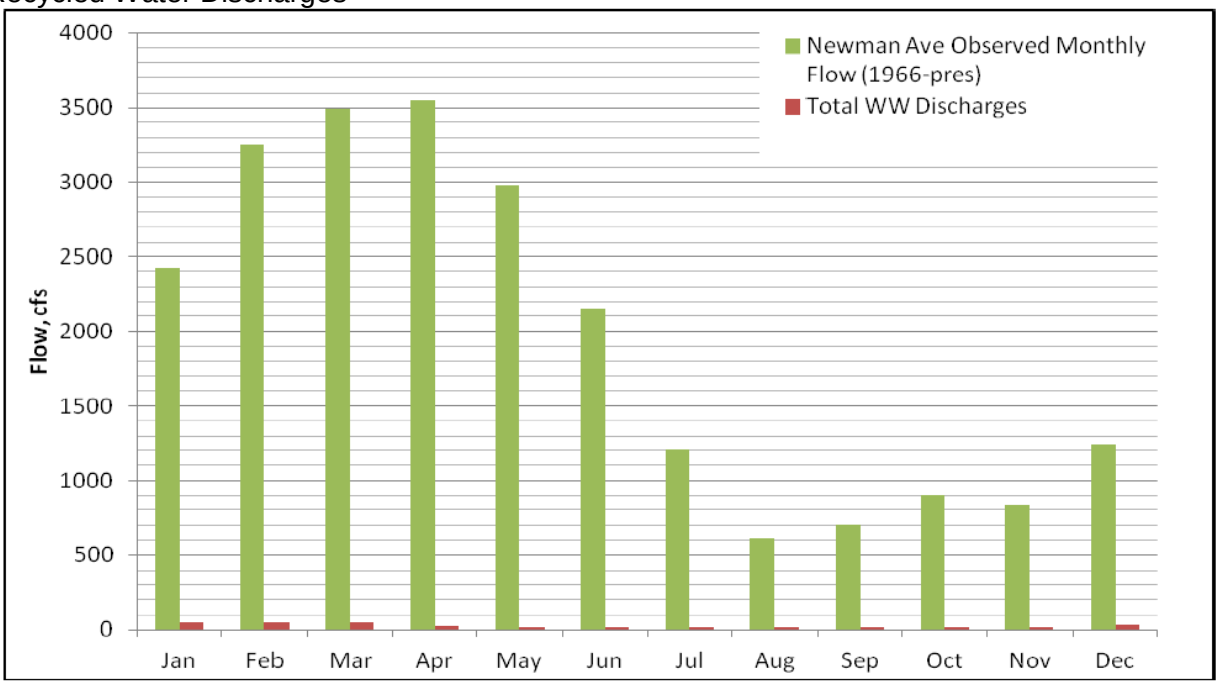
Mitigation Measures No mitigation measures are required.

Impact HYD-5 Reduction of Flows in San Joaquin River

No Action Alternative Under the No Action Alternative, recycled water from Modesto and Turlock would not be discharged to the DMC. While the Cities of Modesto and Turlock currently discharge their recycled water to the San Joaquin River, they could pursue other options for use of the recycled water that would also reduce stream flows in the San Joaquin River. If other uses for recycled water are found that reduce flows in the river, impacts would still be considered less than significant, because the change in flows would be minor (see discussion below under Alternatives 1 and 2).

Combined Alignment Alternative and Separate Alignment Alternative (Alternative 1 and Alternative 2) Under both Alternatives 1 & 2, current discharge to the San Joaquin River would be discontinued and flows from the two treatment plants would be redirected to the DMC. The discharge from the two treatment plants represents a small portion of the total flow in the San Joaquin River (RMC 2013). **Figure 3.11-7** below shows the current recycled water discharge compared to the monthly average flows at the Newman Gage. The Newman Gage is located upstream of the Cities of Modesto and Turlock's wastewater discharges (approximately 10 miles upstream of the Turlock discharge) and is the closest upstream river gage with a long history of river flow data.

Figure 3.11-7: Comparison of San Joaquin River Monthly Average Flows at Newman Gage and Recycled Water Discharges



Source: RMC 2013

The C2Vsim model discussed under **Impact HYD-3** and in **Appendix G**, **Evaluation of NVRRWP Impact on Groundwater** was used to simulate the impact of removing the current recycled water discharges from the San Joaquin River on downstream river flows at the Vernalis station, which measures the San Joaquin River's contribution to Delta outflows. The Vernalis station is approximately 20 miles downstream of the Modesto discharge point and is also downstream of the points at which the Merced and Tuolumne Rivers enter the San Joaquin River. The model simulation showed that the average annual stream flows at Vernalis station would be reduced by approximately 18,000 AF/year (**Appendix G**). The average flow of the San Joaquin River at Vernalis between 1924 and 2011 was 3.3 million AF/year **(Appendix G)**. The reduction in San Joaquin River stream flows at Vernalis due to NVRRWP is approximately 0.5 percent of the average annual flows. This is considered to be a less than significant impact on Delta outflows (**Appendix G**).

The reduction in river stage height (a reflection of water depth in the river) associated with curtailment of the recycled water discharges is estimated to range from approximately 0.25 inches to 1 inch (Hanson 2013). This is considered to be a less than significant impact.

Additionally, removing recycled water flows from the San Joaquin River would beneficially reduce the loading of salt into the river because the salts present in the recycled water would no longer be added to the river (RMC 2013).

PID Conveyance Alternative (Alternative 3) Alternative 3 would have essentially the same impact to flows in the San Joaquin River as Alternatives 1 and 2 as the flows for all three Action alternatives would be identical downstream of the Modesto discharge location. There would be

very minor differences in flows for the few miles between the Turlock and Modesto discharge sites under this alternative, with slightly more water remaining in the river between the Turlock discharge and the PID intake, and slightly less water in the river from the PID intake to the Modesto discharge site. Similar to Alternatives 1 and 2, impacts downstream of Modesto would be less than significant.

Significance Determination before Mitigation Less than significant for all Action alternatives. Less than significant for No Action Alternative.

Mitigation Measures No mitigation measures are required.

Impact HYD-6 Effect on Delta Exports at Banks and Tracy Pumping Plants
No Action Alternative Under the No Action Alternative, recycled water from Modesto and Turlock would continue to be discharged to the river. However, as noted above, the Cities of Modesto and Turlock and could pursue other options for use of the recycled water that would also reduce stream flows in the San Joaquin River. Impacts would be less than significant.

All Action Alternatives As noted above in **Impact HYD-5**, the change in San Joaquin River stream flows at Vernalis due to the NVRRWP is less than significant. In addition to the evaluation of flows, the potential effect on Delta exports was analyzed using the CalSim II model developed by DWR. The CalSim II model was configured to run with and without discharges of recycled water by the Cities of Modesto and Turlock to the San Joaquin River. The two Calsim II model scenarios were compared to evaluate the impact of NVRRWP on Delta exports at the Banks and Jones pumping plants.

Per the Calsim II modelling (RMC 2014), the changes in San Joaquin River stream flows at Vernalis due to the NVRRWP would result in minimal changes to water available in the Delta for exports at the Banks and Jones pumping plants. A comparison of results of CalSim scenarios with and without the NVRRWP shows no changes at the two pumping plants, thus there would be a minimal change in flows at Vernalis due to the Proposed Action. The projected flow changes at Vernalis would have a less than significant impact on the amount of water available for pumping at the Jones and Banks pumping plants and is considered (RMC 2014).

Significance Determination before Mitigation Less than significant for all Action alternatives. Less than significant for the No Action Alternative.

Mitigation Measures No mitigation measures are required.

Cumulative Impacts

Cumulative Impacts to Groundwater Storage As discussed under **Impact HYD-3**, cumulative or long-term impacts of reduced San Joaquin River flows on groundwater storage due to changes in the stream-aquifer interaction would be less than significant. None of the cumulative projects identified in the Proposed Action area would have any effect on the stream-aquifer interaction, and thus there is no cumulative impact to which the Proposed Action contributes. The NVRRWP would not result in increased groundwater pumping in the Turlock, Modesto, or Delta-Mendota subbasins, and thus does not have the potential to combine with

other projects to result in a significant impact. In fact, the NVRRWP could reduce the impacts of groundwater pumping in the Delta-Mendota subbasin, by providing a reliable alternative source of irrigation water to DPWD. There are pre-existing, long-term groundwater problems in the Turlock subbasin, which are part of the baseline conditions, but these conditions are located in the eastern portion of the basin and would occur regardless of whether the Proposed Action is implemented. There is also the possibility that groundwater pumping for both municipal and agricultural uses in the Turlock subbasin could occur in the future, and this is a potentially significant impact. However, the very minor changes in groundwater storage in the western portion of the basin that are associated with reduced San Joaquin River flows are not expected to combine with pumping in the eastern portion of the basin to result in an incremental effect that would be cumulatively considerable.

Cumulative Impacts to San Joaquin River Flows As discussed under **Impact HYD-6**, the reduction in San Joaquin River stream flows at Vernalis due to NVRRWP is approximately 0.5 percent of the average annual flows **(Appendix G).** This is considered to be a less than significant cumulative impact. The C2Vsim model that was used to estimate changes in San Joaquin River flows considers cumulative impacts of multiple environmental factors. C2VSim simulates water movement through the interconnected land surface, surface water and groundwater flow systems in the 20,000 square miles of the alluvial Central Valley aquifer. C2VSim dynamically calculates groundwater conditions based on urban and crop water demands, long-term hydrologic and meteorologic records, land use, cropping patterns, and other inputs.

Cumulative Impacts in the DMC The DMC is often used to convey non-Project water from various approved sources. The quality of non-Project water being introduced is tested prior to and during introductions in order to limit the potential for degradation of CVP water supplies. All non-Project waters introduced and conveyed within federal facilities must meet Reclamation's water quality standards. If, through monitoring, non-Project water fails to meet the criteria for discharging into federal facilities, the water would not be introduced until subsequent testing has demonstrated that the water quality has been met by the criteria as outlined in Reclamation's then current water quality standards. This testing program is anticipated to adequately protect the quality of water in the DMC from the cumulative effects of introduction of non-Project water from the Proposed Action as well as other projects. In addition, as noted under **Impact HYD-2**, discharge of the recycled water to the DMC would require issuance of an NPDES permit, which would establish additional monitoring requirements for the recycled water.

Although capacity in the DMC is limited, SLDMWA and Reclamation actively operate the canal in order to maximize conveyance capacity at all times. Non-Project water would only be allowed to enter the DMC for conveyance and storage within federal facilities if excess capacity is available. As such, the Proposed Action would not limit the ability of other users to make use of the DMC. In addition, the use of the California Aqueduct-DMC Intertie can help to alleviate DMC capacity issues. For these reasons, the Proposed Action is not anticipated to cause conflicts or other cumulative impacts to DMC operations.

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3.12 Indian Trust Assets

This section presents the physical and regulatory setting related to Indian Trust Assets in the vicinity of the proposed NVRRWP project. The impact analysis considers whether the Proposed Action would have potential impacts to Indian Trust Assets.

3.12.1 Environmental Setting/Affected Environment

The study area for the analysis is Stanislaus County. This section describes the environmental setting for Indian Trust Assets within the study area.

There are no Indian Trust Assets in the study area. The nearest Indian Trust Asset is the Chicken Ranch Rancheria, approximately 44 miles northeast of the project area.

3.12.2 Regulatory Framework

This section describes laws and regulations that may apply to the Proposed Action.

Federal Policies and Regulations

Indian Trust Assets are legal interests in assets that are held in trust by the U.S. Government for federally recognized Indian tribes or individuals. The trust relationship usually stems from a treaty, EO, or act of Congress. The Secretary of the Interior is the trustee for the U.S. on behalf of federally recognized Indian tribes. “Assets” are anything owned that holds monetary value. “Legal interests” are defined as a property interest for which there is a legal remedy, such as compensation or injunction, if there is improper interference. Assets can be real property, physical assets, or intangible property rights, such as a lease, or right to use something. Indian Trust Assets cannot be sold, leased or otherwise alienated without U.S. approval. Trust assets may include lands, minerals, and natural resources, as well as hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, Indian Trust Assets may be located off trust land. Reclamation shares Indian trust responsibility with all other agencies of the Executive Branch to protect and maintain Indian Trust assets reserved by or granted to Indian tribes, or Indian individuals by treaty, statute, or EO.

3.12.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

Potential impacts on Indian Trust Assets are analyzed based on the potential for the proposed project to affect such assets.

Thresholds of Significance

An impact to Indian Trust Assets would be considered significant if the project would:

- Adversely affect (modify or alter) an Indian Trust Asset.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to actions associated with the Proposed Action are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Affect Indian Trust Assets* – The Proposed Action does not have a potential to affect Indian Trust Assets as there are none in the project area.

3.12.4 References

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3.13 Land Use and Planning

This section presents the physical and regulatory setting for land use and planning surrounding the Proposed Action. The impact analysis considers the potential for the NVRRWP to physically divide the community or conflict with adopted land use plans or policies. The analysis is based on a review of local land use plans and policies and aerial imagery.

3.13.1 Environmental Setting/Affected Environment

This section describes the environmental setting for current land use within the study area, which includes the proposed Action alternative's construction sites and adjacent land uses. Direct land use impacts are focused in Stanislaus County, where all proposed project facilities would be located; however, project water supply would benefit agricultural land uses in the entire DPWD service area. Additionally, information is provided regarding land uses for the refuges that could receive water supply from the project.

Regional Land Use

The proposed study area is located within California's San Joaquin Valley, approximately 13 miles west of the City of Turlock and 15 miles southwest of the City of Modesto. The study area falls to the east of I-5 and to the west of SR 33. Land use within and adjacent to the proposed study area is characteristic of rural portions of the central San Joaquin Valley and unincorporated portions of Stanislaus County. From an aerial perspective, the landscape is dominated by large square plots with sparse structural development. Irrigated pasture, orchards, row crops, various agricultural structures, dairies, and scattered rural residences dominate the land use pattern for virtually all of the study area.

The project would serve recycled water to agricultural uses within the DPWD service area in San Joaquin, Stanislaus, and Merced counties. More information on agriculture within the region is presented in *Chapter 3.2, Agriculture and Forestry Resources.* More developed and urban land uses are situated to the east of the proposed study area in the Cities of Turlock and Modesto.

The Proposed Action would also make recycled water available to the SOD CVPIA-designated refuges to meet CVPIA requirements. Descriptions of the refuges that could be served by the Proposed Action are provided below, and are based on information presented in Reclamation's Recycled Water Refuge Study (Reclamation 2013).

San Luis National Wildlife Refuge Complex The San Luis NWR Complex, managed by USFWS, is located approximately 10 miles north of Los Banos, California. It encompasses over 26,800 acres of wetlands, riparian forests, native grasslands, and vernal pools. The NWR Complex supports populations of endemic tule elk and is host to assemblages of birds, mammals, reptiles, amphibians, fish, insects, and plants; some of which are endangered species. The NWR is a major wintering ground and migratory stopover point for large concentrations of waterfowl, shorebirds, and other water birds. The San Luis NWR includes the East Bear Creek Unit, West Bear Creek Unit, Freitas Unit, Kesterson Unit, and San Luis Unit (Reclamation 2013).

Kern National Wildlife Refuge Kern NWR, managed by USFWS, is located approximately 20 miles west of the City of Delano. The refuge consists of 11,249 acres of natural desert uplands, a relict riparian corridor, and developed marsh; it is situated on what was once the largest freshwater wetland complex in the western U.S. The Kern NWR provides optimum wintering habitat for migratory birds with an emphasis on waterfowl and water birds. Through restoration and maintenance of native habitat diversity, the refuge also provides suitable habitat for several endangered species as well as preserving a remnant example of the historic valley uplands in the San Joaquin Desert (Reclamation 2013).

State Wildlife Areas Volta SWA, managed by CDFW, is located approximately 0.75 mile north of Volta. Volta SWA consists of 2,891 acres of managed marsh and valley alkali scrub, which support 150 species of birds, including large numbers of waterfowl and shorebirds (Reclamation 2013).

Mendota SWA, managed by CDFW, is located approximately three miles south of Mendota near Whites Bridge. It consists of 11,802 acres with flatlands and floodplain (Reclamation 2013).

Los Banos SWA, managed by CDFW, is located approximately four miles northeast of Los Banos, and includes the Mud Slough Unit. Los Banos SWA was the first of a series of waterfowl refuges established throughout the state to manage habitat for wintering waterfowl and consists of more than 6,217 acres of wetland habitat which includes lakes, sloughs and managed marsh. The refuge supports over 200 species of birds (Reclamation 2013).

The North Grasslands SWA, managed by CDFW, is located approximately six miles north of Los Banos. It consists of 7,069 acres of wetlands, riparian habitat and uplands, which support Swainson's hawk and sandhill crane. The North Grasslands SWA includes the China Island Unit, Galdwall Unit and Salt Slough Unit (Reclamation 2013).

Other Units The Grasslands Resource Conservation District (GRCD) comprises approximately 60,000 acres of habitat land and is composed of privately-owned hunting clubs and other privately-owned wetland areas, as well as all or portions of several SWAs (such as Volta SWA, Los Banos SWA, and the Mud Slough, Gadwall, and Salt Slough units of the North Grassland SWA) and federal wildlife refuges (such as San Luis NWR).

Lands within the GRCD are primarily managed for waterfowl habitat. The GWD has a Water Management Plan, but no overall habitat management plan exists for the GRCD because of the large number of individual property owners. The management objectives of the GRCD include an active program to encourage natural food plant and habitat protection. Land uses include seasonally flooded wetlands, moist soil impoundments, permanent wetland, irrigated pasture, and croplands.

The GRCD contains most of the 51,530 acre GWD. The GWD is a legal entity that was established under section 34000 of the California Water Code to receive and distribute CVP water. The GWD delivers CVP water to the wetland areas within its boundaries. The GWD contains approximately 165 separate ownerships, most of which are duck clubs. Perpetual easements have been purchased by the USFWS to help preserve wetland-dependent migratory

bird habitat on approximately 31,000 acres serviced by the GWD. These easements authorize the USFWS to restrict land uses that would diminish wetland habitat values.

Existing Land Uses

Direct impacts of project construction would be confined to Stanislaus County. The Land Use element of Stanislaus County's General Plan designates the proposed study area for all three Action alternatives as Agriculture (Stanislaus County 1994). The sections below provide more detail as to the type of agriculture found along the three proposed alternative pipeline alignments.

Alternative 1 – Combined Alignment Alternative The pipeline from the Harding Drain Bypass Pipeline to the Jennings Plant Pump Station would begin at the corner of South Carpenter Road and West Harding Road and travel north along South Carpenter Road. Turning west onto West Main Street, the pipeline would continue along West Main Street and then run north onto Jennings Road. The pipeline would then traverse an agricultural field access road to reach the southeastern edge of the Modesto's Jennings Plant. Row crops dominate the agricultural land uses along these stretches of the pipeline.

The Jennings Plant Pump Station is located within the Modesto Jennings Plant, which is bounded to the west by the San Joaquin River, to the east by the Modesto Compost Facility, and to the north and south by agricultural plots. The pipeline would leave the Jennings Plant at the southwestern edge and travel west across a riparian area and under the San Joaquin River, and through an agricultural access road to Lemon Avenue. Lemon Avenue crosses areas planted predominantly in row crops and orchards with some agricultural structures and rural residences. The pipeline turns south along SR 33, which is adjacent to orchards. Turning west onto Zacharias Road, the pipeline runs along Zacharias Road to the DMC. The agriculture along Zacharias Road is predominately orchards with some row crops and agricultural structures and rural residences. For most of this alignment, the pipeline would be constructed on County ROW.

Alternative 2 – Separate Alignment Alternative Existing land use characteristics of Alternative 2 are similar to Alternative 1; land use along the portion of the pipeline from the Modesto Jennings Plant to the DMC is described above under Alternative 1. The new pump station would be located at the southwest corner of South Carpenter Road and West Harding Road. From there, the pipeline alignment traverses a riparian area, under the San Joaquin River, and through several row crop plots before meeting with Pomegranate Avenue. Pomegranate Avenue is dominated by row crops, agricultural structures, and rural residences. The pipeline then turns north up Locust Avenue, west along an agricultural access road before turning south along SR 33. This stretch of the pipeline is adjacent to orchards and has agricultural structures and a number of rural residences. From SR 33, the pipeline runs west along West Marshall Road before turning north on an agricultural access road and then west alongside an electrical substation.

Alternative 3 – PID Conveyance Alternative Land use characteristics of Alternative 3 are similar to Alternatives 1 and 2. The pipeline would begin at the PID intake, which is an existing public use. The pipeline would be constructed within PID ROW, paralleling the PID Main Canal, and then run along Bartch Avenue to Ward Avenue. Land use along the PID Main Canal, Bartch Avenue and Ward Avenue is agricultural, with scattered rural residences.

Sensitive Receptors

Land uses such as residential, schools, day care centers, hospitals, and convalescent homes are considered to be more sensitive than the general public to certain environmental effects, and thus are collectively known as sensitive receptors. There are no schools, day care centers, hospitals, or convalescent homes within 1 mile of the proposed study area. While the proposed study area is not designated as residential in the Stanislaus County General Plan, there are rural residential homes scattered along the three proposed alternatives' pipeline alignments.

3.13.2 Regulatory Framework

This section describes laws and regulations that may apply to the Proposed Action. There are no federal or state policies or programs regulating land use that would apply to the Proposed Action.

Local Policies and Regulations

The discussion of existing land use policies and regulations focuses on Stanislaus County, which is the location for all proposed construction.

Stanislaus County General Plan The Stanislaus County General Plan guides development for the County within a 20-year planning horizon. The Land Use element of the County's General Plan designates the proposed study area as Agriculture (Stanislaus County 1994). This classification is intended to "recognize the value and importance of agriculture by acting to preclude incompatible urban development within agricultural areas. It is intended for areas of land which are presently or potentially desirable for agricultural usage. These are typically areas which possess characteristics with respect to location, topography, parcel size, soil classification, water availability, and adjacent usage which, in proper combination, provide a favorable agricultural environment." The following policies in the Stanislaus County General Plan, Land Use Element would apply to the project:

> *Policy Two*: Land designated Agriculture shall be restricted to uses that are compatible with agricultural practices, including natural resources management, open space, outdoor recreation and enjoyment of scenic beauty.
> *Policy Fourteen*: Uses shall not be permitted to intrude into or be located adjacent to an agricultural area if they are detrimental to continued agricultural usage of the surrounding area.
> *Policy Sixteen*: Agriculture, as the primary industry of the County, shall be promoted and protected.
> *Policy Twenty-Two*: Future growth shall not exceed the capabilities/capacity of the provider of services such as sewer, public safety, solid waste management, road systems schools, health care facilities, etc.

Stanislaus County Zoning Code The Stanislaus County Zoning Code is designed to promote and protect the public health, safety, peace, morals, comfort, convenience, and general welfare of those living and working within Stanislaus County. The Zoning Code provides a general plan of development for the county, and serves to guide, control and regulate the future growth of the county in accordance with the county General Plan. The study area is zoned as A-2, that is, the study area is designed to support and enhance agriculture as the predominant land use. Uses and

policies regarding the A-2 zone are intended to protect open space lands, and ensure that all land uses are compatible with agriculture and open space, including natural resources management.

City of Modesto Urban Area General Plan The City of Modesto Urban Area General Plan serves as a blueprint for future growth within the City. The Plan outlines policies that focus on a community vision (City of Modesto 2008). The following policy in the Urban Area General Plan relating to land use and planning would apply to the project:

> *Overall Land Use Policy*: Establish and maintain an orderly and compatible land use pattern. Evaluate land use compatibility, design compatibility, and the compatibility of lot size and configuration where new development is proposed within or adjacent to established neighborhoods, as well as noise, traffic, and environmental hazards when making land use decisions.

3.13.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

This section evaluates whether construction and operation of the facilities associated with the Proposed Action would result in significant impacts related to land use. The analysis is based on a review of relevant local plans and aerial photography.

Thresholds of Significance

Consistent with Appendix G of the *CEQA Guidelines*, a land use and planning impact would be considered significant if the project would:

- Physically divide an established community or result in land use conflicts.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- Conflict with any applicable HCP or natural community conservation plan.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to activities associated with the Proposed Action are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Conflict with any applicable HCP or natural community conservation plan* – There is no adopted HCP or natural community conservation plan for the study area. Therefore, there would be no impact.

Impacts and Mitigation Measures

Impact LU-1 Physically Divide an Established Community or Result in Land Use Conflicts

No Action Alternative If no action were taken, there would be no land use impacts within the study area.

Combined Alignment Alternative (Alternative 1) Alternative 1would not physically divide an established neighborhood or community because it would not occur within an urban or residential area and would not include construction of a roadway, wall, barrier, or other obstruction that would physically divide existing land uses. In addition, this alternative would not permanently interfere with vehicular circulation of the neighborhood or community. The proposed pipeline would generally follow along existing roadways and would be buried underground once constructed. The pipeline may include aboveground air valves which would be housed on a concrete slab in a protective steel cage (approximately 4 feet by 4 feet in dimension) on the shoulder of the road. The repurposing of the Jennings Plant Pump Station would also not physically divide the community as the plant is already constructed and all repurposing activities would occur on pump station property owned by the City of Modesto.

All pipeline installation would occur within public roadways, private agricultural lands, and public open space areas. An easement from Caltrans would be required to construct the pipeline under SR 33. An access agreement may be required for the railroad crossing. A land use authorization from Reclamation would be required for installation of the new discharge crossing within Reclamation ROW. Project construction could temporarily impact roadway ROWs, but these impacts would cease upon completion of construction and would not be anticipated to affect interaction within a neighborhood or community. As such, there would be no impacts to land use under this alternative as no land uses would be changed or impacted.

Separate Alignment Alternative (Alternative 2) Impacts of Alternative 2 would be similar to Alternative 1. However, Alternative 2 includes an additional pipeline alignment that would require two crossings of SR 33 and the CNFR railroad as well as two discharge locations on the DMC. All three of these would require authorization as described under Alternative 1. Additional impacts under this alternative would also include the construction of an new pump station at the western end of the Harding Drain Bypass Pipeline. The City of Turlock owns this parcel, so no easements or other land acquisition would be needed. Construction of the additional pump station would not physically divide an established neighborhood or community because it would not include construction of a wall, barrier, or other obstruction that would physically divide existing land uses. There would be no impacts to land use under this alternative as no land uses would be changed or impacted.

PID Conveyance Alternative (Alternative 3) Impacts of pipeline construction would be similar to Alternatives 1 and 2. This alternative would not physically divide a community or result in land use conflicts. Construction of the expanded PID intake and pump station would take place at the existing intake facility and would not physically divide an established neighborhood or community because it would not include construction of a wall, barrier, or other obstruction that would physically divide existing land uses. There would be no impacts to land use under this alternative as no land uses would be changed or impacted.

Significance Determination before Mitigation No impact for all Action alternatives. No impact from the No Action Alternative.

Mitigation Measures No mitigation measures are required.

Impact LU-2 Conflict with Any Applicable Land Use Plan, Policy, or Regulation

No Action Alternative If no action were taken, there would be no direct land use impacts within the study area. However, it is not unlikely that a lack of reliable water supply could result in a conversion of agricultural land to non-agriculture use in DPWD. This would be a significant, and because mitigation would not be possible, potentially unavoidable adverse effect of the No Action Alternative.

Combined Alignment Alternative (Alternative 1) This alternative would be consistent with the Land Use element of the Stanislaus County General Plan. The General Plan states that "agriculture, as the primary industry of the County, shall be promoted and protected." The project would secure a reliable water source alternative to CVP water for agriculture use within the County in DPWD's service area. With this new water source, farmers in DPWD could slow the rate of groundwater overdraft and preserve water within the region for later use. See Chapter 3.2 Agriculture and Forestry Resources for more information on agricultural impacts. Land uses along the construction corridor would be affected temporarily during construction, but because the area would be restored to existing conditions once construction is complete the impact would be considered less than significant.

Separate Alignment Alternative (Alternative 2) Impacts would be similar to Alternative 1. In addition, as described in Chapter 2, Alternatives and Proposed Action, this alternative would require construction of an additional pump station to be located at the corner of W. Harding Road and S. Carpenter Road. Land in this area is zoned A-2, indicating that public buildings or other facilities operated by political subdivisions are a Tier 3 use, which would require a use permit and approval from the Stanislaus County Planning Commission prior to development. Tier 3 uses are consistent with the A-2 Zone if (1) the use will not be substantially detrimental or in conflict with the agricultural use of other property in the vicinity and (2) the parcel on which the use is requested is not located in one of the County's most productive agricultural areas as defined in Stanislaus County's General Plan (Stanislaus County 1994). Once constructed, the proposed pump station would not interfere with agricultural uses within the vicinity. Similarly, because the pump station is located on less than 1 acre of land and helps to serve water to agricultural communities within Stanislaus County, it would be consistent with the A-2 zone. As such, the proposed project would not conflict with any local land use plan, and similar to Alternative 1 any temporary land use impacts during construction would be less than significant.

PID Conveyance Alternative (Alternative 3) Impacts would be similar to Alternatives 1 and 2. Under this alternative, the pipeline would be constructed in roads or in existing PID ROW. In addition, the expansion of the PID intake and construction of new pump would take place at PID's existing intake site. Thus, this alternative would not conflict with any local land use plan, and any temporary land use impacts during construction would be less than significant.

Significance Determination before Mitigation Less than significant for Alternatives 1, 2, and 3. Potentially significant and unavoidable for the No Action Alternative.

Mitigation Measures No mitigation measures are required for Alternatives 1, 2, and 3. No mitigation is possible for the No Action Alternative.

Cumulative Impacts

The geographic scope of potential cumulative impacts related to land use and planning is the study area. There are three relevant projects within the vicinity of the Proposed Action that may contribute to cumulative impacts:

- Jennings Treatment Plant Phase 2 Upgrades: increase tertiary treatment capacity by 12.6 mgd.
- West Main Improvement Project: widen West Main Ave to 3 lanes from the San Joaquin River to Crows Landing Road (Stanislaus County Department of Public Works 2011).
- StanCOG South Corridor Study: study potential alignments and corridor options for an expressway from the City of Turlock on the east to I-5 on the west (Stanislaus County Department of Public Works 2011).

Implementation of the Proposed Action, in conjunction with the projects listed above, would not create cumulative land use conflicts. The Proposed Action alternatives are consistent with all land use plans and would thus not have a cumulative impact related to land use planning conflicts. Facilities and infrastructure associated with the Proposed Action would either be buried underground or would be constructed in areas adjacent to other public infrastructure, and as such, would not create long-term cumulative impacts associated with dividing an established community.

3.13.4 References

Bureau of Reclamation (Reclamation). 2013. Refuge Recycled Water Supply Study, Volume I – Project Report. June.

Modesto, City of. 2008. Final Urban Area General Plan. October 14. Available at: https://www.modestogov.com/ced/pdf/planning/documents/general-plan/technical/Urban%20Area%20General%20Plan.pdf.

Stanislaus County. 1994. Stanislaus County General Plan. Available at: http://www.stancounty.com/ planning/pl/general-plan.shtm

Stanislaus County Department of Public Works. 2011. Road to Success – Bridges to the Future, Fall 2011. Available at: http://www.stancounty.com/publicworks/pdf/cip-project-flyer.pdf

3.14 Noise

This section addresses future noise impacts resulting from the implementation of the Proposed Action. Noise regulations for each jurisdiction are identified and summarized as they relate to specific components of the Proposed Action alternatives. This analysis assumes typical construction equipment noise levels to estimate corresponding noise levels at sensitive receptor locations and determines project significance based on local noise regulations.

3.14.1 Environmental Setting/Affected Environment

Study Area

The study area for this section is the area surrounding the construction work areas for the three Action alternatives. In general this is a rural area with few sensitive receptors. The pipeline alignments are mainly located along roadways, in rural agricultural or undeveloped areas, or within existing developed areas such as the Jennings Treatment Plant and the PID intake structure, to which public access is limited.

Noise Principles and Descriptors

Noise Background Noise is defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound.

Sound pressure fluctuations can be measured in units of hertz (Hz) which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power or volume). When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of each measured Hz and corresponding sound power level. The audible sound spectrum consists of a range of frequency spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum (20 to 20,000 Hz). As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A weighting follows an international standard method of frequency de-emphasis and is typically applied to community noise measurements. In practice, the level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. Some representative noise sources and their corresponding A-weighted noise levels are shown in **Table 3.14-1**. All of the noise levels reported herein are A-weighted unless otherwise stated.

Table 3.14-1: Typical A-Weighted Sound Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1000 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, 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
Quiet urban nighttime	— 40 —	Theater, large conference room (background)
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night, concert
	— 20 —	
		Broadcast/recording studio
	— 10 —	
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing

Source: Caltrans 1998.

Noise Exposure and Community Noise An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. The noise levels presented in **Table 3.14-1** are representative of measured noise at a given instant in time, however, they rarely persist consistently over a long period of time. Rather, community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources such as aircraft flyovers, vehicle pass-bys, and sirens, which are readily identifiable to the individual. These successive additions of sound to the community noise environment vary the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

L_{eq}: the equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L_{eq} is the constant sound level that would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).
L_{max}: the instantaneous maximum noise level for a specified period of time.
L_{dn}: 24-hour day and night A-weighed noise exposure level which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises.) Noise between 10:00 P.M. and 7:00 A.M. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noise.

Effects of Noise on People The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, learning.
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. No completely satisfactory method exists to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so called "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur (Caltrans 1998):

- Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of 1 dBA.
- Outside of such controlled conditions, the trained ear can detect changes of 2 dBA in normal environmental noise.
- It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dBA.
- A change in level of 5 dBA is a readily perceptible increase in noise level.
- A 10 dBA change is recognized as twice as loud as the original source.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. Sound level is measured in decibels. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple linear fashion, but rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of 6 to 9 dBA per doubling of distance from the

source, depending on environmental conditions (i.e., atmospheric conditions and noise barriers, either vegetative or manufactured). Widely distributed noises, such as a large industrial facility spread over many acres or a street with moving vehicles (a "line" source), would typically attenuate at a lower rate, approximately 4 to 6 dBA per doubling of distance.

Vibration Background Groundborne vibration propagates from the source through the ground to adjacent buildings by surface waves. Vibration may be composed of a single pulse, a series of pulses, or a continuous oscillatory motion. The frequency of a vibrating object describes how rapidly it is oscillating, measured in Hz. Most environmental vibrations consist of a composite, or "spectrum" of many frequencies. The normal frequency range of most groundborne vibrations that can be felt generally starts from a low frequency of less than 1 Hz to a high of about 200 Hz. Vibration information for this analysis has been described in terms of the peak particle velocity (PPV), measured in inches per second, or vibration level measured with respect to Root Mean Square (RMS) vibration velocity in decibels (VdB), with a reference quantity of 1 micro inch per second.

Vibration energy dissipates as it travels through the ground, causing the vibration amplitude to decrease with distance away from the source. High-frequency vibrations reduce much more rapidly than do low frequencies, so that in the far-field zone distant from a source, the low frequencies tend to dominate. Soil properties also affect the propagation of vibration. When groundborne vibration interacts with a building, usually a ground-to-foundation coupling loss occurs, but the vibration also can be amplified by the structural resonances of the walls and floors. Vibration in buildings typically is perceived as rattling of windows, shaking of loose items, or the motion of building surfaces. In some cases, the vibration of building surfaces also can be radiated as sound and heard as a low-frequency rumbling noise, known as groundborne noise.

Groundborne vibration generally is limited to areas within a few hundred feet of certain types of industrial operations and construction/demolition activities, such as pile driving. Road vehicles rarely create enough groundborne vibration amplitude to be perceptible to humans unless the receiver is in immediate proximity to the source or the road surface is poorly maintained and has potholes or bumps. Human sensitivity to vibration varies by frequency and by receiver. Generally, people are more sensitive to low-frequency vibration. Human annoyance also is related to the number and duration of events; the more events that occur or the greater the duration, the more annoying it becomes.

Existing Noise Environment The existing noise environment in the project area is attributed to various stationary and mobile sources. These include noise originating from local vehicular and truck traffic and the operation of stationary sources (e.g., an existing tallow factory at the northeast corner of Harding Road and Carpenter Road) and mobile noise sources associated with local agricultural activities. Other, less prevalent, sources of noise that contribute to the existing noise environment in the project construction areas include landscaping activities (e.g., leaf blowing, lawn mowing) and regional roadway traffic.

Sensitive Receptors Some land uses are considered more sensitive to ambient noise levels than others, due to the amount of noise exposure (in terms of both exposure duration and insulation

from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, and parks and other outdoor recreation areas generally are more sensitive to noise than are commercial and industrial land uses. Sensitive receptors in the vicinity of the Action alternative's pipeline alignments and pump stations include several rural residences. Installation of the pipelines would occur almost entirely within County road and drainage and irrigation canal ROW. In some instances, the pipeline could be installed within 50 feet of an existing residence; all three alternative pipeline alignments have residences within 50 feet.

3.14.2 Regulatory Framework

Federal Policies and Regulations

Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 CFR, Part 205, Subpart B. The federal truck pass-by noise standard is 80 dBA at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers.

State Policies and Regulations

The State of California establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the State pass-by standard is consistent with the federal limit of 80 dBA. The State pass-by standard for light trucks and passenger cars (less than 4.5 tons, gross vehicle rating) is also 80 dBA at 15 meters from the centerline. These standards are implemented through controls on vehicle manufacturers and by legal sanction of vehicle operators by state and local law enforcement officials.

The State has also established noise insulation standards for new multi-family residential units, hotels, and motels that would be subject to relatively high levels of transportation-related noise. These requirements are collectively known as the California Noise Insulation Standards (Title 24, California Code of Regulations). The noise insulation standards set forth an interior standard of L_{dn} 45 dBA in any habitable room. They require an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than L_{dn} 60 dBA. Title 24 standards are typically enforced by local jurisdictions through the building permit application process.

Local Policies and Regulations

Local regulation of noise involves implementation of General Plan policies and Noise Ordinance standards. Local General Plans identify general principles intended to guide and influence development plans, and Noise Ordinances set forth the specific standards and procedures for addressing particular noise sources and activities. General Plans recognize that different types of land uses have different sensitivities toward their noise environment; residential areas are generally considered to be the land use most sensitive to noise and industrial/commercial areas are generally considered to be the least sensitive. Local noise ordinances typically set forth standards related to construction activities, nuisance-type noise sources, and industrial property line noise levels. Noise regulations and standards that apply to the land uses within the unincorporated portions Stanislaus County are provided below.

Stanislaus County Noise Ordinance The Stanislaus County Noise Ordinance (Title 10 Chapter 10.46 Noise Control) establishes exterior noise level standards shown in **Table 3.14-2**. While these generally apply to operations, there is an exemption for construction or maintenance activities performed by or at the direction of any public entity or public utility. The noise ordinance also has limits for construction equipment during the hours of 7 P.M. to 7 A.M. which requires noise levels to be below 75 dBA during these hours.

Table 3.14-2: Exterior Noise Level Standards

Designated Noise Zone	Maximum A-weighted Sound Level (L_{max})	
	7:00 A.M. to 9:59 P.M.	10:00 P.M. to 6:59 A.M.
Noise Sensitive	45	45
Residential	50	45
Commercial	60	55
Industrial	75	75

Stanislaus County vibration ordinance prohibits operation of any device that creates vibration that is above the vibration perception threshold, which is defined to be a measured motion velocity of 0.01 inch persecond over the range of one to one hundred Hz. While these generally apply to operational vibration, there is an exemption for construction or maintenance activities performed by or at the direction of any public entity or public utility.

City of Modesto General Plan The Modesto General Plan does not include any noise policies relevant to the Proposed Action.

City of Modesto's Municipal Code Section 4.9-103 (Enumerations) of the City of Modesto's municipal code states that use of heavy equipment (e.g., bulldozers, road graders, backhoes, etc.), construction, demolition or other activities that result in loud and raucous operations before 7:00 A.M. or after 9:00 P.M. are declared as public nuisances. However, per Section 4-9.104 (Exemptions) of the City's municipal code, activities on or in publicly owned property are exempt from the City of Modesto's noise requirement. Because the Jennings Plant outfall pump station is on publicly owned property, proposed activities at this location would be exempt from Section 4.9-103.

3.14.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

Noise Construction noise sources would include a variety of heavy equipment and other machinery. The Federal Transit Administration (FTA) has established guidance on noise and vibration impact assessments for construction equipment (FTA 2006). The FTA recommends that for a rough estimate of construction noise levels that the noisiest two pieces of equipment be used to analyze the anticipated noise levels at sensitive receptors assuming the following:

- Full power operation for a full one hour is assumed.
- There are no obstructions to the noise travel paths.
- Typical noise levels from construction equipment are used.

- All pieces of equipment are assumed to operate at the center of the proposed project area.

Using these simplifying assumptions, the noise levels at specific distances can be obtained using the equations provided in the FTA guidance (FTA 2006).

The estimated noise levels are compared to the noise emission limits established by Stanislaus County. While the above calculations apply to construction equipment, truck traffic to and from the construction sites could also have the potential to create additional noise for residences and commercial establishments located along haul routes.

Vibration Construction activity associated with the operation of heavy equipment and vibratory pile driving may generate localized groundborne vibration and noise. However, vibration from ground-disturbing construction activity is typically below the threshold of perception when the activity is more than 50 feet from the receiver. The impact of vibratory pile driving can potentially impact nearby buildings and sensitive receptors. Based on methods and equations described by FTA (FTA 2006), the vibration levels in terms of peak particle velocity at specific distances can be obtained.

Using the most sensitive building types and land use categories the peak PPV would have to exceed 0.12 inches per second and L_{eq} would have to exceed 65 VdB in order to result in any building damage or vibrational disturbances. For industrial buildings the PPV would have to exceed 0.5 inches per second in order to result in any building damage or vibrational disturbances (Caltrans 2013).

Thresholds of Significance

Consistent with Appendix G of the *CEQA Guidelines*, a noise impact would be considered significant if the project would cause:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels.
- For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to actions associated with the project are identified below along with supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Aircraft noise* - Because the project is not located near an airport or airstrip, people working in the project area would not be exposed to noise from airports and airstrips.

Impacts and Mitigation Measures

Impact NOISE-1 Temporary Construction-Related Noise Increases

No Action Alternative Under the No Action Alternative, no construction would occur and there would be no noise impacts.

Combined Alignment Alternative (Alternative 1) Under Alternative 1, construction activities would occur in several phases with different construction equipment lists and in multiple locations. For calculation of noise impacts, construction activities were grouped as applicable to the following locations: Weir Structure, Pump Station, Pipeline (except San Joaquin River crossing), and San Joaquin River Crossing. The construction phase at each of these locations that had the two noisiest pieces of equipment was used to estimate the A-weighted noise impacts shown in **Table 3.14-3**.

Table 3.14-3: Construction Noise Levels

Construction Location	Equipment Type	Typical Noise Level 50 feet from Source (dBA)	Distance to Meet Daytime Exterior Noise Standard (Feet)			
			Sensitive (45 dBA)	Residential (50 dBA)	Commercial (60 dBA)	Industrial (75 dBA)
Weir Structure	Concrete Saws	90	10,200	5,736	1,813	323
	Tractors/Loaders/ Backhoes	85				
Pump Station	Excavator	85	7,071	3,976	1,257	224
	Bulldozer	85				
Pipeline	Rubber Tired Dozers	85	7,071	3,976	1,257	224
	Tractors/Loaders/ Backhoes	85				
San Joaquin River Crossing	Vibratory or Impact Pile Driver	95[1]	16,583	9,325	2,949	524
	Bulldozer	85				

[1]See *Section 4, Biological Resources*, for analysis of noise effects on fish and wildlife. Source: FHWA 2006; FTA 2006, Appendix C

According to **Table 3.14-3** the exterior noise threshold of 50 dBA would be achieved for residential receptors located 3,976 to 9,325 feet or further from the construction area depending on the specific construction phase. For the pump station there is a residence located to the east of the pump station that is 3,760 feet from the Modesto pump station and may experience some

noise above 50 dBA, but no sources would be above 75 dBA. Three residences would experience levels above 50 dBA from construction of the Modesto Weir. Numerous residences are adjacent to the pipeline alignment and would experience levels above 50 dBA for the short time when pipeline construction activity is being conducted near a particular residence before moving further along the pipeline alignment. Numerous residences would also be affected during the San Joaquin River Crossing phase due largely to the pile driving activity, which is scheduled to occur for 2 months, with noise levels decreasing for construction of the trenchless crossings using HDD or microtunneling during the remainder of the construction phase.

While the Stanislaus County Noise Ordinance exempts public entities and utilities, the noise levels at residences near the construction activity could result in annoyance and thus noise generated by project construction could be potentially significant.

In order to address noise annoyance that sensitive receptors and residents may experience, **Mitigation Measure NOISE-1** will be implemented. While not all of the mitigation measure components are measureable, this mitigation measure will result in some reduction in noise levels. For instance, the use of mufflers typically can reduce levels by 5 to 10 dBA (EPA 1971) and additional reductions would occur with the use of any sound barriers or obstructions. Since the County Noise Ordinance exempts this type of construction activity from the noise threshold and appropriate measures have been implemented to reduce levels, the noise levels after mitigation would be less than significant.

Separate Alignment Alternative (Alternative 2) Similar to Alternative 1, construction activities were grouped for calculation of noise impacts as applicable to the following locations: Weir Structure, Pump Station, Pipeline (except San Joaquin River crossing), and San Joaquin River Crossing. The construction phase at each of these locations that had the two noisiest pieces of equipment was used to estimate the A-weighted noise impacts shown in **Table 3.14-3**. Since similar types of equipment are used in Alternatives 1 and 2, the two noisiest pieces of equipment are the same for a given construction phase type and only the location of sensitive receptors near the construction site has changed.

According to **Table 3.14-3** the exterior noise threshold of 50 dBA would be achieved for residential receptors located 3,976 to 9,325 feet or further from the construction area depending on the specific construction phase. A residence is located 3,760 feet from the Modesto pump station and may experience some noise above 50dBA. Several residences are located closer than 3,976 feet from the Turlock pump station site that would experience construction noise levels above 50 dBA, but no sources would be above 75dBA. Three residences would experience levels above 50 dBA from construction of the Modesto Weir and about 12 residences would experience levels above 50 dBA from construction of the Turlock Weir. Numerous residences are adjacent to the pipeline alignment and would experience levels above 50 dBA for the short time when pipeline construction activity is being conducted near a particular residence before moving further along the pipeline alignment. Numerous residences would be affected during the two San Joaquin River Crossings due largely to the pile driving activity, which is scheduled to occur for 2 months with noise levels decreasing for the remainder of the construction phase.

While the Stanislaus County Noise Ordinance exempts public entities and utilities, the noise levels at residences near the construction activity could result in annoyances and thus noise generated by project construction could be potentially significant.

In order to address some of the noise annoyance that sensitive receptors and residents may experience, **Mitigation Measure NOISE-1** will be implemented. While not all of the mitigation measure components are measureable, this mitigation measure will result in some reduction in noise levels. For instance the use of mufflers typically can reduce levels by 5 to 10 dBA (EPA 1971) and additional reductions would occur with the use of any sound barriers or obstructions. Since the County Noise Ordinance exempts this type of construction activity from the noise threshold and appropriate measures have been implemented to reduce levels, the noise levels after mitigation would be less than significant.

PID Conveyance Alternative (Alternative 3) Noise impacts for construction of the weir structure, pump station, and pipeline would be expected to be the same as for Alternatives 1 and 2, and are shown in **Table 3.14-3**. There are several rural residences located along the pipeline alignment, both along the PID Main Canal, and along Bartch and Ward Avenues, but pipeline construction would only affect any individual residence for a short period of time. There is a residence about ½ mile from the weir structure on the DMC, which would experience noise levels above 50 dBA.

In addition, Alternative 3 would require expansion of the existing PID intake facility. Noise impacts of construction would be similar to the impacts of constructing the existing diversion and fish screen. The noisiest construction activity for the intake would be pile driving for construction of the cofferdam, which is estimated to be 95 dBA at a distance of 50 feet. The nearest residence is located about 500 feet southwest of the intake, and could experience noise levels of 74 dBA during pile driving (PID 2006). As stated above, the Stanislaus County Noise Ordinance exempts public entities and utilities, but the noise levels at residences near the construction activity could result in annoyances and thus noise generated by project construction could be potentially significant.

In order to address some of the noise annoyance that sensitive receptors and residents may experience, **Mitigation Measure NOISE-1** will be implemented. Because the County Noise Ordinance exempts this type of construction activity from the noise threshold and appropriate measures have been implemented to reduce levels, the noise levels after mitigation would be less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure NOISE-1: Noise Reduction Measures** (Alternatives 1, 2, and 3). To reduce the impact of noise from construction activities the following measures shall be implemented to the extent feasible:

- Construction activities shall be limited to the hours of 7:00 A.M. to 7:00 P.M., Monday to Friday.

- Construction staging areas shall be as far as possible from existing residences.
- Construction equipment noise shall be minimized during project construction by muffling and shielding intakes and exhaust on construction equipment per the manufacturers' specifications and by shrouding or shielding impact tools. All equipment shall have sound-control devices no less effective than those provided by the manufacturer.
- All stationary noise generating construction equipment shall be placed as far away as possible from sensitive receptors on in an orientation minimizing noise impacts (e.g. behind barriers or storage piles).

Significance Determination after Mitigation Less than significant for all Action alternatives.

Impact NOISE-2 Temporary Disturbance from Construction-Related Vibration
No Action Alternative There would be no construction and therefore no vibration impacts would occur.

Combined Alignment Alternative (Alternative 1) Vibrational impacts from construction could mainly occur from the vibratory pile drivers used at the San Joaquin River crossing. Vibrations from the rest of the construction equipment would typically be below the PPV threshold of 0.01 inches per second at 182 feet. The estimated PPV for the San Joaquin River crossing pile driving activities is based on a reference PPV for vibratory pile drivers at 25 feet of 0.65 inches per second (Caltrans 2013). This was used to estimate the minimum distance a structure would have to be from the pile driving activity to experience 0.01 inch per second threshold. Any structures or sensitive receptors closer than 1,112 feet to the San Joaquin river crossing would experience vibrations greater than the threshold. There are no sensitive receptors or structures located within a 1,112-foot radius of the Modesto crossing and thus the impact from vibrations would be less than significant.

Separate Alignment Alternative (Alternative 2) Impacts for the Modesto crossing would be as described above for Alternative 1.

For the Turlock crossing, an industrial area with several buildings located nearby may experience vibrations above the threshold, which may cause annoyance for workers at this location. However, vibration levels would be less than 0.5 inches per second (Caltrans 2013), which is the threshold to cause damage to industrial buildings. These vibration levels would not cause any building damage and would cause only temporary annoyance for people working near the activities. In addition, the County of Stanislaus vibration ordinance exempts this type of temporary construction activity from lower annoyance thresholds. Therefore, the impact from vibrations would be less than significant.

PID Conveyance Alternative (Alternative 3) Vibration impacts from construction would mainly be associated with pile driving that would be needed for expansion of the PID intake facility. There is a residence located about 500 feet from the intake site that could experience vibrations above the threshold, which may cause annoyance for residents at this location. However, vibration levels would not be expected to be greater than those experienced during construction of the existing intake, which was not expected to damage nearby structures (PID 2006).

Vibration levels are not expected to cause damage, and would cause only temporary annoyance for nearby receptors. In addition, the County of Stanislaus vibration ordinance exempts this type of temporary construction activity from the 0.01 inches per second threshold. Therefore, the impact from vibrations would be less than significant.

Significance Determination before Mitigation Less than significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures No mitigation required.

Impact NOISE-3 Increase in Ambient Noise Due to Operational Noise and Vibration
No Action Alternative Under the No Action Alternative, no construction would occur and there would be no additional operational noises or vibration. Therefore there would be no noise impacts.

Combined Alignment Alternative (Alternative 1) Operation of the modified pump station would result in the generation of noise from pump machinery. Land use surrounding the proposed site of the pump station beyond the wastewater treatment plant is agricultural with some residences located 3,760 feet from the proposed site. The pump station would use 500-horsepower pumps. Given that the pump station would be housed within an enclosed structure, and considering the distance to the nearest sensitive receptors, noise generated by the pump station would generally correspond to existing noise levels, especially since it already has an existing pump station that would be repurposed. Therefore, the impact is less than significant.

Separate Alignment Alternative (Alternative 2) Operation of the pump stations would result in the generation of noise from pump machinery. Land use surrounding the proposed sites of the pump stations include the Jennings Plant, agricultural uses, and some residences located 3,760 and 1,660 feet from the proposed site for the Modesto and Harding Drain Pump Stations, respectively. At build-out, the pump stations would consist of 300 and 250 horsepower pumps for the Modesto and Harding Drain Pump Stations, respectively. Given that the pump stations would be housed within enclosed structures in conjunction with the distances to the nearest sensitive receptors, noise generated by the pump stations would generally correspond with existing noise levels. Therefore, the impact is less than significant.

PID Conveyance Alternative (Alternative 3) Operation of the new pump station at the PID intake would result in the generation of noise from pump machinery. Land use surrounding the proposed site of the pump station at the PID intake is agricultural with one rural residence located about 500 feet from the existing intake site. Noise generated by the pump station, which would be housed within an enclosed structure, would generally correspond to existing noise levels, especially since there is already an existing pump station at the site. Therefore, the impact is less than significant.

Significance Determination before Mitigation Less than significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures No mitigation required.

Impact NOISE-4 Cumulative Noise and Vibration Impacts

No Action Alternative Under the No Action Alternative there would be no additional operational noises or vibration. Therefore, there would be no cumulatively considerable impact.

All Action Alternatives (Alternatives 1, 2, and 3) Temporary increases in ambient noise and vibration levels during installation of the proposed facilities for all Action alternatives would not be cumulatively considerable given the short-term nature of the impacts. Over the long term, the noise impact from the proposed project would be negligible and not cumulatively considerable, given that it would include operation of pumps in enclosed structures and very infrequent motor vehicle trips associated with maintenance activities.

Significance Determination before Mitigation Not cumulatively considerable and therefore less than significant for all Action alternatives.

Mitigation Measures No mitigation required.

3.14.4 References

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Federal Highway Administration. 2006. Construction Noise Handbook. FHWA-HEP-06-015. August. Available at: http://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/. Accessed July 22, 2014.

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3.15 Population and Housing

This section describes the population and housing of the study area, and the relevant regulatory setting. This section also evaluates the potential for the Proposed Action alternatives to affect population and housing.

3.15.1 Environmental Setting/Affected Environment

Population

The DPWD service area encompasses lands within Stanislaus County, San Joaquin County, and Merced County, in the San Joaquin Valley. Proposed facilities will be located entirely within Stanislaus County, and recycled water would be used within DPWD's service area in all three counties. According to the Housing Element of the Stanislaus County General the Plan, the population of the unincorporated limits of Stanislaus County rose from 95,756 in 1990 to 106,741 in 2000, an increase of 11.3 percent from 1990. The overall growth rate from 1990 to present has remained below 1.5 percent. The 2012 population was 114,712, which represents a percent change of approximately 0.4 during that time period (County of Stanislaus 2012). The population of the unincorporated and incorporated areas has risen from 510,694 in July 2008 to 525,491, an approximately 2.8 percent increase since 2008 (County of Stanislaus 2012 and U.S. Census Bureau 2014a). According to the Housing Element, most of the future residential growth in Stanislaus County is projected to occur within the limits of the incorporated cities as historically experienced. Any concentrated growth in unincorporated Stanislaus County is anticipated to take place in communities of Denair, Diablo Grande, Keyes and Salida, which are guided by community plans and are served by special districts that provide sewer and water systems necessary to accommodate development (County of Stanislaus 2012).

The population of San Joaquin County grew from 563,598 to 686,660 residents from 2000 to 2008. The annual average population growth rate during that period was equivalent to 2.7 percent, with the incorporated population occurring at a higher rate (3.1 percent) than the unincorporated area (1.4 percent) (County of San Joaquin 2011). According to the U.S. Census, the 2013 estimated population for 2010 and 2013 are 685,308 and 704,379, respectively, or a population change of approximately 2.8 percent between 2010 and 2013 (U.S. Census Bureau 2014b).

The population of Merced County increased from 210,554 in 2000 to 255,793 in 2010, , a growth rate of approximately 22 percent during that period. According to the U.S. Census, the estimated population in 2013 is 263,228, which represents a population change of approximately 2.9 percent between 2010 and 2013 (U.S. Census Bureau 2014c).

Housing

According to the Stanislaus County Housing Element, household growth between 1990 and 2000 increased at a greater rate throughout the County as a whole than it did in the unincorporated areas. The households in 1990 and 2000 in unincorporated areas are 30,961 and 32,646, an annual percent change of 0.5 percent compared to 1.2 percent Countywide. This was attributed to greater occurrence of multi-family rental units within the incorporated cities where services and

infrastructure are more readily available (County of Stanislaus 2012). Housing units in 2013 were 179,683 (U.S. Census Bureau 2014b).

From 2000 to 2008, San Joaquin County experienced historically high rates of housing growth, with incorporated areas growing slightly faster than unincorporated areas (2.67 percent compared to 1.25 percent). Growth within the cities is possibly related to the trend that has occurred over the last several decades of an influx of Bay Area workers seeking more affordable housing in San Joaquin County. In 2013, there were 235,943 housing units (U.S. Census Bureau 2014b).

In Merced County, the average household growth rate from 2000 to 2006 was 18.5 percent, with the number of household units growing from 68,373 in 2000 to 81,058 in 2006 (U.S. Census Bureau 2000; 2006). The growth rate slowed to 3.1 percent from 2006 to 2012, with the number of household units totaling 83,571 in 2012 (U.S. Census Bureau 2012). In 2013, there were 83,840 housing units (U.S. Census Bureau 2014c).

3.15.2 Regulatory Framework

This section describes laws and regulations that may apply to the Proposed Action.

Federal Policies and Regulations

There are no federal regulations associated with population and housing that are relevant to the Proposed Action.

State Policies and Regulations

There are no state regulations associated with population and housing that are relevant to the Proposed Action.

Local Policies and Regulations

Stanislaus County General Plan The Land Use Element of the Stanislaus County General Plan provides guidance on the County's growth (County of Stanislaus No Date).

GOAL THREE: Foster stable economic growth through appropriate land use policies.

> *Policy Twenty-two*: Future growth shall not exceed the capabilities/capacity of the provider of services such as sewer, water, public safety, solid waste management, road systems, schools, health care facilities, etc.

San Joaquin County General Plan The San Joaquin County General Plan provides guidance on the County's growth (County of San Joaquin General Plan 2010).

> *Objective 1:* To ensure that there is an adequate amount of land planned for urban development to accommodate the projected population growth in areas where the appropriate level of services are or can be made available.
> *Objective 7:* To provide public facilities and services to meet needs in an efficient and cost-effective manner.

Merced County General Plan The Merced County General Plan provides guidance on the County's growth and development (County of Merced 2013).

Policy LU-1.1. Countywide Development. Direct urban development to areas within urban boundaries of cities, Urban Communities, and Highway Interchange Centers in order to preserve productive agriculture, limit urban sprawl, and protect natural resources.
Policy LU-1.2. Rural Centers. Limit the amount of new growth within existing Rural Centers by allowing only agriculture-supporting residential and commercial uses.
Policy LU-1.3. Rural Residential Centers. Limit the amount of new growth within existing Rural Centers by allowing only residential uses, limiting public services, and prohibiting commercial uses.
Policy LU-1.5. New Urban Communities. Consider the establishment of new Urban Communities in areas off of productive agricultural land which satisfy the policy requirements under Goal LU-5.F, in order to accommodate projected future growth.
Policy LU-1.10. Orderly Community Growth. Require the orderly, well planned, and balanced growth of the incorporated communities consistent with the limits imposed by local infrastructure, services, public facilities, and their ability to assimilate growth.

City of Modesto Urban Area General Plan The City of Modesto Urban Area General Plan serves as a blueprint for future growth within the City. The Plan outlines policies that focus on a community vision (City of Modesto 2008). The following policy in the Housing Element of the Urban Area General Plan relating to population and housing would apply to the project:

Policy 6.1: Promote coordination between infrastructure master plans, service area boundaries, and housing plans to ensure that adequate services are available to serve expected housing growth. Direct housing to areas where infrastructure and utilities can be provided commensurate with housing population.

3.15.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

This section evaluates whether construction and operation of the facilities associated with the Proposed Action alternatives would result in significant impacts related to population and housing.

Thresholds of Significance

Consistent with Appendix G of the *CEQA Guidelines*, an impact on population and housing would be considered significant if the project would:

- Displace substantial numbers of housing units, necessitating the construction of replacement housing elsewhere.
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to activities associated with the Proposed Action are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Displace substantial numbers of housing units* – The Proposed Action alternatives would be confined primarily to land owned by the Cities of Modesto and Turlock and to existing roadways and adjacent ROW and would not require the demolition of existing residential houses. As a result, the Proposed Action would not displace existing housing.
- *Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere* – The Proposed Action alternatives construction activities would be confined to land owned by the Cities of Modesto and Turlock and to existing roadways and adjacent ROW and would not remove any housing. As a result, the Proposed Action would not displace people.

3.15.4 References

County of Merced. 2013. Merced County General Plan. Land Use Element. December 2013. Available at: http://www.co.merced.ca.us/documents/28/42/2030%20General%20Pl_1.PDF

County of San Joaquin. 2010. San Joaquin County General Plan – Housing Element. January 12. Available at: http://www.sjgov.org/commdev/cgi-bin/cdyn.exe/handouts-neighpresv_HousingElement?grp=handouts-neighpresv&obj=HousingElement

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U.S. Census Bureau. 2014b. State and County Quick Facts – San Joaquin County, California. Last amended July 8. Available at: http://quickfacts.census.gov/qfd/states/06/06077.html

U.S. Census Bureau. 2014c. State and County Quick Facts – Merced County, California. Last amended July 8. Available at: http://quickfacts.census.gov/qfd/states/06/06047.html

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3.16 Public Services and Utilities

This section presents the physical and regulatory setting for public services and utilities surrounding the Proposed Action. The impact analysis considers the potential for the Proposed Action to exceed the existing capacities for public services (i.e., police, fire, schools, and parks) and utilities (i.e., water, wastewater, storm drainage, solid waste, and electrical services). The analysis is based on a review of local land use plans and policies and aerial imagery.

3.16.1 Environmental Setting/Affected Environment

The study area for the analysis is Stanislaus County, which provides public services to the area in which the Proposed Action alternatives facilities would be constructed. This section describes the environmental setting for current public services and utilities within the construction study area. From the DMC, the Proposed Action would also supply water to users in Merced and San Joaquin Counties, but because there are no facilities there, no effects on services or utilities in those areas are expected.

Police Services

The Stanislaus County Sheriff's Department provides police services for the study area. The Department has a Sheriff, an Undersheriff, 2 Captains, 4 Chiefs, 2 Sergeants, and 10 Lieutenants, as well as a number of officers (Stanislaus County Sheriff's Department 2014a). Patrol Services is responsible for responding to citizen calls and is expected to investigate crime, make arrests, provide preventative patrol, and render assistance as needed. Patrol Services includes specialty units including the K-9 Unit, the Mounted Unit, and SWAT. The Investigations Division is responsible for the follow-up of major crimes that are reported to the Department. The Sheriff's Department provides contractual law enforcement services to the cities of Riverbank, Patterson, Waterford, and Hughson (Stanislaus County Sheriff's Department 2014b).

Fire Services

Fire protection services within the study area are provided by the West Stanislaus County Fire Protection District (WSCFPD), the Westport Fire Protection District (WFPD), and the Mountain View Fire Protection District (MVFPD).

The WSCFD serves roughly 625 square miles west of the San Joaquin River in Stanislaus County, excluding the cities of Patterson and Newman. The WSCFD serves the portions of both Alternative 1 and Alternative 2 that are west of the San Joaquin River, and all of the area crossed by Alternative 3. There are five stations, two of which are jointly shared with the cities of Newman and Patterson. District Headquarters are located at 244 West Las Palmas Avenue in Patterson. The District has eight staff and 85 volunteers and provides fire, emergency medical services (EMS), and rescue services (West Stanislaus County Fire Protection District 2014). Apparatus includes 8 engines, 4 water tenders, 3 rescue vehicles, 1 electric unit, 1 air unit, 4 command vehicles, and 1 truck (West Stanislaus County Fire Protection District 2014). In 2010, the District responded to 120 fires, 280 rescue/medical calls, and 236 other incidents (West Stanislaus County Fire Protection District 2014).

The WFPD serves 45 square miles, including a small portion of the eastern edge of Alternative 1. There is one station located at 5160 South Carpenter Road in Modesto. There are 17 volunteers on staff with access to 2 engines, 1 water tender, and 1 rescue vehicle (Stanislaus LAFCO 2007). Services include fire, EMS, and rescue. Roughly 300 incidents were reported in 2005 (Stanislaus LAFCO 2007).

The MVFPD serves 53 square miles, including a portion of Alternative 2 east of the San Joaquin River. The MVFPD has two stations and is headquartered at 9633 Crows Landing Road in Crows Landing. The MVFPD has 18 volunteer staff with 3 engines and 1 water tender; services include fire, EMS, and rescue (Stanislaus LAFCO 2007). In 2005, MVFPD reported less than 200 incidents (Stanislaus LAFCO 2007).

Other Emergency Services

The Stanislaus County Emergency Medical Services Committee is tasked with coordinating and regulating local emergency service for Stanislaus County (Mountain Valley Emergency Medical Services Agency 2013). Committee members are appointed by the Stanislaus County Board of Supervisors and serve three year terms. The Committee is responsible for recommending optimal EMS dispatch and EMS first response configurations for the County, evaluating the need for policy development, recommending optimal emergency ambulance service areas, recommending guidelines for an EMS disaster plan, and evaluating EMS education levels.

Water Supply

West Stanislaus Irrigation District (WSID) serves the mid-portion of Alternative 1 which runs east-west from I-5 to SR 33. WSID provides water for irrigation purposes to its customers. The district operates and maintains an intake canal along the San Joaquin River for its diversions. WSID also has a contract for CVP water delivered from the DMC.

TID serves the southeastern portion of Alternative 2, including the proposed pump station located at the corner of S. Carpenter Road and W. Harding Road (Stanislaus LAFCO 2009/2011). TID provides irrigation water to more than 5,800 growers in a 307 square mile service area with 149,500 acres of farmland. TID water is stored in Don Pedro Reservoir, and is conveyed by gravity to its service area.

PID serves the portion of Alternative 1 that run from west of the San Joaquin River to SR 33. PID also serves the portion of Alternative 2 that runs along Pomegranate Ave. south of the City of Patterson to SR 33, and almost all of the Alternative 3 alignment. Serving nearly 13,500 acres of farmland and ranches with irrigation water, PID diverts water from the San Joaquin River and has a contract for CVP water delivered from the DMC.

DPWD serves the remainder of the Proposed Action area, including between Rogers Road along Zacharias Avenue to where Alternative 1 connects with the DMC, between SR 33 and along Marshall Road to where Alternative 2 connects with the DMC, and the southern end of the Alternative 3 alignment between Elfers Road and the DMC. Serving agricultural irrigation water to roughly 45,000 acres of farmland, DPWD’s primary source of water is from the CVP.

Wastewater

The majority of unincorporated Stanislaus County, including the study area, is not provided sewer services by a wastewater entity, as rural residences rely on septic systems.

Solid Waste

The Environmental Resources Department of Stanislaus County provides solid waste management services to the study area (Stanislaus County 2013). These services include administering the Refuse Control Ordinance, preparing educational outreach materials, promoting beverage container and waste motor oil recycling, and administering the four refuse collection agreements for the unincorporated areas of Stanislaus County. Bertolotti Disposal Company is the contracted entity that collects solid waste within the study area.

Collected waste and recyclables are transported to the Bertolotti Disposal and Transfer Station at 231 Flamingo Drive in Ceres. From the Transfer Station, all non-recycled waste items are transported to the Fink Road Sanitary Landfill located at 4000 Fink Road in Crows Landing. Opened in 1973, the Fink Road Landfill is owned by Stanislaus County and operated by the Environmental Resources Department (Stanislaus County 2014). It provides landfill services to the cities of Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock, Waterford, and the unincorporated areas of Stanislaus County.

3.16.2 Regulatory Framework

This section describes laws and regulations that may apply to the Proposed Action.

Federal Policies and Regulations

Uniform Crime Reporting Program (UCR) The Federal Bureau of Investigation currently collects information on over 14,000 law enforcement agencies across the nation through the UCR. The UCR defines law enforcement officers as individuals who ordinarily carry a firearm and a badge, have full arrest powers, and are paid from governmental funds set aside specifically for sworn law enforcement representatives. While the UCR records number of law enforcement officers per 1,000 inhabitants, there are currently neither national requirements nor recommendations for staffing level ratios. The national average of sworn officers per 1,000 inhabitants was 2.4 in 2011, with the highest in cities with fewer than 10,000 residents.

Federal Safe Drinking Water Act (SDWA) The SDWA ensures the quality of drinking water and is administered by the EPA. The EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. The Act authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water and cause harm to the public.

State Policies and Regulations

California Drinking Water Program (DWP) The DWP regulates public water systems, oversees water recycling projects, permits water treatment devices, certifies drinking water treatment and distribution operators, and supports and promotes water system security.

Local Policies and Regulations

Stanislaus County General Plan The Stanislaus County General Plan guides development for the County with a 20-year planning horizon.

The following policies in the Stanislaus County General Plan, Safety Element would apply to the project (Stanislaus County 1994):

> *Policy Seven* – Adequate fire and sheriff protection shall be provided.

City of Modesto The City of Modesto Urban Area General Plan serves as a blueprint for future growth within the City. The Plan outlines policies that focus on a community vision (City of Modesto 2008). The following policy in the Urban Area General Plan relating to public services and utilities would apply to the project:

> *General Water Goal*: Ensure a consistent, reliable, high-quality water supply for the City of Modesto and its customers.
> *Water Policies- Baseline Developed Area (i)*: The City of Modesto should continue to pursue additional potential water supply alternatives available to the City to accommodate growth and meet future demand in both normal and dry years.
> *General Wastewater Goal*: The objective of the City's wastewater system is to meet increasingly strict wastewater regulations in a cost-effective manner. As demand for water increases in California, reclaiming wastewater could create opportunities to optimize the region's water resources. Similar opportunities exist for the beneficial reuse of biosolids and digester gas, and other residuals of wastewater treatment.
> *Wastewater Policies- Baseline Developed Area (b)*: The City shall support the near-term expansion of the wastewater treatment and disposal capacity of the Jennings Road Secondary Treatment Plant.
> *Wastewater Policies- Baseline Developed Area (f)*: The City shall continue to support, develop, and research future water reclamation opportunities as a water resource.
> *Wastewater Policies- Baseline Developed Area (m)*: The City will encourage the regional beneficial reuse of reclaimed water. The City is committed to development of a full reclamation program in the long term. The City will comply with Title 22 standards for use of reclaimed water and criteria contained in the California Department of Public Health (CDPH) "Purple Book."
> *Fire Protection Policies- Baseline Developed Area and Planned Urbanizing Area (b)*: The City of Modesto shall ensure adequate ingress and egress to all structures for firefighting and rescue purposes independent of privately owned and maintained driveways.
> *Fire Protection Policies- Baseline Developed Area and Planned Urbanizing Area (k)*: The City of Modesto shall protect life and property by requiring engineered fire protection systems and fire resistive roof systems as part of all new construction; in situations where access is limited, fire sprinkler shall be required for new construction.

3.16.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

Potential impacts on public services and utilities are analyzed based on the potential for the Proposed Action alternatives to affect the services described above.

Thresholds of Significance

Consistent with Appendix G of the *CEQA Guidelines* a public service or utility impact would be considered significant if the project would:

- Result in substantial adverse impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection, police protection, schools, parks, or other public facilities.
- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects or result in the determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- 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.
- Have insufficient water supplies available to serve the project from existing entitlements and resources, and thus require new or expanded entitlements.
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- Be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs or violate federal, state, and local statutes and regulations related to solid waste.
- Comply with federal, state, and local statues and regulations related to solid waste.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to activities associated with the Proposed Action are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects* – The Proposed Action alternatives entail the construction of

new facilities to augment DPWD's water supply with recycled water. The environmental effects of the proposed facilities are evaluated throughout this document. The Proposed Action would not require or result in the construction of new water or wastewater treatment facilities beyond those being analyzed within this environmental document.

- *Require or results in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects* – The Proposed Action alternatives would not generate a substantial increase in the amount of stormwater runoff as nearly all proposed construction elements would either be buried underground or would be constructed on presently impervious land. The Proposed Action would thus not generate a need for new stormwater drainage facilities or the expansion of existing facilities.
- *Have insufficient water supplies available to serve the project from existing entitlements and resources, and thus require new or expanded entitlements* – The Proposed Action alternatives are designed to provide a supplemental water supply to DPWD's service area and SOD CVPIA refuges, and would not create a new demand for water supply. The Proposed Action would not require any additional entitlements, beyond those that are included and evaluated throughout this document.
- *Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments* – The Proposed Action is a water supply project, using recycled water as a source of non-potable water for beneficial use. The Proposed Action would not generate any additional demand for wastewater treatment, beyond that proposed as part of the Proposed Action. Thus, no further evaluation is required.

Impacts and Mitigation Measures

Impact PUB-1 Impacts Associated with New or Altered Governmental Facilities to Maintain Acceptable Levels of Performance

No Action Alternative If no action were taken, there would be no public service impacts within the study area.

All Action Alternatives (Alternative 1, 2, and 3) The Action alternatives include construction of pipelines and pump stations to convey recycled water to potential customers in DPWD and does not include residential or commercial development that would directly induce population growth and require new or expanded fire and police protection, schools, parks, or other public facilities (see *Chapter 4*). In addition, implementation of the project under any of the alternatives would not indirectly induce unplanned population growth that would place new demands on local public service providers, as the resulting water would be provided to existing customers. Thus, the project would not result, directly or indirectly, in substantial adverse impacts associated with the provision of new or physically altered governmental facilities. The project does not generate a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts. The project is not expected to affect the ability of local providers to maintain acceptable service ratios, response times or other performance objectives for fire protection, police protection, schools, parks, or other public facilities. Similarly, the

operation and maintenance of the Proposed Action would not substantially increase the need for new staff from the public service entities.

During construction, accidents could occur in the work area. These accidents would temporarily increase demand for emergency services, which would occur on an as-needed and emergency basis. This short-term increase could be accommodated by the service providers in the study area. Because the Proposed Action alternatives would not require additional public services, this impact is considered less than significant.

Significance Determination before Mitigation Less than significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures No mitigation measures are required.

Impact PUB-2 Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board

No Action Alternative If no action were taken, treated wastewater would continue to be discharged to the San Joaquin River, pursuant to existing NPDES permits for the Cities of Modesto and Turlock.

Combined Alignment Alternative (Alternative 1) Recycled water, blended with DMC water, would be delivered to farms within DPWD and the refuge's service area. Discharge of recycled water to the DMC would be subject to an NPDES Permit issued by the CVRWQCB and Reclamation's then current water quality requirements. The project would be designed to meet all water quality requirements specified by the CVRWQCB and Reclamation. Refer to *Section 3.11, Hydrology and Water Quality* for additional discussion of water quality.

Separate Alignment Alternative (Alternative 2) Impacts would be the same as Alternative 1.

PID Conveyance Alternative (Alternative 3) Recycled water would be blended with San Joaquin River water prior to being introduced into the DMC for delivery to farms within DPWD's service area. Discharge of recycled water to the San Joaquin River would continue to be subject to NPDES permits held by the Cities of Turlock and Modesto, which have been issued by the CVRWQCB. The project would have to meet all water quality requirements specified by the CVRWQCB for discharge, including both existing requirements and potential future requirements, which are becoming increasingly stringent as well as Reclamation's water quality requirements for introduction and conveyance in federal facilities. With continued discharge to the river it is expected that both treatment plants would have to be upgraded in the future to meet more stringent requirements for salt and nutrient removal. It is likely that both plants would have to provide partial treatment via reverse osmosis for salinity removal, which would then require brine disposal for the salts that are removed during treatment. The Modesto Jennings Plant currently provides removal of nitrates/nitrite, but the Turlock facility only removes ammonia. It is likely that Turlock would have to upgrade their treatment process to include nitrogen removal and UV disinfection. The possibility that the existing Turlock and Modesto treatment plants would not meet future treatment requirements is considered a potentially significant impact.

With implementation of **Mitigation Measure PUB-1,** potential impacts would be reduced to less than significant.

Significance Determination before Mitigation Less than significant for Alternatives 1 and 2; potentially significant for Alternative 3.

Mitigation Measures **Mitigation Measure PUB-2: Treatment Plant Upgrades** (Alternative 3). The Cities of Modesto and Turlock would upgrade treatment facilities as needed to meet future requirements for salinity and nutrient removal, plus other future treatment requirements established by the CVRWQCB.

Significance Determination after Mitigation Less than significant.

Impact PUB-3 Served By a Landfill without Sufficient Permitted Capacity or Violate Regulations Related to Solid Waste

No Action Alternative If no action were taken, there would be no solid waste impacts within the study area.

Combined Alignment Alternative (Alternative 1) During construction of this alternative, there would be minimal solid waste generated that would require disposal at a landfill. Spoil, including soil and rock, that would be excavated during construction of the project would either be reused on site for backfilling or disposed of properly. Spoil unable to be reused would be temporarily stored at staging areas until characterized, and then hauled away to the proper disposal site. Additional solid waste would be generated by construction crews within the study area, which would need to be hauled off site to be disposed. Operation of the buried pipeline and re-purposed pump station would not generate any additional solid waste that would require disposal at a landfill.

Solid waste generated during construction, including spoil that cannot be reused, would likely be delivered to the Fink Road Sanitary Landfill. This landfill is currently sized to satisfy all county landfill disposal needs through 2076 (Stanislaus County 2002). As such, impacts to landfill resources would be less than significant. The proposed project would comply with all federal, state, and local statues and regulations related to solid waste.

Separate Alignment Alternative (Alternative 2) Impacts for this alternative would include all of those mentioned above for Alternative 1 as well as impacts resulting from the construction of the new pump station near the western end of the Harding Drain Bypass Pipeline. This impact would include additional spoil material and other trash and solid waste generated by crews during construction which would also be within the capacity of the Fink Road Sanitary Landfill. Similar to Alternative 1, impacts to landfill resources would be less than significant and the proposed project would comply with all federal, state, and local statues and regulations related to solid waste.

PID Conveyance Alternative (Alternative 3) Impacts would be similar to Alternatives 1 and 2, and would also be less than significant.

Significance Determination before Mitigation Less than significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures No mitigation measures are required.

Impact PUB-4 Temporary Disruption of Utilities Due to Construction-Related Activities
No Action Alternative If no action were taken, there would be no utility or public service impacts within the study area.

Combined Alignment Alternative (Alternative 1) Alternative 1 includes the construction of a pipeline within and alongside roads, where other utilities are commonly found. Construction of the proposed project could potentially conflict with existing utilities located along the roadways and near the pump station, particularly underground utilities and/or overhead lines. If these utilities are not clearly identified prior to construction, damage and temporary disruption to those lines, and interruption of the associated services could result. Potential damage to major utility lines could result in significant impacts to the service area, unless appropriate coordination and notification of other service providers is conducted during project planning, design, and construction. Temporary disruption of utility services (i.e., electricity and water) is possible and must be mitigated to ensure that existing construction of the proposed project is not impacted. **Mitigation Measure PUB-4** would reduce this potential impact to less than significant.

Separate Alignment Alternative (Alternative 2) Impacts would be the same as Alternative 1.

PID Conveyance Alternative (Alternative 3) Impacts would be the similar to Alternatives 1 and 2, though the potential for disruption of utilities in roadways would be slightly less because less pipeline construction in roadways would be needed. However, this alternative would require conveyance through PID facilities, and would require substantial expansion of those facilities. There is thus a possibility for interruption of water deliveries to PID customers during construction.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure PUB-4: Coordinate Relocation and Interruptions of Service with Utility Providers during Construction** (Alternatives 1, 2 and 3). The construction contractor shall be required to verify the nature and location of underground utilities before the start of any construction that would require excavation. The contractor shall be required to notify and coordinate with public and private utility providers at least 48 hours before the commencement of work adjacent to any utility. The contractor shall be required to notify the service provider in advance of service interruptions to allow the service provider sufficient time to notify customers. The contractor shall be required to coordinate timing of interruptions with the service providers to minimize the frequency and duration of interruptions.

Significance Determination after Mitigation Less than significant.

Impact PUB-5 Could Require Construction of New Wastewater Treatment Facilities that Would Cause Significant Environmental Effects

No Action Alternative Under the No Action Alternative, it may be necessary for the Cities of Modesto and Turlock to construct treatment plant upgrades if discharge to the river continues if the CVRWQCB imposes additional requirements for removal of salinity and nutrients. It is likely that treatment facilities could be constructed within the existing treatment plant sites, so it is projected that siting of facilities would not result in significant impacts to sensitive cultural or biological resources or to residents in the project area. However, if reverse osmosis treatment is needed to remove salinity, the treatment process would produce brine (highly saline water containing the salts that are removed by the reverse osmosis process). Brine disposal in an inland area is typically difficult because ocean disposal options are not available. Given the uncertainties regarding brine disposal, it is possible that brine disposal could require construction of facilities that would have a significant impact on the environment.

Combined Alignment and Separate Alignment Alternatives (Alternatives 1 and 2) These alternatives include construction of new facilities to augment water supply with recycled water. The environmental effects of the proposed facilities are evaluated throughout this document. These alternatives would not require or result in the construction of new water or wastewater treatment facilities beyond those being analyzed within this environmental document. There would be no impact.

PID Conveyance Alternative (Alternative 3) Similar to the No Action Alternative, this alternative would continue discharges to the San Joaquin River which could require future treatment plant upgrades if the CVRWQCB imposes additional requirements for removal of salinity and nutrients. Construction of new facilities, including brine disposal, could have a significant impact on the environment.

Significance Determination before Mitigation No impact for Alternatives 1 and 2. Significant and potentially unavoidable impacts for Alternative 3 and the No Action Alternative.

Mitigation Measures Although mitigation of impacts may be possible, due to the high level of uncertainty regarding brine disposal it is not possible to define specific mitigation and this impact is considered to be potentially significant and unavoidable.

Significance Determination after Mitigation No impact for Alternatives 1 and 2. Significant and potentially unavoidable impacts for Alternative 3 and the No Action Alternative.

Cumulative Impacts

The geographic scope of potential cumulative impacts related to public services and utilities includes the study area, Stanislaus County, and the service areas of each of the agencies listed in *Section 13.16.1* above. There are three relevant projects within the vicinity of the proposed project that may contribute to cumulative impacts:

- Jennings Treatment Plant Phase 2 Upgrades: increase tertiary treatment capacity by 12.6 mgd.

- West Main Improvement Project: widen West Main Ave to 3 lanes from the San Joaquin River to Crows Landing Road (Stanislaus County Department of Public Works 2011).
- StanCOG South Corridor Study: study potential alignments and corridor options for an expressway from the City of Turlock on the east to I-5 on the west (Stanislaus County Department of Public Works 2011).

Cumulative projects could result in increases in the generation of solid waste, damage to utilities, and disruption to utility service. Because the Proposed Action alternatives are not expected to generate substantial amounts of solid waste and there is sufficient capacity at the landfill through 2076, the alternatives would not contribute to cumulatively considerable impacts. With respect to utility impacts during construction, the implementation of **Mitigation Measure PUB-4** would reduce the proposed alternative's contribution to cumulative effects. As such, they would not contribute to cumulatively considerable impacts.

However, Alternative 3, similar to the No Action Alternative, may require future treatment plant upgrades, which could result in cumulatively considerable impacts. Also, if discharge standards for salts and nutrients become more stringent, it's likely that other dischargers to the San Joaquin River would also have to upgrade treatment facilities. Timing of the upgrades is uncertain, and would not likely overlap with construction of the Jennings Treatment Plant Phase 2 Upgrades, which should be completed in 2016. However, due to the uncertainties regarding brine disposal, there is a possibility of cumulatively significant impacts.

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3.17 Recreation

This section evaluates the potential impacts related to recreational uses that could result from implementation of the Proposed Action. Recreational resources (e.g., parks, bikeways, fishing access, etc.) within the project area are described, along with related County General Plan polices. The impact analysis presents the standards used to evaluate impacts to recreational resources and addresses potential effects of the Proposed Action on such resources. Also assessed are the potential effects that could result from delivery of this water to SOD CVPIA-designated refuges.

3.17.1 Environmental Setting/Affected Environment

The following sections describe the environmental setting for recreational uses and facilities in the construction site vicinity.

Project Site Vicinity

The Proposed Action construction area is generally located in the central portion of Stanislaus County and includes areas that are north, west, and south of the City of Patterson. Area residents have access to recreational opportunities and facilities including several park and fishing areas, bikeways, and recreational centers. The park system that exists today reflects the historical growth patterns of the project area and the trends for certain types of recreational facilities that have been popular as the local park system has developed.

Alternatives 1 and 2 would require one or more crossing of the San Joaquin River, SR 33, the CFNR railroad tracks, and irrigation canals. Alternative 3 would require crossing of SR 33, the CFNR railroad tracks, and irrigation canals. Land uses adjacent to these alignments and other new/constructed facilities consist of agriculture and rural residences. The DMC is used informally for recreation, including fishing, though there is no formally designated fishing access. Further discussion of recreational opportunities in the vicinity of the alternatives follows.

Jennings Plant Pump Station The City of Modesto Wastewater Division maintains a secondary treatment and tertiary facility on Jennings Road northeast of the City of Patterson. The effluent ponds of the Jennings Plant Pump Station form the largest wetland in Stanislaus County and attract a large number of migratory birds. Public access to the area is restricted; the Stanislaus Audubon Society organizes bird watching tours at the facility (City of Modesto 2014; Stanislaus Audubon Society 2014).

Local Bikeways A review of available maps indicates that no designated bikeways traverse the project area. For further discussion of bikeways, please see *Section 3.19, Transportation and Traffic.*

Fishing Access In the project vicinity, there is one access point for fishing in the San Joaquin River. Las Palmas Fishing Access is located adjacent to the existing PID intake on the San Joaquin River east of Patterson off of route J17 (Las Palmas/West Main Street). The three-acre

park has one mile of river frontage with a parking lot, restrooms, concrete boat ramp, barbecues, picnic tables and handicapped access.

South of the Delta CPVIA-designated Wildlife Areas

As discussed in *Chapter 2, Alternative and Proposed Action*, in addition to providing water to the DPWD service area, the proposed project would make recycled water available to certain SOD refuges. Multiple NWRs, SWAs, and one privately managed complex in the Central Valley are designated as CVPIA units/refuges. These areas are generally open spaces containing habitat such as wetlands, native grasslands, riparian forests, and vernal pools that support a variety of fish and wildlife species and are an important part of the Pacific Flyway, a major migration root for migratory birds. Most of them are open to the public. They provide opportunities for birdwatching, wildlife viewing, hiking, biking, boating, waterfowl hunting, camping and fishing. **Table 3.17-1** lists the CPVIA units/refuges located SOD that could potentially be served by the proposed project.

Table 3.17-1: South of Delta CVPIA Wildlife Areas

Facility Name	Location	Activities Available	Acres (approx.)
San Luis NWR (USFWS)[1] • East Bear Creek Unit • Freitas Unit • Kesterson Unit • San Luis Unit • West Bear Creek Unit	Merced County: Approximately 10 miles north of Los Banos	Exhibit hall with interactive educational exhibits, auto/trail routes, bird watching, waterfowl hunting, fishing, and Tule Elk viewing	26,800
Kern NWR (USFWS)[1]	Kern County: 20 miles west of the City of Delano	Auto route, waterfowl hunting, fishing, wildlife viewing	11,249
Volta SWA(CDFW)[2]	Merced County: 0.75 mile north of Volta	Waterfowl hunting, nature trails, wildlife viewing	2,891
Mendota SWA (CDFW)[2]	Fresno County: 3 miles south of Mendota near Whites Bridge	Camping during waterfowl season, hunting, fishing, wildlife viewing.	11,802
Los Banos SWA (CDFW)[2]	Merced County: 4 miles northeast of Los Banos on Henry Miller Avenue	Hunting, hiking, biking, bird watching, boat launch, fishing, kayaking, walking and bicycling on undesignated trails	6,217
North Grasslands SWA (CDFW)[2] • Salt Slough Unit • China Island Unit	Merced and Stanislaus Counties: Generally 6 miles north of Los Banos	Camping during waterfowl season, hunting, boat launch, fishing, boating, wildlife viewing.	7,069
Grasslands Wildlife Management Area (USFWS) [1;3]	Merced County: Santa Fe Grade Rd, several miles east of Los Banos	Closed to public use; wildlife viewing is accessible from adjacent roads, primarily Sante Fe Grade Road, which bisects the north and south Grasslands in a NW/SE direction, north and south of Los Banos	60,000

Sources:
1. USFWS
2. CDFW 2014
3. Recreation.gov 2014

San Luis Reservoir State Recreation Area

Nestled in the grassy hills of the western San Joaquin Valley near historic Pacheco Pass, San Luis Reservoir State Recreation Area is noted for boating, board sailing, fishing, camping, and picnicking. The San Luis State Recreation Area is owned by Reclamation and managed by the California Department of Parks and Recreation. San Luis Reservoir was constructed as a storage reservoir for the CVP and the SWP. It stores water pumped from the Delta pursuant to Reclamation's and DWR's water rights permits. The water arrives through the California Aqueduct and the DMC, and is pumped from the O'Neill Forebay into the main reservoir whenever system demands are below the export capacity of the combined pumping plants. As described in *Chapter 2, Alternatives and Proposed Action*, recycled water conveyed in the DMC as part of the Proposed Action during low-demand periods could be stored in San Luis Reservoir when capacity is available.

A visitor center at the Romero Overlook provides full information on the reservoir and the water projects through audio-visual and printed materials. Telescopes are also available for viewing the area. The Romero Visitor Center is administered by DWR.

San Luis Reservoir State Recreation Area has four campgrounds: Basalt, San Luis Creek, Medeiros, and Los Banos Creek. All campgrounds are open year round. North and South Beach day-use areas have about 200 picnic sites with shade ramadas, tables, and BBQ grills. Both day-use areas have plenty of shade and grass. North Beach is the only designated swim area within San Luis Reservoir State Recreation Area. San Luis Reservoir State Recreation Area consists of three water bodies: San Luis Reservoir, O'Neill Forebay, and Los Banos Creek Reservoir, all of which are accessible to boaters, although Los Banos Creek is subject to winter closure because of water release from the reservoir (State Parks 2014).

3.17.2 Regulatory Framework

This section describes laws and regulations at the federal, state, and local level that may apply to the Proposed Action.

Federal Policies and Regulations

Public Law 102-575, Title 34, Central Valley Project Improvement Act (CVPIA) See *Section 3.4.2, Biological Resources, Regulatory Framework.*

Public Law 105-57, National Wildlife Refuge System Improvement Act of 1997 See *Section 3.4.2, Biological Resources, Regulatory Framework.*

San Joaquin River National Wildlife Refuge Comprehensive Conservation Plan The San Joaquin River NWR is 9 miles west of the city of Modesto and straddles western Stanislaus and Southern San Joaquin Counties. This NWR was established in 1987 primarily to protect wintering habitat for Aleutian Canadian goose (*Branta canadensis leucopareia*), then a federally-listed endangered species. The refuge also serves to protect other threatened and endangered species that depend on wetlands and riparian floodplain habitat. The refuge played a pivotal role in the removal of the Aleutian Canada goose from the federal Threatened and Endangered Species List in 2001.

The San Joaquin River NWR Comprehensive Conservation Plan (CCP) (USFWS 2006) was developed to guide the management of the San Joaquin River NWR for the next 15 years. The San Joaquin River NWR provides protection for both wetland- and upland-dependent wildlife species of California's Central Valley. The goals of the San Joaquin River NWR CCP include providing opportunities for environmental education about native California habitats and wildlife and their conservation and restoration, providing the public with wildlife viewing and photographic opportunities, and providing other recreational activities such as waterfowl hunting and fishing.

State Policies and Regulations

Public Trust Doctrine The Public Trust Doctrine espouses the notion that title to lands under navigable waters up to the high water mark is held by the state in trust for the people (California State Lands Commission n.d.). The Submerged Lands Act grants states sovereignty over their tide and submerged lands, and the Supreme Court established the states' duty to protect (in perpetuity) the public's interest in these areas.[1] The California Supreme Court has interpreted the range of public interest values in these waterways to include general recreation activities such as swimming and boating, as well as preservation of lands in their natural state as open space, as wildlife habitat, and for scientific study.[2,3] The Public Trust Doctrine applies to the San Joaquin River in the vicinity of the Proposed Action.

Local Policies and Regulations

Stanislaus County General Plan Stanislaus County has identified the following goals and policies in the Conservation Element of the General Plan (1994) that are relevant to the Proposed Action:

GOAL 1: Encourage the protection and preservation of natural and scenic areas throughout the County.

Policy 1: Maintain the natural environment in areas dedicated as parks and open spaces.

Policy 2: Assure compatibility between natural areas and development.

*GOAL 4***:** Provide for the open-space recreational needs of the residents of the County.

Policy 14: Provide for diverse recreational opportunities such as horseback riding trails, hiking trails, and bikeways.

Policy 15: Coordinate the provision of recreation needs with the other providers such as the USACE, the State Resources Agency, school districts, river rafters, horse stable operators, and private organizations such as the Sierra Club and Audubon Society.

Stanislaus County Parks Master Plan The Stanislaus County Parks Master Plan (1998) provides a comprehensive overview to guide the Board of Supervisors, Parks Recreation

[1] *Illinois Central Railroad v. Illinois,* 1892. 146 U.S. 387. The Public Trust Doctrine has yet to be applied to federal lands and waters through statutes or case law.

[2] Marks v. Whitney. 1971. 6 Cal.3d 251; National Audubon Society v. Superior Court. 1983. 33 Cal.3d 419; People v. California Fish Co. 1913. 166 Cal. 576.

[3] Frank, R. M. 1983. "Forever Free: Navigability, Inland Waterways, and the Expanding Public Interest." *University of California, Davis Law Review:*16:579. California case law also establishes a link between navigation and recreation, and verges on treating the two as interchangeable public interests.

Commission and the Parks Department in meeting a variety of goals for park lands and users over the next twenty years. In 1994, Stanislaus County updated its General Plan and charged the Parks Department and Parks Commission with accomplishing the development of a Parks Master Plan. Development of this long range plan has included a needs assessment, specific park plans, future planning, development of design standards, and economic and fiscal planning.

The Stanislaus County Parks Master Plan prioritizes simple inexpensive activities, outdoor activities involving the natural environment, and park amenities that include bathroom facilities, children's play areas, barbeques, lighted areas, bike paths, and sports fields. The plan recognizes the importance of fishing access along the county's waterways.

Merced County General Plan Merced County contains approximately 114,000 acres of county, state, and federal parks and recreation areas and public open space areas. Merced County is in the process of updating its General Plan. The 2030 Merced County General Plan Planning Commission Review Draft (Merced County 2011) Recreation and Cultural Resources Element recognizes that recreational resources provide economic, health, and open space benefits. The majority of the NWRs and SWAs that could receive water flows from the Proposed Action are located in Merced County. The following goals and policies in the Recreation and Cultural Resources Element are relevant to the Proposed Action:

GOAL RCR-1: Preserve, enhance, expand, and manage Merced County's diverse system of regional parks, trails, recreation areas, and natural resources for the enjoyment of present and future residents and park visitors.

> Policy RCR-1.1: Encourage the continuation and expansion of existing public recreation land uses, including, but not limited to, public beaches, parks, recreation areas, wildlife areas, and trails.

San Joaquin County General Plan The Public Facilities chapter of the San Joaquin County General Plan (2010) describes the health, economic, and natural resource benefits of recreation and the necessity of providing recreational opportunities for all of the County's residents. Water-based activities such as fishing, boating, swimming, and water skiing, are the most popular recreational activities in San Joaquin County. There are about 400 miles of waterways in the County, including the California Delta, Mokelumne River, Stanislaus River, Calaveras River, and several canals, aqueducts, and borrow sites. The DMC passes through the County, however, there are no legal recreational access points on the canal within San Joaquin County (San Joaquin County 2010).

City of Modesto One of the goals of the City of Modesto's Urban General Plan is to preserve the natural river corridors in Modesto for recreational and open space opportunities. However, the Urban General Plan does not include any specific policies relevant to recreational resources in the project area (City of Modesto 2008).

3.17.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

This section evaluates whether construction and operation of the facilities associated with the Proposed Action alternatives would result in significant impacts related to recreational resources. The analysis is based on the project's preliminary design information, including construction methods and procedures, and project design and management, when weighed against the baseline environmental conditions of recreational facilities in the project area.

The evaluation addresses direct effects on recreational facilities, as well as indirect effects, such as changes in recreational opportunities that could affect the use of the related recreational facility or another facility elsewhere. For example, the evaluation considers whether a reduction in recreational opportunities at a given location could displace users to a different location, resulting in an increase in use and potential for deterioration of the facilities at that other location.

Water from the Proposed Action that may be stored in San Luis Reservoir would not be anticipated to measurably affect recreational facilities because Reclamation would manage introduction of water in the DMC so as to not exceed capacity of the canal and reservoir. Water levels are thus not expected to change in a way that would adversely affect recreation, so impacts in these locations are not considered further.

Thresholds of Significance

Consistent with Appendix G of the *CEQA Guidelines* an impact on recreational resources would be considered significant if the project would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial deterioration of the facility would occur or be accelerated.
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to activities associated with the Proposed Action are identified below along with a supporting rationale as to why further consideration is unnecessary and a no impact determination is appropriate.

- *Inclusion of Recreational Facilities or Require Construction or Expansion of Recreational Facilities* – The Proposed Action alternatives do not include recreational facilities nor would they include construction or expansion of recreational facilities. Therefore, there would be no impacts on the environment related to construction of new or expanded recreational facilities.

Impacts and Mitigation Measures

Impact REC-1. Substantial Impairment of the Use of Existing Parks or Other Recreational Facilities

No Action Alternative Under the No Action Alternative, no-construction would occur. Therefore, no impacts on recreational facilities would occur.

Combined Alignment Alternative (Alternative 1) As described previously, land uses adjacent to Alternative 1 consist of agriculture and rural residences. Pump station construction and operation would occur at the existing Jennings Plant. Public access to the Jennings Plant is restricted, although tours are granted to bird watching groups (see *Section 3.17.1, Environmental Setting/Affected Environment*, above, for more information). The proposed project under this alternative would not change the amount of water available for storage in the effluent ponds. A 54-inch-diameter pipe would deliver recycled water to the DMC near Zacharias Road. However, because formal fishing access at the DMC is not available, access to the canal would not be impacted, so this impact is considered less than significant. Once constructed, the discharge site would not interfere with potential access to the DMC. No other public recreational facilities are located within or adjacent to this alternative's pipeline alignment; therefore, there would be no potential for impact to existing parks or other recreational facilities. Overall impacts are considered less than significant.

Separate Alignment Alternative (Alternative 2) Land uses adjacent to Alternative 2 are similar to those of Alternative 1. The existing pump station at Jennings Plant would also be modified and a new pump station would be constructed at the Harding Drain Bypass Pipeline, located near South Carpenter Road. Currently, the latter site is vacant and consists of open space and agricultural land uses. Under Alternative 2, one 42-inch-diameter pipeline would introduce supply to the DMC at the terminus of Zacharias Road, and another 42-inch-diameter pipe would discharge north of West Marshall Road. Once constructed neither introduction points would interfere with potential access to the DMC. No other public recreational facilities are located within or adjacent to the project alignment; therefore, there would be no impact to existing parks or other recreational facilities from Alternative 2. Overall impacts are considered less than significant.

PID Conveyance Alternative (Alternative 3) Land uses adjacent to the pipeline alignment for this alternative are similar to those of Alternatives 1 and 2, and pipeline construction would not impair recreational uses. The existing PID intake facility is immediately south of an existing recreation area and boat ramp on the San Joaquin River. Construction at the intake site would not affect the boat ramp facility (PID 2006). As with Alternatives 1 and 2, a discharge structure would need to be constructed at the DMC. Once constructed, the discharge site would not interfere with potential access to the DMC. No other public recreational facilities are located within or adjacent to the project alignment; therefore, impacts to existing parks or other recreational facilities from Alternative 3 would be less than significant.

Significance Determination Less than significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures None.

Impact REC-2 Increase in Water Flow to the National Wildlife Refuges Such that Substantial Increase in Birdwatching and Other Recreational Opportunities Would Occur
No Action Alternative Under the No Action Alternative, there would be no change to the water supply to SOD CVPIA-designated refuges, and as such no change in recreational opportunities or use of recreational facilities at these locations. There would be no impact.

All Action Alternatives (Alternative 1, 2, and 3) The Proposed Action alternatives would make some recycled water available to certain SOD CVPIA-designated refuges to meet CVPIA requirements. These refuges contain habitat that supports a variety of fish and wildlife species, and are an important part of the Pacific Flyway, a major migration route for migratory birds. An increase in water supply would most likely lead to an increase in habitat for these species. While this conceivably could have a beneficial effect on recreational viewing opportunities at the refuges that receive water from the Proposed Action, causing an increase in recreational use, no determination has yet been made on the amount of water or which of the refuges would be served by the NVRRWP.

Significance Determination Potentially beneficial impact for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures None.

Cumulative Impact Analysis

The Proposed Action alternatives may have limited short-term impacts on recreation as described above. However, there are no cumulative projects that would affect recreation on the DMC or San Joaquin River that would create cumulative adverse impacts to recreation from any of the Action alternatives.

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3.18 Socioeconomics

This section describes the socioeconomic conditions in the study area, and discusses the effect on the economy that could be expected to result from implementing the Proposed Action.

3.18.1 Environmental Setting/Affected Environment

The following sections present socioeconomic data for San Joaquin, Stanislaus and Merced Counties.

Population and Employment

Table 3.18-1 shows the estimated population in San Joaquin, Stanislaus and Merced Counties and the numbers of individuals employed in various industries in each county.

Table 3.18-1: Population and Employment by Industry Sector - 2013

Category	San Joaquin County	Stanislaus County	Merced County
Total Population	685,306	514,453	255,793
Employed Population	269,943	202,047	96,057
INDUSTRY			
Agriculture, forestry, fishing, hunting, mining	13,782	11,124	13,576
Construction	18,092	12,162	6,567
Wholesale trade	26,382	26,592	12,064
Retail trade	9,879	7,084	2,804
Transportation, warehousing, utilities	36,930	28,422	10,097
Information	15,945	9,012	4,854
Finance, insurance and real estate	5,729	1,540	1,614
Professional, scientific, management, administrative, waste management services	12,298	8,856	3,767
Education, health care	27,759	19,374	5,978
Arts, entertainment, recreation, accommodation, food services	58,147	43,340	21,272
Other services (not public)	20,462	15,688	5,440
Public administration	12,770	10,804	4,245
Median income (dollars)	$56,652	$50,686	$49,870
Per capita income (dollars)	$21,652	$20,608	$17,838

Source: U.S. Census 2013

After rising steadily through 2011, overall unemployment rates in the three counties served by DPWD have decreased in the last several years. **Table 3.18-2** shows unemployment rates in San Joaquin, Stanislaus and Merced Counties from 2008 through 2014.

Table 3.18-2: Annual Average Unemployment Rates

Year	San Joaquin County	Stanislaus County	Merced County
2008	10.4	11.0	12.5
2009	15.3	15.8	16.9
2010	17.3	17.2	18.7
2011	16.8	16.7	18.2
2012	15.0	15.1	16.9
2013	12.8	13.0	14.7
2014	10.6	11.2	12.8

Source: California EDD 2015

Agricultural Water Use and Production

DPWD has a contract with Reclamation for delivery of up to 140,210 AF of CVP water annually for irrigation of approximately 45,000 acres of highly productive farmland with a production value of over $130 million gross farm dollars annually (RMC 2013). Prior to the implementation of the CVPIA, and other legal and regulatory delivery constraints, DPWD typically received its full water allocation every year. When the full water allocation was available, normal agricultural fallowing in the DPWD service area averaged 3,349 acres per year (RMC 2013).

As shown in **Table 3.18-3**, Reclamation was only able to provide full CVP contract deliveries to DPWD in only three water years out of the last twenty four. On-going shortages and lack of water supply reliability have created a severe hardship on DPWD and its growers as they have been required to increase fallowing and/or purchase more costly water supplies on the open market to support ongoing agriculture. Crop reports for 2014 indicate that fallowed acreage has increased by almost 4,000 acres over the prior year's total of 7,239 acres, resulting in a significant loss of both farm income and agricultural related jobs. The effect of these shortages on the agriculturally-based economies of the communities on the west side of the San Joaquin Valley has had severe economic repercussions and will exhibit continuing negative economic impacts as these losses ripple through the local and regional economies.

Uncertainties regarding water supply have ongoing effects on the local economy. Over the years from 2001 to 2013 growers in the DPWD service area increased acreage planted to higher value permanent crops, such as almonds, but in the face of uncertain water deliveries, growers may defer land conversion investments and leave lands fallow. However, this is not an option for lands already planted in permanent crops. Drought conditions and pumping restrictions have thus had major economic impacts on San Joaquin Valley counties (Michael and Hewitt et al. 2010).

Table 3.18-3: Historic Annual CVP Allocation

Year	Allocation (AFY)	Percent of Full Allocation
1990-91	70,105	50
1991-92	35,053	25
1992-93	35,053	25
1993-94	70,105	50
1994-95	58,888	42
1995-96	140,210	100
1997-98	126,189	90
1998-99	140,210	100
1999-2000	98,147	70
2000-01	91,137	65
2001-02	63,095	45
2002-03	98,147	70
2003-04	105,158	75
2004-05	98,147	70
2005-06	119,179	85
2006-07	140,210	100
2007-08	70,105	50
2008-09	56,084	40
2009-10	14,021	10
2010-11	63,095	45
2011-12	112,168	80
2012-13	56,084	40
2013-14	28,042	20
2014-15	0	0

3.18.2 Regulatory Framework

There are no federal or state regulations regarding socioeconomics that would apply to the Proposed Action. This section describes laws and regulations at the local level that may apply to the project.

Local Policies and Regulations

Stanislaus County General Plan The following goal is relevant to socioeconomics.

- Agriculture Goal One: Strengthen the agricultural sector of our economy.

San Joaquin County General Plan The following objective is relevant to socioeconomics.

- Water Resources Objective 1: To ensure adequate quantity and quality of water resources for municipal and industrial uses, agriculture, recreation, and fish and wildlife.

Merced County General Plan The following goal is relevant to socioeconomics.

GOAL AG-1: Maintain the financial viability of the agricultural sector by encouraging expansion of commercial agriculture, attracting new agricultural support and value added industries, and promoting locally-grown commodity.

3.18.3 Impact Analysis/Environmental Consequences

CEQ's NEPA regulations (40 CFR 1508.8[b]) list economic and social factors among the effects that should be analyzed in an EIS. Specifically, economic and social effects should be discussed when they are interrelated with natural or physical effects (40 CFR 1508.14).

Methodology for Analysis

Potential economic benefits of the Proposee Action were analyzed using a regional input-output model that was calibrated to existing local economic data. IMPLAN Version 3 software was used to derive the model. The analysis was focused on quantifying the income and employment benefits associated with additional water supply and did not take into account the short-term benefits of construction employment or ongoing operations and maintenance of the proposed water conveyance facilities. Analysis was based on the potential agricultural cropping impacts from new recycled water supplies as direct, indirect and induced income and employment (Michael and Pogue 2010).

Impacts

Economic Benefits of Proposed Action

No Action Alternative The No Action Alternative would not result in any of the potential economic benefits of the project, and the agricultural economy in the DPWD service area would continue to be subject to the uncertainties of water supply availability. Additional years in which DPWD does not receive a full allocation of CVP water would result in ongoing adverse effects on the agricultural economy due to fallowing and loss of agricultural related jobs.

Combined Alignment and Separate Alignment Alternatives (Alternatives 1 and 2) The potential economic benefits of Alternatives 1 and 2 would be the same as each alternative would be able to deliver much needed additional water supplies to DPWD and certain SOD refuges. Although not expected until full build out of the Cities (a 40 year period), the potential annual delivery of up to 59,000 AF would provide additional water supplies to supplement DPWD's CVP water supplies ensuring continued agricultural viability in the district. Based on the analysis conducted by Michael and Pogue (2010), at full buildout, the NVRRWP under these alternatives could result in 572 additional jobs, with $29,030,055 in total income and $67,537,627[1] in total output each year.

[1] Income and output were calculated in 2010 dollars. Values in 2014 dollars, accounting for inflation using the Consumer Price Index, would be $31,665,665 in total income and $73,669,302 in total output each year.

PID Conveyance Alternative (Alternative 3) Under Alternative 3, the delivery of additional water supplies to DPWD would have similar socioeconomic benefits as Alternatives 1 and 2. However, there might be some short-term disruption of service to growers served by the PID Main Canal during construction of the portions of the pipeline that cross existing laterals. This could have a minor economic impact, but due to the short-term nature of the disruption the effects are expected to be fairly small.

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3.19 Transportation and Traffic

This section evaluates the potential impacts related to transportation and traffic that could result from implementation of the Proposed Action. The analysis is based on a review of traffic facilities in the project vicinity and local transportation plans.

3.19.1 Environmental Setting/Affected Environment

The following sections describe the environmental setting for transportation and traffic within the study area.

Regional Setting and Project Vicinity

The Proposed Action construction area is generally located in the central portion of Stanislaus County and includes areas that are north, east, and south of the City of Patterson. The Combined Alignment Alternative (Alternative 1) includes installation of a recycled water pipeline that would run approximately 69,800 feet beginning at Turlock's Harding Drain Bypass Pipeline, continuing north along South Carpenter Road, west on West Main Street, north on Jennings Road to Modesto's Jennings Plant, and then continues west beneath the San Joaquin River, and then along Lemon Avenue and Zacharias Road to the DMC. **Figure 2-2** shows the planned pipeline route for Alternative 1 and names of the affected roads.

The Separate Alignment Alternative (Alternative 2) includes independent pipeline segments from Turlock and Modesto's treatment facilities to the DMC. The northern segment of the pipeline follows the same route as the pipeline planned for Alternative 1 from the Jennings Plant outfall pump station to the DMC, beginning at Modesto's Jennings Plant and continuing west beneath the San Joaquin River, and then along Lemon Avenue and Zacharias Road to the DMC. The southern segment would begin from a new pump station located adjacent to the Harding Drain Bypass Pipeline, continue west underneath the San Joaquin River, across open space and along Pomegranate Avenue and a private road between Locust Avenue and SR 33, continue along West Marshall Road, jog around a substation to the north of West Marshall Road, and end at the DMC. **Figure 2-3** shows the planned pipeline route for Alternative 2 and names of the affected roads.

The PID Conveyance Alternative (Alternative 3) would primarily be constructed paralleling the PID Main Canal, with short segments on Bartch Avenue and Ward Avenue. **Figure 2-4** shows the planned pipeline route for Alternative 3 and names of the affected roads.

Regional Transportation Network Stanislaus County is served by several major highways including I-5, Highway 99, SR 132, SR 165, and County Road J17 (West Main Street). SR 33 is a two-lane and four-lane (within city limits only), north-south route that runs parallel to I-5 between Santa Nella and Vernalis. SR 108 has an east-west alignment from Riverbank and SR 219 to the county line. Within the county, SR 108 connects to SR 120. SR 120 is a major east-west, two- and four-lane state highway in northern Stanislaus County that is the continuation of the primary route to Yosemite National Park. SR 120 also connects Oakdale to San Joaquin County.

SR 132 travels throughout the county in an east-west two-lane configuration, through the center of Modesto. This highway is known as Maze Boulevard west of Highway 99 and as Yosemite Boulevard east of Highway 99. SR 165 is a north-south facility located in the southern portion of the county, between the Merced County line and Highway 99 in Turlock. SR 219 is a two- and four- lane, east-west highway that connects with Highway 99 near Salida and SR 108 in Modesto.

The proposed project would be located along several stretches of roadway that have been identified by the Stanislaus Council of Governments (StanCOG) as possible future expressways in the 2010 StanCOG Regional Expressway Study (StanCOG 2010). The following possible alignments are located within the Proposed Action construction area (StanCOG 2014a and StanCOG 2014c):

1. County Road J17 (West Main Street) may serve as the main artery of the planned South County Corridor, which is a planned multilane lane expressway that will connect the cities of Patterson and Turlock. Construction required to widen West Main Street will occur in phases along segments of West Main Street; construction to widen West Main Street to three lanes from the San Joaquin River west to Carpenter Road is scheduled to begin in 2020 (StanCOG 2014b).
2. As part of the planned South County Corridor expressway, a Patterson Bypass is a planned expressway with an unspecified number of lanes that will route drivers around the City of Patterson and will serve to link I-5 with the City of Turlock. The Patterson Bypass may use existing Zacharias Road and construction would involve widening the road and realigning the intersection of Zacharias Road and SR 33, but according to the City of Patterson 2010 General Plan EIR, the Patterson Bypass does not have any funding forecasted, although the City has identified it as a need (City of Patterson 2010) and it is still under study (StanCOG 2010). Additionally, the intersection at Carpenter Road and West Main Street will be improved (StanCOG 2014a).
3. SR 33 is planned to be an expressway outside of the City of Patterson. It is currently a two lane road but StanCOG 2010 states there are plans to widen it to a four-lane expressway (StanCOG 2010). The City of Patterson General Plan EIR also states that SR 33 will be widened from downtown Patterson to the San Joaquin County line (but does not specify the number of lanes), and recommends widening the road to four lanes from the intersection of SR 33 and Sperry Road in downtown Patterson north to the intersection of Rogers Road and SR 33 (City of Patterson 2010).

Designated Truck Routes SRs 132, 108, and 120 are the east-west arteries running through the County. The primary north-south arteries are Highway 99 and I-5. All county roads, unless otherwise signed, are designated truck routes.

Transit Service Stanislaus Regional Transit (STaRT) offers transportation between cities within Stanislaus County and to the City of Merced via seven bus routes. Route 10 provides service between Modesto and Turlock during weekdays, and operates seventeen round trips between 5:05 a.m. and 10:35 p.m. Route 15 also provides service between Modesto and Turlock

during weekdays, and combines with the Modesto/Riverbank/Oakdale route to provide Saturday service. Route 40 offers service to Modesto, Grayson, Westley, and Patterson, Monday through Saturday. Route 45 West offers service to Patterson, Crows Landing, Newman, and Gustine, Monday through Saturday, and Route 45 East offers Monday through Saturday service between Turlock and Patterson. Route 60 offers weekday service between Modesto and Oakdale, as well as Saturday service to Riverbank. Route 70 offers service to Modesto, Turlock, and Merced Monday through Saturday. STaRT offers curb-to-curb shuttle services between Modesto/ Oakdale/ Riverbank, Turlock/Modesto/Ceres/Keyes, and Waterford/Modesto/Hughson/Empire. STaRT also offers Dial-A-Ride services in Newman, Oakdale, Patterson, Riverbank, and Waterford (STaRT 2014).

Turlock Transit Lines, operated by the City of Turlock, provides public transportation services via both the Bus Line Service of Turlock (BLAST) and Dial-A-Ride of Turlock (DART). BLAST service operates Monday through Friday, from 6:40 A.M. through 5:30 P.M. and from 9:25 A.M. through 4:00 P.M. on Saturday. BLAST serves virtually all major focal points in Turlock and Denair. DART provides curb-to-curb service to senior and disabled passengers in the greater Turlock and Denair areas. In Turlock, DART service is offered Monday through Friday, from 6:40 A.M. to 5:30 P.M., and on Saturday, from 9:25 A.M. to 4:00 P.M. In Denair, DART service is offered Monday through Friday, from 9:00 A.M. to 4:00 P.M., and on Saturday, from 9:30 A.M. to 3:30 P.M. (City of Turlock 2014).

Bikeways/Pedestrian Circulation The regional network of bicycle facilities includes a variety of Class I, II, and III bikeways within the cities and communities of Stanislaus County. Class I bicycle facilities are also known as bike paths. Class II facilities are more commonly known as bike lanes, and are designated by striping in paved roads or street ROW. Bicyclists using these facilities share the roadway with cars. The bike lanes are clearly marked and distinguished as guideways for bicycles. Class III facilities are bike routes that share ROW with other vehicles but have no striping or recognizable designation other than signage. No designated bicycle facilities exist within the study area (StanCOG 2014a), but West Main Street is a planned Class III bikeway (Stanislaus County 2011).

Railroads The CFNR maintains railroad tracks that are located adjacent and parallel to SR 33 within the designated study area.

Existing Traffic Volumes Daily traffic volumes in Stanislaus County range from more than 138,000 average daily trips (ADT) on Highway 99 to more than 16,000 ADT on arterials such as West Main Street to less than 2,000 ADT on local streets (StanCOG 2010). **Table 3.19-1** shows ADT values for road segments near the study area.

Table 3.19-1: Existing Daily Traffic Volumes on Roadways In and Around the Project Area

Roadway	Location	Daily Traffic (ADT)
Sperry Road	SR 33 to Ward Avenue	7,150
SR 33	Ward Ave to Westley, CA	5,042
SR 33	Crows Landing Road to Poppy Ave	3,650

Level of service (LOS) is a measure of the performance of transportation facilities. TStanCOG defines roadway LOS as one of six LOS designations: A, B, C, D, E, or F (StanCOG 2011). LOS A and B represent free flow or reasonably free flow operations, and LOS E and F represent high levels of congestion and unstable traffic flow. **Table 3.19-2** provides descriptions of each LOS category.

The LOS for the roadways that could be directly affected by the Action alternatives was not available during preparation of the Draft EIR/EIS or this Final EIS; however, the Stanislaus County General Plan (County of Stanislaus 1994) identifies a target LOS of C or better. The local roadways are not typically congested, and so this LOS is likely being met under baseline conditions.

Table 3.19-2: LOS Definitions/Characteristics

LOS	Description
A	Represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.
B	Stable flow, but the presence of others in the traffic stream begins to be noticeable.
C	Stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interaction with others in the traffic stream.
D	Represents high density, but stable flow.
E	Represents operating conditions at or near the capacity level.
F	Represents forced traffic flow or a breakdown in traffic flow.

Parking Unless otherwise indicated, parking is available to vehicles along the shoulders of County highways within the County ROW, per the Stanislaus County Code.

3.19.2 Regulatory Framework

This section describes laws and regulations at the federal, state, and local level that may apply to the Proposed Action.

Federal Highway Administration Manual on Uniform Traffic Control Devices

The Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) is a compilation of national standards for all traffic control devices, including road markings, highway signs, and traffic signals. This document, which has been administered by FHWA since 1971, is updated periodically to accommodate the nation's evolving transportation needs and addresses new safety technologies, traffic control tools and traffic management techniques. The most current version of the MUTCD is dated 2009 and was published in the Federal Register on June 13, 2012 (FHWA 2014).

Caltrans Transportation Management Plan Guidelines

Caltrans Transportation Management Plan Guidelines (2009) outlines strategies and guidelines that are needed to minimize traffic congestion during road work activities that are planned along existing Caltrans facilities. The guidelines established in this document identify processes, roles, and responsibilities for all planned construction, maintenance, and permit activities.

Incorporation of these strategies in project construction documents and implementation of the strategies are expected to help reduce congestion and manage traffic impacts near work areas.

Stanislaus County General Plan

The Circulation Element of the Stanislaus County General Plan (County of Stanislaus 1994) contains the following relevant policies and implementation measures:

GOAL ONE: Encourage the protection and preservation of natural and scenic areas throughout the County.

> *Policy Two:* Circulation systems shall be designed and maintained to promote safety and minimize traffic congestion.
>
> *Implementation Measure 1:* The County shall maintain LOS C or better for all County roadways and intersections, except, within the sphere of influence of a city that has adopted a lower level of service standard, the City standard shall apply.
>
> *Implementation Measure 7:* Within the spheres of influence of any city, roadway improvements, dedications, building setbacks, and road reservations shall meet the development standards of the city consistent with the Spheres of Influence Policy in the Land Use Element of the General Plan, except in those areas subject to an individual city/county agreement.
>
> *Implementation Measure 10:* Traffic control devices (e.g., traffic signals), traffic calming, and other transportation system management techniques shall be utilized to control the flow of traffic, improve traffic safety, and minimize delays.
>
> Policy Five: Transportation requirements of commercial and industrial development shall be considered in all planning, design, construction, and improvements.

GOAL TWO: Provide a safe, comprehensive, and coordinated transportation system that includes a broad range of transportation modes.

> *Policy Seven:* Bikeways and pedestrian facilities shall be designed to provide reasonable access from residential areas to major bicycle and pedestrian traffic destinations such as schools, recreation and transportation facilities, centers of employment, and shopping areas.
>
> *Implementation Measure 7:* Whenever a roadway is resurfaced or restored, adequate pavement shoulder and/or striping will be considered to safely accommodate bicycle travel in accordance with the County Standards and Specifications, the Caltrans Highway Design Manual, or other nationally recognized standard, where adequate right-of-way exists.
>
> *Policy Eight:* Promote public transit as a viable transportation choice.

GOAL THREE: Maintain a balanced and efficient transportation system that facilitates inter-city and interregional travel and goods movement.

> *Policy Nine:* The County shall promote the development of inter-city and interregional transportation facilities that more efficiently moves goods and freight within and through the region.

Modesto Urban Area General Plan

There are no transporation policies relevant to the Proposed Action. Operation of facilities under the Action alternatives would not generate more than 100 peak-hour trips, so a traffic study is not

required. Other policies pertain to development of the transportation network within the Modesto urban area and are not applicable to the Proposed Action.

3.19.3 Impact Analysis/Environmental Consequences

Methodology for Analysis

This section evaluates whether construction and operation of the facilities associated with the Proposed Action could result in significant impacts related to local transportation and traffic. The analysis is based on a review of various plans, policies, and reports, as well as evaluations of aerial imagery and visits to the study area.

Operational effects would be minimal; pipelines would be buried and vehicle traffic generated by the project under the three Action alternatives would be limited to a very small number of infrequent vehicle trips for pipeline inspection and maintenance. For this reason, this impact analysis focuses on construction-related impacts.

Thresholds of Significance

Consistent with Appendix G of the *CEQA Guidelines*, a traffic impact would be considered significant if the Proposed Action would:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of a circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersection, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roadways or highways.
- Result 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.
- Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.
- Conflict with adopted policies regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Criteria Requiring No Further Evaluation

Criteria listed above that are not applicable to activities associated with the Proposed Action are identified below along with a supporting rationale as to why further consideration is unnecessary and a no-impact determination is appropriate.

- *Result 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* – Activities related to construction and operation of the Proposed Action alternatives would not interfere

with air traffic; they would neither require an alteration of air traffic patterns nor result in an increase in air traffic levels.

Impacts and Mitigation Measures

Impact TR-1 Temporary Lane and Road Closures and Potential for LOS Degradation

No Action Alternative Under the No Action Alternative, neither pipeline construction nor operation would occur. There would be no impacts to transportation and traffic under the No Action Alternative.

Combined Alignment Alternative (Alternative 1) All pipeline construction would occur within public roadways and other public ROW, private and municipal agricultural lands, and public open space areas. Construction of the pipeline alignment under this alternative would consist of open-cut construction, except at specific crossings (e.g., river, highway, railroad, and irrigation canals), where trenchless construction techniques would be employed. Equipment, material and vehicle staging would be accommodated either at the construction zones, or at selected off-site locations (e.g., open lots) owned by the Cities of Modesto and Turlock. To accommodate construction equipment and work area, the entire construction corridor (active work area including the trench) would be approximately 45 feet wide.

Lemon Avenue and Zacharias Road are narrow, two-lane rural roads that are approximately 20 feet wide with varying widths of shoulders surrounded by agricultural lands. Overhead electrical utility lines are located along a large portion of these roadways.Residences and other farm-related structures are scattered on parcels along these alignments.

If access can be provided along the roadway shoulders and adjacent property, only partial road closures with appropriate traffic control would be required. The potential exists for pipeline construction along West Main Street, Jennings Road and South Carpenter Road to create lane/road closures requiring detours and other traffic control. Road closures are also anticipated along Lemon Avenue during construction, which would necessitate detours. One segment of trenchless pipe would be required to cross both SR 33 and the CFNR.

Partial or complete closures of roadways could cause a degradation of LOS below acceptable standards, cause roadway congestion, and potentially create roadway hazards. This impact is considered to be potentially significant. Implementation of **Mitigation Measure TR-1** would reduce impacts to a level that is less than significant

Separate Alignment Alternative (Alternative 2) The impacts caused by the installation of the northern reach of the pipeline would be the same as those described for Alternative 1. Impacts along the southern reach of the pipeline would be similar. In particular, Pomegranate Avenue is a narrow, two-lane rural road that is approximately 20 feet wide with varying widths of shoulders surrounded by agricultural lands. Overhead electrical utility lines are located along a large portion of this roadway. Residences and other farm-related structures are scattered on parcels along the alignment. Installation of the southern reach of the pipeline would result in the closure of Pomegranate Avenue during construction, requiring detours. As in the case of the northern reach, one segment of trenchless pipe would be required to cross both SR 33 and the CFNR.

Impacts under this alternative would be similar to Alternative 1 and would be considered potentially significant. Implementation of **Mitigation Measure TR-1** would reduce impacts to a level that is less than significant.

PID Conveyance Alternative (Alternative 3) This alternative has a shorter length of pipeline than Alternatives 1 and 2, and the majority of the pipeline would be constructed in existing PID ROW along the Main Canal. Construction in roadways would be limited to about 1.3 miles of pipeline in Bartch Avenue and about 1 mile of pipeline in Ward Avenue. Impacts of construction in these roadways would be similar to those described for Alternative 1. As with the other alternatives, one segment of trenchless pipe would be required to cross both SR 33 and CFNR. Temporary lane and road closures would be considered potentially significant. Implementation of **Mitigation Measure TR-1** would reduce impacts to a level that is less than significant

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures **Mitigation Measure TR-1: Implement a Construction Management Plan to Minimize Interference with Traffic and Emergency Response Hazards** (Alternatives 1, 2 and 3). The Partner Agencies or the construction contractor, in consultation with the County, will prepare and implement a Traffic Management Plan (TMP). The Partner Agencies will be responsible for ensuring that the plan is adequately developed and implemented. The Partner Agencies will provide the TMP to the Stanislaus County Department of Public Works and Caltrans. The TMP will include recommended traffic-control and traffic-reduction measures as identified in the Transportation Management Plan Guidelines issued by the Division of Traffic Operations Office of System Management Operations (Caltrans 2009). The Partner Agencies will require all traffic-control or traffic-reduction measures described in the TMP to be implemented. In addition, to the extent feasible, construction-related traffic and any temporary road closures shall be scheduled during non-peak traffic periods.

The measures included in the TMP shall be consistent with any applicable guidelines outlined in the Standard Specifications for Public Works Construction, the U.S. Department of Transportation's Manual on Uniform Traffic Control Devices, and the Work Area Traffic Control Handbook. The plan will include the following items:

- Definition of location and timing of any temporary lane or roadway closures.
- Identification and provision for circumstances requiring the use of temporary traffic control measures, such as flag persons, warning signs, lights, barricades, and cones to provide safe work areas in the vicinity of the project site or along the haul routes, including for narrow roadway segments, and to warn, control, protect, and expedite vehicular, bicycle, and pedestrian traffic and access by emergency responders.
- Implementation of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak-hour traffic, placement of detour signs (if required), lane closure procedures (if required), flaggers (if required), placement of cones for drivers, and designated construction access routes and access points.
- Notification to adjacent property owners, transit agencies and public safety personnel regarding when major deliveries, detours, and lane closures will occur.

- Measures to address the potential for construction-related traffic to impede emergency response vehicles and a specific training and information program for construction workers to ensure awareness of emergency procedures for project-related accidents.
- Identification of haul routes for movement of construction vehicles that will minimize impacts on vehicular and pedestrian traffic and circulation and safety, and provision for monitoring surface streets used for haul routes so that any damage and debris attributable to the haul trucks can be identified and corrected by the Partner Agencies in coordination with the construction contractor.
- Consideration of other projects in the vicinity that could also affect the same roadways as the project.
- Development of a process for responding to and tracking complaints pertaining to construction activity, including identification of an onsite complaint manager.
- Documentation of road pavement conditions for all routes that would be used by construction vehicles both before and after project construction. Roads damaged by construction vehicles will be repaired to the level at which they existed before project construction.

Significance after Mitigation Less than significant.

Impact TR-2. Potential Impacts on Public Transit, Bicycle, and Pedestrian Uses of Affected Roadways

No Action Alternative Under the No Action Alternative, no pipeline construction would occur. There would be no impacts to transportation and traffic under the No Action Alternative.

Combined Alignment Alternative (Alternative 1) Traffic impacts during construction of Alternative 1 may include disruption of alternative modes of transportation, such as blocking bicycle or pedestrian access on the shoulders of area roadways. The potentially affected roadways do not have sidewalks or specifically delineated bike lanes. Impacts on transportation and traffic would be temporary in nature but could significantly conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation. STaRT Route 45 West travels along West Main Street Monday through Saturday of each week, and could be affected by lane or road closures of West Main Street or the surrounding roads that may be affected by the construction of this alternative. Additionally, the shoulders of the roads that may be affected may be used by pedestrians and cyclists, who could in turn be affected by lane or road closures. This impact is considered potentially significant. Implementation of **Mitigation Measure TR-1** would reduce potential impacts on transit, bicycle, and pedestrian uses of potentially affected roadways during the construction phase, and would ensure that impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Impacts would be similar to those of Alternative 1, and are considered potentially significant. Implementation of **Mitigation Measure TR-1** would reduce potential impacts on transit, bicycle, and pedestrian uses of potentially affected roadways during the construction phase, and would ensure that impacts would be less than significant.

PID Conveyance Alternative (Alternative 3) The pipeline alignment for this alternative would not affect any public transit routes, but could affect bicycle or pedestrian access along Bartch and Ward Avenues. Impacts would be similar to those of Alternative 1, and are considered potentially significant. Implementation of **Mitigation Measure TR-1** would reduce potential impacts on bicycle, and pedestrian uses of potentially affected roadways during the construction phase, and would ensure that impacts would be less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures See **Mitigation Measure TR-1.**

Significance after Mitigation Less than significant.

Impact TR-3 Interference with Emergency Access and Circulation
No Action Alternative Under the No Action Alternative, neither pipeline construction nor operation would occur. There would be no impacts to the access and circulation of emergency vehicles under the No Action Alternative.

Combined Alignment Alternative Construction of this alternative could interfere with the accessibility of roadways to emergency vehicles. Lane closures or full road closures, particularly along limited-width roads such as Lemon Avenue, Zacharias Road, Pomegranate Avenue, and Jennings Road could affect the response time necessary for emergency vehicles responding to emergencies in the area or traveling through the area. Impacts on emergency access and circulation would be temporary in nature but could significantly conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system. This impact is considered potentially significant. Implementation of **Mitigation Measure TR-1** would address the potential to interference with emergency access and circulation, reducing this impact to a level that would be less than significant.

Separate Alignment Alternative (Alternative 2) Impacts under this alternative would be similar to those of Alternative 1. Road closures could result in delays to emergency vehicles using roads that may be affected by construction. This impact is considered potentially significant. Implementation of **Mitigation Measure TR-1** would reduce this impact to a level that would be less than significant.

PID Conveyance Alternative (Alternative 3) Impacts under this alternative would be similar Alternative 1, though fewer roads would be affected. Road closures could result in delays to emergency vehicles using roads that may be affected by construction. This impact is considered potentially significant. Implementation of **Mitigation Measure TR-1** would reduce this impact to a level that would be less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures See **Mitigation Measure TR-1**.

Significance after Mitigation Less than significant.

Impact TR-4 Impacts to Traffic and Circulation from Trip Generation
No Action Alternative Under the No Action Alternative, neither pipeline construction would occur. There would be no trip generation under the No Action Alternative.

Combined Alignment Alternative Construction of this alternative would generate vehicle trips for deliveries of equipment and materials and disposal of spoil, and workers would be expected to commute via car from their homes to the work areas. This could result in impacts to traffic and circulation along potentially affected roadways.

Under this alternative, hauling trips could range from zero (for locations not requiring haul of spoil, such as for reconstruction of the pump station), to 83 round trips per day (for pipeline trenching). Worker vehicle trips are estimated to range from 8 to 28 round trips per day. In addition, a maximum of 25 truck trips per day would be required for delivery of imported backfill, pipe, equipment and other materials. This would introduce considerable additional traffic volume to existing roadways, many of which are small, rural, and do not have substantial capacity. While the existing traffic volumes on these roadways are generally low, and impacts would be short-term in any particular location, the traffic generated by the project could reduce LOS below acceptable levels and impair traffic circulation. This impact is considered potentially significant. **Mitigation Measure TR-1** would address these impacts by developing a construction TMP, which would identify haul routes, timing, and other factors to reduce impacts. With implementation of this mitigation measure, impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Impacts of this alternative would be similar to those of Alternative 1. Hauling trips could range from zero (for locations not requiring haul of spoil, such as for reconstruction of the pump station), to 71 round trips per day (for pipeline trenching). Worker vehicle trips are estimated to range from 8 to 28 round trips per day. In addition, a maximum of 25 truck trips per day would be required for delivery of imported backfill, pipe, equipment and other materials. This impact is considered potentially significant. **Mitigation Measure TR-1** would address these impacts by developing a construction TMP, which would identify haul routes, timing, and other factors to reduce impacts. With implementation of this mitigation measure, impacts would be less than significant.

PID Conveyance Alternative (Alternative 3) Impacts of this alternative would be similar to those of Alternatives 1 and 2, though there would be fewer hauling trips because of the shorter length of pipeline. **Mitigation Measure TR-1** would address these impacts by developing a construction TMP, which would identify haul routes, timing, and other factors to reduce impacts. With implementation of this mitigation measure, impacts would be less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures See **Mitigation Measure TR-1**.

Significance after Mitigation Less than significant.

Impact TR-5 Damage to Driveways from Open Trench Excavation
No Action Alternative Under the No Action Alternative, neither pipeline construction nor operation would occur. There would be no impacts to driveways along the above listed roadways under the No Action Alternative.

Combined Alignment Alternative (Alternative 1) Residences and facilities located along South Carpenter Road, West Main Street, Jennings Road, Lemon Avenue, and Zacharias Road that use driveways to access their respective roadways could be affected by open-trenching activities that would occur along these roadways. This is considered to be a potentially significant impact. **Mitigation Measure TR-2** would reduce this impact by providing access to driveways outside of construction work hours. Together with **Mitigation Measure TR-1**, which would include notification of adjacent property owners of planned construction activities, impacts due to interference with driveway access because of open trenching activities would be reduced to less than significant.

Separate Alignment Alternative (Alternative 2) Residences and facilities located along Lemon Avenue, Zacharias Road, and Pomegranate Avenue that use driveways to access their respective roadways could be affected by open-trenching activities that would occur along these roadways.This is considered to be a potentially significant impact. **Mitigation Measure TR-2** would reduce this impact by providing access to driveways outside of construction work hours. Together with **Mitigation Measure TR-1**, which would include notification of adjacent property owners of planned construction activities, impacts due to interference with driveway access because of open trenching activities would be reduced to less than significant.

PID Conveyance Alternative (Alternative 3) Residences and facilities located along Bartch Avenue and Ward Avenue that use driveways to access their respective roadways could be affected by open-trenching activities that would occur along these roadways. This is considered to be a potentially significant impact. **Mitigation Measure TR-2** would reduce this impact by providing access to driveways outside of construction work hours. Together with **Mitigation Measure TR-1**, which would include notification of adjacent property owners of planned construction activities, impacts due to interference with driveway access because of open trenching activities would be reduced to less than significant.

Significance Determination before Mitigation Potentially significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures See **Mitigation Measure TR-1**.

Mitigation Measure TR-2: Install Temporary Trench Plates over Open Trenches
(Alternatives 1, 2 and 3). During construction of the pipeline, temporary trench plates will be installed over open trenches at the end of each work day.

Significance after Mitigation Less than significant.

Impact TR-6 Impacts to State Route 33 and California Northern Railroad Company Railroad Tracks

No Action Alternative Under the No Action Alternative, there would be no impacts to SR 33 and CFNR railroad tracks, as construction of the pipeline would not take place.

All Action Alternatives (Alternative 1, 2, and 3) Pipeline crossings of SR 33 and CFNR railroad tracks could result in impediments to highway and rail traffic, respectively. However, trenchless construction methods (HDD or jack and bore construction) would be used for crossings of SR 33 and CFNR tracks, which would avoid traffic and circulation impediments to these transportation corridors. By using trenchless technology, the Action alternatives would avoid impacts to SR 33, CFNR tracks, and related roadway and rail traffic; there would be no impact.

Significance Determination before Mitigation No impact.

Mitigation Measures No mitigation measures are necessary.

Impact TR-7 Impacts to Roadway Surfaces as a Result of Construction Activities

No Action Alternative There would be no impacts to roadway surfaces if the No Action Alternative is implemented as no construction would occur.

Combined Alignment Alternative (Alternative 1) Implementation of this alternative would involve open trench construction along roadways and roadway shoulders, which would involve cutting into the roadway surface in various locations. Damage to the roadway would be temporary; upon completion of the pipeline installation, affected roadways would be repaved per the requirements of Stanislaus County (Stanislaus County 2014). Because damage to roadways would be temporary and roadway surfaces would be restored after construction, impacts would be less than significant.

Separate Alignment Alternative (Alternative 2) Impacts would be the same as under Alternative 1, and would be less than significant.

PID Conveyance Alternative (Alternative 3) Impacts would be the same as under Alternative 1, though there would be less construction in roadways; impacts would be less than significant.

Significance Determination before Mitigation Less than significant for all Action alternatives. No impact for the No Action Alternative.

Mitigation Measures No mitigation measures are necessary.

Cumulative Impact Analysis

The geographic scope of cumulative impacts related to transportation and traffic includes the construction footprint and surrounding roadways. The Proposed Action, as well as other projects listed in **Table 3.0-1**, would result in significant cumulative impacts if they collectively adversely affect the same roadways or other transportation infrastructure. Projects listed in **Table 3.0-1** that are relevant to the Proposed Action are the South County Corridor Study and the West Main Street Highway Improvement project. Although none of the roads that would be affected

by the proposed Action alternatives would be directly affected by roadway improvements during the Proposed Action's construction phase, it is possible that the intersection of South Carpenter Road and West Main Street will undergo construction starting in 2016, as the roadway widening of the segment of West Main Street from Carpenter Road to Crows Landing Road is scheduled to begin in 2016 (StanCOG 2014c). Roadway widening and associated improvements to the intersection of West Main Street and South Carpenter Road, combined with construction activities required to implement the Proposed Action, could result in potentially significant cumulative impacts by resulting in lane closures, roadway closures, and construction-related traffic at the same time, increasing congestion on local roadways. The Proposed Action's contribution would be considerable, and this would be a potentially significant impact.

Mitigation Measure TR-1 would involve preparation of a construction management plan for traffic, which would include consideration of other projects in the development of measures to reduce the traffic impacts of the Proposed Action. With implementation of this mitigation measure, the contribution of the project to this cumulative impact would be reduced to a level where it would no longer be considerable.

Significance Determination before Mitigation Potentially significant for all Action alternatives.

Mitigation Measures See **Mitigation Measure TR-1.**

Significance after Mitigation Less than significant.

3.19.4 References

California Department of Transportation (Caltrans). June 2009. Transportation Management Plan Guidelines. Division of Traffic Operations, Office of System Management Operations. Available: http://www.dot.ca.gov/hq/traffops/systemops/tmp_lcs/files/TMP_Guidelines.pdf. Accessed July 14, 2014.

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Chapter 4 Other NEPA Considerations

4.1 Significant and Unavoidable Impacts

As described in *Chapter 3, Affected Environment/Environmental Setting, Environmental Consequences/Impacts and Mitigation Measures*, there would be no significant and unavoidable impacts from Alternatives 1 and 2. Alternative 3 could result in a significant unavoidable impact associated with the need for additional treatment of wastewater prior to discharge to the San Joaquin River due to future requirements and the resultant need for brine disposal.

The No Action Alternative does have the potential to result in significant impacts associated with the lack of a reliable water supply. There is a potential for increased groundwater pumping, which could result in further depletion of the groundwater basin. It is also likely that a lack of water supply could lead to the conversion of agricultural land to non-agricultural uses. This would be a significant unavoidable impact. In addition, the No Action Alternative could result in a significant unavoidable impact associated with the need for additional treatment of the wastewater prior to discharge to the San Joaquin River due to future requirements and the resultant need for brine disposal.

4.2 Irreversible and Irretrievable Commitments of Resources

Implementation of the Proposed Action would require irreversible commitment of natural resources including construction materials; labor; and energy required for construction, operation, and maintenance. Commitment of non-renewable natural resources used in construction would include gravel, petroleum products, steel, and others. Commitment of energy resources for construction would include fuel oil, natural gas, and gasoline for heavy machinery. Operation of the Proposed Action would result in further commitment of energy resources. However, the consumption of energy for construction and operation would not be inefficient, wasteful or unnecessary. The Proposed Action would support the reuse of recycled water for irrigation in the region, which would otherwise be discharged into the San Joaquin River.

4.3 Growth Inducing Impacts

Projects are considered to have growth-inducing implications when economic, housing, or population growth occur either directly or indirectly. Local land use plans (e.g., general plans) provide for development patterns and growth policies that allow for the planned and orderly expansion of urban development (i.e., residential, commercial and industrial uses) supported by adequate urban public services (e.g., water supply, wastewater treatment, solid waste service disposal capacity, police and fire services). A project that would induce unplanned growth (i.e., conflict with local land use plans) could indirectly cause adverse environmental impacts not

previously envisioned. Thus, to assess whether a project has the potential to induce growth and result in adverse secondary effects beyond what is anticipated by the local jurisdiction, it is important to assess the degree to which the growth associated with a project would or would not be consistent with applicable land use plan.

Construction of the Proposed Action alternatives would not directly induce population growth, as no new residential or commercial development projects would be served by the project (see *Section 3.16, Population and Housing*). The Proposed Action would deliver recycled water to existing growers in the DPWD Service area (within Stanislaus, San Joaquin and Merced Counties) for agricultural irrigation purposes only. Growers in this region rely heavily on CVP supplies[1] (Reclamation 2011), augmented by groundwater pumping and surface water transfers, which vary depending on Delta pumping restrictions, drought conditions, and climate change and associated allocations by Reclamation. The proposed Action alternatives would also not indirectly induce growth (by removing or reducing the barriers to growth) because recycled water would not offset potable supplies in the cities of Turlock or Modesto where the recycled water is derived, or in any of the counties where recycled water would be delivered. Recycled water would be used beneficially for irrigation purposes for existing growers who have unreliable water supply, in lieu of being discharged into the San Joaquin River and being exported out of the region. Recycled water would also supplement supplies to refuges. Delivering non-potable water supply to refuges and to potential users within the DPWD service area would not increase existing potable water supplies and thus would not indirectly accommodate additional development within the cities or counties. Thus, impacts of growth inducement are less than significant for all three Action alternatives.

4.4 Environmentally Preferable Alternative

Reclamation and the Partner Agencies have identified Alternative 1 – Combined Alignment Alternative, as the Preferred Alternative.

Reclamation is required to identify the Preferred Alternative in a Final EIS (unless prohibited by law) (40 CFR 1502.14(e) and 43 CFR 46.425). It should be noted that CEQ regulations do not require identification of a Preferred Alternative in a Draft EIS if none has been determined. The Preferred Alternative should be an alternative that completes the action and that best meets the purpose and need for the action, as defined in an EIS. Defining the Preferred Alternative does not define the Federal lead agency's final decision. It is not necessary to provide a separate discussion in an EIS on the rationale for selecting of a Preferred Alternative. That specific discussion is most appropriate for the Record of Decision. The intention is to inform the public what the Federal lead agency considers best, based on available information. Public comments or other considerations may result in a change in the Preferred Alternative and may even result in the final decision (recorded in the Record of Decision) not being the Preferred Alternative identified in a Final EIS.

[1] DPWD has also secured alternate water supplies through temporary water transfers from other agencies or the use of groundwater from privately owned wells.

If an alternative exists that has the consensus of the affected community and is reasonable and practicable, meets the purpose and need for action, and is within Reclamation's statutory authority to implement, Reclamation should designate that alterative as the Preferred Alternative or explicitly explain why it was not so designated (43 CFR 46.110). No such consensus-based alternative has yet to be proposed by any party.

4.5 References

Bureau of Reclamation (Reclamation). 2014. Reclamation Announces Initial 2014 Central Valley Project Water Supply Allocation. February 21. Available at: http://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=46045

Bureau of Reclamation (Reclamation). 2011. Del Puerto Water District Water Management Plan. 2008 Criteria. July 5. Available at: http://www.water.ca.gov/wateruseefficiency/sb7/docs/2014/plans/Del%20Puerto%20WD%20PLAN_DOCUMENT.pdf

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Chapter 5 Consultation, Coordination and Compliance

This chapter summarizes the activities undertaken by Reclamation and the Partner Agencies to satisfy NEPA, CEQA, and other regulatory requirements, as well as activities undertaken for public and agency involvement. As described in Chapter 1, Reclamation and the City of Modesto jointly prepared a Draft EIR/EIS for the proposed NVRRWP, but due to timing constraints the City of Modesto prepared a standalone Final EIR (SCH# 2014042068) pursuant to CEQA requirements which was released on June 19, 2015 and certified by the City on July 7, 2015. This Final EIS has been prepared by Reclamation to satisfy NEPA requirements.

5.1 Scoping

The CEQA Notice of Preparation (NOP) and NEPA NOI for the Draft EIR/EIS were released on April 22, 2014, and distributed to 27 agencies. Postcards with information on where the NOP could be viewed and notification of the scoping meeting were also sent to 32 organizations and 84 property owners. The release of the NOP and NOI, along with postings of these notices in the local newspapers and on the websites of Reclamation and the Partner Agencies, began the 30-day scoping period for the project which ended on May 22, 2014. A joint public scoping meeting for the Draft EIR/EIS was held at on May 13, 2014 at the City of Modesto (2nd Floor Conference Room 2001 at 1010 Tenth Street). The Scoping Report is included in **Appendix A** of this Final EIS.

5.2 Draft EIR/EIS Distribution

As described previously, the Draft EIS/EIR was distributed for a 60 day public review and comment period beginning on January 8, 2015. A public meeting was held on Wednesday, February 11, 2015 at Modesto City Hall, 1010 Tenth Street, Modesto. During the public review period, Reclamation and the City of Modesto received 15 comment letters. The City of Modesto also received correspondence from the State Clearinghouse documenting the completion of the public review period for the Draft EIR. There were no verbal comments made at the public meeting. The comment letters and Reclamation's response to comments are included in *Chapter 8* of this Final EIS.

During the public review period, the Draft EIR/EIS was available for review on Reclamation's website (http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=17241), the Partner Agencies website (http://www.nvr-recycledwater.org/documents.asp), and at the following locations:

Bureau of Reclamation
1243 "N" Street
Fresno, CA 93721

City of Modesto, Utilities Department
1010 Tenth Street, 4th Floor
Modesto, CA 95354

City of Turlock
156 S. Broadway
Turlock, CA 95380

Del Puerto Water District
17840 Ward Ave
Patterson, CA 95363

The distribution list for the Draft EIR/EIS is included as **Appendix H**.

5.3 Compliance with Federal Statutes and Regulations

This section describes the status of compliance with relevant federal laws, executive orders, and policies.

5.3.1 Federal Endangered Species Act

Section 7 of the ESA (16 U.S.C. § 1531 *et seq.*) requires federal agencies, in consultation with and with the assistance of the Secretary of the Interior and or Commerce, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species. The USFWS and NMFS have regulatory authority over projects pursuant to the ESA that may affect the continued existence of a federally listed (threatened or endangered) species. Section 9 of the ESA prohibits the take of federally listed species. Take is defined under the ESA, in part, as killing, harming, or harassment of such species. Under federal regulations, take is further defined to include habitat modification or degradation where it actually results in death or injury to wildlife by substantially impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Section 7 of the ESA outlines procedures for federal interagency cooperation and participation in the conservation and recovery of federally listed species and designated critical habitat. Section 7(a)(2) requires federal agencies to consult with other federal agencies with regulatory authority to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or to destroy or adversely modify designated critical habitat. Critical habitat identifies specific areas that have the physical and biological features that are essential to the conservation of a listed species, and that may require special management considerations or protection.

Chapter 3.4, Biological Resources, describes the sensitive species that have the potential to occur in the area, and potential effects to federal endangered and threatened species. Impacts to species will be avoided through the implementation of Mitigation Measures, or through measures established in consultation with the USFWS and NMFS.

Reclamation has been coordinating with USFWS and NMFS on an ongoing basis since early in the planning process to incorporate ESA section 7(a)(2) consultation for potential effects to listed species due to the Proposed Action. Reclamation will not initiate any action related to the NVRRWP without first completing the appropriate consultation(s) with USFWS or NMFS. Documentation of the completion of Section 7 consultation will be included in the Record of Decision issued by Reclamation for the Proposed Action.

5.3.2 Fish and Wildlife Coordination Act

FWCA of 1934, as amended (16 U.S.C. § 661 *et seq*.) is intended to promote conservation of fish and wildlife resources by preventing their loss or damage, and to provide for development and improvement of fish and wildlife resources in connection with water projects. Federal agencies undertaking water projects are required to fully consider recommendations made by USFWS, NMFS, and State wildlife agencies when any waterbody is impounded, diverted, controlled, or modified for any purpose.

FWCA requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. Reclamation has initiated consultation with the USFWS pursuant to FWCA. Documentation of the completion of FWCA consultation will be included in the Record of Decision issued by Reclamation for the Proposed Action.

5.3.3 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Act of 1976 as amended (16 U.S.C. § 1801 *et seq*.), is the primary act governing federal management of fisheries in federal waters, from the 3-nautical-mile state territorial sea limit to the outer limit of the U.S. Exclusive Economic Zone. It establishes exclusive U.S. management authority over all fishing within the Exclusive Economic Zone, all anadromous fish throughout their migratory range except when in a foreign nation's waters, and all fish on the continental shelf. The Magnuson-Stevens Act establishes eight Regional Fishery Management Councils responsible for the preparation of fishery management plans to achieve the optimum yield from U.S. fisheries in their regions. The act also requires federal agencies to consult with NMFS on actions that could damage EFH. EFH, as defined in the 1996 Sustainable Fisheries Act (Public Law 104-297). EFH includes those habitats that support the different life stages of each managed species. A single species may use many different habitats throughout its life to support breeding, spawning, nursery, feeding, and protection functions. EFH can consist of both the water column and the underlying surface (e.g., streambed) of a particular area. The San Joaquin River in the Study Area is designated EFH for Chinook salmon. As described in *Section 3.4, Biological Resources*, the project is not expected to have adverse effect on fish habitat in the San Joaquin River. Reclamation is consulting with NMFS pursuant to the Magnuson-Stevens Act in coordination with its ESA consultation.

5.3.4 National Historic Preservation Act, Section 106

The purpose of NHPA (16 U.S. Code § 470) is to protect, preserve, rehabilitate, or restore significant historical, archeological, and cultural resources. Section 106 of the act requires Federal agencies to take into account effects on historic properties. Once an undertaking has been established, the Section 106 review involves a step-by-step procedure described in detail in the implementing regulations (36 CFR Part 800). Reclamation initiated consultation with the SHPO on May 27, 2015 requesting concurrence with a finding of no adverse effects to historic properties affected for the Proposed Action. SHPO concurred with Reclamation's determination on July, 2, 2015.

5.3.5 Clean Air Act

The U.S. Congress adopted general conformity requirements as part of the CAA Amendments in 1990 and the EPA implemented those requirements in 1993 (Sec. 176 of the CAA (42 U.S.C. § 7506) and 40 CFR Part 93, Subpart B). General conformity requires that all federal actions "conform" with the SIP as approved or promulgated by EPA. The purpose of the general conformity program is to ensure that actions taken by the federal government do not undermine state or local efforts to achieve and maintain the national ambient air quality standards. Before a federal action is taken, it must be evaluated for conformity with the SIP. All "reasonably foreseeable" emissions predicted to result from the action are taken into consideration. These include direct and indirect emissions, and must be identified as to location and quantity. If it is found that the action would create emissions above *de minimis* threshold levels specified in EPA regulations (40 CFR § 93.153(b)), or if the activity is considered "regionally significant" because its emissions exceed 10 percent of an area's total emissions, the action cannot proceed unless mitigation measures are specified that would bring the Proposed Action into conformance. As described in *Section 3.3, Air Quality*, the study area lies within the San Joaquin Valley Air Basin. The results of the air quality modeling showed that NO_x emissions could exceed Federal General Conformity significance thresholds. With implementation of **Mitigation Measure AIR-1** (reduce NO_x emissions), impacts would be reduced to less than significant. Thus, the project is in compliance with this Act.

5.3.6 Farmland Protection Policy Act

FPPA (7 U.S.C. § 4201 *et seq.*) requires a federal agency to consider the effects of its actions and programs on the nation's farmlands. The FPPA is intended to minimize the impact of federal programs with respect to the conversion of farmland to nonagricultural uses. It assures that, to the extent possible, federal programs are administered to be compatible with state, local, and private programs and policies to protect farmland. As described in *Section 3.1, Agriculture and Forestry Resources*, no long term conversion of farmland to non-agricultural use would occur. There could be temporary impacts to soil resources during construction where activities would occur within agricultural land, but such effects would be mitigated to less-than-significant levels with implementation of **Mitigation Measure AG-1**. Thus, the project would be in compliance with this Act.

5.3.7 Executive Order 11988 – Floodplain Management

EO 11988 requires federal agencies to recognize the values of floodplains and to consider the public benefits from restoring and preserving floodplains. Because pipelines would need to cross

under the San Joaquin River, there would be facilities located within the floodplain, but the buried pipelines and associated small appurtenances such as air release valves, would not increase flood hazards or interfere with floodplain management. Reclamation and the Partner Agencies have considered EO 11988 in their development of the NVRRWP alternatives and have complied with this order.

5.3.8 Federal Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and Executive Order 13168

The MBTA (16 U.S.C. §§ 703-712) and the Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668-668c) prohibit the take of migratory birds (or any part, nest, or eggs of any such bird) and the take and commerce of eagles. EO 13168 requires that any project with federal involvement address impacts of federal actions on migratory birds. As described in *Section 3.4, Biological Resources*, the Proposed Action could have potential to impact burrowing owls and tricolored blackbirds. However, with **Mitigation Measures BIO-9** and **BIO-10**, impacts would be reduced to less than significant. *Section 3.4* also evaluated the impacts on golden eagle and bald eagle and determined that potential impacts on these species would be less than significant. Thus, the lead agency would be in compliance with this EO and the Acts.

5.3.9 Executive Order 13112: Invasive Species

EO 13112 directs all federal agencies to prevent and control introductions of invasive non-native species in a cost-effective and environmentally sound manner to minimize their economic, ecological, and human health impacts. As directed by this EO, a national invasive species management plan guides federal actions to prevent, control, and minimize invasive species and their impacts (NISC 2008). No invasive species that warrant removal have been identified in the study area. In areas where revegetation is required, use of native species will be required so as to insure that invasive non-native plant species are not introduced to the area. Discharge of recycled water would not entail any risk of introducing invasive aquatic species to the DMC. The Proposed Action would thus be in compliance with this EO.

5.3.10 Executive Order 11990 – Protection of Wetlands

Under EO 11990, federal agencies must avoid affecting wetlands unless it is determined that no practicable alternative is available. The EO directs federal agencies to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in implementing civil works. As described in *Section 3.4, Biological Resources*, wetlands likely occur in the study area. A jurisdictional wetland delineation has been submitted to USACE for verification. Mitigation measures have been identified to reduce potentially significant impacts to less than significant levels. These include avoidance of federally protected wetlands to the extent possible through alignment adjustments and use of trenchless construction techniques, compensatory mitigation for losses of aquatic resources, and measures to reduce impacts of a frac-out. Thus, the Proposed Action will be in compliance with EO 11990.

5.4 Cooperating Agencies

Under NEPA cooperating agencies are agencies other than the lead agency that have jurisdiction by law or special expertise with respect to the environmental impacts expected to result from a proposed project. For the NVRRWP, the following agencies have been designated as Cooperating Agencies pursuant to NEPA in preparation of the Draft EIR/EIS and the Final EIS:

- City of Modesto, the lead agency for CEQA and one of the partners in the NVRRWP
- DPWD, a partner in the NVRRWP
- USFWS, responsible for biological consultation regarding effects on terrestrial and freshwater aquatic species
- NMFS, responsible for biological consultation regarding effects on anadromous fish
- City of Turlock, a partner in the NVRRWP

In addition, Reclamation is consulting with the USACE regarding necessary permits under Section 404 of the CWA. The USACE has designated Reclamation as the NEPA lead for permitting under both Section 7 of the ESA and Section 106 of the NHPA.

5.5 References

United States Environmental Protection Agency (EPA). 2014. Pacific Southwest, Region 9. 2014. Ground Water – Sole Source Aquifer. Last updated September 25, 2013. Available at: http://epa.gov/Region9/water/groundwater/ssa.html

Chapter 6 EIS Preparers

A list of persons who prepared or reviewed various sections of the Final EIS, prepared significant background materials, or participated substantially in preparing the Final EIS is presented below.

6.1 EIS Preparation Team

Table 6-1: List of Preparers

Name	Qualifications	Project Role
	Bureau of Reclamation, NEPA Lead Agency	
Scott Taylor, Repayment Specialist	M.S. Economics, 6 years experience	Project Manager
Ben Lawrence, Natural Resource Specialist	B.S. Chemical Engineering, 16 years experience	NEPA Review- South-Central California Area Office
Rain Emerson, Supervisory Natural Resource Specialist	M.S. Biology - Evolutionary and Ecology Option, 6 years experience	NEPA Review- South-Central California Area Office
Doug Kleinsmith, Natural Resources Specialist		NEPA Review- Mid-Pacific Regional Office
Liz Vasquez, Natural Resource Specialist	M.S. Environmental Science and Management, 10 years experience	NEPA Review- Mid-Pacific Regional Office
Jennifer Lewis, Wildlife Biologist	B.A. Biology, Ph.D. Entomology, 5 years experience	Review: Biology
Mark Carper, Archaeologist	M.A. Archaeology, 15 years experience	Review: Cultural Resources
Mary Johannis, Deputy Regional Planning Officer	B.S. Civil Engineering, Professional Engineer, 20 years experience	Review: Energy
Lisa Rainger, Geologist	B.S. Geology, 27 years experience	Review: Geology
Michael Mosley, Physical Scientist	B.S. Geological and Environmental Science, 6 years experience	Review: Water Quality
Tim Rust, Fish and Wildlife Program Manager	B.S Biology, M.S. Environmental Engineering, 34 years experience	Review: Refuges and Water
Chris Eacock, Project Manager/Soil Scientist		Review: Water Quality
Patricia Rivera, Native American Affairs Program Manager	B.A. Social Work, Anthropology, and Sociology; M.S. Public Policy and Administration; J.D., 8 years experience	Review: Indian Trust Assets

Andrea Meier, Natural Resource Specialist	B.S. Environmental Toxicology, M.S. Public Policy and Administration, 12 years experience	Review: Project Description
David Woolley, Land Resource Specialist		Review: Recreation
	RMC Water and Environment	
Robin Cort	B.S. Biology, Ph.D. Ecology; over 30 years experience in water resources planning, environmental documentation and permitting	Manager of EIR/EIS preparation
Lyndel Melton	M.S. Environmental Engineering, B.S., Civil Engineering: Over 36 years experience in civil, environmental and water resources planning and design and environmental compliance	Project Manager and Technical Reviewer
Carrie Del Boccio	M.S. Environmental Engineering, B.S., Civil Engineering, Education Abroad; Over 9 years experience in water planning and treatment design, pipeline design	Project Engineer
Sue Chau	B.A. Environmental Science; over 15 years experience in water resources including water/wastewater treatment, storage, conveyance, and water supply, CEQA and NEPA compliance and water planning	Population and Housing; Growth Inducement
Katie Cole	M.S. Environmental Science and Management, B.S. Sociology and Environmental Studies; 1 year experience in water resources planning	Land Use, Energy, Geology and Soils, Public Services and Utilities, Hazards and Hazardous Materials,
Phoebe Grow	M.S. Environmental Management, B.S. and B.A.; Over 10 years experience in environmental engineering in water resources planning, regulatory compliance, environmental permitting, stormwater management, and regional watershed planning	Hydrology and Water Quality
Reza Namvar	Ph.D. Civil Engineering, M.S., B.S.; Over 19 years experience in environmental and water resources planning, management and engineering, development and application of groundwater flow and contaminant transport models	Groundwater analysis
Ryan Doyle	B.S. Civil and Environmental Engineering; Over 1 year experience water resources planning and design to groundwater modeling and remediation	GIS
Lindsey Wilcox	B.S. Environmental Resources and Forest Engineering; Over 8 years experience in water resource planning and permitting	Document preparation
	Basin Research	
Colin Busby	Ph.D. Anthropology, 38 years cultural resources management experience	Cultural Resources, Historic Property Survey Report
Donna Garaventa	Ph.D. Anthropology, 35 years experience in cultural resources assessment	Cultural Resources, Historic Property Survey Report
	Horizon Water and Environment	
Michael Stevenson	M.S., Environmental Science, 17 years experience in environmental compliance	Technical oversight, QA/QC
Kevin Fisher	M.S., Ecology, 14 years experience in biological assessments	Biological Resources
Jen Schulte	Ph.D., Chemical Engineering, 8 years experience in air and noise impact assessment	Air Quality, Global Climate Change/GHGs, Noise
Allison Chan	M.S., Environmental Management, 7 years experience in environmental analysis	Aesthetics
Jacob Finkle	B.S., Environmental Sciences, 3 years experience in environmental analysis	Traffic/Transportation
Patrick Donaldson	M.S., Environmental Management, 3 years experience in environmental analysis	Environmental Justice, Agriculture and Forestry Resources
Pam Rittlemeyer	M.A., Geography, 6 years experience in environmental analysis	Recreation

Catherine Schnurrenberger	M.S. Ecology, 24 years experience in environmental analysis	Biological Resources
Brian Piontek	M.S., Environmental Management, 3 years experience in environmental analysis	Biological Resources
Corrina Lu	M.A., Geography, 13 years experience in environmental analysis	Biological Resources
Paul Glendening	B.A., Geography, 13 years experience in environmental analysis	GIS
Scott Walls	MLA, 6 years experience in environmental analysis	Biological Resources

6.2 North Valley Regional Recycled Water Program Partner Agencies Reviewers

City of Modesto, CEQA Lead Agency

William Wong, P.E. Engineering Division Manager, Utilities Department
Larry Parlin, P.E. Director of Utilities
Richard Ulm, P.E. Former Director Utility and Planning Projects

City of Turlock

Michael Cooke Municipal Services Director
Dan Madden Former Municipal Services Director
Garner Reynolds, P.E. Regulatory Affairs Manager

Del Puerto Water District

Anthea Hansen General Manager

City of Ceres

Michael Brinton, P.E. Deputy Director of Public Works

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Chapter 8 Responses to Comments

8.0 Introduction

This chapter contains each letter or email commenting on the Draft EIR/EIS, and includes responses to each comment. Revisions to text of the Draft EIR/EIS based on comments are included in these responses. Text revisions in the responses in this chapter are formatted in revision mode for ease of reference: ~~strikeouts~~ indicate removed text and underlines indicate new text. Actual revisions in the Final EIS are denoted by lines on the left side of the margin as explained in Chapter 1. Reclamation and the City of Modesto received 15 comments on the Draft EIR/EIS during the 60-day public review period. The City of Modesto also received correspondence from the State Clearinghouse documenting the completion of the public review period for the Draft EIR. There were no verbal comments made at the meeting held during the public review period. Each comment letter received is listed in Table 8-1 and identified by number, comment author, and date. The full text of all written comments is included in this chapter followed by the response to comments. Each letter is identified by a number (as shown in Table 8-1) and each comment is identified by a comment number in the margin; responses use the same number system. For example, Comment 1 in Letter 1 is designated Comment 1-1. In addition, to facilitate reading the Response to Comments, a summary of each comment is inserted in *italics* just prior to each response. This summary does not substitute for the actual comment; the reader is urged to read the full original text of all comments. The responses are prepared in answer to the full text of the original comment, and not to the abbreviated summary.

Table 8-1: List of Commenters

Letter #	Comment Author	Comment Date
	Federal Agencies	
1	United States Environmental Protection Agency, Region IX, Kathleen Martyn Goforth, Manager, Environmental Review Section	3/10/15
	State Agencies	
2	California State Lands Commission, Cy R. Oggins, Chief, Division of Environmental Planning and Management	2/23/15
3	State Water Resources Control Board, Carina Gaytan, Environmental Scientist	2/23/15
4	State of California, Governor's Office of Planning and Research, State Clearinghouse, Scott Morgan, Director	2/24/15
5	State of California, Department of Fish and Wildlife, Jeffrey R. Single, Regional Manager, Central Region	3/9/15
	Regional and Local Agencies	
6	Central Valley Regional Water Quality Control Board, Trevor Cleak, Environmental Scientist	2/4/15
7	San Joaquin Valley Air Pollution Control District, Arnaud Marjollet, Director of Permit Services	3/9/15
8	Turlock Irrigation District, submitted through Remy, Moose, Manley LLP, Whitman F. Manley	3/9/15
9	Grassland Water District, Ricardo Ortega, General Manager	3/10/15
	Organizations	
10	Patterson Frozen Foods, Inc., and Lakeside Hills, LLC, submitted through The Zumwalt Law Firm, Frank T. Zumwalt, Esq.	3/9/15
11	Audubon California, Meghan Hertel, Working Lands Director	3/10/15
12	Ducks Unlimited, Mark E. Biddlecomb, Director, Western Region	3/10/15
13	State Water Contractors, Terry L. Erlewine, General Manager	3/10/15
14	Chevron Environmental Management Company, Mike N. Oliphant, Project Manager	3/9/15
	Individuals	
15	Robert Martelli	2/6/15

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

March 10, 2015

Mr. Pablo Arroyave
Deputy Regional Director
Bureau of Reclamation
South-Central California Area Office
1243 N Street
Fresno, California 93721

Subject: North Valley Regional Recycled Water Program Draft Environmental Impact Statement, Stanislaus County, California [CEQ# 20150011]

Dear Mr. Arroyave:

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement for the North Valley Regional Recycled Water Program. Our review and comments are 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.

The North Valley Regional Recycled Water Program would provide recycled wastewater from the Cities of Turlock and Modesto via the Central Valley Project's Delta-Mendota Canal to Del Puerto Water District for irrigation purposes, and would provide annual supplemental water to designated wildlife refuges for wetlands. Three action alternatives are evaluated in the Draft EIS: two alternatives would construct pipelines to convey water from the Cities to the DMC; a third alternative would continue discharges into the San Joaquin River and would use the river and expanded existing facilities for conveyance. 1-1

EPA is generally supportive of water recycling as a way to provide dependable water supplies, as it can have environmental benefits of reducing diversions of water from sensitive ecosystems and reducing pressure to pump groundwater. Such projects must be carefully designed and evaluated to ensure that these benefits are fully realized and any potential adverse impacts are avoided or minimized.

Based on our review of the DEIS, we have rated all the Action Alternatives and the document as *Environmental Concerns – Insufficient Information* (EC-2). Please see the enclosed "Summary of EPA Rating Definitions." Our rating is based primarily on concerns about the potential impacts that may result from further reducing flow in the San Joaquin River, and the potential impacts to waters of the U.S. Furthermore, we believe that additional opportunities exist to reduce air quality impacts. Please find our detailed comments enclosed, which provide recommendations to address these issues.

We appreciate the opportunity to review and comment on this DEIS, and are available to discuss the recommendations provided. When the FEIS is released for public review, please send one hard copy and

one CD to the address above (Mail Code: ENF 4-2). Should you have any questions, please contact me at (415) 972-3521, or contact Jean Prijatel, the lead reviewer for the project. Jean can be reached at (415) 947-4167 or prijatel.jean@epa.gov.

Sincerely,

Kathleen Martyn Goforth, Manager
Environmental Review Section

Enclosures: Summary of EPA Rating Definitions
EPA Detailed Comments

cc: Adam Laputz, Regional Water Quality Control Board (Central Valley Region)
Andy Gordus, California Department of Fish and Wildlife

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). 1-1 Cont'd

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.

Hydrology and Water Quality

San Joaquin River Flows

The DEIS states that the proposed project would result in a "slight reduction of stream flows" – approximately 0.5% – in the San Joaquin River with the diversion of wastewater discharges to the Delta-Mendota Canal (page 3.11-20). While EPA agrees that this reduction in flow, itself, is likely a minor reduction, flows in the San Joaquin River system are already well below natural flows. It is estimated that, in a median year, only 31% of the natural flow is allowed to remain in the river channel, i.e. the diversion rate is approximately 69%.[1] In a system that is already impacted by reduced flows, any further reduction in flows -- even a relatively small one -- is likely to have an impact. Efforts are underway to increase flows in the system.

1-2 The State Water Resources Control Board's 2010 Flows Report[2] underscores the need to increase flows in the San Joaquin River system to support aquatic life, including several endangered species that rely on freshwater flows. The SWRCB is proposing that flow criteria for Delta outflows and the San Joaquin River basin be included in upcoming modifications to the Water Quality Control Plan.[3] It is anticipated that these upcoming flow requirements will require less water be diverted for human consumption and more water be left in the river for aquatic life. Any water transfers in this system would need to be operated in a manner consistent with these requirements.

The Biological Resources chapter of the DEIS discusses the impacts of reduced flows on fish species and their habitats (page 3.4-79) and proposes the following mitigation to support implementation of the Recovery Plan for Central Valley Chinook and Steelhead: improve wastewater treatment in the watershed and augment spawning gravel in the San Joaquin River as part of Reclamation's San Joaquin River Restoration Program, the U.S. Fish and Wildlife Service's Anadromous Fish Restoration Program, or other relevant restoration program.

> ***Recommendation***: Discuss the implications of the SWRCB's proposed flow criteria for the San Joaquin River basin, including how the proposed project would operate within these requirements and any changes the criteria would necessitate to the analysis of the cumulative impacts of the action alternatives.

CWA 303(d) Impairments

The DEIS lists Clean Water Act 303(d) impairments for the segment of the San Joaquin River in the project area: alpha BHC, boron, chlorpyrifos, DDT, DDE, diazinon, diuron, E. coli, electrical conductivity, Group A pesticides, mercury, toxaphene, and unknown toxicity (page 3.11-15). The DEIS

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[1] Flow estimates based on observed flow and unimpaired flow at Vernalis from Tables 2.6 and 2.5 on pp. 2-17 and 2-16 in Appendix C of the Substitute Environmental Document for the Bay Delta Water Quality Control Plan (see link above), as cited in EPA Comments on the Bay Delta Water Quality Control Plan, Phase I SED. March 28, 2013. Available at: http://www2.epa.gov/sites/production/files/documents/sfdelta-epa-comments-swrcb-wqcp-phase1-sed3-28-2013.pdf

[2] State Water Resources Control Board, 3 Aug. 2010, Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem Prepared Pursuant to the Sacramento-San Joaquin Delta Reform Act of 2009, (2010 Flows Report), available at www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/final_rpt080310.pdf

[3] Draft Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the Bay-Delta: San Joaquin River Flows and Southern Delta Water Quality: www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2012_sed/

notes that this list was based on information from the State Water Resources Control Board in 2010. In EPA's final approval of the 303(d) impairments list on October 11, 2011, temperature was added to the list of impairments for the project area river segment, as well as the next two segments downstream of the project area: Tuolumne River to Stanislaus River and Stanislaus River to Delta Boundary. EPA believes that the reduced flows discussed above could contribute to challenges for reducing temperature impairments. 1-3

> ***Recommendation***: Update the CWA 303(d) impairments list to include temperature impairments for the San Joaquin River in the project area and downstream of the project area and include temperature in the cumulative effects analysis of reduced flows.

Regulatory Framework

The DEIS discusses the Recycled Water Policy adopted by the State Water Resources Control Board in May 2009 and amended in April 2013. This policy encourages the use of recycled water to achieve sustainable local water supplies and reduce greenhouse gas emissions. The Recycled Water Policy includes monitoring requirements for groundwater recharge projects, but does not address the type of project proposed in the action alternatives of this DEIS. On June 3, 2014, the SWRCB adopted a statewide General Order titled "General Waste Discharge Requirements for Recycled Water Use."[4] Page 6 of the General Order states that it applies to "recycled water projects where recycled water for non-potable use is used or transported." 1-4

> ***Recommendation***: In the regulatory framework section of the Hydrology and Water Quality chapter of the FEIS, include a discussion of the General Waste Discharge Requirements for Recycled Water Use and clarify whether the action alternatives are covered by the General Order.

NPDES Permit

The DEIS states that the Cities of Modesto and Turlock are pursuing National Pollutant Discharge Elimination System permits to allow discharges to the Delta-Mendota Canal (page 1-10), and pursuing Wastewater Change Petitions to establish water rights for the recycled water (page 1-11). It further states that both cities would retain their existing discharge locations and access to the San Joaquin River, but that discharges to the SJR would only happen when the DMC was unavailable, which is expected to be a rare event. According to the DEIS, the State Water Resources Control Board will review the Petitions and determine whether "the change would not injure other legal users of water, would not unreasonably harm instream uses, and would not be contrary to the public interest" (page 2-3). 1-5

> ***Recommendation***: Include in the FEIS the status of the new NPDES permits and Wastewater Change Petitions with the SWRCB. Include any discussion and determination provided by the SWRCB about impacts to existing instream uses.

Clean Water Act, Section 404

The DEIS notes that a Clean Water Act section 404 permit will be required for all work proposed in jurisdictional waters of the U.S. A description of types and locations of features likely to be considered jurisdictional waters is included in the DEIS. The document states that a jurisdictional wetlands delineation will be conducted and submitted to the U.S. Army Corps of Engineers for the purposes of determining areas to avoid and calculating required compensatory mitigation. General mitigation measures are provided in the DEIS to avoid, minimize, and mitigate for anticipated impacts, including 1-6

[4] www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2014/wqo2014_0090_dwq_revised.pdf

"compensatory mitigation consistent with the conditions of a CWA Nationwide Permit" and/or the
1-6 Compensatory Mitigation Rule. The DEIS does not indicate which Nationwide Permit would apply to the project.

> ***Recommendation***: Identify and describe the CWA Nationwide Permit that would apply to each alternative. Include in the FEIS the wetlands delineation submitted to USACE and identify proposed areas for compensatory mitigation.

Air Quality

As noted in the DEIS, the project is within the boundary of the San Joaquin Valley Air Basin, which is classified as extreme nonattainment for ozone and nonattainment for $PM_{2.5}$, and is subject to the EPA General Conformity Rule. The DEIS provides environmental commitments intended to reduce fugitive dust from construction, as required by the San Joaquin Valley Air Pollution Control District, and indicates that implementation of those commitments will reduce the impacts to $PM_{2.5}$ levels to less than significant. The DEIS further states that the action alternatives will require the implementation of Mitigation Measure AIR-1 to reduce NOx emissions below the *de minimus* level of 10 tons per year. This mitigation measure provides several options for on-site reductions from which a combination of measures will be selected. After "all feasible" proposed on-site measures have been implemented, if annual emissions are still expected to be over 10 tons per year for NOx, then the project proponent will fund SJVAPCD's Emission Reduction Incentive Program to offset emissions to zero tons per year (page 3.3-32).

> ***Recommendation***: In addition to the measures required to meet applicable local, state, and federal requirements, EPA recommends committing to additional on-site mitigation measures, such as the following, to reduce NOx emissions before determining the need to fund off-site mitigation:

1-7

Mobile and Stationary Source Controls:

- Minimize use, trips, and unnecessary idling of heavy equipment.
- Maintain and tune engines per manufacturer's specifications to perform at EPA certification levels, where applicable, and to perform at verified standards applicable to retrofit technologies.
- Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained, tuned, and modified consistent with established specifications. The California Air Resources Board has a number of mobile source anti-idling requirements which should be employed (http://www.arb.ca.gov/msprog/truck-idling/truck-idling.htm).
- Prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations.
- In general, commit to the best available emissions control technologies for project equipment:
  - *On-Highway Vehicles* - On-highway vehicles should meet or exceed the US EPA exhaust emissions standards for model year 2010 and newer heavy-duty on-highway compression-ignition engines (e.g., long-haul trucks, refuse haulers, etc.).[5]

[5] http://www.epa.gov/otaq/standards/heavy-duty/hdci-exhaust.htm

- *Nonroad Vehicles & Equipment* - Nonroad vehicles & equipment should meet or exceed the US EPA Tier 4 exhaust emissions standards for heavy-duty nonroad compression-ignition engines (e.g., construction equipment, nonroad trucks, etc.).[6]
- *Low Emission Equipment Exemptions* – The equipment specifications outlined above should be met unless: 1) a piece of specialized equipment is not available for purchase or lease within the United States; or 2) the relevant project contractor has been awarded funds to retrofit existing equipment, or purchase/lease new equipment, but the funds are not yet available.

Administrative controls:

- Prepare an inventory of all equipment prior to construction.
- Develop a construction traffic and parking management plan that minimizes traffic interference and maintains traffic flow.
- Identify where implementation of mitigation measures is rejected based on economic infeasibility.

Climate Change

On December 24, 2014, the Council on Environmental Quality released revised draft guidance for public comment that describes how federal departments and agencies should consider the effects of greenhouse gas emissions and climate change in their NEPA reviews. The revised draft guidance supersedes the draft greenhouse gas and climate change guidance released by CEQ in February 2010. This new draft guidance explains that agencies should consider both the potential effects of a proposed action on climate change, as indicated by its estimated greenhouse gas emissions, and the implications of climate change for the environmental effects of a proposed action. 1-8

In describing the need for action, the DEIS discusses how climate change is expected to impact Delta water exports and water availability in the region through more severe weather events and increased temperatures (page 1-4). In the Hydrology and Water Quality chapter, the DEIS discusses the C2VSim model used to estimate changes in San Joaquin River flows. It states that the model considers "cumulative impacts of multiple environmental factors" (page 3.11-27), but does not state whether those factors include modeled impacts of climate change. It is unclear whether the climate change insights that were used to indicate a need for action are included in the cumulative effects analysis of impacts to hydrology and water quality.

Recommendations: Update, in the FEIS, the Regulatory Framework section of the Greenhouse Gas Emissions chapter to reflect the new CEQ draft guidance.

Indicate whether and, if so, how the C2VSim model that was used to estimate San Joaquin River flows considers the impacts of climate change. Describe how the proposed project would impact the cumulative effects of climate change on the hydrology and water quality of the San Joaquin River. 1-9

Water Allocation between DPWD and Wildlife Refuges

The Scoping Report in Appendix A acknowledges that EPA's scoping comment letter requested that the DEIS describe the distribution of project water between irrigation and wildlife refuges, and states that the Project Description of the DEIS will describe this allocation. The Project Description in the DEIS states that Reclamation will work with Del Puerto Water District to obtain supplemental water supplies 1-10

[6] http://www.epa.gov/otaq/standards/nonroad/nonroadci.htm

1-10 Cont'd through this project for south of the Sacramento-San Joaquin River Delta Central Valley Project Improvement Act designated wildlife refuges (page 2-1), but the DEIS does not contain a description of how water would be allocated between DPWD and the refuges. The Alternatives chapter further states that it is most likely that SOD refuges will receive water during low agricultural-demand periods (page 2-17), but provides no further detail about water quantities, timing of distribution, or how the low agricultural-demand period relates to the refuges' annual water delivery schedules.

> ***Recommendation***: In the FEIS, specify the expected distribution of project water between DPWD and wildlife refuges, including timing of deliveries and how that timing relates to the water delivery needs of the refuges.

8.1 Comment Letter 1 - United States Environmental Protection Agency, Region IX, Kathleen Martyn Goforth, Manager, Environmental Review Section

8.1.1 Response to Comment 1-1

Comment Summary: The comment states that based on review of the Draft EIS, The U.S. Environmental Protection Agency (EPA) has rated the document as "Environmental Concerns – Insufficient Information" based on concerns about reducing river flows and potential impacts to waters of the U.S. EPA also believes that there are opportunities to reduce air quality impacts.

Responses to detailed comments are provided below, and copies of the Final EIS will be provided to the EPA.

8.1.2 Response to Comment 1-2

Comment Summary: The comment requests discussions of the implications of the flow criteria for the San Joaquin River Basin in the SWRCB's 2010 Flows Report and the potential San Joaquin River flow requirements in the SWRCB's 2012 Draft Substitute Environmental Document for San Joaquin River flows and Southern Delta Water Quality, including how the project would operate within these requirements, and how any changes in these criteria would require changes in the Draft EIR/EIS's analysis of cumulative impacts.

Pages 3.11-24 to 3.11-26 of the Draft EIR/EIS discussed the reductions in San Joaquin River flows that would occur with implementation of the NVRRWP and explain why the effects of the estimated reduction of approximately 0.5 percent of the average annual flows on the San Joaquin River and the associated reductions in Delta outflows are considered to be less than significant. The cumulative impacts on San Joaquin River flows are discussed on page 3.11-27, which explains that "*the C2Vsim model that was used to estimate changes in the San Joaquin River flows considers cumulative impacts of multiple environmental factors. C2VSim simulates water movement through the interconnected land surface, surface water and groundwater flow systems in the 20,000 mi^2 of the alluvial Central Valley aquifer*". The C2VSim modeling for the NVRRWP considers cumulative effects of diversions including the following:

- Sacramento River diversion to City of Sacramento.
- Delta diversions for agricultural, municipal and industrial uses.
- Delta diversions to North Bay Aqueduct for agricultural, municipal and industrial uses.
- Delta diversion to North Bay Aqueduct export.
- Delta diversion to Contra Costa Canal.
- Delta diversion to CVP.
- Delta diversion to SWP.
- Stanislaus River riparian diversions for agricultural, municipal and industrial uses.
- Tuolumne River diversion to Modesto Canal.
- Tuolumne River riparian diversions for agricultural, municipal and industrial uses.
- Tuolumne River diversion to Turlock Canal.

- Merced River riparian diversions for agricultural, municipal and industrial uses.
- Merced River to Merced Irrigation District Main Canal diversions for agricultural, municipal and industrial uses.
- Chowchilla River diversion to Chowchilla Water District.
- Chowchilla River riparian diversions for agricultural uses.
- Chowchilla River diversions for spreading.
- Fresno River diversion to Madera Irrigation District.
- Fresno River riparian diversions for agricultural uses.
- Fresno River diversions for spreading.
- San Joaquin River riparian diversions for agricultural, municipal and industrial uses.

The first paragraph of this comment states that any reduction in San Joaquin River flows, even a relatively small one, may have an impact. Similarly, the last sentence of this comment states that the Final EIR/EIS should discuss how any changes in these criteria may affect the EIR/EIS's analysis of cumulative impacts. The modeling of potential impacts considers the fact that there are numerous existing diversions from the system (as listed above) that have cumulatively resulted in reduced flows and considers the effect of the reduction in discharge associated with the NVRRWP in the context of those reduced flows. Because of the cumulative impacts of past, present and reasonably foreseeable future actions along the river, the Draft EIR/EIS has concluded that on a cumulative basis, the project's small contribution to the already cumulatively substantial impacts on habitat in the river could contribute to further degradation to habitat and potentially fish survival (see page 3.4-93 of the Final EIS). This analysis, and the conclusions in the Draft EIR/EIS that are based on this analysis, remains valid.

There are times when the City of Modesto cannot discharge to the San Joaquin River, so a reduction in discharge at those times is not a result of the project. Modesto's current NPDES permit prohibits all discharges from June 1 to September 30 in a given year, and restricts discharges during the October 1 to May 31 discharge season. Specifically, Modesto may discharge only when river flows provide a flow ratio equal to or greater than 20:1 (river to effluent) as a daily average. As a result of this restriction, in 2014 Modesto discharged an annual total of only 1,139 AF. From 2000 through 2014 there were 56 months during the discharge season when there was no discharge (i.e. on average there was no discharge during 47 percent of the 8-month period when discharge is allowed if river flows provide sufficient dilution). Although the percentage reduction varies depending on the water year type, all reductions in flows that would result from elimination of wastewater discharges are considered insignificant in comparison to the seasonal and annual variations in flows that were experienced (between 1990 and 2014, flows at Vernalis ranged from about 585,000 AFY to 8,900,000 AFY).

Water Code section 85086, subdivision (c), which was adopted as part of the 2009 Delta Reform Act, required the SWRCB to "develop new flow criteria for the Delta ecosystem necessary to protect public trust resources." Following this directive, the SWRCB prepared an August 3, 2010 report titled "Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem". The report's executive summary contains the following statements about the limitations of the SWRCB's approach for developing the 2010 Flows Report (SWRCB 2010 Flows Report, pp. 2-3.):

"Limitations of State Water Board Approach
When setting flow objectives with regulatory effect, the State Water Board reviews and considers all the effects of the flow objectives through a broad inquiry into all public trust and public interest concerns. For example, the State Water Board would consider other public trust resources potentially affected by Delta outflow requirements and impose measures for the protection of those resources, such as requiring sufficient water for cold water pool in reservoirs to maintain temperatures in Delta tributaries. The State Water Board would also consider a broad range of public interest matters, including economics, power production, human health and welfare requirements, and the effects of flow measures on non-aquatic resources (such as habitat for terrestrial species). The limited process adopted for this proceeding does not include this comprehensive review.

Future Use of this Report

None of the determinations in this report have regulatory or adjudicatory effect. Any process with regulatory or adjudicative effect must take place through the State Water Board's water quality control planning, water rights processes, or public trust proceedings in conformance with applicable law. In the State Water Board's development of Delta flow objectives with regulatory effect, it must ensure the reasonable protection of beneficial uses, which may entail balancing of competing beneficial uses of water, including municipal and industrial uses, agricultural uses, and other environmental uses. The State Water Board's evaluation will include an analysis of the effect of any changed flow objectives on the environment in the watersheds in which Delta flows originate, the Delta, and the areas in which Delta water is used. It will also include an analysis of the economic impacts that result from changed flow objectives."

To date, the SWRCB has not made any regulatory determinations regarding flow requirements for the San Joaquin River that rely on the 2010 Flows Report.

The EPA comment states that "[a]ny water transfers in this system [referring to the San Joaquin River system] would need to be operated in a manner consistent with these requirements." This comment recommends that the EIR/EIS discuss "the implications" of these flow criteria, "including how the proposed project would operate within these requirements."

Neither the flow criteria in the 2010 Flows Report nor the potential San Joaquin River flow requirements in the SWRCB's 2012 Draft Substitute Environmental Document are regulatory requirements. The Draft EIR/EIS analyzes the potential effects of the NVRRWP on San Joaquin River flows and the potentially affected biological resources. Because the 2010 Flows Report was only for planning purposes, did not impose any regulatory requirements, and does not indicate what regulatory actions the SWRCB may take in the future regarding San Joaquin River flows, and because the SWRCB has not taken any regulatory actions based on the 2012 Substitute Environmental Document, it is outside the scope of the EIR/EIS to assume that the SWRCB will take any particular specific actions based on either of these documents, therefore, the Draft EIR/EIS does not discuss how possible future San Joaquin River flow requirements might affect the proposed project. However, if the SWRCB takes some future action to increase flows in the river system, this would only reduce the cumulative effect of the reduction in

discharges associated with the NVRRWP. In addition, the Proposed Action would operate within the criteria of current or future SWRCB requirements on transfers within the San Joaquin River system, if applicable.

8.1.3 Response to Comment 1-3

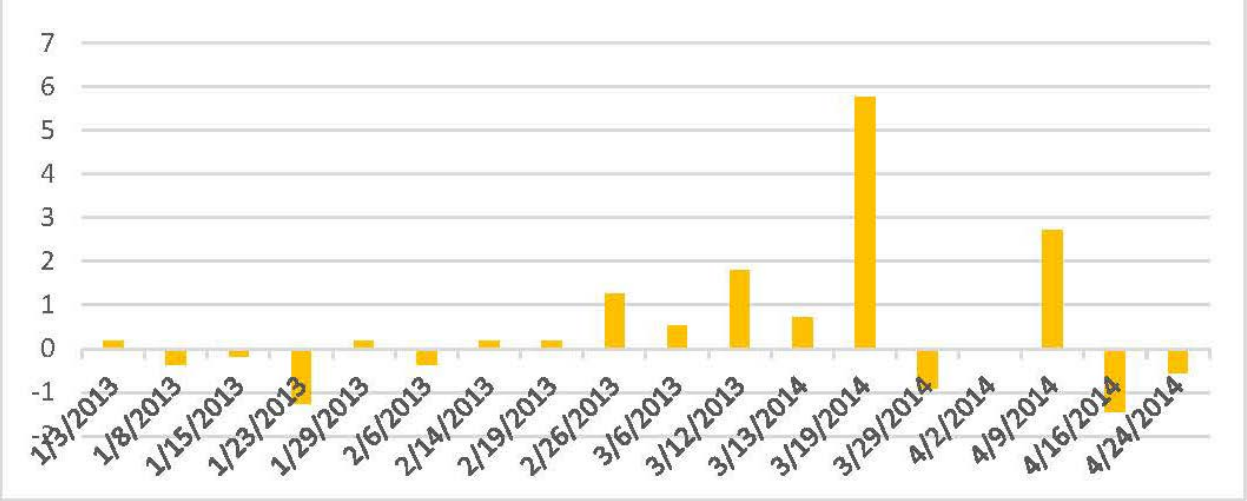
Comment Summary: The comment states that the list of Clean Water Act 303(d) impairments needs to be updated to include temperature impairment of the San Joaquin River and include temperature in the cumulative effects analysis of reduced flows.

The Draft EIR/EIS does note, in the discussion of San Joaquin River Water Quality on page 3.11-5, that portions of the river in "*the project area from the Merced River to the Tuolumne River and Tuolumne River to Stanislaus River are listed as impaired water bodies for boron, electrical conductivity, mercury, water temperature and several pesticides*". Reductions in discharges associated with the NVRRWP are not expected to affect temperature as discussed below.

During the summer months, the City of Modesto does not discharge to the river and the City of Turlock discharges effluent that is about the same temperature as the river. Turlock effluent temperature averages 25.7 degrees Celsius (^{o}C) while the river temperature averages 25.5 ^{o}C. Both cities are allowed to discharge in the winter months, when the temperature of the river averages 12.1 ^{o}C. During winter Turlock effluent temperatures average 18.3 ^{o}C, and removing this discharge would not make the water in the river warmer.

During their discharge season the City of Modesto monitors temperature of their effluent and at upstream and downstream receiving water locations. Review of that data, which is presented in **Figure 8-1** shows that there is no predictable relationship between the temperature of the discharge and the changes in temperature downstream. In 2013, temperatures downstream of the discharge location were warmer than the upstream temperature on ten sampling dates and were colder than the upstream temperature on seven sampling dates (see chart below). On several sampling dates the discharge was warmer than the upstream receiving water temperature, but the downstream receiving water temperature was colder than the upstream temperature. Given the lack of relationship between discharge temperature and receiving water temperature, removing the discharge is not expected to increase temperatures in the river, and would thus not make a contribution to cumulative temperature effects. The minor changes in the volume of water in the river were evaluated in the Draft EIR/EIS. As noted on page 3.11-25, "*reduction in river stage height (a reflection of water depth in the river) associated with curtailment of recycled water discharges is estimated to range from 0.25 inches to 1 inch*" and this is not expected to result in a measurable change in temperature. As noted in the cumulative analysis on page 3.11-27 of the Draft EIR/EIS "*the reduction in San Joaquin River stream flows at Vernalis due to NVRRWP is approximately 0.5 percent of the average annual flows (Appendix G: Evaluation of NVRRWP Impact on Groundwater, 2014). This is considered to be a less than significant impact. The C2Vsim model that was used to estimate changes in San Joaquin River flows considers cumulative impacts of multiple environmental factors.*" Because the change in flows is considered minimal on a cumulative basis, the small changes in flows is not expected to result in a cumulative effect on temperature.

Figure 8-1: Difference in Temperature Downstream and Upstream of Modesto Discharge



The EPA comment requests that temperature be added to the list of CWA 303(d) impairments for the San Joaquin River. The Draft EIR/EIS (Page 3.11-15) is revised as follows (see page 3.11-16 in the Final EIS):

> These activities would not be expected to contribute to any of the 303(d) listed impairments of the San Joaquin River in the project area or downstream of the intake (alpha BHC, boron, chlorpyrifos, DDT, DDE, diazinon, diuron, *E. coli*, electrical conductivity, Group A pesticides, mercury, toxaphene, temperature and unknown toxicity)

8.1.4 Response to Comment 1-4

Comment Summary: The comment requests that a discussion of the General Waste Discharge Requirements for Recycled Water Use be included in the Hydrology and Water Quality Section and asks if the action alternatives are covered by the General Order.

The NVRRWP would not be covered by the General Waste Discharge Requirements for Recycled Water Use. Although the NVRRWP has been conceived as a recycled water project, from a regulatory standpoint it is more accurately characterized as a wastewater discharge project, as the DMC is listed as a water of the State in the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins (CVRWQCB, rev October, 2011). To that end, the CVRWQCB is processing an NPDES permit for discharge into the DMC. Thus a Recycled Water Permit is not required nor is it applicable for discharge of tertiary treated wastewater to the DMC for conveyance to DPWD. Water diverted from the DMC is considered surface water, and would not be re-characterized as recycled water based on an approved discharge to the canal. The NPDES permit will establish discharge standards based on the beneficial uses of the receiving water as defined in the Basin Plan. Requirements of the General Order were thus not detailed in the *Hydrology and Water Quality* section of the Draft EIR/EIS because it is not applicable to the NVRRWP. No change is necessary on the Final EIS.

8.1.5 Response to Comment 1-5

Comment Summary: The comment requests information on the status of the new NPDES permits and Wastewater Change Petitions with the SWRCB, including any discussion and determination provided by SWRCB about impacts to existing instream uses.

As noted in the comment, introduction of the non-CVP water into the DMC would require an NPDES Permit. The Cities of Turlock and Modesto have prepared Reports of Waste Discharge (ROWD) and submitted the ROWD to the CVRWQCB to start the application process for an NPDES permit. As stated on page 1-11 of the Draft EIR/EIS, the City of Modesto has filed a Wastewater Change Petition with the SWRCB, which issued public notice of the Petition on February 10, 2015. The public review period ended on March 12, 2015, and the SWRCB received protests of the Petition from TID and Westlands Water District. The City of Modesto is in the process of resolving those protests and expects to reach an agreement with TID and the Westlands Water District. The SWRCB has not yet made a determination regarding impacts to existing instream uses. The City of Turlock filed a Wastewater Change Petition in mid August 2015.

8.1.6 Response to Comment 1-6

Comment Summary: The comment requests that the CWA Nationwide Permit for each alternative be identified and described. The comment also requests that the Final EIS include the wetlands delineation submitted to U.S. Army Corps of Engineers (USACE) and identify proposed areas for compensatory mitigation.

Reclamation invited the USACE to be a cooperating agency for preparation of the EIS. USACE declined to be a cooperating agency, but indicated that based on review of the project description it appeared that the project can be authorized under Nationwide Permit number 12, Utility Lines (email from Kathleen Dadey, Chief, California South Branch, Regulatory Division, USACE Sacramento District to Ben Lawrence of Reclamation). As described on page 5-6 of the Draft EIR/EIS, USACE has designated Reclamation as the NEPA lead for permitting under both Section 7 of the ESA and Section 106 of the NHPA. Nationwide Permit 12, which could be used for pipeline construction associated with both Alternatives 1 and 2, allows activities required for the construction of utility lines (such as the proposed recycled water pipelines) provided that the activity does not result in the loss of greater than ½-acre of waters of the U.S. for the entire project. Because Alternative 3 would include both pipelines and expansion of an existing intake on the San Joaquin River, it is expected that an individual 404 Permit would be required for this alternative. As described in Chapter 1, Alternative 1 has been identified as the Preferred Alternative in the Final EIS and a wetlands delineation has been prepared and submitted to USACE. The delineation has not yet been verified and thus it would be premature to include the delineation in the Final EIS. As noted on page 3.4-74 of the Draft EIR/EIS, which described effects on federally protected wetlands, "*Potential adverse impacts to federally protected wetlands would be minimized by using trenchless construction techniques in these areas*". Where temporary construction impacts at pipeline crossings are unavoidable, **Mitigation Measure BIO-16a** (see page 3.4-75 of the Draft EIR/EIS and page 3.4-88 in the Final EIS) requires that "*After construction, surface topography and drainage shall be restored to pre-construction conditions. Where appropriate, revegetation shall be implemented with site-adapted native*

species." The Partner Agencies intend to provide mitigation by re-establishing wetlands at any area that has been temporarily affected by construction, which is the type of compensatory mitigation preferred by USACE. As noted in **Mitigation Measure BIO-16b** (see pages 3.4-75 and 3.4-76 of the Draft EIR/EIS and page 3.4-88 of the Final EIS) if required by USACE compensatory mitigation "*may also include purchase of credits at an approved mitigation bank or contribution to an approved in-lieu fee program*". Details of mitigation would be developed during the 404 Permit process. As additional measures would only further reduce the potential impacts, the inclusion of the wetland delineation would not substantially change the impacts analysis in the Draft EIR/EIS and no change is needed in the Final EIS.

8.1.7 Response to Comment 1-7

Comment Summary: The comment suggests additional on-site mitigation measures to reduce NOx emissions before determining the need to fund off-site mitigation.

Several of the suggestions for additions to **Mitigation Measure AIR-1: Reduce NOx Emissions** have been added. However, the requirements for specific engine tiers and newer trucks are significantly ahead of CARB implementation schedules. For example CARB does not require all vehicles to be 2010 and newer until January 1, 2023. Tier IV engines may not be readily available at the time of the project construction. In addition, comments received from the SJVAPCD did not suggest that these measures would be necessary. Therefore, the mitigation measure leaves these as measures that the contractor will be encouraged to implement to the extent feasible. There is no change to the significance conclusion and the implementation of voluntary emission offset agreement will ensure that NO_x emissions are fully mitigated consistent with general conformity requirements.

Mitigation Measure AIR-1 on page 3.3-35 of the Final EIS has been revised as follows:

> **Mitigation Measure AIR-1: Reduce NOx Emissions** (Alternatives 1, 2 and 3)
>
> NO_x emissions associated with construction activities shall be reduced to 10 tons per year through on-site equipment and hauling vehicle mitigation measures to the extent feasible. All vehicles and equipment used during construction shall be maintained and properly tuned in accordance with the manufacturer's specifications <u>to perform at EPA certification levels and to perform at verified standards applicable to retrofit technologies</u>. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. <u>Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure CCR Title 13 Section 2485).</u> Emissions reduction methods may be chosen from any combination of the following measures:
>
> - <u>Minimize the use and trips of construction equipment and trucks by consolidating trips and loads to the extent feasible.</u>
> - <u>Minimize unnecessary idling by shutting off equipment and trucks when not in use to the extent feasible and comply with CARB idling regulations.</u>

- Conduct periodic unscheduled inspections to ensure equipment is maintained properly and in accordance with manufacturer's recommendations and excessive idling is not occurring.
- Prepare inventory of all equipment prior to construction consistent with SJVAPCD Indirect Source Review Rule.
- Develop a construction traffic and parking management plan that minimizes traffic interference and maintains traffic flow.

The contractor will be encouraged to implement the following measures to the extent feasible before implementation of off-site mitigation measures and identify why the measures are infeasible if not implemented in particular due to economic infeasibility:

- Use alternative fueled vehicles.
- Use newer tier engines such as EPA Tier 4 exhaust emissions standards for heavy-duty nonroad compression ignition engines.
- Use of newer on-highway vehicles that meet the EPA exhaust emissions standards for model year 2010 and newer heavy-duty on-highway compression ignition engines.
- Use phased material hauling trips.
- Use after-market pollution control devices to reduce emissions.
- Lengthen the construction schedule to reduce the annual intensity of construction activities.

If all feasible on-site measures have been implemented and annual emissions are anticipated to still be above 10 tons per year for NO_x, then the project proponent shall enter into a Voluntary Emissions Reduction Agreement (VERA) with SJVAPCD. The VERA would provide pound-for-pound mitigation of air emissions increases down to a net zero emissions per year as required under general conformity through a process that develops, funds, and implements emission reduction projects. SJVAPCD would serve as administrator of the emissions reduction projects and verifier of the successful mitigation effort.

8.1.8 Response to Comment 1-8

Comment Summary: The comment requests that the Regulatory Framework portion of the Greenhouse Gas Emissions chapter be updated to reflect draft guidelines published by the Council on Environmental Quality (CEQ).

The Draft EIR/EIS included a discussion of the original draft guidance that was published in February 2010. The updated guidance is similar with the earlier guidance and the analysis of GHG impacts that was presented in the Draft EIR/EIS is consistent with the 2014 update. The Draft EIR/EIS has been revised to reflect the newer guidelines. The following text has been added to page 3.9-5 and 3.9-6 of the Final EIS:

> On December 18, 2014 the CEQ released revised draft guidance on the consideration of GHG emissions and climate change in NEPA review. This is an update to the previously issued guidance in draft form in February 2010. The Guidance encourages agencies to include a quantitative assessment of GHG emissions for projects expected to have direct GHG emissions of 25,000 metric tons or more on an annual basis. The guidance states

that the assessment of direct and indirect climate change effects should account for upstream and downstream emissions and includes guidance on biogenic sources of GHG emissions from land management actions. The guidance recommends that if a cost-benefit analysis is relevant to the analysis, the Federal social cost of carbon estimates are useful in providing a meaningful NEPA review.

8.1.9 Response to Comment 1-9

Comment Summary: The comment asks whether, and if so, how the C2VSim model considers the impacts of climate change, and how the project would impact the cumulative effects of climate change on the hydrology and water quality of the San Joaquin River.

According to DWR, C2VSim is not designed to consider the impacts of climate change. C2VSim has a drought model, but not a full climate change scenario. Reclamation, in their 2011 SECURE Water Act Report (Reclamation 2011) identifies climate challenges that the Sacramento and San Joaquin River Basins could likely face, which include a potential 4.2 to 5.3 percent reduction in precipitation and a possible 8.7 percent decline in mean annual runoff. The report also predicts that climate-change surface water decreases are likely to increase groundwater demands. Reclamation is dedicated to mitigate risks to ensure long-term water resource sustainability through its WaterSMART Program, and has worked with other federal agencies to develop an Interim Federal Action Plan. The Plan includes alignment of federal, State and local water conservation and recycling efforts. As noted on page 3.11-25 of the Draft EIR/EIS "*The reduction in San Joaquin River stream flows at Vernalis due to NVRRWP is approximately 0.5 percent of the average annual flows*". **Appendix G** of the Draft EIR/EIS provided the basis for this calculation. Existing discharges from Modesto and Turlock average 18,000 AFY and the average annual discharge of the San Joaquin River is 3,300,000 AFY. If climate change results in a future 8.7 percent reduction in river flows, the annual discharge could be reduced to 3,013,000 AFY. Under this scenario, the Turlock and Modesto flows would represent 0.6 percent of the average annual flows. This is still a very small change in flows that is not likely to represent a meaningful change in river flows. Although cumulative impacts on hydrology were determined not to be significant from a purely hydrologic perspetive, it is worthwhile noting that because of the relationship between hydrology and fisheries habitat, cumulative impacts were also evaluated from the standpoint of the effect of hydrologic changes on fisheries. Because of the cumulative impacts of past, present and reasonably foreseeable future actions along the river, the Draft EIR/EIS concluded that on a cumulative basis, the project's small contribution to the already cumulatively substantial impacts on habitat in the river could contribute to further degradation to habitat and potentially fish survival (see page 3.4-79 of the Draft EIR/EIS).

8.1.10 Response to Comment 1-10

Comment Summary: The comment requests that the Final EIS specify the expected distribution of project water between DPWD and wildlife refuges, including timing of deliveries and how that timing relates to the water delivery needs of refuges.

At the time of completion of the Scoping Report it was hoped that additional detail on water allocation between DPWD and the wildlife refuges would be available before publication of the Draft EIR/EIS. However, the type of detailed information that was requested by the EPA was not available at the time of publication of the Draft EIR/EIS nor is it available for publication of the

Final EIS as DPWD does not yet have an agreement with Modesto and Turlock to purchase recycled water, and thus has not been able to negotiate a contract with Reclamation to supply water for refuges. As noted on page 2-17 of the Draft EIR/EIS and page 2-21 of the Final EIS: "*With respect to the SOD refuges, it is most likely water would be delivered to them during low agricultural-demand periods, although this has yet to be determined. Water would be delivered to the refuges via either existing turnouts from the DMC or through other existing private conveyance systems, as appropriate, and in accordance with the refuges' respective annual water delivery schedules. Water delivered to SOD refuges would be managed on refuge for wetland habitat purposes in accordance with the refuges' Reclamation approved Refuge Water Management Plans (available at: http://www.usbr.gov/mp/watershare/wcplans/index.html).*"

While it is understood that the amount of benefit would vary depending on the exact allocation, it is clear that any allocation would be an improvement over current conditions. When Reclamation and DPWD develop a draft agreement for supplying water to refuges, Reclamation will determine whether any supplemental environmental review is required. Note that no additional infrastructure would be required to serve the refuges. No change in the Final EIS is needed.

STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

JENNIFER LUCCHESI, *Executive Officer*
(916) 574-1800 *Fax* **(916) 574-1810**
California Relay Service TDD Phone **1-800-735-2929**
from Voice Phone **1-800-735-2922**

Contact Phone: **(916) 574-1890**
Contact FAX: **(916) 574-1885**

Established in 1938

February 23, 2015

File Ref: SCH #2014042068

City of Modesto
William Wong
1010 Tenth Street, 4th Floor
Modesto, CA 95353

Subject: Draft Environmental Impact Report/Statement (EIR/S) for North Valley Regional Recycled Water Program in San Joaquin, Stanislaus, and Merced Counties

Dear Mr. Wong,

The California State Lands Commission (CSLC) staff has reviewed the subject EIR/S for the North Valley Regional Recycled Water Program (Project) being prepared by the city of Modesto. Modesto, as a public agency proposing the Project, is the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), and the U.S. Bureau of Reclamation (USBR) is the lead agency under the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 et seq.). The CSLC is 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, because the Project involves work on sovereign lands, the CSLC will act as a responsible agency.

CSLC Jurisdiction and Public Trust Lands 2-1

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 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.

After reviewing the information contained in the EIR/S, CSLC staff has determined the Project will be located along areas of the natural bed of the San Joaquin River on State-owned sovereign land under the jurisdiction of the CSLC. Therefore, a lease from the CSLC will be required for Modesto to implement the Project on sovereign lands. Please contact Wendy Hall (see contact information below) for further information about the extent of the CSLC's sovereign ownership and leasing requirements.

2-1 cont'd

Please also be advised that while some of the waterways involved in the Project may not be under the CSLC's leasing jurisdiction, those waterways are still subject to a public navigational easement. This easement provides that the public has the right to navigate and exercise the incidences of navigation in a lawful manner on State waters that are capable of being physically navigated by oar or motor-propelled small craft. Such uses may include, but are not limited to, boating, rafting, sailing, rowing, fishing, fowling, bathing, skiing, and other water-related public uses. The activities completed under the Project must not restrict or impede the easement right of the public.

These comments are made without prejudice to any future assertion of State ownership or public rights, should circumstances change, or should additional information become available. This letter is not intended, nor should it be construed as a waiver or limitation of any right, title, or interest of the State of California in any lands under its jurisdiction.

Project Description

Modesto, along with the Del Puerto Water District (DPWD) and city of Turlock (Partner Agencies), are proposing the Project to implement a regional solution to address water supply shortages within DPWD's service area on the west side of the San Joaquin River in San Joaquin, Stanislaus, and Merced Counties. This service area is located on the south of the Sacramento-San Joaquin River Delta (Delta).

The Project proposes to deliver up to 59,000 acre feet per year of recycled water produced from Modesto and Turlock through pipelines (from their wastewater treatment facilities) crossing the San Joaquin River and ending at the Delta-Mendota Canal (DMC). DMC is a feature of the Central Valley Project owned by the USBR.

As CSLC staff understands it, the Partner Agencies propose the Project to meet the following objectives:

- Establish an alternative, reliable, long-term water supply of up to 59,000 acre feet per year of recycled water for DPWD;

- Maximize the beneficial use of recycled water to DPWD customers and south of Delta Central Valley Project Improvement Act (CVPIA) designated wildlife refuges;
- Maximize Project Partner Agencies' control of operations and delivery of water;
- Establish a long-term water right to allow for the beneficial reuse of recycled water;
- Maximize use of existing facilities for treatment/delivery of recycled water;
- Provide supplemental annual water supplies to south of Delta CVPIA Sections 3406(b)(3) and 3406(d)(2) requirements;
- Avoid or minimize (through incorporation of design constraints and management practices) impacts to environmental resources such as surface water, groundwater levels, land subsidence, groundwater quality and biological resources including sensitive species; and
- Deliver agricultural water to DPWD at a cost that supports regional economic sustainability.

Project Alternatives 2-1 cont'd

Proposed work at the San Joaquin River includes three proposed Project alternatives:

- Alternative 1 proposes a combined pipeline alignment that will convey recycled water from the Turlock through a pipeline that will be combined with recycled water from Modesto conveying water to the DMC. The pipeline will cross under the San Joaquin River by Horizontal Directional Drilling (HDD). Once the pipelines are in place, discharges to the San Joaquin River will be discontinued.
- Alternative 2 proposed two separate pipeline alignments to convey flows from Turlock and Modesto crossing under the San Joaquin River. The two pipelines will cross under the San Joaquin River by HDD. Once the pipelines are in place, discharges to the San Joaquin River will be discontinued. Under this alternative, discharges to the San Joaquin River will be discontinued.
- Alternative 3 proposes expansion and upgrading the existing Patterson Irrigation District (PID) intake structure on the San Joaquin River. The conveyance system (existing Modesto and Turlock discharges to the San Joaquin River) is also proposed to be expanded through construction of a new pipeline paralleling the PID main Canal.

Environmental Review

CSLC staff requests that Modesto consider the following comments on the Draft EIR/S.

Biological Resources

1. Frac-Out Prevention Plan for Horizontal Directional Drilling: Based on the discussion on page 3.4-53 and Appendix F (starting on page F-1), it is not clear if 2-2

2-2 cont'd

the Frac-Out Prevention Plan (Plan) will be provided for CSLC staff's review before it is finalized. Please note that as part of any lease that may be considered for this Project, CSLC staff would need to review and approve the proposed Frac-out Plan for directional drilling under the San Joaquin River. CSLC staff recommends that the first sentence of Mitigation Measure BIO-1d (on page 3.4-53) be revised as follows:

> *Prior to constructing a crossing(s) of the San Joaquin River, a Frac-out Prevention and Contingency Plan shall be developed and submitted to the city of Modesto and the California State Lands Commission for review and approval.*

CSLC staff notes that the city of Modesto may also need to seek review and approval of the Plan from the California Department of Fish and Wildlife and/or appropriate Regional Water Quality Control Board.

Cultural Resources

2-3

2. Title to Resources: The Mitigation Measure CUL-1 on page 3.5-7 should clearly 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. CSLC staff requests that Modesto contact and consult with Assistant Chief Counsel Pam Griggs (see contact information below) if any cultural resources are discovered on state sovereign lands during proposed Project construction.

Mitigation Monitoring and Reporting Program

2-4

3. Adoption of a Mitigation Monitoring and Reporting Program (MMRP) is required as part of project approval pursuant to section 15097 of the State CEQA Guidelines. MMRPs are commonly included in Draft EIRs to facilitate public review but are not required to be included; the Draft EIR/S for the Project did not include an MMRP. CSLC staff recommends an MMRP be included as part of the Final EIR/S to ensure transparency and public disclosure.

Thank you for the opportunity to comment on the Draft EIR/S for the Project. As a responsible agency, the CSLC will need to rely on the Final EIR/S for the issuance of a lease as specified above and, therefore, we request that you consider our comments prior to certification of the EIR/S.

2-5

Please send copies of future Project-related documents, including electronic copies of the Final EIR/S, Mitigation Monitoring and Reporting Program (MMRP), Notice of Determination (NOD), CEQA Findings and, if applicable, Statement of Overriding Considerations when they become available, and refer questions concerning environmental review to Afifa Awan, Environmental Scientist, at (916) 574-1891 or via e-mail at Afifa.Awan@slc.ca.gov. For questions concerning archaeological or historic resources under CSLC jurisdiction, please contact Assistant Chief Counsel Pam Griggs at (916) 574-1854 or via email at Pamela.Griggs@slc.ca.gov. For questions concerning

CSLC leasing jurisdiction, please contact Wendy Hall, Public Land Manager at (916) 574-0994, or via email at Wendy.Hall@slc.ca.gov.

Sincerely,

Cy R. Oggins, Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
A. Awan, CSLC
J. DeLeon, CSLC
W. Hall, CSLC
W. Crunk, CSLC
P. Griggs, CSLC
E. Milstein, CSLC

8.2 Comment Letter 2- California State Lands Commission, Cy R. Oggins, Chief, Division of Environmental Planning and Management

8.2.1 Response to Comment 2-1

Comment Summary: The comment explains the jurisdiction of the California State Land Commission (CSLC), and summarizes the description of the project and alternatives.

The Draft EIR/EIS identified the need for a Lease Agreement from the CSLC in **Table 1-3, Responsible and Trustee Agencies and Coordination** (page 1-14 of the Draft EIR/EIS).

8.2.2 Response to Comment 2-2

Comment Summary: The comment states that CSLC staff would need to review and approve a Frac-out Plan for directional drilling under the San Joaquin River and requests revision of Mitigation Measure BIO-1d to acknowledge that.

If HDD is selected as the construction method for the crossing(s) of the San Joaquin River, the Partner Agencies would submit the proposed Frac-out Plan to CSLC, as requested. Page 3.4-63, **Mitigation Measure BIO-1d** in the Final EIS is revised as follows:

> **Mitigation Measure BIO-1d: Develop and Implement a Frac-out Contingency Plan for Trenchless Construction** (Alternatives 1 and 2 only)
>
> Prior to constructing a crossing(s) of the San Joaquin River, a Frac-out Prevention and Contingency Plan shall be developed <u>and submitted by the City of Modesto to the California State Lands Commission for review</u>. At minimum, the plan shall prescribe the measures to ensure protection of aquatic resources, special-status plants and wildlife, including:
>
> - Procedures to minimize the potential for a frac-out associated with HDD.
> - Procedures for timely detection of frac-outs.
> - Procedures for timely response and remediation in the event a frac-out.
> - Monitoring of drilling and frac-out response activities by a qualified biologist.

8.2.3 Response to Comment 2-3

Comment Summary: The comment points out that CSLC holds title to all abandoned shipwrecks, archaeological sites and historic or cultural resources on or in the tide and submerged lands of California, and requests that CSLC be contacted if any such resources are discovered during project construction.

As noted on page 3.5-5 of the Draft EIR/EIS, collection of background information included a review of the shipwreck database search results through the CSLC. According to CSLC staff, there are no known shipwrecks in the vicinity of the two river crossing locations that were evaluated in the Draft EIR/EIS (personal communication from Pamela Griggs, CSLC Assistant Chief Counsel, email to Robin Cort dated June 6, 2014). Because the PID intake is located

between the two river crossings and the riverbank at that location has been previously disturbed by construction of the existing facility, no shipwrecks would be expected to be found there. To further clarify CSLC jurisdiction over cultural resources the following text is added to page 3.5-5 of the Final EIS:

> *California State Lands Commission* 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. If any cultural resources are discovered on state sovereign lands during construction activities, CSLC staff must be consulted.

Mitigation Measure CUL-1 on page 3.5-7 already requires notification of appropriate parties if any cultural resources are encountered during construction. CSLC would be consulted if any cultural resources are encountered on or in the tide and submerged lands of California.

8.2.4 Response to Comment 2-4

Comment Summary: The comment recommends that a Mitigation Monitoring and Reporting Program (MMRP) be included in the Final EIR/EIS.

An MMRP for the project was included in Appendix J of the Final EIR certified by the City of Modesto. It has also been attached as Appendix J to this Final EIS.

8.2.5 Response to Comment 2-5

Comment Summary: The comment requests copies of future project-related documents.

The Partner Agencies will provide the Final EIR, MMRP, Notice of Determination (NOD), CEQA Findings, and Statement of Overriding Considerations to CSLC as requested.

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CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

FEB 23 2015

William Wong
City of Modesto
1010 Tenth Street, 4th Floor
Modesto, CA 95354

Dear Mr. Wong

ENVIRONMENTAL IMPACT REPORT/STATEMENT (EIR/EIS) FOR CITY OF MODESTO (CITY); NORTH VALLEY REGIONAL RECYCLED WATER PROGRAM (PROJECT); STANISLAUS COUNTY; STATE CLEARINGHOUSE NO. 2014042068

We understand that the City is pursuing Clean Water State Revolving Fund (CWSRF) financing for this Project (CWSRF No. C-06-8062-110). 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 to be prepared for the Project.

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, 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 of the most recent State General Obligation Bond Rates with a 30-year term. Applications are accepted and processed continuously. Please refer to the State Water Board's CWSRF website at: 3-1
www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/index.shtml.

The CWSRF Program is partially funded by the United States Environmental Protection Agency and requires additional "CEQA-Plus" environmental documentation and review. Three enclosures are included that further explain the CWSRF Program environmental review process and the additional federal requirements. For the complete environmental application package, please visit:
http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/srf_forms.shtml. 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 the USFWS, and/or the NMFS regarding all federal special-status species that the Project has the potential to impact if the Project is to be financed by the CWSRF Program. The City 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 in the Project site, in the surrounding areas, or in the service area, and to identify applicable conservation measures to reduce such effects.

In addition, CWSRF projects must comply with federal laws pertaining to cultural resources, specifically Section 106 of the National Historic Preservation Act (Section 106). The State Water Board has responsibility for ensuring compliance with Section 106, and 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 (http://www.nps.gov/history/local-law/arch_stnds_9.htm) to prepare a Section 106 compliance report.

3-1 Cont'd

Note that the City 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 extend to a ½-mile beyond Project 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.

Other federal environmental requirements pertinent to the Project under the CWSRF Program include the following (for a complete list of all federal requirements, please visit: http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/docs/forms/application_environmental_package.pdf):

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 United States Army Corps of Engineers (USACE), or requires 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. 3-1 Cont'd

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.

Following are specific comments on the City's draft EIR/EIS:

1. Table 3.3-10 on page 3.3-30 is missing emission measurements for reactive organic gases and lead. Please add these to the table or address them in the document. 3-2

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2. Table 3.4-2 on page 3.4-39 mentions that a blue elderberry plant is located within the Project area. Please identify where this bush is exactly located on the maps provided in the Biological Resources section of the report. 3-3

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3. Please identify what lists were used, and when these lists were generated, that were used to create the biological tables 3.4-1 and tables 3.4-2. 3-4

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4. Please identify when the reconnaissance and pre-construction surveys from Biological Resources were completed. 3-5

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5. Page 3.5-2 mentions that an Area of Potential Effect was identified. Please provide the measurements of this APE. 3-6

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6. Page 3.5-5 states that a 0.25 mile buffer was used to identify cultural resources within or near the APE. Please note that State Waterboard CWSRF Program requires a 0.50 mile buffer around the APE. 3-7

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7. To mitigation measure CUL-2, please add that the Native American Heritage Commission shall be notified by phone within twenty-four hours of the discovery of Native American remains as required by Section 7050.5 (c) of the Health and Safety Code. 3-8

3-9 Please provide us with the following documents applicable to the proposed Project following the City's California Environmental Quality Act (CEQA) process: (1) one copy of the draft and final EIR/EIS, (2) the resolution adopting the EIR/EIS and making CEQA findings, (3) all comments received during the review period and the City's response to those comments, (4) the adopted Mitigation Monitoring and Reporting Program (MMRP), (5) a Statement of Overriding Considerations and (6) the Notice of Determination filed with the Stanislaus County Clerk and the Governor's Office of Planning and Research, State Clearinghouse. 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.

Thank you for the opportunity to review the City's draft EIR/EIS. If you have any questions or concerns, please feel free to contact me at (916) 341-5642, or by email at Carina.Gaytan@waterboards.ca.gov, or contact Ahmad Kashkoli at (916) 341-5855, or by email at Ahmad.Kashkoli@waterboards.ca.gov.

Sincerely,

Carina Gaytan

Carina Gaytan
Environmental Scientist

Enclosures (3)

1. Clean Water State Revolving Fund Environmental Review Requirements
2. Quick Reference Guide to CEQA Requirements for State Revolving Fund Loans
3. Basic Criteria for Cultural Resources Reports

cc: State Clearinghouse
(Re: SCH# 2014042068)
P.O. Box 3044
Sacramento, CA 95812-3044

8.3 Comment Letter 3 - State Water Resources Control Board, Carina Gaytan, Environmental Scientist

8.3.1 Response to Comment 3-1

Comment Summary: The comment provides information on environmental review requirements for the Clean Water State Revolving Fund (CWSRF) Program.

The Partner Agencies have submitted a completed environmental application package for the CWSRF Program, which addresses compliance with the CAA, protection of wetlands, compliance with the FPPA, compliance with the MBTA, and compliance with the Flood Plain Management Act. The project area is not within a coastal zone and does not affect a wild and scenic river. Requirements for Section 7 ESA consultation and compliance with Section 106 of the NHPA have been discussed with SWRCB staff, who have agreed that because of the federal actions necessary for implementation of the NVRRWP, it is appropriate for Reclamation to take the lead in both Section 7 and Section 106 consultation. This documentation will be provided to the SWRCB by the Partner Agencies once consultation is complete. Reclamation has already completed Section 106 consultation and the concurrence letter from the State Historic Preservation Officer was provided to the SWRCB.

8.3.2 Response to Comment 3-2

Comment Summary: The comment requests that emissions information for reactive organic gases and lead be added to Table 3.3-10.

ROG are a subset of VOCs. Therefore the emissions level for VOCs in **Table 3.3-10** includes all project emissions of ROG, and for purposes of this analysis they are considered equal. Lead emissions are not quantified as they are negligible due to fuel regulations limiting lead content in fuel.

To clarify emissions information, the following footnotes have been added to **Table 3.3-10** in the Final EIS:

Table 3.3-10: Combined Alignment Alternative Construction Emissions (tons per year)

Year	Scenario[1]	VOC[2]	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
2016	Unmitigated	1.45	16.34	11.09	0.021	1.61	1.03
	Phased Reduction		(1.32)				
	Tier 3 Reduction		(7.67)				
	Mitigated Potential		7.35				
2017	Unmitigated	0.17	1.72	1.02	.0025	0.20	0.087
	Phased Reduction		(0)				
	Tier 3 Reduction		(0.69)				
	Mitigated Potential		1.03				
2018	Unmitigated	0.013	0.14	0.072	.00023	0.098	0.015
	Phased Reduction		(0)				
	Tier 3 Reduction		(.036)				
	Mitigated Potential		0.10				
CEQA Significance Threshold		10	10	100	27	15	15

Notes:

1. The amount of reduction that occurs as a result of mitigation (material hauling phasing or Tier 3 equipment) is shown in parentheses for NO_x only. There may be reductions in other pollutants as well and a minor increase in CO but that would not increase emissions above significance thresholds. Calculations are shown in **Appendix B**.

2. Reactive Organic Gases (ROGs) are a subset of Volatile Organic Gases (VOCs). Emissions level for VOCs includes all project emissions of ROG; for purposes of this analysis they are considered equal

Note: Lead emissions are not quantified as they are negligible due to fuel regulations limiting lead content in fuel.

8.3.3 Response to Comment 3-3

Comment Summary: The comment requests that the location of a blue elderberry bush mentioned in Table 3.4-2 be added to Figure 3.4-1.

Although some blue elderberry bushes were noted in the field during reconnaissance surveys, they were not mapped because no bushes were found within the proposed construction footprint for the NVRRWP. However, as stated on page 4.3-56 of the Draft EIR/EIS, pre-construction surveys would be conducted as required by **Mitigation Measure BIO-3a: Avoid Impacts to Valley Elderberry Longhorn Beetle**, which requires that "*No less than 120 days prior to commencing construction, the locations of elderberry plants within 200 feet of open-cut construction areas shall be identified*". Therefore no change in the Final EIS is needed.

8.3.4 Response to Comment 3-4

Comment Summary: The comment requests that information be provided about lists that were used to create the special status species information in Table 3.4-1 and 3.4-2.

The lists that were used to create Tables 3.4-1 and 3.4-2 were identified on page 3.4-30 of the Draft EIR/EIS and page 3.4-38 of the Final EIS, which state the following:

"*Background information on special-status plant and wildlife species with potential to occur in the Study Area was compiled from numerous sources including, but not limited to, the following:*

- *U.S. Fish and Wildlife Service (USFWS) List of Federal Endangered and Threatened Species that Occur in or May Be Affected by Projects in Stanislaus County as well as in the USGS 7.5 minute quadrangles for the Study Area, including Patterson, Westley, Brush Lake, Crow's Landing (USFWS 2014,* ***Appendix D)****.*
- *California Natural Diversity Database (CNDDB) and CNPS Inventory of Rare and Endangered Plants of California queries for the USGS 7.5 minute quadrangles within the Project Area and the quadrangles immediately adjacent to them, which are: Patterson, Westley, Brush Lake, Crow's Landing, Copper Mountain, Solyo, Vernalis, Ripon, Salida, Riverbank, Ceres, Hatch, Gustine, Newman, Orestimba Peak and Wilcox Ridge (****Appendix D****).*"

The USFWS list was accessed on May 14, 2014, and CNDDB list was prepared on May 24, 2014.

8.3.5 Response to Comment 3-5

Comment Summary: The comment asks when the reconnaissance and pre-construction surveys for biological resources were completed.

Reconnaissance level surveys were conducted on April 4, May 9 and 22, July 1, and August 8, 2014. Pre-construction surveys have not been completed because construction would not start until spring of 2016. Time frames for pre-construction surveys are specified in mitigation measures and are summarized in **Table 3.4-3** starting on page 3.4-51 of the Draft EIR/EIS, and in **Appendix J, the Mitigation Monitoring and Reporting Program** of the Final EIS. To clarify the timing of reconnaissance surveys, the following has been added at the top of page 3.4-39 of the Final EIS:

> Reconnaissance level surveys were conducted on April 4, May 9 and 22, July 1, and August 8, 2014. **Tables 3.4-1** and **3.4-2** list the special-status plant and wildlife species known to occur in the vicinity of the Study Area, ...

8.3.6 Response to Comment 3-6

Comment Summary: The comment requests the measurements of the Area of Potential Effect (APE).

The APE is identified in the HPSR, which was submitted to the SWRCB along with the Environmental Package that was submitted as part of the Financial Assistance Application. As noted in Section 2.5 of the HPSR, which starts on page 9:

"2.5 AREA OF POTENTIAL EFFECTS (APE)

The APE for the NVRRWP includes all areas where direct or indirect impacts may occur. The horizontal and vertical APE includes the proposed pipeline alignment within the county road right of way and privately owned agricultural land for cross-county sections as well as the maximum depth of disturbance.

In general the construction corridor for proposed open-cut construction (active work area including the trench) would be approximately 45 feet wide in order to accommodate construction equipment and extra work areas. The open-cut trench would range from 6 to 8 feet wide and approximately 8 to 10 feet deep, depending on the pipe size, existing utility locations, and pipe bedding requirements.

The areas that will use trenchless construction will have three different vertical APEs depending on the exact method within the NVRRWP. HDD will have with a maximum of 1500 to 3000 square feet to be excavated to a depth of five feet below the current ground surface for the entry and exit pits for HDD. JCB will require 420 square feet of surface area with an approximate depth of 15-20 feet. MTC will require 350 square feet with an approximate excavation depth of 15-20 feet. The APE configuration allows for the use of these methods for crossing SR 33, the CFNR railroad alignment and the San Joaquin River."

8.3.7 Response to Comment 3-7

Comment Summary: The comment states that a 0.5-mile buffer around the APE should be used to identify cultural resources, instead of the 0.25-mile buffer cited on page 3.5-5.

The records search covered a 0.25-mile radius around the APE for a total 0.5-mile area centered around the APE. Reclamation, as the federal lead agency, has determined that the area for the records search meets the requirements for consultation with State Historic Preservation Officer regarding compliance with the Section 106 of the NHPA. Subsequent communication with staff from the SWRCB has confirmed that because Reclamation will be responsible for Section 106 consultation, the search radius is acceptable (personal communication from Carina Gaytan, SWRCB, phone call on April 1, 2015).

8.3.8 Response to Comment 3-8

Comment Summary: The comment requests revision of Mitigation Measure CUL-2 to include notification of the Native American Heritage Commission in the event of discovery of Native American Remains.

Mitigation Measure CUL-2 in the Final EIS has been revised as follows:

Mitigation Measure CUL-2: Discovery of human burials during construction
(Alternatives 1, 2 and 3)
The treatment of human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity within the project shall comply with applicable

State and federal laws. This shall include immediate notification of the Stanislaus County Coroner (Stanislaus County Sherriff's Office) and Reclamation.

In the event of the coroner's determination that the human remains are Native American, notification of the NAHC is required. The NAHC shall be notified by phone within 24 hours of the discovery and shall be afforded the opportunity to appoint a Most Likely Descendant (MLD) (Public Resources Code Section 5097.98). The archaeological consultant, project sponsor, and MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. California Public Resources Code allows 48 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the reburial method, the project will follow Public Resources Code Section 5097.98(b) which states that "the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."

8.3.9 Response to Comment 3-9

Comment Summary: The comment requests that documents applicable to the CEQA process be provided and asks to be notified of any hearing or meetings held regarding environmental review of the project.

A copy of the Draft EIR/EIS has already been provided to the SWRCB. The Partner Agencies also provided the Final EIR (which included all comments received during the review period along with responses to each comment); resolution certifying the EIR and making CEQA findings; the adopted MMRP, and NOD to the SWRCB. Because there were no significant unavoidable impacts identified in the Final EIR, the Partner Agencies have not adopted a Statement of Overriding Considerations. Notice of hearings and meetings has been provided to the SWRCB.

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STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

February 24, 2015

William Wong
City of Modesto
1010 Tenth Street, 4th Floor
Modesto, CA 95353

Subject: North Valley Regional Recycled Water Program
SCH#: 2014042068

Dear William Wong:

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 February 23, 2015, 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: 4-1

> "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."

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

Enclosures
cc: Resources Agency

Document Details Report
State Clearinghouse Data Base

SCH#	**2014042068**
Project Title	North Valley Regional Recycled Water Program
Lead Agency	Modesto, City of

Type	EIR Draft EIR
Description	Cities of Modesto and Turlock would deliver up to 59,000 acre feet per year of recycled water to the Del Puerto Water District (DPWD). Water would be conveyed through a pipeline, located primarily in public right-of-way, crossing the San Joaquin River to the Delta Mendota Canal for conveyance to DPWD customers. Water could also be made available to wildlife refuges. New facilities constructed for the project would be located in Stanislaus County, but the DPWD service area would also include San Joaquin and Merced Counties.

Lead Agency Contact

Name	William Wong		
Agency	City of Modesto		
Phone	207 571 5801	*Fax*	
email			
Address	1010 Tenth Street, 4th Floor		
City	Modesto	*State* CA	*Zip* 95353

Project Location

County	Stanislaus			
City	Modesto, Turlock, Patterson			
Region				
Lat / Long				
Cross Streets	S. Carpenter Rd, W. Main St., Jennings Rd, Lemon Ave, Zacharias Rd, W. Marshall Rd, Pomegranate			
Parcel No.				
Township		*Range*	*Section*	*Base*

Proximity to:

Highways	Hwy 33
Airports	
Railways	CFNR
Waterways	San Joaquin River
Schools	
Land Use	Agriculture

Project Issues	Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Flood Plain/Flooding; Geologic/Seismic; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Growth Inducing; Landuse; Cumulative Effects
Reviewing Agencies	Resources Agency; Department of Fish and Wildlife, Region 4; Delta Protection Commission; Department of Parks and Recreation; Central Valley Flood Protection Board; Department of Water Resources; Caltrans, District 10; Air Resources Board; State Water Resources Control Board, Division of Drinking Water; State Water Resources Control Board, Divison of Financial Assistance; Regional Water Quality Control Bd., Region 5 (Sacramento); Department of Toxic Substances Control; Native American Heritage Commission; State Lands Commission; Delta Stewardship Council

Date Received 01/08/2015 *Start of Review* 01/08/2015 *End of Review* 02/23/2015

Note: Blanks in data fields result from insufficient information provided by lead agency.

8.4 Comment Letter 4 - State of California, Governor's Office of Planning and Research, State Clearinghouse, Scott Morgan, Director

8.4.1 Response to Comment 4-1

Comment Summary: The comment transmits comment letters state agencies, and confirms that the City of Modesto has complied with the State Clearinghouse review requirements for draft environmental documents pursuant to the California Environmental Quality Act.

The City of Modesto appreciates the assistance of the State Clearinghouse in complying with CEQA requirements for environmental review.

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State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4005
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

March 9, 2015

William Wong, City of Modesto
Utilities Department
1010 10th Street, 4th Floor
Modesto, California 95353
E-mail: wwong@modestogov.com

Ben Lawrence
United States Bureau of Reclamation
1234 "N" Street
Fresno, California 93721
E-mail: blawrence@usbr.gov

Subject: Draft Environmental Impact Statement / Report, EA/UP&P No. 2014-02, SCH No. 2014042068 North Valley Regional Recycled Water Program

Dear Messrs. Wong and Lawrence:

The California Department of Fish and Wildlife (Department) has reviewed the Draft Environmental Impact Statement/Environmental Impact Report (Draft EIR/EIS) for the North Valley Regional Recycled Water Program (Project).

The United States Department of the Interior, Bureau of Reclamation (Reclamation) is the Lead Agency pursuant to the National Environmental Protection Act (NEPA). The City of Modesto is the Lead Agency pursuant to the California Environmental Quality Act (CEQA). The City of Modesto and Reclamation jointly prepared the Draft EIS/EIR for the proposed Project. The City of Modesto, City of Turlock, and Del Puerto Water District (DPWD) (Partner Agencies) propose to implement the proposed Project to address water supply shortages in DPWD's service area on the west side of the San Joaquin River (SJR) in San Joaquin, Stanislaus, and Merced counties. The Project would deliver up to 59,000 acre feet per year (AFY) of recycled water produced by the cities of Modesto and Turlock via the Delta-Mendota Canal (DMC). Instead of discharging into the SJR, recycled water would be conveyed by the cities of Modesto and Turlock through pipelines from their wastewater treatment facilities, crossing the SJR, ending at the DMC. The recycled water would then be conveyed to DPWD. The Project also proposes to provide Incremental Level-4 (IL4) water to Central Valley Project Improvement Act (CVPIA) designated wildlife refuges. 5-1

The Draft EIS/EIR evaluates three (3) Project alternatives, plus a No Action alternative. Two alternatives would use different pipeline alignments to convey water to the DMC. A third alternative would continue river discharge, and then divert and convey water to the DMC through expanded facilities owned by the Patterson Irrigation District.

5-1 Cont'd The Preferred Project Alternative (Alternative 1) is the Combined Alignment Alternative. Alternative 1 would convey recycled water from the City of Turlock through a pipeline beginning at the end of the existing Harding Drain Bypass Pipeline north to the City of Modesto's Jennings Water Quality Control Facility (Jennings Plant). From there the flow would be combined with recycled water from Modesto. From the Jennings Plant the pipeline would cross under the SJR and convey water to the DMC.

This following provides the Department's comments and recommendations on the Draft EIS/EIR.

Impacts to Sensitive Biological Resources

1.1.3 South of the Delta Refuges Water Needs and Descriptions

5-2 The Project proposes to make recycled water available to certain South of Delta (SOD) Central Valley Project Improvement Act (CVPIA) designated federal National Wildlife Refuges (NWRs), State Wildlife Areas (SWAs), and one privately-managed wetland (Grassland Resource Conservation District), collectively referred to as "Refuges". This section along with Figure 1-5 implies that IL4 water would be supplied to the Refuges, but does not describe the amount of IL4 that would be delivered annually to Refuges. The Project description should detail the amount of IL4 water that would be dedicated annually to the Refuges, and clarify whether or not IL4 water is considered mitigation for other Project-related impacts.

2.4.1 Operations

5-3 The timing of IL4 water delivery to SOD refuges would likely be during low agricultural-demand periods, although this has yet to be determined. The EIS/EIR should discuss when low agricultural-demand periods would occur within the DPWD, and whether the expected timing of IL4 delivery would be beneficial to refuge management.

3.11 Hydrology and Water Quality

Impact HYD-5 Reduction of Flows in San Joaquin River
The hydrology and water quality analysis uses SJR flow data from the Vernalis and Newman gages as the baseline flow conditions for Project analysis. The Newman gage

is upstream of Turlock, and the Vernalis gage is downstream of Modesto. The hydrology analysis discusses impacts to flow at the Vernalis gage. The Draft EIS/EIR should include an analysis of direct and indirect impacts to biological resources and fisheries along the SJR reach between Turlock and Modesto resulting from permanent diversion of up to 59,000 acre-feet of recycled wastewater. Such analysis should include the impacts due to loss of potential SJR surface flow and groundwater recharge in this reach during critically dry years such as the current drought years of 2012 through 2014. 5-4

3.18.3 Socioeconomics Impact Analysis/Environmental Consequences

The document states that, "*At buildout the project could result in 572 additional jobs, with $31,665,665 in total income and $74,669,302 in total output each year.*" No impact analysis has been done to show the Project benefits of refuge water supply use. If direct benefits in habitat value, increased acreage, or bird use days cannot be shown, then perhaps showing the opportunity costs of forgoing Project water could be done instead. 5-5

3.4 Biological Resources

Impact BIO-6: Effects on giant garter snake.

The document states that, "*If giant garter snake (GGS) are present in upland areas during construction, injury or mortality to individuals could result while operating construction equipment for site preparation (i.e. clearing and grubbing). However, harm or mortality of individual GGS is considered unlikely because snakes would likely sense vibration from construction equipment and disperse from the work area.*" It cannot be assumed that GGS will disperse from the work area in advance of encroaching construction equipment, and the foregoing language should be removed from the Draft EIS/EIR. 5-6

Mitigation Measure BIO-6 (Page 3.4-61)
Mitigation Measure BIO-6 would require preconstruction surveys, onsite biological monitoring, and restrict location of construction activities. If GGS are observed during preconstruction biological surveys, site preparation activities, or during construction activities, consultation with the Department would be warranted to discuss how to implement the Project and avoid take ("take" defined in Fish and Game Code Section 86). An Incidental Take Permit (ITP) from the Department may be required if the project, project construction, or any project-related activity during the life of the project will result in "take" (Fish and Game Code Sections 86, 2080, 2081 (b)(c)). 5-7

Impact BIO-10 & BIO 12: Effects on Tricolored Blackbird and Swainson's Hawk

5-8 Tricolored blackbird (*Agelaius tricolor*) and Swainson's hawk (*Buteo swanson*i) have been documented nesting in the immediate vicinity of the Project area. The Department recommends that a habitat assessment be conducted by a qualified biologist familiar with these species to determine if the Project would impact potential breeding grounds. An adequate habitat assessment would include the Project site including a ½-mile buffer. If potential breeding grounds are identified then surveys would need to be conducted during the appropriate time of year to determine if tricolored blackbirds and Swainson's hawk are nesting within the Project site or the surrounding area. If these species are identified within a ½ mile of the Project site, consultation with the Department would be warranted to discuss how to implement the Project and avoid take ("take" defined in Fish and Game Code Section 86). If "take" cannot be avoided, an ITP would be necessary pursuant to the California Endangered Species Act (CESA) (Fish and Game Code Sections 86, 2080, 2081 (b)(c)).

5-9 **Mitigation Measures BIO-12:** Swainson's hawks are more susceptible to human activities that result in nest failure and abandonment. This mitigation measure should be changed to require a ½-mile no-disturbance buffer around Swainson's hawk nests. Consultation with the Department is recommended if an alternative nesting season no-disturbance buffer is proposed. Any such buffer would need to avoid "take."

4.4 Environmentally Preferable/Superior Alternative

5-10 This section fails to analyze the environmental alternative impact of using recycled water for wildlife refuges. The IL4 is currently being met partly through groundwater use, similar to DPWD's current use of groundwater resources and therefore should show similar impacts. Improving the economics of wetland restoration and optimization will also help offset CVP biological impacts which are to be met with Full Level 4 water supplies. Short-term impacts of construction on biological resources can be offset by long-term water use at wildlife refuges resulting in improved habitat values.

An analysis should be made to consider the environmental impacts of possible expanding agricultural use as compared with the No Project alternative. The Draft EIS/EIR should consider whether agricultural use is expected to increase because of this additional recycled water supply or whether these supplies would be expected to replace existing groundwater use. A similar analysis should be made for refuge water use.

Suggested Additional Changes by Chapter and Page Number

1-8: The header for Table 1-1 "Wildlife Areas" should be changed to "State Wildlife Areas" to match the description in Section 1.1.3. 5-11

3-13-1: There is no direct conveyance route for Kern National Wildlife Refuge to receive recycled water and it should be removed from consideration.

3.14-1: "(sound power)" should be replaced with "(volume)".

3.16-2: "Delta Puerto Water District" should be replaced with "Del Puerto Water District".

3.17-2: "birdwatching, wildlife viewing, hiking, biking, boating, and fishing" opportunities should also include "waterfowl hunting and camping" to match Table 3.17-1 activities.

If you have any questions regarding these comments, please contact Annette Tenneboe, Senior Environmental Scientist (Specialist), at (559) 243-4014, extension 231; annette.tenneboe@wildlife.ca.gov, or by writing to the California Department of Fish and Wildlife at 1234 East Shaw Avenue, Fresno, California 93710.

Sincerely,

for

Jeffrey R. Single, Ph.D.
Regional Manager
California Department of Fish and Wildlife, Central Region

ec: Paul Forsberg
James Rosauer
Jeffrey Shu
Gerald Hatler
Dean Marston
Julie Vance
Andy Gordus
Bill Cook
Annette Tenneboe
California Department of Fish and Wildlife

8.5 Comment Letter 5 - State of California, Department of Fish and Wildlife, Jeffrey R. Single, Regional Manager, Central Region

8.5.1 Response to Comment 5-1

Comment Summary: The comment summarizes the project and alternatives that are considered in the Draft EIR/EIS, and states that the letter provides comments on the Draft EIR/EIS.

The summary provided in the comment is generally correct, but it has not yet been determined if the supplemental water that could be provided to certain SOD refuges would be considered to be IL4 water. Water supplied by the NVRRWP may be considered to be either L2 or IL4 water.

8.5.2 Response to Comment 5-2

Comment Summary: The comment states that the Draft EIR/EIS should describe the amount of IL4 water that would be dedicated annually to refuges and clarify whether or not IL4 water is considered mitigation for other project-related impacts.

See Responses to Comments 1-10 and 5-1 regarding water delivery to refuges. Provision of supplemental water to refuges is a component of the Proposed Action and is not proposed as mitigation for project impacts.

8.5.3 Response to Comment 5-3

Comment Summary: The comment requests that the EIR/EIS discuss when low agricultural demand periods would occur with DPWD and whether the expected timing of IL4 delivery would be beneficial to refuge management.

Please refer to **Figure 1-4** on page 1-6 of the Draft EIR/EIS, which shows a monthly graph of recycled water production, DPWD agricultural demand, and refuge demand. Agricultural demand is highest in April through October with far less demand from November through February. The refuges have need for water throughout the year, and can make use of water that is produced in the fall and winter months, when recycled water production is highest. Storage in the federal facilities would also facilitate year-round use of recycled water. Reclamation has determined that water deliveries from the project would be beneficial for refuge management (Reclamation 2013), and that maximizing flexibility of annual transfers would provide the greatest benefit.

8.5.4 Response to Comment 5-4

Comment Summary: The comment states that the EIR/EIS should include an analysis of direct and indirect impacts to biological resources and fisheries along the San Joaquin River (SJR) reach between Turlock and Modesto resulting from diversion of 59,000 acre-feet of wastewater, and should include impacts due to loss of SJR surface flow and groundwater recharge during critically dry years.

Impacts to biological resources and fisheries associated with changes in river flows were discussed beginning on page 3.4-59 of the Draft EIR/EIS, and a detailed assessment was presented in Appendix E. Impacts are also discussed in the hydrology section beginning on page 3.11-24 of the Draft EIR/EIS. The existing combined discharges from Modesto and Turlock do not currently total 59,000 AFY. The project's ultimate capacity of 59,000 AF is based on the total estimated flow projections at buildout of the two cities projected to be in 2045. As shown in **Appendix E** of the Draft EIR/EIS, the Modesto and Turlock combined wastewater discharges to the San Joaquin River currently average 25 cfs (which represents a current annual discharge of about 18,000 AFY), with a range of average monthly flows of 12.9 to 51.4 cfs.

Turlock discharges an average of about 10,000 AFY, and because of discharge permit limitations (Modesto cannot discharge to the river at all between June and September) Modesto only discharges an average of about 8,000 AFY. The project would thus eliminate an average of 18,000 AFY of current discharges to the San Joaquin River, not 59,000 AFY. As noted on page 3.11-25 "*The reduction in San Joaquin River stream flows at Vernalis due to NVRRWP is approximately 0.5 percent of annual flows*". Additional information about potential changes in flows in critically dry years, and in portions of the river upstream of Vernalis (C2VSim analysis) was presented in **Appendix G** of the Draft EIR/EIS.

As noted in Response to Comment 1-2, in dry years, existing discharges from the City of Modesto are severely limited. Modesto's current NPDES permit prohibits all discharges from June 1 to September 30, and it restricts discharges during the October 1 to May 31 discharge season. Specifically, Modesto may discharge only when river flows provide a flow ratio equal to or greater than 20:1 (river to effluent) as a daily average. As a result of this restriction, in 2014 Modesto discharged an annual total of only 1,139 AF. Although the percentage reduction varies depending on the water year type, all reductions in flows that will result from elimination of these discharges are considered insignificant in comparison to the seasonal and annual variations in flows that are experienced (between 1990 and 2014, flows at Vernalis ranged from about 585,000 AFY to 8,900,000 AFY).

It should be noted that flows at the Newman gage were not used for the analysis of impacts on fisheries because, as noted in **Appendix E** of the Draft EIR/EIS, "*the flows at Vernalis were selected since the existing biological relationships between river flow and juvenile salmon survival, river flow and subsequent adult escapement, and Vernalis flows are a key driver in the SalSim lifecycle model.*"

Changes in groundwater recharge associated with these minor reductions in discharges are also expected to be minimal. Results of modeling conducted for an 88-year simulation period, which includes a number of critically dry years, are reported starting on page 3.11-20 of the Draft EIR/EIS. The Draft EIR/EIS specifically provided information for the reach between Modesto and Turlock. As shown **in Figure 3.11-4** of the Draft EIR/EIS, the portion of the river between the two discharge locations is bordered by the Turlock groundwater subbasin on the east side of the San Joaquin River, and by the Delta-Mendota subbasin on the west side. **Table 3.11-6** on page 3.11-22 of the Draft EIR/EIS shows the change in groundwater storage in each subbasin along the river on average annual and cumulative bases. The Turlock subbasin is projected to have a 2 AFY reduction in average annual groundwater storage, while the Delta-Mendota

subbasin could experience a reduction of 5 AFY. When compared to the estimated total groundwater storage in the Turlock subbasin, which DWR estimates as 12,800,000 AF of groundwater to a depth of 300 feet (DWR 2003), a 2 AFY reduction in storage represents a 0.000016 percent change in storage. For the Delta-Mendota subbasin, which is estimated to store 26,600,000 AF of groundwater to a depth of 300 feet (DWR 2003), the reduction represents a 0.000019 percent change. DWR (2003) also provides estimates of average annual pumping for the Turlock subbasin, with 65,000 AFY estimated for urban extraction and 387,000 AFY for agricultural pumping. A 2 AFY reduction in recharge is only 0.0004 percent of the amount of water that is extracted from the Turlock subbasin by pumping. The reduction in recharge would occur in a portion of the subbasin near the river that currently experiences high groundwater levels, not in the eastern portion of the basin where pumping has created a cone of depression. The reduction in groundwater recharge is thus considered to be less than significant.

8.5.5 Response to Comment 5-5

Comment Summary: The comment states that the socioeconomic analysis in the Draft EIR/EIS does not show the project benefits of refuge water supply use.

The comment is correct that the Draft EIR/EIS has not attempted to calculate a monetary benefit associated with providing water to refuges. An evaluation of economic benefits of providing water to refuges would be highly speculative and is outside the scope of the EIR/EIS. The purpose of the environmental document is to provide an assessment of the environmental impacts associated with constructing and implementing the project. While it is acknowledged that water for refuges has potential economic benefits, quantifying those benefits or determining the opportunity cost of forgoing water would require more information than is currently available.

8.5.6 Response to Comment 5-6

Comment Summary: The comment states that it cannot be assumed that giant garter snake (GGS) will disperse from the work area in advance of encroaching construction equipment, and that this statement should be removed from the EIR/EIS.

We concur with CDFW's assessment that it cannot be assumed that GGS, if present, would disperse from the work area. The Final EIS has been revised to remove this language. Potential direct impacts to GGS due to construction activities are still considered less than significant with mitigation because aquatic habitat would be crossed using trenchless construction techniques, and scheduling of construction adjacent to aquatic habitats would be done only during the snake's active season (May 1 to October 1). Specifically, **Mitigation Measure BIO-6: Avoid and Minimize Impacts to Giant Garter Snake** requires avoidance of work in GGS habitat, to the extent feasible, and provides measures to protect GGS during any construction within 200 feet of potential GGS habitat.

The paragraph under the Combined Alignment Alternative starting on page 3.4-72 of the Final EIS is updated, as follows:

Combined Alignment Alternative (Alternative 1)
Potential impacts to GGS would be minimized by using trenchless construction techniques in aquatic habitats where GGS may occur. Potential upland habitat adjacent to aquatic habitat in the San Joaquin River would be avoided because entry and pullback pits for HDD construction would be on the land-side of the river levees and greater than 200 feet from suitable aquatic habitat. To the extent feasible, construction is expected to take place in the active season for GGS, which is from May 1 to October 1. The proposed pipeline alignment would cross the natural drainage on the east side of the San Joaquin River up to three times (**Figure 3.4-1**, Stations 373+00. 436+00, and 562+50). Approximately 54,000 square feet (1.24 acres) of potential GGS upland habitat would be temporarily disturbed during construction. This would temporarily reduce the amount and quality of upland habitat available to GGS. If GGS are present in upland areas during construction, injury or mortality to individuals could result while operating construction equipment for site preparation (i.e., clearing and grubbing). ~~However, harm or mortality of individual GGS is considered unlikely because snakes would likely sense vibration from construction equipment and disperse from the work area.~~

8.5.7 Response to Comment 5-7

Comment Summary: The comment requests consultation with the Department if GGS are observed during preconstruction surveys and states that an Incidental Take Permit may be required if the project would result in "take".

Mitigation measure BIO-6, as presented in the Draft EIR/EIS, would avoid and minimize potential impacts to GGS due to construction activities. If GGS are observed during preconstruction biological surveys, site preparation activities, or during construction activities, the Partner Agencies will be responsible for consultation with CDFW to discuss how to avoid take and/or acquire an Incidental Take Permit for GGS if take cannot be avoided. Reclamation is consulting with the USFWS and NMFS on the project pursuant to Section 7 of the ESA. Issuance of a Record of Decision will not be done until consultations are complete.

8.5.8 Response to Comment 5-8

Comment Summary: The Department states that Tricolored blackbird (Agelaius tricolor) and Swainson's hawk (Buteo swainsoni) have been documented nesting in the immediate vicinity of the project area, and the Department recommends that a habitat assessment be conducted by a qualified biologist familiar with these species to determine if the project would impact potential breeding grounds. The comment requests consultation with the Department if tricolored blackbird or Swainson's hawk are observed during preconstruction surveys and states that an Incidental Take Permit may be required if the project would result in "take".

Habitat assessments for these species were conducted as part of the reconnaissance biological surveys for the Proposed Action alternatives. Suitable breeding habitat for Swainson's hawk occurs along the San Joaquin River corridor, the natural drainage to the west of the river, and in isolated or small groves of mature trees in agricultural fields (See **Table 3.4-3** in the Draft EIR/EIS). Tricolored blackbird may breed in drainage/irrigation channels with emergent vegetation and agricultural fields cultivated in silage or grain (See **Table 3.4-3** in the Draft EIR/EIS for locations where these habitats occur).

Swainson's hawks are likely to nest within the vicinity of the proposed construction areas, and Tricolored blackbirds may also nest within the vicinity of the construction areas. **Mitigation Measures BIO-10** and **BIO-12** establish measures to avoid take of Tricolored blackbirds and Swainson's hawks, which include consultation with CDFW, as appropriate. In addition, **Mitigation Measure BIO-13** requires measures to avoid and minimize impacts to birds protected under the MBTA, which include consultation with USFWS, as appropriate. With implementation of these mitigation measures (as modified per Response to Comment 5-10), take of these species would be unlikely. If take of either species cannot be avoided, Reclamation will consult with USFWS pursuant to the MBTA and the Partner Agencies will consult with CDFW pursuant to Fish and Game Code Sections 2080 and 2081.

8.5.9 Response to Comment 5-9

Comment Summary: The comment requests a 1/2-mile no disturbance buffer around Swainson's hawk nests.

As specified in **Mitigation Measure BIO-12**, *"Surveys shall cover a minimum of a 0.5-mile radius around potentially suitable nesting habitat for Swainson's hawk. … If nesting raptors are detected a no-disturbance buffer shall be established around the nest"*. The biologist shall have the discretion to determine the appropriate buffer, which may involve consultation with the CDFW, as appropriate. **Mitigation Measure BIO-12** (page 3.4-82) has been revised in the Final EIS as follows:

- If nesting raptors are detected, a no-disturbance buffer shall be established around the nest. Buffers shall be established by a qualified biologist, with consultation with the CDFW and/or USFWS, as appropriate ~~0.25 mile for Swainson's hawk and white-tailed kite, and 500 feet for northern harrier and non-listed raptors. A qualified biologist may identify an alternative buffer based on a site specific evaluation and in consultation with CDFW~~. No construction activities shall be initiated within the buffer until fledglings are fully mobile and no longer reliant upon the nest or parental care for survival. Construction must either be started before nests are established, or if nesting birds are already present, construction within the buffer zone would have to be delayed until nesting is done for the season.

8.5.10 Response to Comment 5-10

Comment Summary: The comment states that the EIR/EIS fails to analyze the impact of using recycled water for wildlife refuges and cites the potential benefits of using water at refuges. The comment also states that the alternatives analysis should consider the impact of expanding agricultural use as compared to the No Project Alternative.

It is understood that the adverse groundwater impacts associated with the No Action Alternative could include additional groundwater use both for irrigation in DPWD and to supply water for refuges; this is discussed on page 3.11-22 of the Draft EIR/EIS. DPWD irrigators in the northern portion of the Delta-Mendota subbasin have needed to increase groundwater pumping to make up for reductions in CVP supply. Refuges have also had to depend on groundwater to make up water supply shortages.

The Proposed Aciton alternatives are not relying on benefits to the refuges to provide mitigation for short-term construction impacts; however, the provision of supplemental water to refuges would definitely contribute to improved habitat values. The recycled water supplied by the NVRRWP is not intended to support expanded agricultural use. As described on page 4-2 of the Draft EIR/EIS, the NVRRWP would provide water to support existing DPWD agricultural uses and its customers who are not receiving their full allocation of water from the CVP. Similarly, water supplied to refuges would be intended to make up for existing shortfalls in supplemental water supplies. It is expected that agricultural water supplies from the project would enable a reduction in groundwater pumping in the northern portion of the Delta-Mendota subbasin, which would be beneficial to the region.

8.5.11 Response to Comment 5-11

Comment Summary: The comment suggests several editorial changes to the Draft EIR/EIS, and suggests that it is not possible to provide water to the Kern National Wildlife Refuge.

Although there is not a direct conveyance route to the Kern National Wildlife Refuge, water can be supplied to that refuge via an exchange of water from the CVP for water from the SWP. The Refuge Water Supply Program presently delivers CVP water to the Kern Wildlife Refuge via an exchange for SWP water, and could do the same with the NVRRWP water, which would be conveyed through the CVP system. An exchange of water supplies is not part of the Proposed Action alternatives covered in this EIS and may need additional environmental review prior to implementation.

The remainder of the editorial changes requested have been accommodated in the Final EIS. The heading for the second column **Table 1-1** on page 1-9 is revised as follows:

> **State Wildlife Areas**

The second sentence of the fourth paragraph on page 3.14-1 is revised as follows:

> … (sound power or volume)…

The first sentence of the fifth paragraph on page 3.16-2 is revised as follows:

> ~~Delta Puerto Water District (~~DPWD~~)~~ serves the remainder of the proposed project, …..

The first line on page 3.17-2 is revised as follows:

> …birdwatching, wildlife viewing, hiking, biking, boating, waterfowl hunting, camping and fishing.

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CALIFORNIA
Water Boards

Edmund G. Brown Jr.
Governor

Matthew Rodriquez
Secretary for
Environmental Protection

Central Valley Regional Water Quality Control Board

FEB
Received
Capital Improvement
Services

4 February 2015

William Wong
City of Modesto
Utilities Department
1010 Tenth Street, 4th Floor
Modesto, CA 95354

CERTIFIED MAIL
7014 2120 0001 3978 4696

COMMENTS TO REQUEST FOR REVIEW FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT, NORTH VALLEY REGIONAL RECYCLED WATER PROGRAM PROJECT, SCH#: 2014042068, STANISLAUS COUNTY

Pursuant to the State Clearinghouse's 8 January 2015 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Draft Environment Impact Report/Environment Impact Statement* for the North Valley Regional Recycled Water Program Project, located in Stanislaus County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues. 6-1

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

For more information on the Construction General Permit, visit the State Water Resources Control Board website at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for
6-2 LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/.

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

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Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 97-03-DWQ.

6-3 For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml.

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACOE). If a Section 404 permit is required by the
6-4 USACOE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements.

If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACOE at (916) 557-5250.

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[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACOE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications. 6-5

Waste Discharge Requirements

If USACOE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project will require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation.

6-6

For more information on the Water Quality Certification and WDR processes, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/help/business_help/permit2.shtml.

Regulatory Compliance for Commercially Irrigated Agriculture

If the property will be used for commercial irrigated agricultural, the discharger will be required to obtain regulatory coverage under the Irrigated Lands Regulatory Program.
There are two options to comply:

1. **Obtain Coverage Under a Coalition Group.** Join the local Coalition Group that supports land owners with the implementation of the Irrigated Lands Regulatory Program. The Coalition Group conducts water quality monitoring and reporting to the Central Valley Water Board on behalf of its growers. The Coalition Groups charge an annual membership fee, which varies by Coalition Group. To find the Coalition Group in your area, visit the Central Valley Water Board's website at: http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/app_approval/index.shtml; or contact water board staff at (916) 464-4611 or via email at IrrLands@waterboards.ca.gov.

2. **Obtain Coverage Under the General Waste Discharge Requirements for Individual Growers, General Order R5-2013-0100**. Dischargers not participating in a third-party group (Coalition) are regulated individually. Depending on the specific site conditions, growers may be required to monitor runoff from their property, install monitoring wells, and submit a notice of intent, farm plan, and other action plans regarding their actions to comply with their General Order. Yearly costs would include State administrative fees (for example, annual fees for farm sizes from 10-100 acres are currently $1,084 + $6.70/Acre); the cost to prepare annual monitoring reports; and water quality monitoring costs. To enroll as an Individual Discharger under the Irrigated Lands Regulatory 6-7

Program, call the Central Valley Water Board phone line at (916) 464-4611 or e-mail board staff at IrrLands@waterboards.ca.gov.

Low or Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are
6-8 typically considered a low or limited threat to water quality and may be covered under the General Order for *Dewatering and Other Low Threat Discharges to Surface Waters* (Low Threat General Order) or the General Order for *Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water* (Limited Threat General Order). A complete application must be submitted to the Central Valley Water Board to obtain coverage under these General NPDES permits.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0074.pdf

For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0073.pdf

If you have questions regarding these comments, please contact me at (916) 464-4684 or tcleak@waterboards.ca.gov.

Trevor Cleak
Environmental Scientist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

8.6 Comment Letter 6 - Central Valley Regional Water Quality Control Board, Trevor Cleak, Environmental Scientist

8.6.1 Response to Comment 6-1

Comment Summary: The comment states that a project with a construction area larger than one acre most obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit).

The Draft EIR/EIS acknowledges that the project will need to obtain coverage under the Construction General Permit because the construction area will be more than one acre. The permit is included in the list of approvals in **Table 1-3** on page 1-14 of the Draft EIR/EIS. Requirements of the permit are also discussed in greater detail on page 3.11-9 of the Draft EIR/EIS, which describes the need for a SWPPP.

8.6.2 Response to Comment 6-2

Comment Summary: The comment states that Phase I and II MS4 Permits require Permittees to reduce pollutants and runoff flows from new development using Best Management Practices.

The project does not propose new development and would therefore not require MS4 permits. As noted on page 3.11-13 of the Draft EIR/EIS "*The proposed project would add very little impervious surface to the landscape as the above-ground facilities are limited to air valves along the new pipelines (housed in 4 foot by 4 foot steel cages), modifications to the existing Jennings Plant Pump Station that would not increase the total footprint of the pump station, and, in the case of Alternative 2, a small building (building footprint 40 feet by 50 feet) that would house a new pump station at the end of the Harding Drain Bypass Pipeline. These facilities are too small to have any appreciable impact on surface runoff.*"

8.6.3 Response to Comment 6-3

Comment Summary: The comment states that storm water discharges associated with industrial sites must comply with the Industrial Storm Water General Permit Order No. 97-03-DWQ.

As noted in Response to Comment 4-1, the majority of the project consists of buried underground pipelines, which would not require coverage under the Industrial Storm Water General Permit. Modifications to the existing Jennings Plant Pump Station would take place entirely within the existing Jennings Plant, where stormwater generated onsite is captured and routed through the on-site treatment system. The recycled water pump station that would be constructed at the end of the Harding Drain Bypass Pipeline as part of Alternative 2 is not a type of facility that would require coverage under the Industrial Storm Water General Permit.

8.6.4 Response to Comment 6-4

Comment Summary: The comment states that the project would require a Clean Water Act Section 404 Permit if there would be any discharge of dredged or fill materials in navigable waters or wetlands, and that the Department of Fish and Wildlife should be consulted regarding a Streambed Alteration Permit.

The Draft EIR/EIS acknowledges that the project will need to obtain a 404 Permit because construction of pipelines would require crossings of waters of the U.S. and jurisdictional wetlands. The permit is included in the list of approvals in **Table 1-3** on page 1-14 of the Draft EIR/EIS. Requirements of the permit are also discussed in greater detail on page 3.4-23 of the Draft EIR/EIS, which describes the need for a 404 Permit. Impacts to federally protected wetlands are discussed starting on page 3.4-74 of the Draft EIR/EIS. **Table 1-3** also identified the need for a Streambed Alteration Agreement.

8.6.5 Response to Comment 6-5

Comment Summary: The comment states that if a 404 Permit is required, then a 401 Water Quality Certification must be obtained.

The Draft EIR/EIS lists federal permits in **Table 1-3**, which notes that a 404 Permit and Section 10 permit would be required. However, a Section 9 Permit from the U.S. Coast Guard is not expected to be needed because no structures would be constructed within a navigable water. The Draft EIR/EIS acknowledges that the project would need to obtain a Section 401 Water Quality Certification. The permit is included in the list of approvals in **Table 1-3** on page 1-14 of the Draft EIR/EIS. Requirements of the Water Quality Certification are also discussed in greater detail on page 3.4-23 of the Draft EIR/EIS, which describes Section 401 requirements.

8.6.6 Response to Comment 6-6

Comment Summary: The comment states that if only non-jurisdictional waters of the State ("non-federal" waters) are present, the project would require a Waste Discharge Requirements permit.

Based on the evaluation of waters and wetlands in the Proposed Action area, the Draft EIR/EIS (starting on page 3.4-74) identified that there are jurisdictional waters. A wetland delineation was prepared and submitted to the USACE. It is expected that the USACE will take jurisdiction over any affected waters.

8.6.7 Response to Comment 6-7

Comment Summary: The comment states that if the property will be used for commercial irrigated agriculture, the discharger will be required to obtain regulatory coverage under the Irrigated Lands Regulatory Program

As described on page 4-2 of the Draft EIR/EIS, the project would serve existing agricultural users in the DPWD, and would not include development of any new agricultural lands. Recycled water would be introduced into the DMC for existing agricultural purposes within DPWD. All of the District's irrigated lands already have coverage under the Irrigated Lands Regulatory Program as part of the Westside San Joaquin River Watershed, and have since its inception.

8.6.8 Response to Comment 6-8

Comment Summary: The comment states that construction dewatering would require coverage under an NPDES Permit, and specifies two General Orders under which coverage could be obtained.

The Draft EIR/EIS acknowledges that the project would need to obtain a coverage for dewatering during construction and for pipeline discharges during testing and startup. **Table 1-3** on page 1-14 of the Draft EIR/EIS identifies the need to file a NOI for coverage under the Low-Threat Discharge Order for Dewatering During Construction. Requirements of the Limited Threat General Order are also discussed in greater detail on pages 3.11-9 and 3.11-14 of the Draft EIR/EIS.

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San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

March 9, 2015

William Wong
City of Modesto
Utility Planning and Projects Department
1010 Tenth Street, 4th Floor
Modesto, CA 95353

Agency Project: North Valley Regional Recycled Water Program - Draft Environmental Impact Report/Environmental Impact Statement EA/UP & P No. 2014-02, SCH# 2014042068

District CEQA Reference No: 20150016

Dear Mr. Wong:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the North Valley Regional Recycled Water Program (NVRRWP). The City of Modesto, Del Puerto Water District (DPWD) and City of Turlock (Partner Agencies) propose to implement a regional solution to address water supply shortages within DPWD's service area on the west side of the San Joaquin River in San Joaquin, Stanislaus and Merced Counties, south of the Sacramento-San Joaquin River Delta (Delta). The project would deliver up to 59,000 acre feet per year of recycled water produced by the cities of Modesto and Turlock via the Delta-Mendota Canal, a feature of the Central Valley Project owned by the Bureau of Reclamation. Instead of discharging into the San Joaquin River, recycled water would be conveyed from Modesto and Turlock through pipelines from their wastewater treatment facilities, crossing the San Joaquin River, and ending at the Delta-Mendota Canal. The water would then be conveyed directly to Del Puerto Water District customers. The project also proposes to provide water to Central Valley Project Improvement Act designated refuges located south of the Delta to meet their need for water supply. The project facilities consist of pipelines and pump stations. The District offers the following comments:

District Comments: 7-1

1. Based on information provided to the District, with implementation of Mitigation Measure AIR-1, project specific emissions of criteria pollutants are not expected to exceed District significance threshold of 10 tons/year NOx, 10 tons/year ROG, and

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585

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15 tons/year PM10. Therefore, the District concludes that project specific criteria pollutant emissions would have no significant adverse impact on air quality.

Mitigation Measure AIR-1, pages 3.3-32 and 33, states:

7-1

- "NOx emissions associated with construction activities shall be reduced to 10 tons per year through on-site equipment and hauling vehicle mitigation measures to the extent feasible."
- "If all feasible on-site measures have been implemented and annual emissions are anticipated to still be above 10 tons per year for NOx, then the project proponent shall enter into a Voluntary Emissions Reduction Agreement (VERA) with SJVAPCD. The VERA would provide pound-for-pound mitigation of air emissions increases down to a net zero emissions per year as required under general conformity …"

The VERA is an instrument by which the project proponent provides monies to the District, which is used by the District to fund emission reduction projects that achieve the reductions required by the lead agency. District staff is available to meet with project proponents to discuss a VERA for specific projects. For more information, or questions concerning this topic, please call District Staff at (559) 230-6000.

7-2

2. The Air Quality Section of the DEIR/EIS, page 3.3-17, states: "Portable equipment used at project sites for less than 6 consecutive months must be registered with SJVAPCD."

   The District offers the following clarification. Portable emission units (including portable drilling rigs) are required to be registered with either the California Air Resources Board (CARB) or with the District (Rule 2280 Portable Equipment Registration).

7-3

3. The Air Quality Section of the DEIR/EIS, page 3.3-18, states that the EPA withdrew approval of the *2004 Extreme Ozone Attainment Demonstration Plan* in 2012 and that the District is revising the plan to seek Board approval in 2014. However, the District already adopted the *2013 Plan for the Revoked 1-Hour Ozone Standard* in September 2013 to address the revoked 1-hour ozone standard. The District recommends this statement be revised. The 2013 plan can be found on the District's website at:
   http://www.valleyair.org/Air_Quality_Plans/Ozone-OneHourPlan-2013.htm

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7-4

4. A 5 minute idling time was assumed for trucks. There was no indication that such a limitation would be included as a mitigation measure. Despite the Airborne Toxic Control Measure (ATCM) for idling, the District believes that there are no enforcement measures to ensure that trucks will idle for only 5-minutes unless such

measures are included as mitigation measures in the California Environmental Quality Act (CEQA) process or in the land use permit. The ATCM includes numerous exceptions to the 5-minute idling limitation.

District Rules and Regulations

7-5 5. The proposed project may be subject to District Rules and Regulations, including: Regulation VIII (Fugitive PM10 Prohibitions), Rule 4102 (Nuisance), and Rule 4702 (Internal Combustion Engines). The above list of rules is neither exhaustive nor exclusive. To identify other District rules or regulations that apply to this project, the District recommends the applicant contact the District's Small Business Assistance (SBA) office. SBA staff can be reached at (209) 557-6446.

More information regarding District rules and regulation can be obtained by:

- Visiting the District's website at http://www.valleyair.org/rules/1ruleslist.htm for a complete listing of all current District rules and regulation, or
- Visiting the District's website at http://www.valleyair.org/busind/comply/PM10/compliance_PM10.htm for information on controlling fugitive dust emissions

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7-6 6. Based on the information provided to the District, the proposed project does not meet the definition of a development project. Therefore, the District concludes the proposed project is not subject to District Rule 9510 (Indirect Source Review).

7-7 7. The District recommends that a copy of the District's comments be provided to the project proponent.

If you have any questions or require further information, please contact Georgia Stewart at (559) 230-5937.

Sincerely,

Arnaud Marjollet
Director of Permit Services

Georgia Stewart

For: Chay Thao
Permit Services Manager
AM: gs

8.7 Comment Letter 7 – San Joaquin Valley Air Pollution Control District, Arnaud Marjollet, Director of Permit Services

8.7.1 Response to Comment 7-1

Comment Summary: The comment states that the San Joaquin Valley Air Pollution Control District (SJVAPCD) concludes that the project would have no significant adverse impact on air quality based on criteria pollutant emissions, and offers that the SJVAPCD staff is available to meet with the Partner Agencies to discuss a Voluntary Emissions Reduction Agreement (VERA).

Comment noted. As described in **Mitigation Measure AIR-1** in the Draft EIR/EIS (page 3.3-32), the NVRRWP would implement a VERA if it is not possible to reduce construction-period NO_x emissions to 10 tons per year or less. If a VERA is necessary this would be coordinated with the SJVAPCD.

8.7.2 Response to Comment 7-2

Comment Summary: The comment offers clarification about requirements for portable emissions units, which are required to be registered with either the California Air Resources Board (CARB) or with the District (Rule 2280 Portable Equipment Registration).

Comment noted. The state registration program operated by CARB is described on page 3.3-16 of the Draft EIR/EIS in the section about State Regulations and Policies under the heading "*Portable Equipment Registration Process*". That section explains that "*The statewide Portable Equipment Registration Program establishes a system to uniformly regulate portable engines and portable engine-driven equipment units. After being registered in this program, engines and equipment units may operate throughout the state without the need to obtain individual permits from air districts.*"

8.7.3 Response to Comment 7-3

Comment Summary: The comment provides updated information about the revoked 1-hour ozone standard and suggests that the description on page 3.3-18 of the Draft EIR/EIS should be revised.

Page 3.3-18 of the Draft EIR/EIS is revised in the Final EIS as follows:

> SJVAPCD ~~is revising the plan currently and plans to seek District~~ adopted the 2013 Plan for the Revoked 1-hour O_3 Standard in September 2013~~approval in 2014~~.

8.7.4 Response to Comment 7-4

Comment Summary: The comment notes that although 5-minute idling time for trucks is required by CARB, there is no mechanism for enforcement, and suggests that it would be appropriate to include this restriction as a mitigation measure.

The Final EIS has been revised to accommodate the District's request to include idling restrictions as mitigation. **Mitigation Measure AIR-1: Reduce NOx Emissions** (page 3.3-35), is revised as follows:

> **Mitigation Measure AIR-1: Reduce NOx Emissions** (Alternatives 1, 2 and 3)
> NO_x emissions associated with construction activities shall be reduced to 10 tons per year through on-site equipment and hauling vehicle mitigation measures to the extent feasible. All vehicles and equipment used during construction shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure CCR Title 13 Section 2485). Emissions reduction methods may be chosen from any combination of the following measures:

8.7.5 Response to Comment 7-5

Comment Summary: The comment states that the project may be subject to additional District Rules and Regulations, including Regulation VIII (Fugitive PM10 Prohibitions), Rule 4102 (Nuisance) and Rule 4702 (Internal Combustion Engines), and suggests that the applicant contact the District's Small Business Assistance office to determine other District rules and regulations that may apply.

Page 3.3-17 of the Draft EIR/EIS does note that "*Operations, including construction operations, must control fugitive dust emissions in accordance with SJVAPCD Regulation VIII.*" Rule 4702 does not apply to portable engines, which would be used during construction, or to stand-by generators, which are the only internal combustion engines that are expected to be used as part of construction and/or operation of the NVRRWP. While it is anticipated that compliance with existing regulations and **Mitigation Measure AIR-1** would prevent nuisance conditions described in Rule 4102, the Partner Agencies will comply with all applicable District Rules and Regulations.

8.7.6 Response to Comment 7-6

Comment Summary: The comment states that the NVRRWP does not meet the definition of a development project and is thus not subject to District Rule 9510 (Indirect Source Review).

As described on page 1-1 of the Draft EIR/EIS, the project is a water supply project, not a development project.

8.7.7 Response to Comment 7-7

Comment Summary: The SJVAPCD requests that a copy of their comments be provided to the project proponent.

The SJVAPCD comments have been provided to the NVRRWP Partner Agencies, which include the City of Modesto, City of Turlock, and DPWD.

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RMM

REMY | MOOSE | MANLEY
LLP

Whitman F. Manley
wmanley@rmmenvirolaw.com

March 9, 2015

VIA ELECTRONIC & REGULAR MAIL

U.S. Department of the Interior
Bureau of Reclamation, SCCAO
Attn: Ben Lawrence, Natural Resource Specialist
1243 N Street
Fresno, CA 93721-1813
Email: blawrence@usbr.gov

City of Modesto, Utilities Department
Attn: William Wong, Engineering Division Manager
1010 Tenth Street, Suite 4500
Modesto, CA 95354
Email: wwong@modestogov.com

Re: North Valley Regional Recycled Water Program (SCH No. 2014042068) - Comments on the Draft EIR/EIS

Dear Mr. Lawrence and Mr. Wong:

This firm represents Turlock Irrigation District ("TID") with regard to the North Valley Regional Recycled Water Program ("Project"). This letter and attachments provide TID's comments on the Project and the associated Draft Environmental Impact Report/Environmental Impact Statement (hereafter "DEIR" for ease of reference). 8-1

We submit this letter to inform the U.S. Department of Interior, Bureau of Reclamation ("Bureau") and City of Modesto that the Project does not meet the minimum standards of adequacy under the California Environmental Quality Act ("CEQA") (Public Resources Code § 21000 et seq.), the CEQA Guidelines (Cal. Code Regs., titl.14, § 15000 et seq.), and the National Environmental Policy Act ("NEPA") (42 U.S.C. § 4321 et seq.). [1]

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[1] / The Bureau and City of Modesto as lead agencies for the Project prepared the January 2015 DEIR. The Partner Agencies for the Project include the Cities of Modesto and Turlock and the Del Puerto Water District. On April 18, 2014, the City of Modesto issued a Notice of Preparation ("NOP") for the DEIR. TID submitted "scoping comments" on May 20, 2014.

One of the primary purposes of CEQA is to provide the public and decision makers with a complete analysis and full disclosure of the proposed project's potentially significant environmental impacts. With regard to the subject DEIR, the Bureau and City of Modesto have not made a sufficient effort at disclosing the full nature and extent of the Project's environmental impacts to the public.

The EIR is "the heart of CEQA." (Guidelines, § 15003, subd. (a); *Laurel Heights Improvement Assn. v. Regents of Univ. of Cal.* (1988) 47 Cal.3d 376, 392 ("*Laurel Heights I*").) It "is an 'environmental "alarm bell" whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return.'" (*Laurel Heights I, supra*, 47 Cal.3d at p. 392.) "Because the EIR must be certified or rejected by public officials, it is a document of accountability" that ensures "the public will know the basis on which its responsible officials either approve or reject environmentally significant action." (*Ibid.*) Likewise, NEPA requires that federal agencies "'consider every significant aspect of the environmental impact of a proposed action'" and "'inform the public that [they have] indeed considered environmental concerns in [their] decisionmaking process[es].'" (*Earth Island Institute v. US. Forest Service* (9th Cir. 2003) 351 F.3d 1291, 1300.)

8-1 Where, as here, the environmental review document does not fully and accurately inform decision-makers, and the public, of the environmental consequences of proposed actions, the document does not satisfy the basic goals of either CEQA or NEPA. (See Pub. Resources Code, § 21061 ["The purpose of an environmental impact report is to provide public agencies and the public in general with detailed information about the effect that a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project."].)

As discussed in detail below and in the attached technical comments, the DEIR is replete with serious flaws. The DEIR does not provide an adequate description of the Project and contains so little information about the Project's potential environmental impacts to groundwater that, in many instances, it is difficult to evaluate the accuracy of the environmental analysis. Nor does the DEIR provide the necessary evidence or analysis to support its conclusions that cumulative impacts to groundwater would be less than significant. Consequently, the Bureau and City of Modesto will need to prepare and recirculate a revised EIR/EIS if they choose to proceed with the proposed Project. We also have the following, specific comments on the DEIR.

A. The DEIR Does Not Provide an Adequate Description of the Whole of the Project.

"As section 15378 of the CEQA Guidelines explains: "(a) 'Project' means the whole of an action, which has the potential for resulting in [an environmental change.]" (*Save Tara v. City of West Hollywood* (2008) 45 Cal.4th 116, 129, fn. 8.) Under CEQA, the inclusion in the EIR of a clear and comprehensive description of the proposed project is critical to meaningful public review. (*County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 193.) The court in *Inyo* explained why a thorough project description is necessary:

> A curtailed or distorted project description may stultify the objectives of the reporting process. Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefit against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal (i.e., the "no project" alternative) and weigh other alternatives in the balance.

(*Id.* at pp. 192-93.) Thus, "'[a]n accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR.'" (*Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 830.)

The DEIR presents inconsistent information regarding Project features and fails to describe aspects of the Project critical to its analysis. For example, the DEIR fails to adequately describe the recently constructed Harding Drain Bypass pump station and pipeline or to summarize the relevant conclusions of the Harding Drain Bypass Project EIR (SCH No. 2003062002). The Harding Drain was constructed and is currently operated and maintained by TID as an agricultural irrigation conveyance drain system to intercept and convey irrigation return flows. (Harding Drain Bypass Draft EIR, July 2004, at p. 2-3.) Along with treated wastewater from the City of Turlock, flow in the Harding Drain consists of a combination of TID surface water, operational spill water, and agricultural and urban drainage water during the irrigation season and urban storm drainage water at other times during the year. (*Ibid.*) 8-2

In 2013 and 2014, TID pumped 3,166 AF and 2,295 AF respectively out of the Harding Drain. This water is delivered to up to 3,275 acres within a portion of TID's irrigation service area each year. This irrigation in turn allows the groundwater that the Cities of Turlock and Ceres and other drinking water purveyors within the Turlock Subbasin pumped to return to its subbasin of origin through deep percolation. [2] The removal of these waters from the Turlock Groundwater Subbasin will have foreseeable adverse consequences to agricultural water supplies and groundwater.

Operation of the Harding Drain Bypass Pipeline is central to the Project's proposed exportation of recycled water outside of the water's groundwater basin of origin.

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[2] / "Deep percolation of irrigation water is the largest inflow to the [Turlock] groundwater basin and plays an important role in maintaining groundwater storage. Surface water from the Turlock Irrigation District, and to a lesser extent, the Merced Irrigation District is used to supply more than half of the total irrigation water applied within the Basin. Hence, under current conditions the continued use of surface water for agricultural irrigation is vital for sustaining recharge in the Subbasin. Future changes to inflows or outflows resulting from shifts in land use patterns have the potential to reduce recharge and create reductions in groundwater storage." (Turlock Groundwater Basin Groundwater Management Plan, March 18, 2008, at p. 4.)

To the extent that the Project's DEIR relies on the analysis and mitigation measures in the prior analysis, the DEIR must incorporate the Harding Drain Bypass EIR and any related addenda by reference and briefly summarize the relevant discussions. (Guidelines, § 15150, subd. (b) ["[w]here part of another document is incorporated by reference, such other document shall be made available to the public for inspection at a public place or public building"]; and *id.*, subd. (c) ["the incorporated part of the referenced document shall be briefly summarized where possible or briefly described if the data or information cannot be summarized"].) The agency cannot leave it to the public or decision-makers to piece together analyses scattered in different documents. (See *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412.)

Moreover, if the Harding Drain Bypass Project EIR does not adequately analyze or mitigate the potentially significant impacts to groundwater and agricultural resources that would result from the currently proposed Project, then the Bureau and City of Modesto must include in the DEIR an analysis of the combined impacts of the Harding Drain Bypass and Recycled Water projects, and consider mitigation measures and alternatives addressing those combined effects. Such impacts to the Turlock Subbasin are foreseeable and must be considered.

B. The DEIR Does Not Provide an Adequate Description of the Environmental Setting.

CEQA requires an EIR to "delineate environmental conditions prevailing absent the project, defining a 'baseline' against which predicted effects can be described and quantified." (*Neighbors for Smart Rail v. Exposition Metro Line Construction Auth.* (2013) 57 Cal.4th 439, 447.) The baseline is normally "existing conditions" in the vicinity of the project "as they exist at the time the [NOP] is published." (*Id.* at p. 448.) "Knowledge of the regional setting is critical to
8-3 the assessment of environmental impacts." (Guidelines, § 15125, subd. (c).) Thus, CEQA Guidelines section 15125 provides that EIRs "must include a description of the physical environmental conditions in the vicinity of the project . . . from both a local and *regional* perspective." (*Id.* at subd. (a), emphasis added.) Furthermore, "[s]pecial emphasis should be placed on environmental resources that are rare or unique to that region and *would be affected by the project*." (*Ibid*, emphasis added.)

An EIR's description of a project's environmental setting plays a critical role in all of the subsequent parts of the EIR because it provides "the baseline physical conditions by which a Lead Agency determines whether an impact is significant." (Guidelines, § 15125, subd. (a).) Longstanding case law upholds this fundamental principle by recognizing that "[a]n EIR must focus on impacts to the *existing environment*, not hypothetical situations." (*County of Amador* v. *El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 955, emphasis added.)

"If the description of the environmental setting of the project site and surrounding area is inaccurate, incomplete or misleading, the EIR does not comply with CEQA." (*Cadiz Land Co. v. Rail Cycle* (2000) 83 Cal.App.4th 74, 87.) Here, as is explained below, the EIR's "description and consideration" of the regional setting "is so incomplete and misleading that it fails to meet

the standard set forth in . . . Guidelines section 15125." (*San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 723.)

In particular, the DEIR fails to accurately:

(1) describe and identify the Turlock Groundwater Subbasin as the source of the City of Turlock's recycled water that the Project proposes to export to Del Puerto Water District ("DPWD") in the Delta Mendota Subbasin (see DEIR, p. 1-8 [providing estimate of total recycled water available "at buildout" without providing description of or figures for the tertiary treated recycled water available in 2014 to sell to DPWD]); 8-3

(2) describe the City of Turlock's use of the Harding Drain in 2014, and use by TID and others of the City's recycled water from the Harding Drain in 2014 (see DEIR, p. 1-9 [misleading statement by implication that no City of Turlock recycled water was discharged into the Harding Drain in 2014]); and 8-4

(3) describe the City of Modesto's application of its tertiary and secondary treated wastewater to agricultural lands leased to farmers within TID's service area boundary, or when the application of tertiary water will be reduced or curtailed entirely (see DEIR, p. 1-9 [brief mention of application of treated wastewater to "Modesto-owned ranch land"]). 8-5

These omissions obscure the Project's potentially significant impacts to groundwater and agricultural resources. (See DEIR, pp. 3.11-20 to 3.11-23 [analyzing only the "slight reduction of stream flows in the San Joaquin River" that result from the termination of the "current discharges from the Cities of Modesto and Turlock"].)

Save our Peninsula Committee v. Monterey County Board of Supervisors (2001) 87 Cal.App.4th 99, 121-122 is on point. In that case, the court explained that CEQA requires "preparers of [an] EIR [to] conduct the investigation and obtain documentation to support a determination of pre-existing conditions" because "the impacts of the project must be measured against the 'real conditions on the ground.'" There, the developer of a proposed residential subdivision on ranch lands had pumped a significant amount of water in the years right before the start of environmental review, presumably in an effort to establish that water use in existing baseline conditions was already high. The court concluded that "this treatment of baseline water use violated the basic principles of CEQA" because "some of these figures, although generated from recent pumping on the property, did not reflect water actually used for irrigating the property." (*Id.* at pp. 120-121.) The EIR was defective for the further reason that the EIR did not provide a clear, consistent description of historic groundwater use, and thus left the public to guess at the baseline conditions against which the project's impacts were measured. 8-6

Here, the DEIR does not provide a straightforward description of existing groundwater conditions and groundwater uses in the area, at the time the agencies commenced the environmental review process by releasing an NOP.

8-6 Similarly, the term "Available Recycled Water" is used both in the DEIR's Table 1-2 and in the Feasibility Study's Table ES-1, but the DEIR does not provide a clear explanation of what that term means. The DEIR must disclose the quantity of water – the "Net Available Recycled Water" – proposed to be sold to DPWD. The amount of the water proposed to be sold should be disclosed both at the outset of the Project, and at Project buildout, presumably in 2045.

The DEIR should also disclose existing uses of this water that will be displaced by virtue of the sale to DPWD. Absent this information, the DEIR fails to provide basic information about what the Project entails.

As a result of the EIR's inadequate description of baseline conditions, the DEIR fails to consider potential impacts to agricultural entities and the Turlock Subbasin currently dependent on the recycled water proposed to be exported to DPWD.

C. The DEIR Fails to Adequately Analyze the Project's Impacts on Groundwater.

CEQA requires that an EIR be detailed, complete, and reflect a "good faith effort at full disclosure." (Guidelines, § 15151; see also *Coalition for Canyon Preservation v. Bowers* (9th Cir. 1980) 632 F.2d 774, 782 ["[S]ubjective good faith is not the test for determining the adequacy of an EIS. The test is an objective one."].) The EIR must analyze both direct and indirect impacts, "'giving due consideration to both the short-term and long-term effects' of the project." (*Neighbors for Smart Rail v. Exposition Metro Line Const. Authority* (2013) 57 Cal.4th
8-7 439, 454.) "An indirect physical change in the environment is a physical change in the environment which is not immediately related to the project, but which is caused indirectly by the project. If a direct physical change in the environment in turn causes another change in the environment, then the other change is an indirect physical change in the environment." (Guidelines, § 15064, subd. (d)(2).)

Here, the DEIR fails to adequately analyze both direct and indirect impacts to groundwater. First, the Project will have foreseeable direct impacts from the termination of an important groundwater recharge mechanism in the Turlock Subbasin. The Project effectively allows the City of Turlock to pump groundwater from the Turlock Subbasin for municipal uses, and then to export all the recycled wastewater to DPWD in the Delta Mendota Subbasin. This export will interrupt the beneficial, historical practice that exists in the relevant baseline setting of allowing the City of Turlock's recycled water to recharge the Turlock groundwater basin through application of that water to agricultural lands within the same basin.

Second, the Project will have foreseeable indirect impacts from curtailment of the City of Modesto's application of its treated wastewater to Modesto ranch lands. As detailed in TID's

attached technical comments, the City of Modesto's ranch lands [3] consist of approximately 2,500 acres, of which approximately 1,350 acres lie within TID's service boundaries. If the City of Modesto stops providing treated wastewater to the Modesto ranch lands, then the entire 2,500 acres will need to identify a replacement water supply for their irrigation needs. For the lands within TID's service boundaries, the source of replacement water would likely be surface water and/or groundwater. For the lands outside of TID's service boundaries, the source of replacement water would likely be groundwater from the Turlock Subbasin. These additional demands on the Turlock Subbasin and surface waters that interconnect with the Turlock Subbasin will have potentially significant impacts that should have been analyzed and mitigated in the DEIR. 8-8

An EIR should provide a "sufficient degree of analysis" to inform the public about the proposed project's adverse environmental impacts and to allow decision-makers to make intelligent judgments. (*Ibid.*) Meaningful analysis of impacts effectuates one of CEQA's fundamental purposes: to "'inform the public and responsible officials of the environmental consequences of their decisions *before* they are made.'" (*Laurel Heights Improvement Assn. v. Regents of the Univ. of Cal.* (1993) 6 Cal.4th 1112, 1123 *("Laurel Heights II").*) To accomplish this purpose, an EIR must contain facts and analysis, not just an agency's bare conclusions. (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 568.) An EIR's conclusions must be supported by substantial evidence. (*Laurel Heights I, supra*, 47 Cal.3d at p. 409.)

As documented in the attached technical comments, the project DEIR does not identify, analyze, or support its conclusions regarding the Project's significant environmental impacts to groundwater. The DEIR analyzes only impacts to groundwater that would result from the average reduction in San Joaquin River flows of 18,000 AFY, which the DEIR asserts is the average amount of treated wastewater discharged by the Cities of Turlock and Modesto into the San Joaquin River in the relevant baseline setting. (DEIR, p. 3.11-20; DEIR, Appendix G, pp. 4-5 ["The average annual streamflows at Vernalis station would be reduced by approximately 18,000 AF/year"].) The DEIR fails to include any analysis of the extraction of the groundwater from the Turlock Subbasin, which ends up as sewage treated at both the Turlock and Modesto Wastewater Treatment Plants (WWTPs). 8-9

In fact, the DEIR mentions the "extraction of groundwater" in only one place: the DEIR's unsupported and conclusory statement at pages 3.11-22 to 3.11- 23 regarding the No Action Alternative's compliance with the Sustainable Groundwater Management Act:

> Extraction of groundwater would be conducted within the bounds of existing regulations, including recently passed legislation, specifically SB 1168, AB 1739, and SB 1319, which together enacted the Sustainable Groundwater Management 8-10

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[3] / On November 3, 2010, the City of Modesto entered into a certain "Agreement for Lease of Agricultural Land – Jennings Ranch" with a Wendel Trinkler, Jr., Lessee. This lease is discussed further in TID's technical comments.

> Act providing a framework for improved management of groundwater supplies by local authorities
>
> (DEIR, pp. 3.11-22 to 3.11-23 [discussion of the No Action Alternative].)

This brief mention is inadequate. Extraction of groundwater from the Turlock Subbasin is currently occurring, and is therefore part of the existing, environmental setting. The extraction of groundwater from this subbasin will continue to occur and increase under the Project, not just under the No Action Alternative. The DEIR does not acknowledge these facts. As a result of the defects in the DEIR's project description and baseline discussed above, the DEIR fails to properly analyze the Project's impacts to groundwater.

The Turlock Subbasin is a separate and distinct subbasin within the larger San Joaquin Valley Groundwater Basin. (Turlock Groundwater Basin's Groundwater Management Plan,[4] March 18, 2008, p. 2.) The Turlock Subbasin underlies an area of approximately 347,000 acres, with irrigated crops (245,000 acres), native vegetation (69,000 acres), and urban development
8-10 (20,000 acres) as the predominant land uses. (*Id.* at p. 1.) As the Groundwater Management Plan explains, the water balance for the Turlock Subbasin depends in part on inflows from the deep percolation of agricultural water.

> Outflows from the Turlock Subbasin result from municipal, domestic, and agricultural supply and drainage well pumping, discharge to the local rivers, discharges from subsurface agricultural drains, and consumption by riparian vegetation. The estimated average total outflow for the 1997-2006 period is 541,000 AF/yr. The majority of outflow comes from estimated agricultural, municipal and rural residential, and drainage well pumping, which collectively averaged 457,000 AF/yr for the 1997- 2006 period. Inflows to the Subbasin result primarily from deep percolation of agricultural and landscape irrigation water and infiltration of precipitation. The estimated average total inflow for the 1997- 2006 period is 519,000 AF/yr. Approximately 72 percent of this quantity occurs on 245,000 irrigated acres of cropland within the Subbasin.
>
> (*Id.* at p. 3.)

Under the Sustainable Groundwater Management Act (Wat. Code, § 10720 et seq.), the Turlock Subbasin is a high-priority basin. The Groundwater Management Act requires high and medium-priority basins to achieve sustainable management within 20-30 years of implementation of a Groundwater Sustainability Plan. (Wat. Code, § 10727.2, subd. (b).)

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[4] The 2008 Turlock Groundwater Basin's Groundwater Management Plan is available in its entirety at http://www.tid.com/sites/default/files/documents/tidweb_content/Groundwater%20Management%20Plan.pdf (last visited March 9, 2015).

"Sustainable groundwater management" is defined as "the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results." (Wat. Code, § 10721, subd. (u).) The statute defines "undesirable result" to mean one or more of several enumerated effects, including the chronic lowering of groundwater levels, significant and unreasonable degraded water quality, or significant and unreasonable reduction of groundwater storage. (Wat. Code, § 10721, subd. (w).)

8-10

As noted in TID's technical comments, the Turlock Subbasin is already suffering from a cone of depression that has formed and continues to expand on the eastern side of the Subbasin, where irrigation use exceeds recharge. The Project will further disrupt the water balance of the Turlock Subbasin by exporting to DPWD in the Delta Mendota Subbasin recycled water that originates from the Turlock Subbasin. As mentioned above, the Project's recycled water was being used to recharge groundwater in this subbasin through application of the recycled water to agricultural lands within the Turlock Subbasin boundaries in the relevant baseline setting. The Project will have foreseeable, significant impacts to the Turlock Subbasin that further threaten the region's chances of achieving sustainable groundwater management by the deadlines in the Sustainable Groundwater Management Act.

D. The DEIR's Analysis of the Project's Cumulative Impacts to the Turlock Groundwater Subbasin is Inadequate.

An EIR must analyze cumulative impacts because "the full environmental impact of a proposed project cannot be gauged in a vacuum." (*Communities for a Better Environment v. Cal. Resources Agency* (2002) 103 Cal.App.4th 98, 114 ("*CBE v. Resources Agency*").) The CEQA Guidelines define cumulative impacts to be "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 probable future projects." (Guidelines, § 15355, subd. (b).) Thus, impacts that are "individually minor" may be "collectively significant." (*Ibid.*) Similarly, cumulative impacts under NEPA are defined 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 C.F.R. § 1508.7.)

8-11

As explained in the attached technical comments, the DEIR's analysis of cumulative impacts violates CEQA and NEPA in two important ways. First, the cumulative impacts analysis for groundwater impacts simply references the discussion of project-specific groundwater impacts from the elimination of an average annual discharge of 18,000 AF of treated wastewater into the San Joaquin River and adopts the same less than significant conclusion reached for Impact HYD-3 (Substantial Depletion of Groundwater Supplies or Substantial Interference with Groundwater Recharge). (DEIR, pp. 3.11-20 to 3.11-23.) This approach is inadequate. Second, the DEIR does not identify and adequately discuss other reasonably foreseeable projects in the region, even though those other projects have the potential to affect the same resources as the

Project. The DEIR does not address cumulative impacts to the Turlock Subbasin or to TID's surface water supplies. As a result, the EIR does not accurately consider whether the Project's impacts to the Turlock Subbasin are cumulatively considerable.

CEQA requires a lead agency to undertake a two-step cumulative impacts analysis. First, the agency must consider whether the combined effects from the proposed project and other projects would be cumulatively significant. Second, the agency must then consider whether the "proposed project's incremental effects are cumulatively considerable." (*CBE v. Resources Agency*, *supra*, 103 Cal.App.4th at p. 120; Pub. Resources Code, § 21083, subd. (b)(2); Guidelines, §§ 15355, subd. (b), 15064, subd. (h)(1).) This two-part analysis reflects the legal and empirical reality that "the greater the existing environmental problems are, the lower the threshold should be for treating a project's contribution to cumulative impacts as significant." (*CBE v. Resources Agency*, *supra*, at p. 120.) Cursory statements of an agency's conclusions are inadequate under both CEQA and NEPA. (*Laurel Heights II*, *supra*, 6 Cal.4th at p. 1124; *Delaware Riverkeeper Network v. F.E.R.C.* (D.C. Cir. 2014) 753 F.3d 1304, 1320 [disapproving of conclusory, "cursory statement" in EIS that cumulative impacts would not be significant].)

Instead of following CEQA's mandate, the DEIR here betrays a fundamental misunderstanding of the statute. The document contains a single sentence on the Project's cumulative groundwater impacts, stating simply that, "[a]s discussed under **Impact HYD-3**, cumulative or long-term impacts of reduced San Joaquin River flows on groundwater storage would be less than significant." (DEIR, p. 3.11-27.) Thus, the EIR assumes that if the Project's impacts related to groundwater are less than significant (which they are not), then the impacts could not be cumulatively considerable. This approach turns cumulative analysis on its head and is a plain violation of CEQA and NEPA. An EIR may not conclude that a project will not contribute to cumulative impacts simply because it has a less than significant impact on a project level. (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 720-21.)

Aside from a lack of analysis or discussion of cumulative impacts to groundwater, the DEIR also includes an improperly narrow list of cumulative projects. (See DEIR, pp. 3-3 to 3-5.) In determining the universe of related probable projects to consider, CEQA gives a lead agency two options. An EIR can specifically identify "past, present, and probable future projects producing related or cumulative impacts." (Guidelines, § 15130, subd. (b)(1)(A).) Or the agency can rely on "[a] summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect. Such plans may include: a general plan, regional transportation plan, or plans for the reduction of greenhouse gas emissions. A summary of projections may also be contained in an adopted or certified prior environmental document for such a plan." (Guidelines, §15130, subd. (b)(1)(B.) Moreover, an EIR must "define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for the geographic limitation used." (Guidelines, § 15130, subd. (b) (3).)

Here, the DEIR appears to use the "list method," but the DEIR's cumulative projects list is an "unduly narrow" list that "prevent[s] the severity and significance of the cumulative

impacts from being accurately reflected." (*Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1215; DEIR, pp. 3-3 to 3-5 [not including the Harding Drain Bypass Project and other projects relevant to groundwater impacts and the Turlock Subbasin].) For example, surface water supplies historically available to TID for irrigation are expected to be reduced significantly due to additional instream flow mandates as part of regulatory processes before the State Water Resources Control Board (SWRCB) and the Federal Energy Regulatory Commission. As noted in TID's technical comments, the SWRCB's December 2012 Draft Substitute Environmental Document analyzing Phase 1 of the Board's Bay-Delta Water Quality Control Plan includes the Board's Preferred Lower San Joaquin River Alternative. This Preferred Alternative would take 35% of the unimpaired February through June flows from the Tuolumne, Stanislaus, and Merced Rivers each year for environmental purposes. 8-11

It was reasonable and practical for the DEIR to include the omitted "past, present, and probable future projects producing related or cumulative impacts," and "their exclusion prevented the severity and significance of the cumulative impacts from being accurately reflected." (Guidelines, § 15130, subd. (b)(1)(A); 124 Cal.App.4th at p. 1215.)

E. The DEIR Must Analyze Alternatives to Exporting the Recycled Water Outside the Groundwater Basin of Origin.

CEQA requires an EIR to "describe a range of reasonable alternatives to the project . . . which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects . . . and evaluate the comparative merits of the alternatives." (Guidelines, §§ 15126.6, subd. (a), 15002, subd. (a)(3); see also 42 U.S.C. 4332(C)(iii) [NEPA requiring same].) The evaluation of alternatives must "contain analysis sufficient to allow informed decision making." (*Laurel Heights I, supra*, 47 Cal.3d at pp. 404, 406 [requiring "meaningful detail"]; *Kings County, supra*, 221 Cal.App.3d at p. 735 [finding EIR lacked "quantitative, comparative analysis" of alternatives].)

The alternatives analyzed in the DEIR all consist of alignment alternatives: (1) Combined Alignment Alternative, (2) Separate Alignment Alternative, and (3) PID Conveyance Alternative. (DEIR, pp. 2-1 to 2- 6.) Because the Project Objectives are crafted to be artificially narrow, the DEIR improperly fails to consider reasonable alternative uses of recycled water from the Cities of Turlock and Modesto that avoid exporting the water outside of its groundwater basin of origin. (See DEIR, p. 1-12 [project objectives include "[d]eliver[ing] agricultural water to DPWD at a cost that supports regional economic sustainability"].) There are many potential uses of the recycled water by the cities and water purveyors, which can send their sewage to either the Turlock or Modesto WWTPs. For example, the recycled water can be applied to agricultural uses within the Turlock Subbasin, especially within the eastern portion of the Subbasin experiencing a substantial drawdown of groundwater levels. 8-12

As explained above, the DEIR failed to adequately analyze impacts to agricultural water supplies and groundwater, including cumulative impacts to the Turlock Subbasin. Because these

impacts are significant, the DEIR must consider additional alternatives that would avoid or substantially lessen these significant effects. (See Guidelines, §§ 15126.6, subd. (a), 15002, subd. (a)(3) [one basic purpose of CEQA is to "[p]revent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible"].)

CONCLUSION

TID recommends that the agencies revise the DEIR to address these problems, and recirculate the DEIR for further public review and comment. We appreciate the opportunity to provide these comments and look forward to your responses.

Very truly yours,

Whitman F. Manley

Whitman F. Manley

Attachments:

Exhibit A: TID's March 9, 2015 technical comments on the North Valley Regional Recycled Water Program Draft EIR, and associated attachments

Exhibit B: TID's May 20, 2014 Scoping Comments for the Proposed North Valley Regional Recycled Water Program EIS/EIR

Exhibit C: Excerpts from the Turlock Groundwater Basin's Groundwater Management Plan, March 18, 2008

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SUBMITTED VIA E-MAIL (blawrence@usbr.gov and wwong@modestogov.com) AND U.S. MAIL

March 9, 2015

United States Bureau of Reclamation
Attn: Benjamin Lawrence
1243 N Street, SCC-412
Fresno, CA 93721

William Wong
City of Modesto
Deputy Director, Utility Planning & Projects Department
1010 Tenth Street, 4th Floor
Modesto, CA 95354

Subject: Comments on Draft Environmental Impact Report/Environmental Impact Statement for the Proposed North Valley Regional Recycled Water Program

Dear Mr. Lawrence and Mr. Wong:

Turlock Irrigation District ("TID") is appreciative of the opportunity to provide the following comments on the Draft EIR/EIS (collectively "DEIR") for the Proposed North Valley Regional Recycled Water Program ("NVRRWP").

Formed in 1887 as the first publicly owned irrigation district in California, TID today serves water to approximately 5,800 growers who irrigate approximately 150,000 acres within TID's irrigation boundary within southern Stanislaus County and northern Merced County. Additionally TID provides electric service to nearly 100,000 accounts. 8-13

The conjunctive use of Tuolumne River surface water applied on farmland to recharge groundwater resources is a key water management strategy that has been employed by TID for decades. Planned recharge in wet years, combined with strategic pumping in dry years has been to the long-term benefit of the 347,000 acres that overlie the Turlock Subbasin.

TID filed Scoping Comments on the NVRRWP May 20, 2015. In its Scoping Comments, TID identified several key areas in which the environmental analysis of the project would need to address. TID's Scoping Comments are enclosed and attached to the letter from our legal counsel.

TID's Scoping Comments were not adequately addressed in the DEIR. Based upon the reasons outlined below and in the letter from our legal counsel, the DEIR is narrowly focused and legally deficient. The focus must be broadened and these deficiencies must be reconciled within a recirculated Draft EIR/EIS or a more comprehensive Final EIR/EIS.

I. The DEIR Fails to Adequately Describe the Physical Environmental Setting and Baseline Conditions

In particular, the DEIR fails to accurately:

8-14 (1) describe and identify the Turlock Groundwater Subbasin as the source of the City of Turlock's recycled water that the Project proposes to export to Del Puerto Water District (DPWD) in the Delta-Mendota Subbasin (see DEIR, p. 1-8 [providing estimate of total recycled water available "at buildout" without providing description of or figures for the currently available recycled water]);

8-15 (2) describe the City of Turlock's use of the Harding Drain in 2014, and use by TID and others of the City's recycled water from the Harding Drain in 2014 (see DEIR, p. 1-9); and

8-16 (3) describe the City of Modesto's application of its tertiary and secondary treated wastewater to agricultural lands leased to farmers within TID's irrigation service boundaries and when the tertiary water application will be reduced or curtailed entirely (see DEIR, p. 1-9 [brief mention of application of treated wastewater to "Modesto-owned ranch land"]).

A. The Turlock Groundwater Subbasin is the Area of Origin of the City of Turlock's Recycled Water and a Portion of the City of Modesto's Recycled Water

The Turlock Subbasin is the area of origin for most Turlock wastewater treatment plant ("WWTP") sewer flows and a portion of the City of Modesto's sewer flows.

8-17 The Turlock Subbasin is described in the 2008 Turlock Groundwater Basin Groundwater Management Plan ("GWMP"). The GWMP was adopted by TID on March 18, 2008 and by the City of Turlock on Feb. 26, 2008. Figures 1, 5 and 6 of the GWMP shows the location, boundaries, and characteristics of the Turlock Subbasin and are attached for reference (Attachments 1, 2 and 3, respecitvely). The Subbasin is bounded by the Tuolumne River on the north, the Merced River on the south, the San Joaquin River on the west, and on the east by the western extent of the outcrop of crystalline basement rock in the foothills of the Sierra Nevada Mountains. The City of Turlock, the City of Ceres, the portion of the City of Modesto located south of the Tuolumne River ("South Modesto"), and the communities of Denair and Keyes are all within this Subbasin and within TID's irrigation boundaries. As of 2008, the Subbasin underlies an area of approximately 347,000 acres, with irrigated crops (245,000 acres), native

vegetation (69,000 acres), and urban development (20,000 acres) as the predominant land uses. Urban development and irrigated lands have expanded since 2008, most of which are in 100% groundwater-dependent areas.

Except for a small amount of recycled water use, the water source for municipal and industrial water ("M&I") uses within the cities of Turlock and Ceres, South Modesto, and the communities of Denair and Keyes is groundwater pumped from the Turlock Subbasin. Much of that groundwater ends up as sewer flows to the Turlock WWTP. South Modesto and some of Ceres' sewer flows go to the Modesto WWTP. Figure 15i of the GWMP (Attachment 4) shows the annual pumping from municipal wells for Turlock from 1952 to 2006. The following table summarizes the amount of potable groundwater pumped, in acre-feet (AF) by those four public entities during 2012:

Turlock	Ceres	Denair	Keyes	2012 Total
21,668 AF	8,056 AF	1,522 AF	927 AF	32,173 AF

In addition to the above potable groundwater amount, the City of Turlock also pumped 398 AF for landscape irrigation. 8-17 Cont'd

Average local rainfall within the Turlock Subbasinis is about 13 inches per year. Overall averages are slightly higher on the eastern side, and slightly lower to the west. Recharge is mainly from irrigation water imported by TID from the Tuolumne River, and to a lesser extent from the Merced River by others. See GWMP Figure 19 (Attachment 5). Historically predominant rangeland on the eastern side of the Subbasin without access to surface water supplies continues to transition to permanent crops, increasing demand on the Turlock Subbasin's groundwater supply. As more and more Tuolumne River surface water is required for instream flow requirements and other uses, water users within the Turlock Subbasin will become more reliant upon groundwater to compensate for future surface water supply shortages.

A cone of depression has formed and continues to expand and deepen on the eastern side of the Turlock Subbasin, where irrigation use exceeds recharge. The cone continues to expand, extending to the west to Denair and Turlock and toward the rivers as additional lands go into production. Recent groundwater contour maps indicate that while the community of Denair is located in the area of the Subbasin where groundwater flows eastward (i.e. toward the cone of depression). Turlock, Keyes, and Ceres are located to the west of the cone, in an area where the gradient causes groundwater to flow toward the SJR, including groundwater within the freshwater confined aquifer. GWMP Figure 7 showing the groundwater movement within the Subbasin (Attachment 6) and a map showing the Subbasin's 2010 groundwater levels and a graphic (Attachment 7) showing estimated groundwater level profiles for 1960, 2005, and 2010 are attached for reference.

The Turlock Subbasin has significant groundwater issues and groundwater-related environmental concerns. These are widely recognized but are not addressed in the DEIR.

8-17 Cont'd While the proposed transfer to Del Puerto Water District ("DPWD") would help alleviate impacts to DPWD from reduced water supplies from the Delta, it will result in redirected impacts to the Turlock Subbasin. While TID is sympathetic to the situation within DPWD, there is a significant local demand for water supplies by both municipal water purveyors and growers within the Turlock Subbasin. The export of recycled water to DPWD will eliminate the ability to reuse this recycled water within the Turlock Subbasin where the water originated. In addition, surface water supplies historically available to TID for irrigation are expected to be reduced significantly due to additional instream flow mandates as part of regulatory processes before the State Water Resources Control Board and the Federal Energy Regulatory Commission. For example, the State Water Resources Control Board's Draft Substitute Environmental Document analyzing Phase 1 of the Board's Bay-Delta Water Quality Control Plan, released in December 2012, includes the Board's Preferred Lower San Joaquin River Alternative. This Preferred Alternative would take 35% of the unimpaired February through June flows from the Tuolumne, Stanislaus, and Merced Rivers each year for environmental purposes. These issues underscore the need to keep Turlock Subbasin water supplies within the Turlock Subbasin.

B. Uses of the City of Turlock's Recycled Water within the Turlock Subbasin

8-18 The DEIR fails to describe the uses of the City of Turlock's recycled water within the Turlock Subbasin during the environmental baseline period of up through 2014. As the DEIR notes, at 1-9, the Harding Drain is an open channel owned by TID. There are eight private pumps and one TID pump (Pump 152) that takes water from the Harding Drain for agricultural purposes. See attached map of the Harding Drain (Attachment 8) and the location of the nine pumps. TID pumps approximately 3,000 AF and the eight private pumps approximately 2,000 AF per year, or approximately 5,000 AF per year. During 2013, TID pumped 3,166 AF and during 2014, TID pumped 2,295 AF out of the Harding Drain, which could be delivered to up to 3,275 acres within that portion of TID's irrigation service area. Consequently, the City of Turlock, until 2015, was not disposing of its recycled water through its Harding Drain Bypass Pipeline directly to the San Joaquin River. Therefore, the DEIR statement on page 1-9 that "Turlock currently discharges an average annual flow of 10 mgd to the San Joaquin River via the Harding Drain Bypass Pipeline" is not a true statement, since Turlock only started bypassing the Harding Drain and using the bypass pipeline in January 2015.

8-19 The conditions "on the ground" in 2014, which properly reflect the historical usage of the Harding Drain, is the relevant baseline condition from which the Project's impacts need to analyze. The removal of the City's recycled water from the Harding Drain will put greater demands on TID to provide additional Tuolumne River surface water and on Turlock Subbasin groundwater to replace the exported recycled water. Additional groundwater will be pumped

when TID surface water is not available, such as in drought years and where surface water is lost to regulatory processes described above. This additional Turlock Subbasin groundwater demand resulting from the export of recycled water has cumulative impacts that need to be addressed and which also are relevant to possible Project alternatives. 8-19 cont'd

The City of Turlock uses a small amount of recycled water to irrigate its Pedretti Baseball Park, but does not use recycled water for any other city park or for city landscaped area. By agreement with TID, the City of Turlock delivers approximately 2,000 AFY for cooling water purposes to TID's Walnut Energy Center, a 250-megawatt natural gas-fired, combustion turbine based, combined-cycle electric generating plant.

C. City of Modesto's application of recycled water to agricultural lands within TID service area boundaries

The City of Modesto has been delivering primary treated effluent from its Sutter Avenue WWTP to its Jennings Road secondary WWTP since the late 1960's when the Jennings Road WWTP was constructed. The attached Wastewater Treatment Facilities Schematic (Attachment 9) is from the City of Modesto's 2007 Wastewater Treatment Master Plan Update. The Master Plan reports that the Modesto Ranch's "Irrigation Land" consists of 2,526 acres. It is TID's understanding that during 2014, because of drought conditions causing low flows in the San Joaquin River ("SJR"), the City of Modesto did not make any discharges to the San Joaquin River and applied all of its recycled water on the Modesto Ranch land to grow alfalfa, corn, and other forage crops. The City of Modesto may only discharge secondary-treated wastewater during the time period and only when sufficient dilution flows exist in the SJR as stated in the DEIR, at 1-8:

> *"The secondary effluent is applied to Modesto-owned ranch land (approximately 2,500 acres) or is discharged to the San Joaquin River from October 1 through May 31, when river flows provide a 20:1 dilution ratio."* 8-20

Most of the City of Modesto lies north of the Tuolumne River within the Modesto Subbasin and within the Modesto Irrigation District (MID).[1] Except for the sewage originating from the City of Ceres and from that portion of the City of Modesto lying south of the Tuolumne River, most of Modesto's sewer flows originate outside of the Turlock Subbasin.

As discussed in more detail below, the DEIR states that Modesto's secondary effluent is applied to Modesto-owned ranch land consisting of approximately 2,500 acres although no AFY numbers are disclosed and that since 2010 when Phase 1 of Modesto's treatment upgrades

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[1] Pursuant to an 1890 Agreement, TID and MID share their individually and jointly owned water rights to the flows of the Tuolumne River at the La Grange Dam. TID has been unable to ascertain MID's position on the NVRRWP because Section 24.2, p. 47, of MID's 2005 Treatment and Delivery Agreement with the City of Modesto bars MID from objecting to any "reclaimed water usage, transportation or sale [by the City of Modesto] to any, [sic] court, administrative agency or other body or tribunal with jurisdiction over any such use, or in the press."

were completed, Modesto provides all 2.3 MGD [2,581 AFY] of tertiary effluent to the Modesto-owned ranch land. An aerial map of the "Modesto-owned ranch land" prepared by TID staff with Notes is enclosed for reference (Attachment 10). Of the 2,100 acres of the Modesto's ranch land, 1,235.26 acres have not been irrigated with TID water for some 25 years and 115 acres have not been irrigated with TID water for 15 years. The Regional Water Quality Control Board's requirements severely limiting Modesto's ability to discharge Modesto's treated sewage into the San Joaquin has benefitted the Turlock Subbasin groundwater for many years.

On November 3, 2010, the City of Modesto entered into that certain "Agreement for Lease of Agricultural Land – Jennings Ranch" with a Wendel Trinkler, Jr., Lessee ("Modesto Ranch Lease" or "Lease"). A copy of the Lease is attached (Attachment 11). The Lease has the following significant provisions:

- Section 1, page 2 of the Lease, provides that the Lease is for "a ten (10) year term commencing on January 31, 2011, and ending on the last day of December 2020." The "Lessee is given three (3) four-year options to extend the term." However, the City "at City's sole option" may not grant any extended term if, for example, there are changes in the volume of treated wastewater available for irrigation.

8-20 cont'd

- Section 4.H, page 5, obligates the City to "provide a full water supply to Lessee necessary to meet crop water demand for agricultural crops grown by Lessee at Jennings Ranch during the lease term," but "Such water necessary to provide said full supply may come from a combination of sources including but not limited to . . . groundwater and irrigation district surface water."

- Section 22, page 10, states, "The delivery of tertiary treated wastewater to Jennings Ranch is not included as part of this Agreement and any such delivery shall be at the sole option of City." In other words, the City may unilaterally stop all future deliveries of tertiary water to its Lessee at any time in order to sell that tertiary treated wastewater to DPWD.

Continued application of Modesto's treated wastewater at the existing quantity levels on the Modesto Ranch lands must be required until long-term groundwater sustainability is achieved within the Turlock Subbasin. The requirement would apply even if the land is sold by Modesto. Discontinuation or significant reduction in that use will cause a significant adverse environmental impact on the Turlock Subbasin by the removal of this source of groundwater recharge and the resulting substitute use of groundwater and/or TID's surface water on those acres within TID. This is TID's main concern with the City of Modesto's participation in the NVRRWP.

II. The DEIR Fails to Adequately Analyze the Project's Impacts on Groundwater

A. The NVRRWP Proposes to Export Turlock Subbasin Water to the Del Puerto WD and the Delta-Mendota Subbasin within Stanislaus County

The DPWD provides irrigation water to 45,000 acres of farmland within western San Joaquin, Stanislaus, and Merced counties. The Delta-Mendota Subbasin reaches from western Stanislaus, Merced, and Fresno counties. The groundwater conditions within western Stanislaus County is in better condition than within the eastern side of the Turlock Subbasin. The Delta-Mendota Subbasin is hydrologically separated from the Turlock Subbasin by the San Joaquin River. 8-21

The Delta-Mendota Canal ("DMC") conveys Central Valley Project ("CVP") water from the Jones Pumping Plant in the Delta through western San Joaquin, Stanislaus, Merced, and Fresno counties, terminating at the Westlands Water District. While the DEIR emphasizes the benefits of the proposed Project to western Stanislaus County, once the NVRRWP recycled water is discharged into the Delta Mendota Canal, some of the water will flow out of Stanislaus County for use within Merced and Fresno counties.

B. The Sustainable Groundwater Management Act Requires Cities and Water Districts within the Turlock Subbasin to Achieve Groundwater Sustainability

In 2014, the California Legislature adopted and Governor Brown signed a package of three bills that brought comprehensive groundwater regulation to California. That legislation is collectively referred to as the Sustainable Groundwater Management Act ("SGMA"). The major requirement of the SGMA is that local public agencies must implement measures to achieve groundwater sustainability over the long term within the groundwater subbasin from which they and private users extract groundwater. Extensive articles and materials on the SGMA have been published. See, e.g., "The 2014 Sustainable Groundwater Management Act: A Handbook to Understanding and Implementing the Law," Water Education Foundation, 2015. 8-22

The mandates of the SGMA support and validate TID's concerns in its DEIR comments about the need to provide long-term for a sustainable Turlock Subbasin through the integrated and coordinated use of groundwater, surface water, and recycled water.

The DEIR's gratuitous and totally unsupported conclusionary statement regarding the Project's compliance with the SGMA is at pages 3.11-22 to 3.1- 23, which states, under the No Action Alternative:

> *"Extraction of groundwater would be conducted within the bounds of existing regulations, including recently passed legislation, specifically SB 1168, AB 1739, and SB 1319, which together enacted the Sustainable Groundwater Management*

> *Act providing a framework for improved management of groundwater supplies by local authorities."*

8-22 cont'd

In fact, this is the only specific location in the DEIR where its mentions the "extraction of groundwater." One of TID's major points as discussed in Section I.A above and elsewhere is that the DEIR fails to discuss the extraction of groundwater within the Turlock Subbasin. This groundwater ends up as recycled water. The DEIR fails to discuss the consequences to the Turlock Subbasin's long-term sustainability caused by the export of 59,000 AFY of recycled water out of Turlock Subbasin at Project Buildout.

The Project will further disrupt the water balance of the Turlock Subbasin by exporting to Del Puerto Water District located within the Delta-Mendota Subbasin the NVRRWP recycled water that originates from the Turlock Subbasin. As mentioned above, the Project's recycled water was being used to recharge groundwater in this subbasin through application of the recycled water to agricultural lands within the Turlock Subbasin boundaries in the relevant baseline setting.

III. There are deficiencies in DEIR/EIS's use of data

While the DEIR is dated January 2015, all of the data used in the DEIR must be as a practical matter be pre-2015 data.

8-23

The DEIR data is presented in a way that is either misleading or makes it difficult for a reader to be able to analyze the data or the DEIR provides conflicting information. A good example of that is the DEIR's presentation or lack of full disclosure on "Recycled Water Availability." Table 1-2, Recycled Water Availability at Buildout" (which is defined as 2045), shows Modesto at 30,600 AFY and Turlock at 28,400 AFY for a total of 59,000 AFY. Yet there is no table in the DEIR, which shows Recycled Water Availability in 2014. Table ES-1 in the NVRRWP Feasibility Study reports "2018 Available Recycled Water" of 16,500 AFY for Modesto and 14,150 AFY for Turlock, for a total of 30,600 AFY.

We know the following from the statements on pages 1-8 to 1-9 of the DEIR:

8-24

- Modesto's secondary effluent is applied to Modesto-owned ranch land consisting of approximately 2,500 acres.
- Since 2010 when Phase 1 of Modesto's treatment upgrades were completed, Modesto provides all 2.3 MGD [2,581 AFY] of tertiary effluent to the Modesto-owned ranch land.
- Modesto's Phase 2 treatment upgrades are schedule to be online by February 2016 and will provide an additional 12.6 MGD of tertiary treatment capacity, bringing the total tertiary treatment capacity of 14.9 MGD [16,718 AFY]. Note that the 16,718 AFY number

supports the 16,500 AFY 2018 Available Recycled Water number in the Feasibility Study Table ES-1.

- Modesto is planning to continue to increase tertiary treatment capacity to 27.3 MGD [30,855 AFY] by build-out (i.e., 2045) and the DEIR goes on to state that "this water would be available for the proposed project." Note that the 30,855 AFY number supports the 30,600 AFY 2045/Buildout Available Recycled Water number in the Feasibility Study Table ES-1 and in DEIR Table 1-2.

- In addition, the NVRRWP's Response to TID's scoping comments, the NVRRWP stated the following:

  "There will be no change to the existing uses of recycled water; these uses are as follows:
  - *Turlock Irrigation District Walnut Energy Center*
  - *Modesto Ranch Irrigation (adjacent to treatment plant)*
  - *City of Turlock Pedretti Park."*

The above DEIR data and representations in the Responses to TID's scoping comments raise several key questions, including the following:

1. Is it correct to state that as used in the DEIR, the term "recycled water" only means tertiary treated wastewater, which has been "oxidized, filtered, and adequately disinfected, pursuant to the CDPH reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22) or equivalent" and "would also have to comply with Reclamation's water quality standards for the Upper DMC"? See DEIR, Section 1.1.7, at 1-10 to 1-11. Is it also correct to state that any wastewater, which has only been secondary treated, would not be classified as "recycled water" for purposes of this DEIR? 8-25

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2. What does the term "Available Recycled Water" mean as used in both DEIR Table 1-2 and Feasibility Study Table ES-1? From the above data, is it a correct statement that all of the tertiary treated recycled water produced at both the Turlock and Modesto WWTPs will be sold to DPWD? 8-26

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3. If the last sentence in No. 2 above is an incorrect statement, where is it disclosed in the DEIR the amounts of the "Net Available Recycled Water" proposed to be sold to DPWD from the City of Turlock and from the City of Modesto upon commercial operation of the Project? "Net" meaning net of existing uses, which the NVRRWP Response emphatically states above that there would be "no change"? So is 30,600 AFY the net amount proposed to be sold to DPWD in 2018 and is 59,000 AFY the net amount proposed to be sold to DPWD at Project "Buildout"? 8-27

8-28 4. As discussed above in Section I.C, the City of Modesto may unilaterally cease delivering any tertiary treated recycled water under the Modesto Ranch Lease and sell all such water to DPWD. The DEIR states at the top of page 1-9 that all 30,855 AF "would be available for the proposed project." Would it be correct to state that the City of Modesto intends to discontinue using tertiary treated recycled water on more than 2,500 acres of City-owned ranch land and sell all such water to DPWD? Is it also correct to state that the City of Modesto's representation quoted above that "There will be no change in the existing uses of recycled water" at Modesto Irrigation Ranch is not a true statement?

IV. There are Deficiencies in Impact HYD-3 Analysis (Substantial Depletion of Groundwater Supplies or Substantial Interference with Groundwater Recharge)

8-29 A major focus of the DEIR is to address the potential impacts to San Joaquin River fisheries and water quality of withdrawing approximately 18,000 AFY of secondary and tertiary treated wastewater from the San Joaquin River.[2] Consequently, Impact HYD-3 only analyzes the impact of the proposed Project's reductions in the San Joaquin River stream flows on groundwater storage. See DEIR at 3.11-20. As shown by the comments in this letter, the DEIR's narrow analysis is legally deficient and the Bureau and the City of Modesto will need to prepare a legally sufficient analysis of the groundwater impacts of the proposed project and recirculate a revised DEIR if they choose to proceed with the proposed Project.

V. The DEIR's Analysis of the Project's Cumulative Impacts to the Turlock Groundwater Subbasin is Inadequate and Violates CEQA

8-30 The DEIR states, when addressing "Cumulative Impacts to Groundwater Storage", at 3.11-27, "As discussed under Impact HYD-3, cumulative or long-term impacts of reduced San Joaquin River flows on groundwater storage would be less than significant." The DEIR's analysis of cumulative impacts violates CEQA in two important ways. First, the cumulative impacts analysis for groundwater impacts simply references the discussion of project-specific groundwater impacts and adopts the same less than significant conclusion reached for Impact HYD-3 (Substantial Depletion of Groundwater Supplies or Substantial Interference with Groundwater Recharge) (DEIR, pp. 3.11-20 to 3.11-23.). This is inadequate. Second, the DEIR does not address cumulative impacts to the Turlock Subbasin or to TID's surface water supplies. As a result, the EIR did not accurately consider whether the Project's impacts to the Turlock Subbasin are cumulatively considerable.

[2] As discussed in Section I.B above, alleged average of 18,000 AFY is incorrect because of the approximately 5,000 AFY of Harding Drain water diverted for agricultural uses through 2014.

Therefore, the "Cumulative Impacts to Groundwater Storage" as described in the DEIR fail to analyze the cumulative impacts to the Turlock Subbasin. Additionally, the DEIR fails to provide a sufficient analysis regarding the cumulative impacts to TID's surface water supplies with the withdrawal of recycled water from the Harding Drain and from City of Modesto-owned lands.

VI. The DEIR Improperly Fails to Analyze Alternatives to Exporting the Recycled Water Outside the Groundwater Subbasin of Origin

The DEIR improperly fails to consider any reasonable alternative uses of recycled water from the Cities of Turlock and Modesto that avoid exporting the water outside of its groundwater basin of origin. (See DEIR, p. 1-12 [project objectives include "[d]eliver[ing] agricultural water to DPWD at a cost that supports regional economic sustainability"].) The Project objective of "regional economic sustainability" has now been overridden by the SGMA requirement that the Turlock Subbasin achieve groundwater sustainability. The proposed export of all of the recycled water proposed by this Project (some 59,000 AFY) could very well be a major factor in preventing the achievement of long-term groundwater sustainability within the Turlock Subbasin. Assisting to achieve groundwater sustainability within the Merced and Fresno county portions as well as the Stanislaus County portion of the Delta-Mendota Subbasin does not reduce in any way the SGMA obligations upon the City of Turlock, the City of Modesto, and those other public entities pumping groundwater and sending wastewater to the two WWTPs from achieving groundwater sustainability within the Turlock Subbasin. 8-31

The DEIR should also have analyzed alternative uses of recycled water within the Cities of Turlock, Modesto, and Ceres to reduce the extraction of groundwater by those cities. Those alternatives were obviously not considered because they would not bring any revenue to Turlock or Modesto as would the sale of recycled water to DPWD. As stated above, the cities are required to take steps to achieve groundwater sustainability within the Turlock Subbasin. In addition, as shown in the comments contained in Section I.A above, the eastern side of the Turlock Subbasin is experiencing a chronic lowering of groundwater levels. Both the Cities of Turlock and Modesto are aware of this groundwater problem. Yet the DEIR fails to present an alternative use of at least some of their recycled water to help address that problem.

CONCLUSION

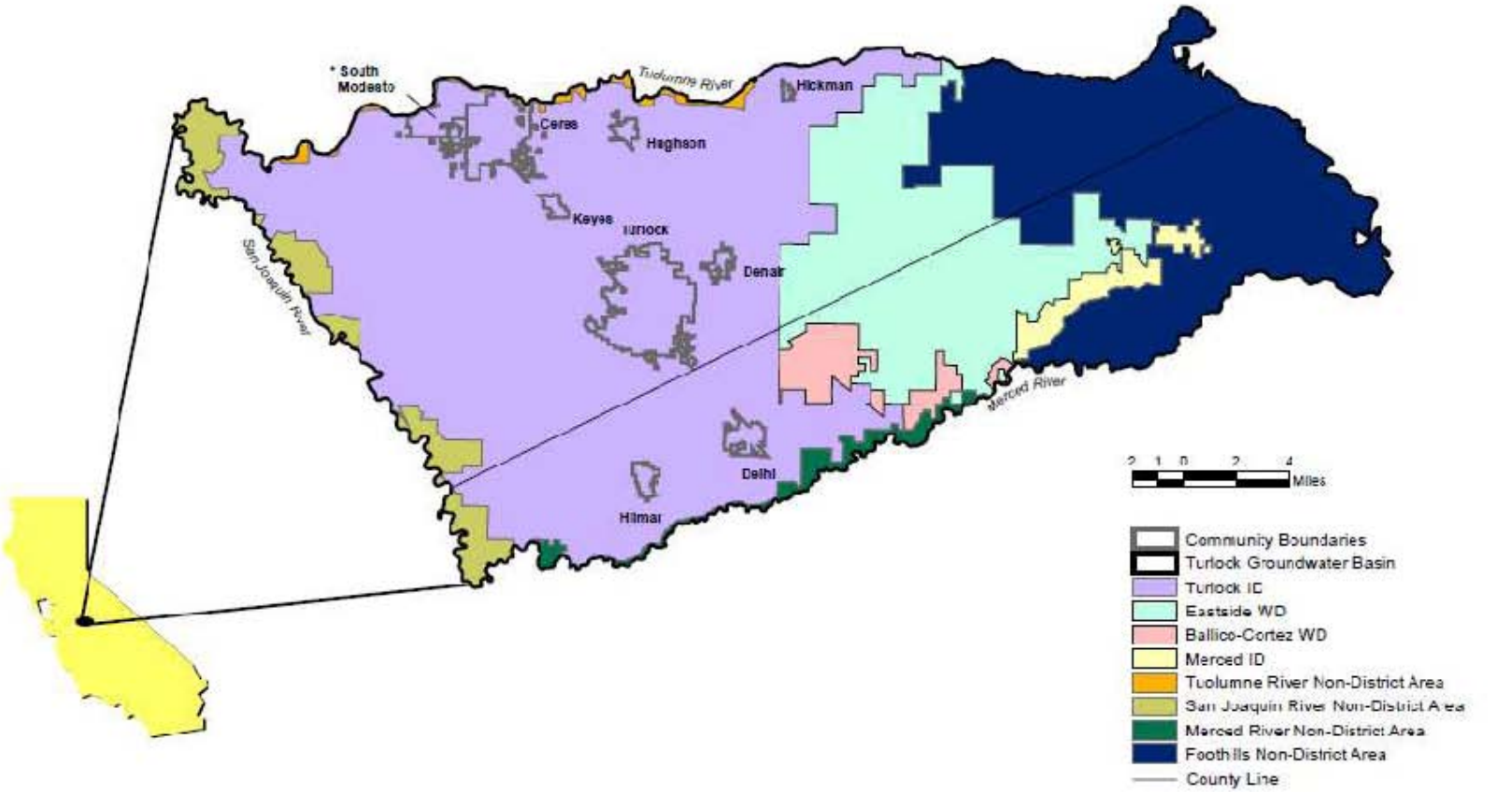
TID recommends that the agencies revise the DEIR to address these problems, and recirculate the DEIR for further public review and comment. We appreciate the opportunity to provide these comments and look forward to your responses.

Very truly yours,

Casey Hashimoto, P.E.
General Manager

Attachments:

1. Turlock Groundwater Subbasin Groundwater Management Plan, Figure 1
8-32 2. Turlock Groundwater Subbasin Groundwater Management Plan, Figure 5
3. Turlock Groundwater Subbasin Groundwater Management Plan, Figure 6
4. Turlock Groundwater Subbasin Groundwater Management Plan, Figure 15i
5. Turlock Groundwater Subbasin Groundwater Management Plan, Figure 19
6. Turlock Groundwater Subbasin Groundwater Management Plan, Figure 7
7. Turlock Groundwater Subbasin's 2010 groundwater levels
8. Map of locations where water is pumped from the Harding Drain
9. City of Modesto Wastewater Treatment Facilities Schematic
10. Modesto-owned ranch land map, with notes
11. "Modesto Ranch" Lease



* South Modesto represents the City of Modesto Service Area South of the Tuolumne River

Figure 1. Turlock Groundwater Basin Location and Boundaries

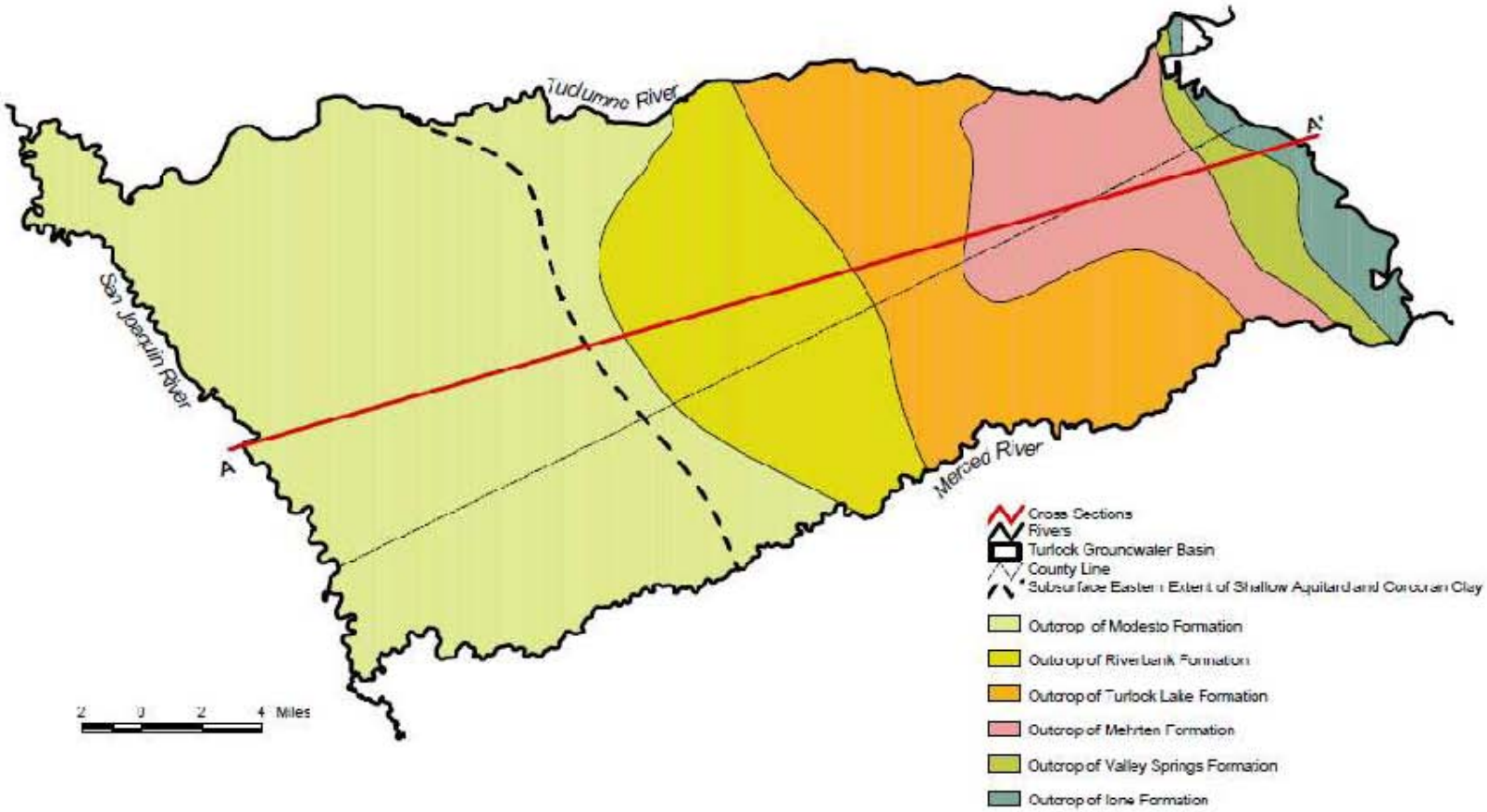


Figure 5. Hydrogeologic Units Represented within the Groundwater Model

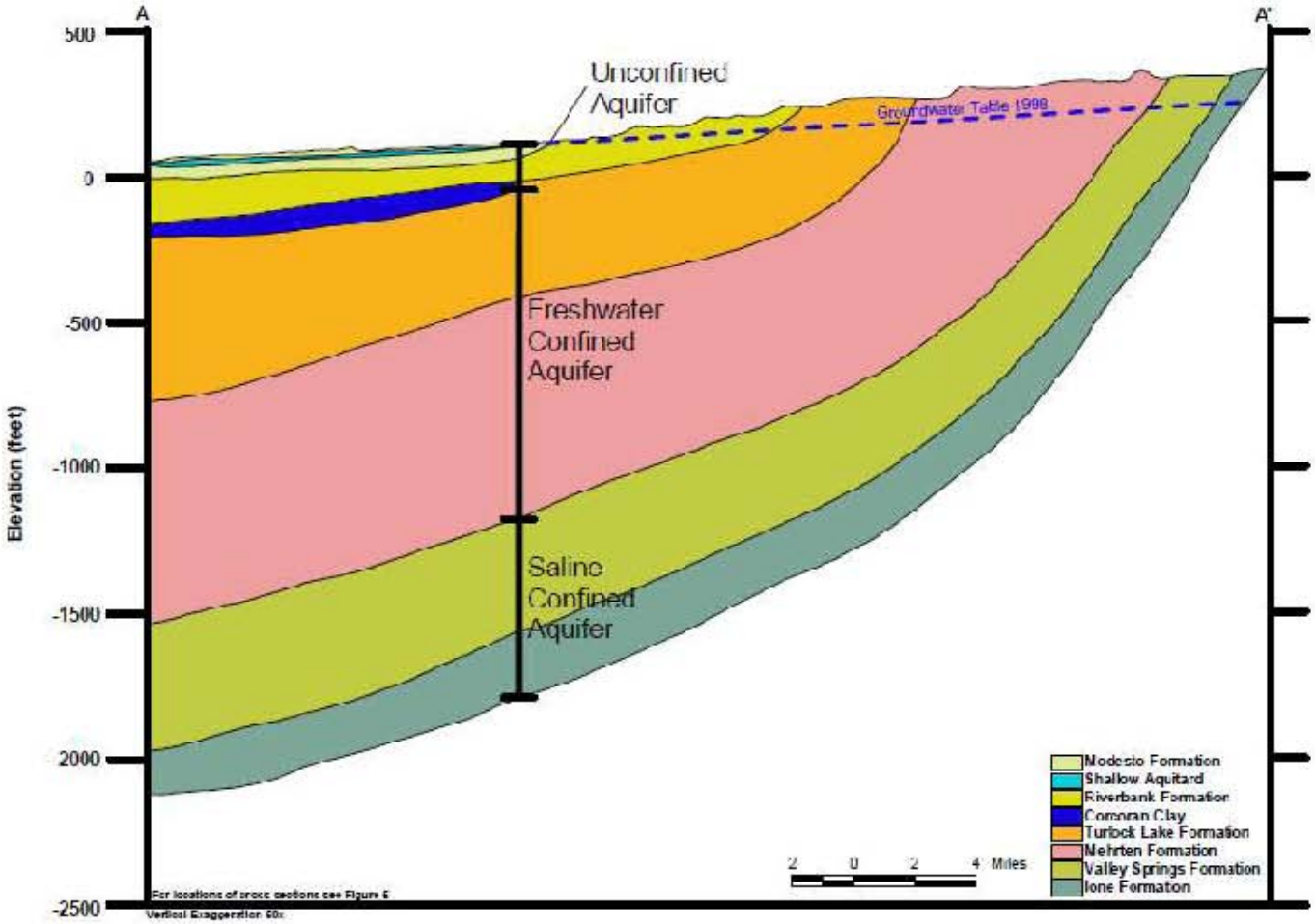


Figure 6. East-West Cross-Section Showing Hydrogeologic Units within the Groundwater Basin

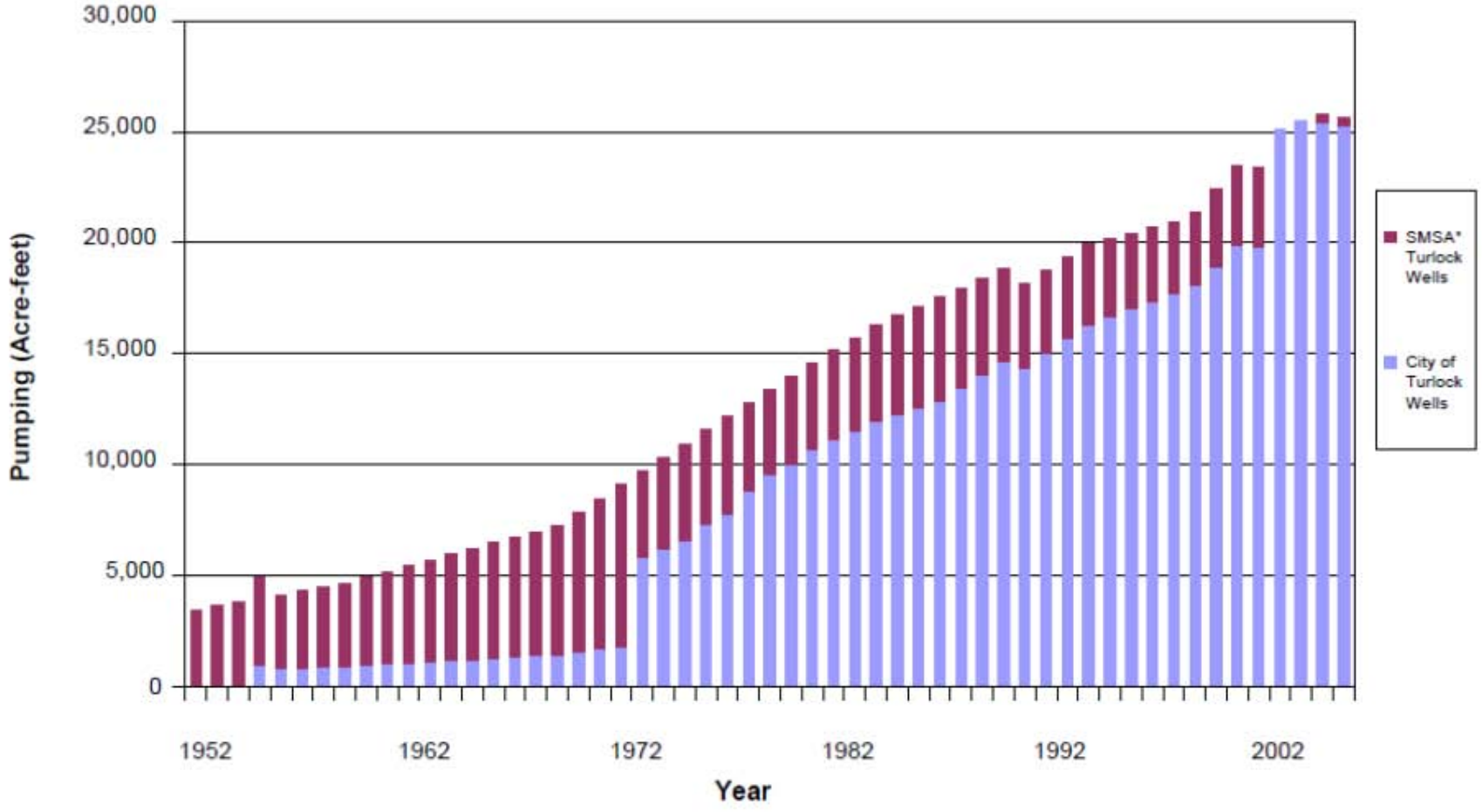


Figure 15i. Annual Pumpage from Municipal Wells for Turlock, 1952-2006

*SMSA (South Modesto Service Area) Turlock Wells are within the City of Turlock and operated by the City of Modesto

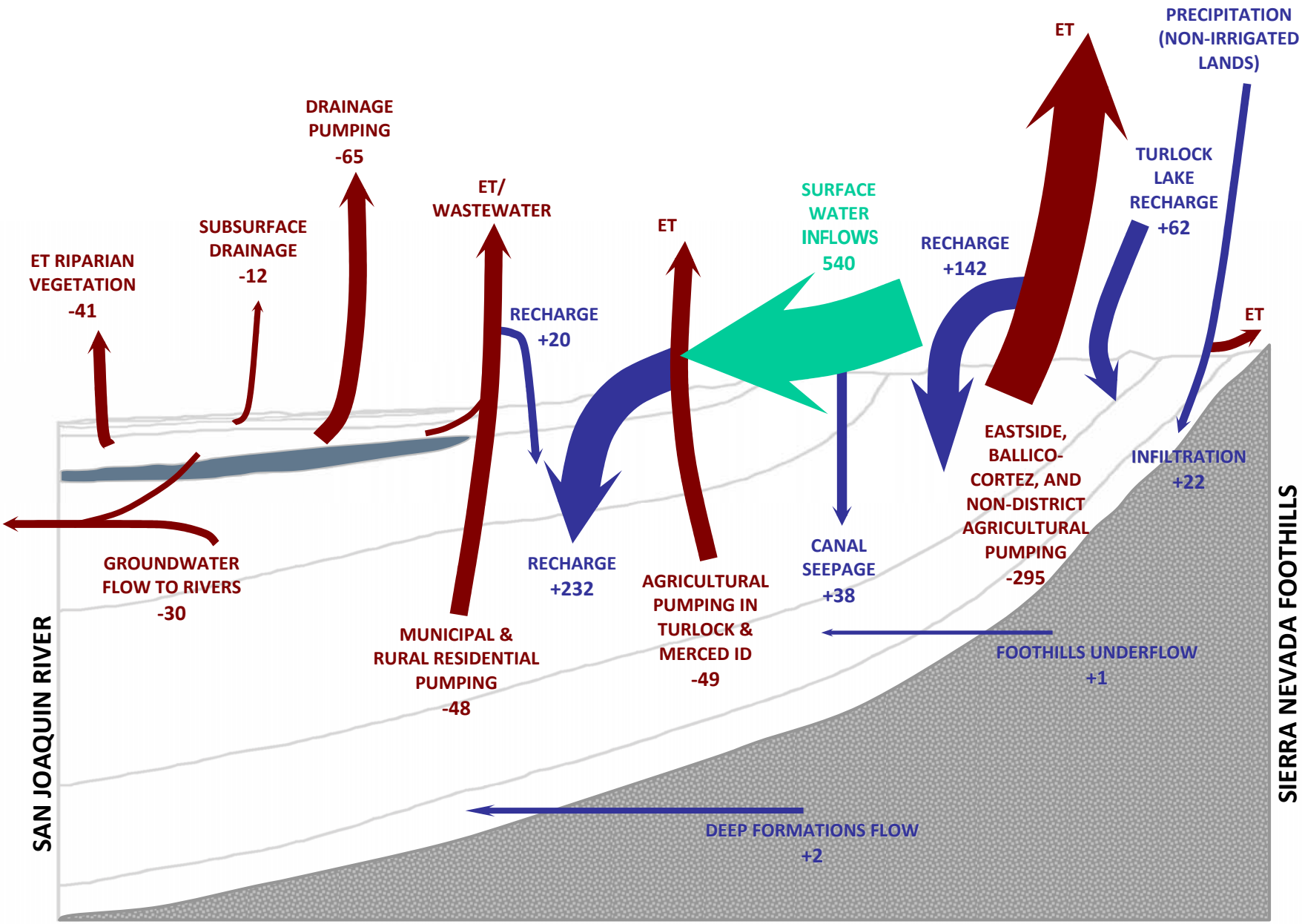


Figure 19. Estimated Turlock Groundwater Basin Water Budget, 1997-2006 (Thousands of Acre-Feet per Year)

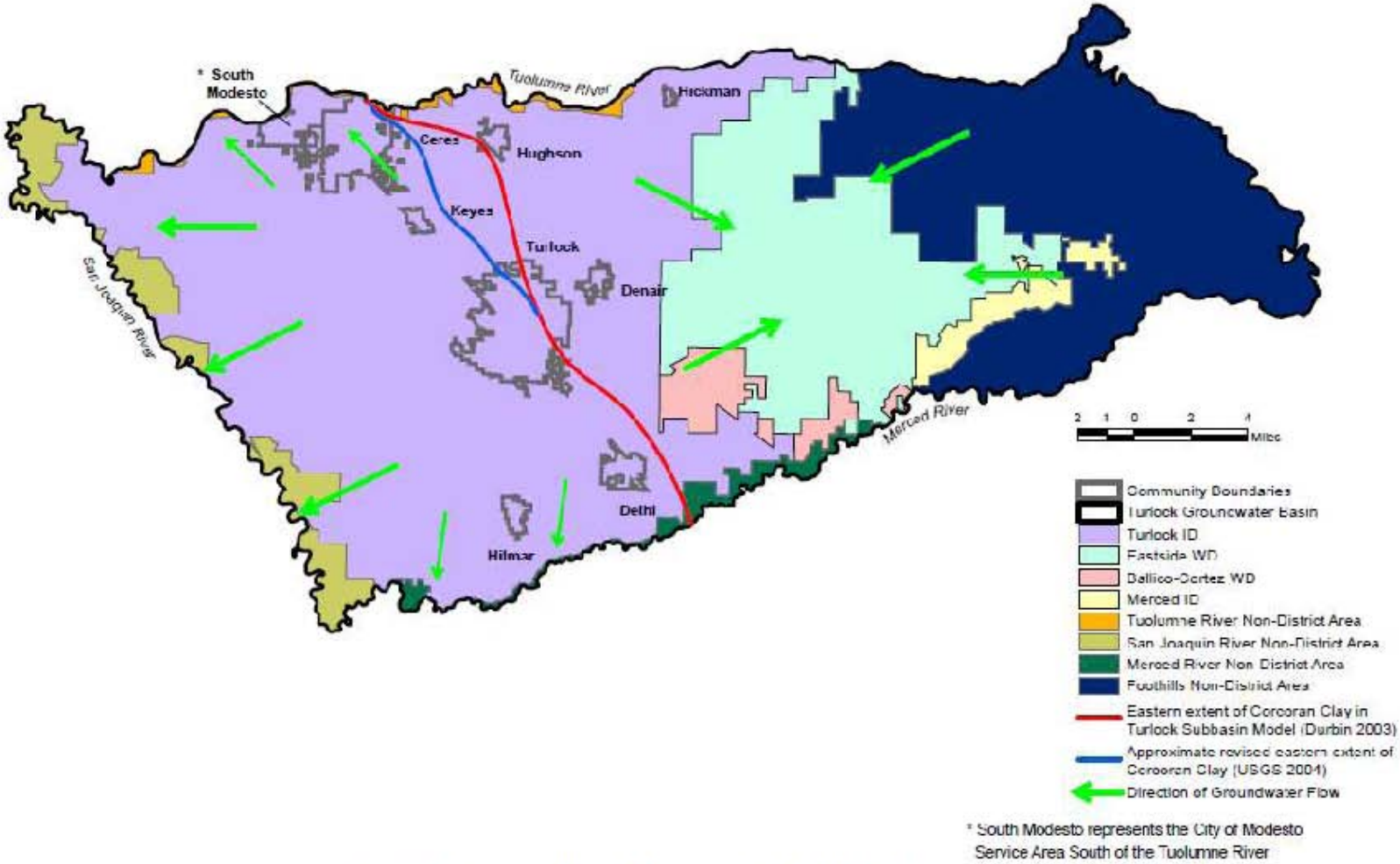
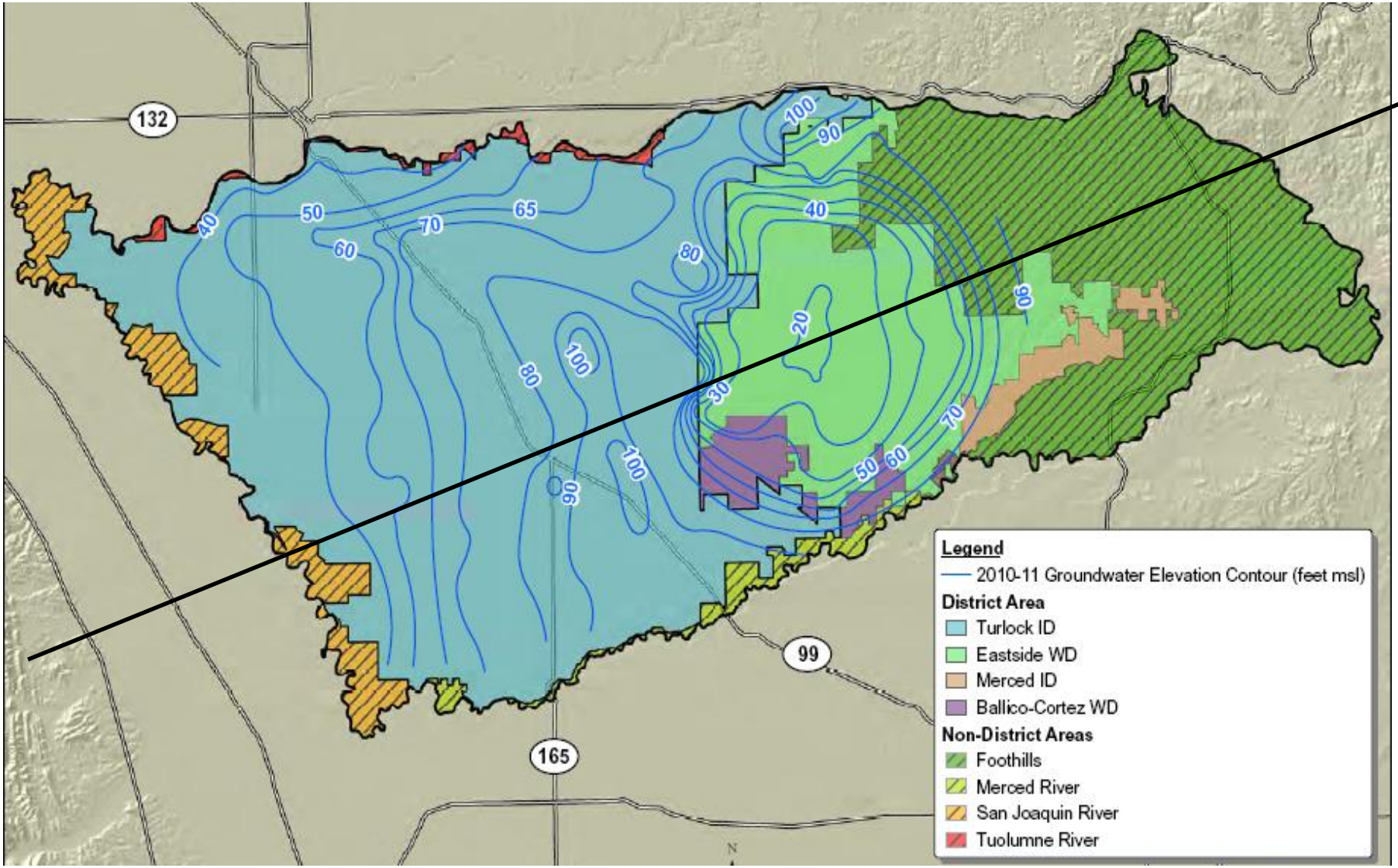
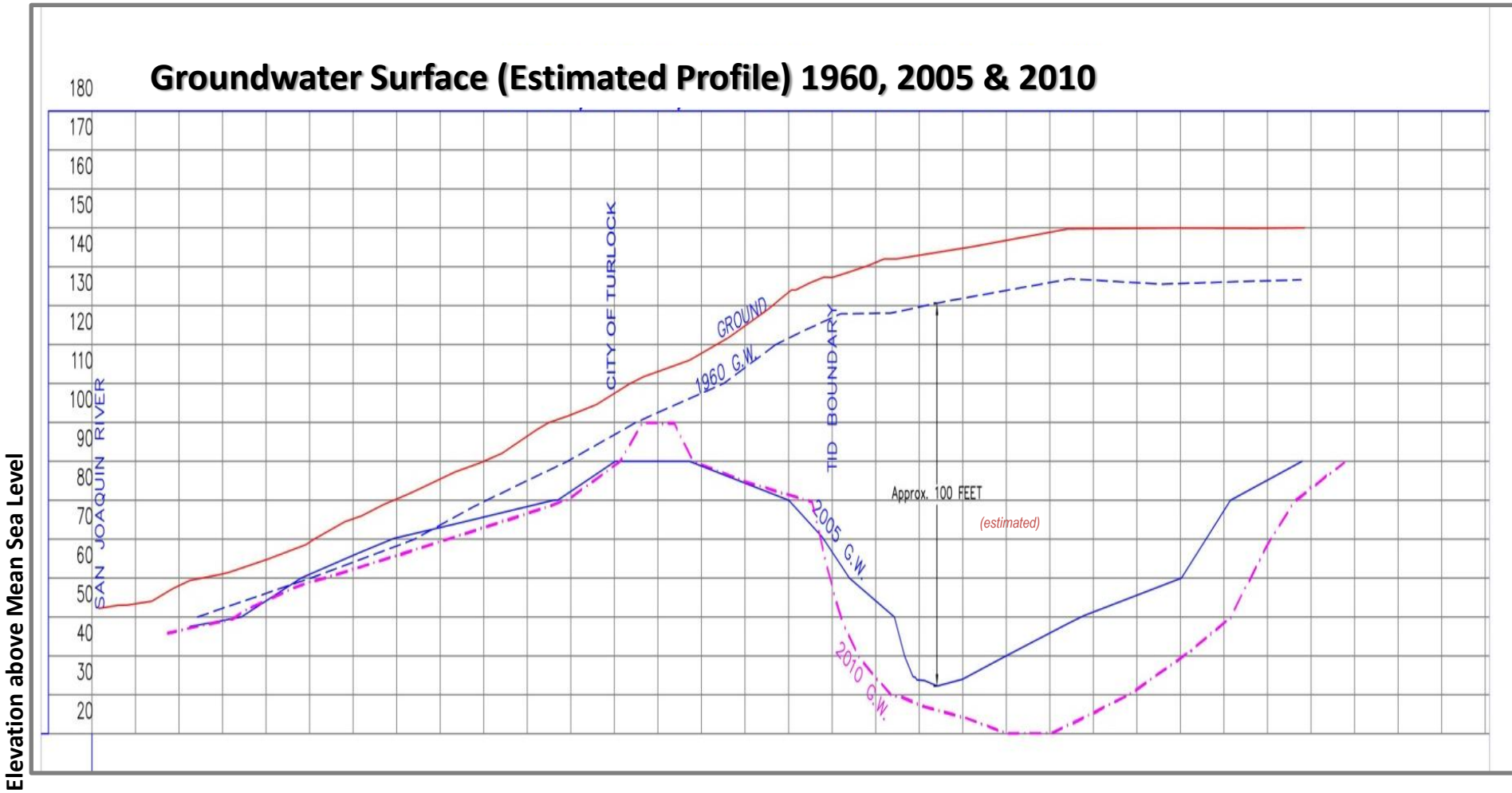


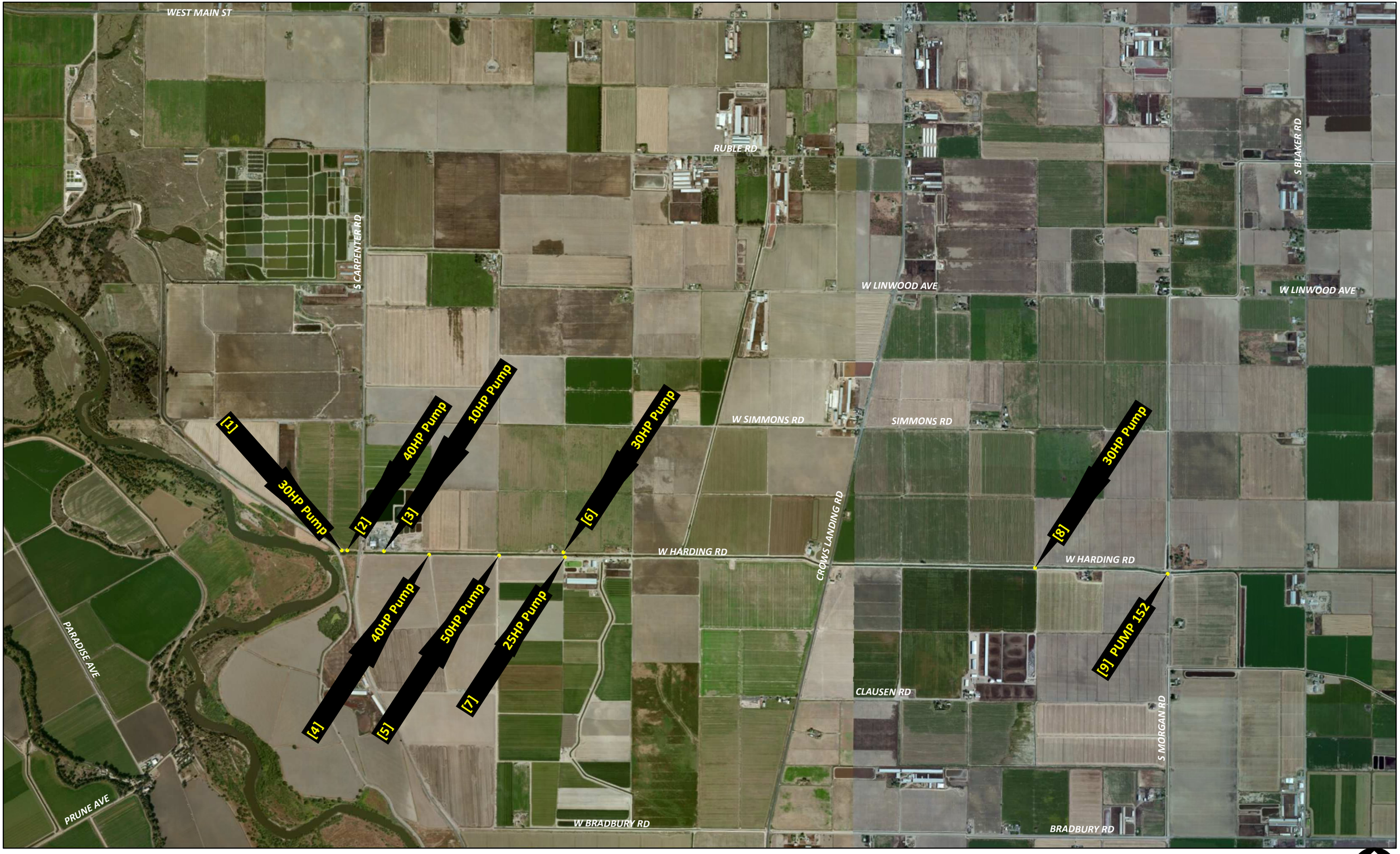
Figure 7. Groundwater Movement within the Basin

Groundwater Levels - 2010



Cross-Section of the Basin





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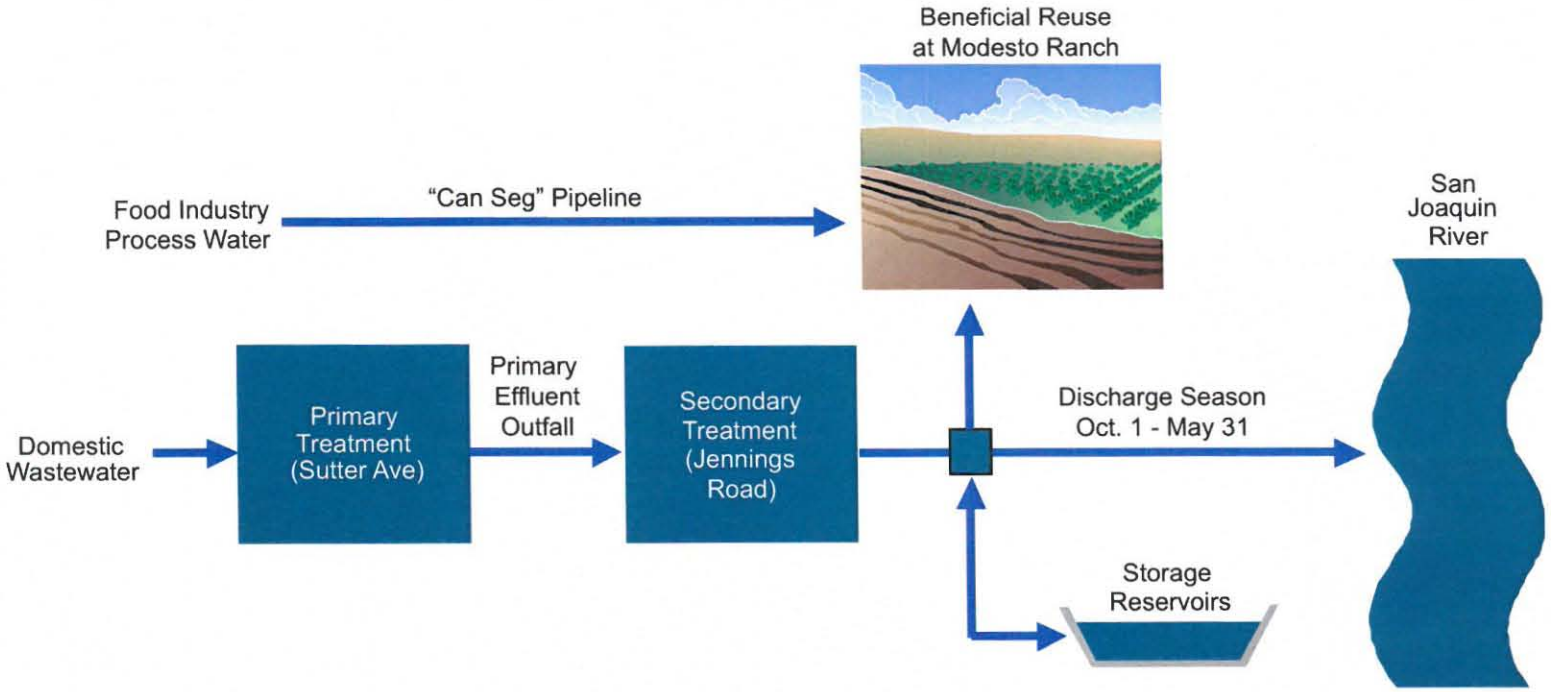

Figure 1.2
WASTEWATER TREATMENT FACILITIES SCHEMATIC
WASTEWATER MASTER PLAN PHASE 2 UPDATE
CITY OF MODESTO

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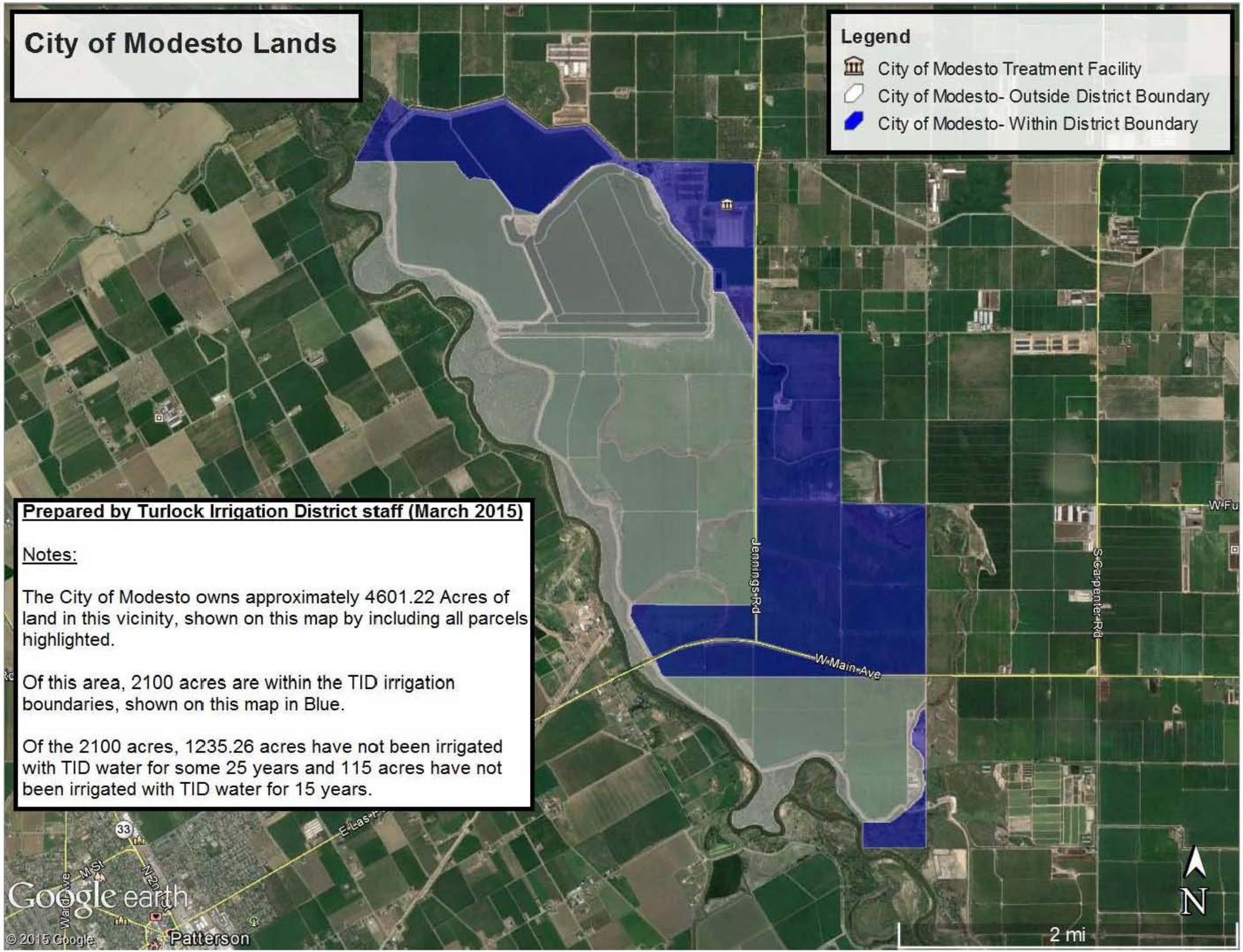

Prepared by Turlock Irrigation District staff (March 2015)

Notes:

The City of Modesto owns approximately 4601.22 Acres of land in this vicinity, shown on this map by including all parcels highlighted.

Of this area, 2100 acres are within the TID irrigation boundaries, shown on this map in Blue.

Of the 2100 acres, 1235.26 acres have not been irrigated with TID water for some 25 years and 115 acres have not been irrigated with TID water for 15 years.

AGREEMENT FOR LEASE OF AGRICULTURAL LAND
JENNINGS RANCH

THIS AGREEMENT ("Agreement") is entered into this 3 day of November, 2010 and shall become effective as described herein, by and between the City of Modesto, a charter city and municipal corporation ("City"), and Wendel Trinkler Jar. _____ ("Lessee").

RECITALS

This Agreement is made with respect to the following facts:

WHEREAS, City of Modesto (City) is the owner of Assessor's Parcel Nos. 22-01-02, 22-01-04, 22-01-05, 22-03-02, 22-04-01, 22-04-02, 22-04-03 and 58-01-01 (Jennings Ranch), which are located in the County of Stanislaus adjacent to City's secondary wastewater treatment facility. Jennings Ranch including field numbers and location, and City's secondary wastewater treatment facility are shown on Exhibit 1, which is attached hereto and by this reference incorporated herein.

WHEREAS, City purchased Jennings Ranch for the purpose of disposing treated wastewater and cannery segregation water by irrigation of agricultural crops, and City has historically leased Jennings Ranch to experienced agricultural tenants to accomplish said disposal.

WHEREAS, City's application of treated wastewater and cannery segregation water is regulated by Waste Discharge Requirement's (WDR) issued by the Central Valley Regional Water Quality Control Board, as set forth in Order No. 99-112, which is attached hereto as Exhibit 2 and by this reference incorporated herein.

WHEREAS, City also uses Jennings Ranch for the purpose of disposing biosolids and co-compost by spreading and soil incorporation. Biosolids applications are regulated by a WRD issued by the Regional Water Quality Control Board, as set forth in Order No. 94-030, which is attached hereto as Exhibit 3 and by this reference incorporated herein.

WHEREAS, City is allowed by the WDR to irrigate a maximum area of 2,530 acres with treated wastewater and cannery segregation water. The area presently irrigated encompasses some 2,530 acres consisting of 33 separate fields ranging in size from 15 to 127 irrigated acres. For this lease, field #22 at 80 acres will be deducted from the total acreage until such time that the field can be farmed thus making the total acreage for this lease 2,450. A tabulation summarizing the field acreage is included as Exhibit 4 attached hereto and by this reference incorporated herein.

WHEREAS, Jennings Ranch has been recently operated as a Certified Organic Farm by the previous tenant.

WHEREAS, City's consultant has prepared a "Ranch Land Lease Study" that sets forth the approach for achieving City's objective for disposing treated wastewater, cannery segregation water and biosolids, which establishes the basis for managing Jennings Ranch.

WHEREAS, City requires an experienced agricultural farming enterprise to operate and manage Jennings Ranch to achieve the City's objectives and comply with the terms and conditions of the applicable WDR's.

WHEREAS, City has conducted a competitive process to identify qualified agricultural enterprises and has accepted proposals from these qualified bidders.

WHEREAS, Lessee was qualified to bid and was the successful bidder selected as a result of the competitive process, and wants to enter into a long-term lease for Jennings Ranch.

WHEREAS, Lessee will operate and manage Jennings Ranch in a farmer-like manner to dispose treated wastewater, cannery segregation water, and biosolids and co-compost in accordance with the applicable WDR's.

WHEREAS, City will lease Jennings Ranch to Lessee for agricultural purposes in exchange for receiving monthly lease payments, operating and maintaining the agricultural infrastructure, and disposing treated wastewater, cannery segregation water and biosolids under the terms and conditions of this Agreement as set forth herein

NOW THEREFORE, the parties hereto, incorporating the above recitals as part of their Agreement and in consideration of the mutual covenants, terms and conditions contained herein, do hereby agree as follows:

AGREEMENT

That City for and in consideration of the covenants, conditions, agreements and stipulations hereinafter expressed, does hereby demise and lease unto Lessee, and Lessee hereby hires from City those certain premises, referred to herein as Jennings Ranch, situated in the County of Stanislaus, State of California, more particularly outlined in yellow on the attachment hereto marked Exhibit 1. The area shown in yellow does not include the San Joaquin drainage levee or floodplain area located outside the levee

All structures and facilities on the leased premises may be substandard in one or more respects. Lessor agrees to be responsible for all reasonable costs for repairing, bringing up to code, or adapting such facilities to Lessees business purposes. Said structures shall not be occupied or used by Lessee until needed repairs are performed to the' satisfaction of City's Deputy Director of Public Works - Operations. All improvements and fixtures attached to the real property shall become property of City except as otherwise agreed upon by written contract.

1. LEASE TERM

Lessee shall be entitled to have and to hold Jennings Ranch, together with the appurtenances, rights, privileges and easements thereunto belonging to or appertaining for a ten (10) year term commencing on January 31, 2011, and ending on the last day of December 2020.

Lessee is given three (3) four-year options to extend the term ("extended term") on all the provisions contained in this Agreement, except for significant changes in Jennings Ranch operation arising from changes to City's WDR's, changes to the

acreage available for farming, changes in the volume of treated wastewater and cannery segregation water available for irrigation, and any other such occurrence or condition that would affect the operation and management of Jennings Ranch. The extent that such significant changes may affect the future use of Jennings Ranch during extended terms shall be made by City at City's sole option. Lessee shall request extended term by making written request to City giving notice to exercise of the option at least three months but not more than six months before the expiration of the initial-term and each extended term. Provided that, if Lessee is in default on the date any of the extended terms are to commence, the extended term shall not commence and this Agreement shall expire at the end of the initial term or extended term in effect.

The parties shall have sixty (60) days after City receives a written option notice in which to agree on any significant changes to the Agreement during any extended term. If the parties are unable to agree on the new terms and conditions for the extended term within the sixty (60) day period, Lessee shall forfeit any right to extended lease and this Agreement shall expire at the end of the term. Neither party to this Agreement shall have the right to have a court or other third party set the terms herein.

2 ANNUAL LEASE AMOUNT AND PAYMENT TERMS

A. The annual lease payment to be paid by Lessee to City for Jennings Ranch shall be determined based on the total net acreage available to Lessee for farming, and irrigation with treated wastewater and cannery segregation water, multiplied by the unit lease amount, as determined solely by City. The total net acreage shall not exceed 2,530 acres as allowed by City's WDR's (Order No. 99-112). The total net acreage for this lease is 2,450 until such time that field #22 is able to be farmed. The annual lease amount beginning January 1, 2011 shall be no less than $200.00 for each net irrigated acre and $4,000 for the feedlot. The unit lease amount will be adjusted for inflation annually at City's option each June 1 with any unit lease amount adjustment becoming effective with the following January 15 lease payment. The adjustment amount for inflation shall be determined by applying the United States Government Bureau of Labor Statistics Cost of Living Index. The annual lease amount adjustment shall not exceed 3 percent (3.0%) per annum, regardless of the index percentage. This annual lease amount shall be adjusted at the end of each calendar year in accordance with the net irrigated acreage available for irrigation, and the unit lease amount adjusted for inflation with the new effective lease amount beginning each January 15 of each successive year during the 10-year lease term and any extended terms.

B. The annual lease payment shall be paid in monthly equal amounts of $41,166.67, payable no later than the 15th of each month. This monthly payment pattern will continue through the term of this Agreement. Payments shall be paid in lawful money of the United States of America to City's Finance Director, City of Modesto, and P.O. Box 3441, Modesto, CA 95353

C. City may at City's sole option request Lessee to make certain repairs and improvements beyond the scope of this Agreement. Such request shall be made in writing from City to Lessee. Lessee shall not be obligated to make such repairs or improvements if requested by City. City shall have the sole right to contract with others to make repairs and improvements not covered by this Agreement. Lessee has the right to request certain repairs and improvements to City's facilities and City shall have the sole right to determine if such requested repairs are necessary to accomplish City's objectives. Lessee shall submit formal plans for improvements and

shall obtain the prior written consent of City's Deputy Director of Public Works - Operations or his authorized representative prior to commencing work. Lessee shall receive a credit that will be applied to the next lease payment due City for any such work authorized by City. Lessee shall not receive a lease credit for any expenditure for which such prior written consent is not obtained. In those instances where such prior written consent is obtained, Lessee shall present an invoice to City including documentation of expended costs including written bills and receipts. City shall provide a written confirmation of receiving such invoice from Lessee including a statement of lease payment due that reflects a credit for the approved invoiced amount.

3. SECURITY DEPOSIT

Lessee agrees to keep on deposit with City the sum of Twenty Five Thousand Dollars ($25,000.00) as security for the full and faithful performance of each and every term, provision, covenant, and condition of this Agreement. If Lessee defaults with respect to any of the terms, provisions, covenants, and conditions of this Agreement, including but not limited to the payment of rent, the repair of damages to the premises caused by Lessee, or the cleaning of such premises upon expiration or termination of this Agreement, City may use, apply, or retain the whole or any part of this security for payment of any or all of the above-mentioned specific purposes. Any remaining portion of such deposit shall be returned to Lessee no later than thirty (30) days after expiration or sixty (60) days after termination of this Agreement. Lessee shall not be entitled to any interest on the security deposit.

4. ADDITIONAL CONSIDERATION

A. Jennings Ranch shall be used for the production of agricultural crops including irrigated grass hay, alfalfa and annual forage crops, that achieve City's objectives of disposing treated wastewater, cannery segregation water, and biosolids and co-compost in accordance with the terms and conditions of City's WDR's. Animal grazing, and any such related activity is not an allowed use of Jennings Ranch under the terms and conditions of this Agreement.

B. City shall at City's expense remove interior fencing and maintain the exterior fencing that surrounds Jennings Ranch. City shall be responsible for timely repair of any fence breaks and shall be responsible for maintaining the integrity of exterior fencing. Should Lessee damage the exterior fencing, Lessee shall pay City for the repair costs. City at City's sole discretion may elect to have Lessee make such repairs or contract with others to make such repairs. City shall provide weed control along the exterior fencing and shall maintain a weed free environment one-foot wide on each side of the fence centerline.

C. City reserves the right, at City's expense, to remove the existing feedlot and return the land to a use compatible with City's objectives with 90 days notice to lessee. City reserves the right during years 2018, 2019 and 2020 to Remove a maximum of 500 acres of land contiguous to existing ponds for the purpose of expanding the recycled water program. City shall endeavor to work with Lessee and make notification of such needs on a timely basis, to minimize losses and effects on Lessee's operation. Any such removal of land from irrigation for other City uses shall be reflected in the annual adjustment of net irrigated acreage. In the event the Lessee has incurred production cost on irrigatable acreage to be removed, the lessee will be reimbursed those actual and verifiable cost.

D. City shall perform periodic agronomic monitoring to assess soil quality. Such monitoring may result in requirements to amend Jennings Ranch soils and shall

be incorporated into the Ranch Management Plan. The cost to purchase, deliver and apply soil amendments shall be paid by Lessee. Lessee shall incorporate soil amendments at Lessees cost by discing in a timely manner. City and Lessee shall coordinate these activities to insure timely soil amendment application and incorporation, and include these activities in the Operations Report.

E. Lessee agrees, as additional consideration for lease of Jennings Ranch, to keep said premises clear of all noxious grasses, weeds and plants and to keep said premises in good repair and condition, and to protect said premises from animal and insect pests, and not commit or suffer to be committed any waste on said premises. Lessee further agrees to disc and till, deep rip, and aerate the land as necessary to comply with the terms of this Agreement to the satisfaction of City's Deputy Director of Public Works - Operations or his authorized representative.

F. Lessee agrees as additional consideration for lease of Jennings Ranch to operate said land disposal irrigation system under the direction and to the satisfaction of City's Deputy Director of Public Works - Operations or his authorized representative, and to take delivery of all treated wastewater and cannery segregation water flows from the City's facilities regardless of the effect of taking said treated wastewater and cannery segregation water flows on Lessees operation, and further agrees to hold City, its officers, agents and employees harmless from and against any and all claims, demands, losses, defense costs or liabilities of any kind or nature resulting from the delivery of treated wastewater and cannery segregation water by City to Lessee in any amounts exceeding the normal amount of water required to irrigate said leased premises.

G. Lessee agrees as additional consideration and at Lessee sole cost for the lease of Jennings Ranch to implement a crop rotation plan. Such plan shall require the planting or replanting of approximately 300 acres in permanent pasture harvested for grass hay, alfalfa or annual forage crops during each year of the lease term as directed by the City's Deputy Director of Public Works - Operations. Lessee shall level the ground by land-planning or laser leveling as crops are rotated and shall coordinate such grading activities with City. City may elect at City's sole option to provide recommendations for grading. Lessee shall coordinate the crop rotation plan with City for purposes of applying biosolids and co-compost for land disposal. Lessees crop rotation plan shall be incorporated into Lessees annual management plan update. The annual management plan update will be agreed upon by City's Deputy Director of Public Works - Operations. Lessee agrees to perform tillage to maintain soil quality and water infiltration on all alfalfa and pasture land under the approval of City's Deputy Director of Public Works - Operations. Such tillage shall be performed as required to maintain said soil quality and water infiltration using appropriate equipment following mechanical harvesting, and shall be at Lessees sole cost and expense.

H. City shall provide a full water supply to Lessee necessary to meet crop water demand for agricultural crops grown by Lessee at Jennings Ranch during the lease term as set forth in Section 1 – Lease Term above. Such water necessary to provide said full supply may come from a combination of sources including but not limited to treated wastewater, cannery segregation water, recycled tail water, groundwater and irrigation district surface water. The source of water provided to meet Lessees crop water demand shall be determined at the sole option of City. Treated wastewater and cannery segregation water shall be the primary sources of irrigation water made available to Lessee.

5. SPECIAL PROVISIONS

City's Deputy Director of Public Works - Operations shall have the right to give Lessee twenty-four (24) hours prior written notice terminating this Agreement for cause, or at City's sole discretion to enter Jennings Ranch and assume Lessees responsibilities under the terms of this Agreement without any offset in rent. Upon receiving such notice of termination, Lessee shall immediately vacate the premises. Lessee agrees to hold City, its officers, agents and employees harmless from and against any and all claims, demands, losses, defense costs or liability of any kind or nature resulting from Agreement termination for cause exercised by City, and City's assumptions of said responsibilities.

City shall continually monitor Lessees management of Jennings Ranch to insure compliance with the terms and conditions of this Agreement. Should City determine, at its sole discretion that Lessee is not in compliance with the terms and conditions of this Agreement, written notice of such non-compliance shall be provided from City to Lessee. Lessee shall have 30 calendar days from the date of written notice to comply after which City, at its sole discretion, can direct and pay others to correct any condition of non-compliance. Lessee shall pay City for all costs and expenses incurred including a fifteen (15) percent contingency to correct deficiencies.

6. AMOUNT OF WASTEWATER

Lessee agrees to accept delivery of and properly use for irrigation and land disposal treated wastewater and cannery segregation water from City's treatment facilities to the satisfaction of City's Deputy Director of Public Works - Operations or his authorized representative. Lessee shall take delivery of all treated wastewater and cannery segregation water from City's facilities regardless of the effect of taking said treated wastewater and cannery segregation water on Lessees operation. Lessee shall manage mechanical harvest operations, especially during the cannery segregation water irrigation season, to insure that adequate soil drying has occurred prior to harvest in order to maintain soil physical quality.

7. JENNINGS RANCH USE

Lessee shall use Jennings Ranch solely for the purpose of raising irrigated agricultural crops thereon as defined in Section 19. Lessee shall maintain Jennings Ranch to keep the premises in good repair and condition, including routine tillage. Lessee agrees to till, cultivate, aerify, irrigate and farm said Jennings Ranch in a farmer-like manner, and shall use management practices consistent with those used by other commercial farms in the Jennings Ranch vicinity. Such farmer-like practices are not limited to but shall include the control of weed, insect, disease and rodent pests. Lessee shall use only such products as will not endanger the long-term agricultural suitability of said Jennings Ranch.

Lessee shall keep such improvements as may be in existence on said Jennings Ranch in good repair and condition, and protect all of said Jennings Ranch and the crops thereon from noxious grasses, weeds, plants and from animal and insect pests and not commit or suffer to be committed any waste. The City authorizes the lessee to employ the services of a licensed pest control advisor for purposes of making pest control recommendations and pesticide applications at Jennings Ranch and those recommendations shall be included in the annual Ranch Management Plan. Pesticide handling, application and storage at Jennings Ranch shall be conducted in accordance with state law and Stanislaus County Agricultural Commissioner regulations. Lessee agrees to submit monthly reports and records of pesticide

applications to City as part of the Ranch Operations Plan. Lessee agrees to employ a qualified professional farm manager to directly oversee all operation and maintenance activities performed by Lessee at Jennings Ranch. Such farm manager shall have a minimum of five (5) years experience in similar farming operations.

8. ORGANIC CERTIFICATION AND USE

Lessee shall retain the right to operate all or part of Jennings Ranch as a Certified Organic Farm in accordance with the standards of the USDA National Organic Program (NOP), with the written consent of City's Deputy Director of Public Works - Operations. Lessee shall have sole responsibility for compliance with NOP standards and organic certification requirements, and shall indemnify, hold harmless and defend City in accordance with Section 27 – Lessee Indemnification of this Agreement against any and all claims that may be associated with organic farming at Jennings Ranch. Organic farming at Jennings Ranch by Lessee shall comply with the requirements of Sections 7 - Jennings Ranch Use, 19 – Use of Treated Wastewater, 20 – Biosolids and Co-compost Application Statement, 23 – Ranch Operation Plan and 24 – Ranch Management Plan of this Agreement.

City shall periodically review, at City's expense, organic farming operations for compliance with Section 7 – Jennings Ranch Use to insure that Jennings Ranch is being managed in a farmer-like manner. City's Deputy Director of Public Works - Operations shall have the sole discretion of revoking approval for organic farming at Jennings Ranch should it be determined by City, at City's sole discretion, that Lessee is not operating in compliance with the terms and conditions of this Agreement, including but not limited to compliance with NOP standards.

Lessee acknowledges City's objective of biosolids disposal as set forth in Sections 4 – Additional Considerations and 20 – Biosolids and Co-compost Application Statement of this Agreement. Lessee agrees that such biosolids applications do not meet the criteria for organic crop production as set forth by the NOP and that fields used for biosolids disposal shall not be used by Lessee for organic crop production. City intends at City's sole option to extend biosolids applications to other Jennings Ranch fields not presently used for that purpose. City shall coordinate such applications with Lessee. City shall at City's sole option remove fields from organic production when City deems such action to be in City's best interest in meeting City's objectives for biosolids disposal.

Lessee shall identify fields at Jennings Ranch that will remain in organic production in their Ranch Management Plan as set forth in Section 24 – Ranch Management Plan hereinafter. Jennings Ranch land returned to conventional farming from organic production shall not be later used for organic farming purposes.

Lessee shall return organic farmed fields to conventional agricultural production the following cropping season for annual crops, or the following calendar year for perennial crops, when directed to take such action by City's Deputy Director of Public Works - Operations. Such direction shall occur should the City require additional acreage for biosolids application and under conditions of non-compliance with the provisions of this Agreement as determined solely by City. In the event Lessee fails to comply with the terms of this Section, City may exercise its rights as outlined in Section 5 - Special Provisions above.

9. LESSEE MAINTENANCE AND REPAIRS

Lessee shall, at their sole cost and expense, keep and maintain the houses, barns, miscellaneous outbuildings, domestic water pumps and wells located on

Jennings Ranch and every part thereof in good and sanitary order, condition, and repair.

Lessee shall, at their sole cost and expense, maintain the drainage system above the tailwater sump boxes, and irrigation system downstream of the throttling valves. Lessee shall, at their sole cost and expense, maintain the existing trough wells throughout the ranch.

Lessee shall maintain the existing condition of Jennings Ranch facilities. Repair and replacement by Lessee shall be at the minimum in-kind. Any Jennings Ranch improvements shall be made at the sole cost of Lessee and are subject to prior approval of City's Deputy Director, Public Works – Operations and shall become the property of the City.

City reserves the right to notify Lessee in writing to maintain or repair any improvements located on the leased premises which are Lessees to maintain and repair, and to enter and inspect the leased premises at reasonable hours. If Lessee fails to make such maintenance and repairs within ten (10) days from the date of said notice, City, its authorized agent, contractor or representative may perform such maintenance or repairs and Lessee shall within ten (10) days after receiving billing thereof pay the cost including fifteen (15) percent for contingencies.

10. <u>CITY MAINTENANCE AND REPAIRS</u>

City shall, at its sole cost and expense, keep and maintain the irrigation system, including the tailwater return system, and the irrigation facilities located upstream of and including the throttling valves, the five (5) booster pumps located at the three Booster Pump Stations (NE corner of Field #5, NW corner of Field #13 and SE corner of Field #15), the drainage system below and including the tailwater pump stations and the peripheral drainage ditch located on the east and south sides of the existing wastewater ponds, in good and sanitary order, condition and repair. City shall provide prompt repair of irrigation facilities and will return said facilities to operation within three (3) working days of any emergency related water service disruption. City shall provide timely maintenance of irrigation facilities and will coordinate such maintenance activities with Lessee.

11. <u>FENCES</u>

Lessee shall not have the right to construct fencing during the term of this Agreement without first obtaining written approval of City's Deputy Director of Public Works - Operations. Such fencing shall become City's property upon termination or expiration of this Agreement.

12. <u>IMPROVEMENTS</u>

It is understood by the parties that any improvements on Jennings Ranch will be done at the sole cost and expense of Lessee. Buildings or other structures shall not be erected upon the premises unless the consent of City's Deputy Director of Public Works - Operations is first had in writing. Lessee agrees to notify City in writing, prior to beginning such improvements so that City may post and record Notices of Non-responsibility. Lessee agrees not to permit any liens to be placed upon the premises by reason of any improvements which they may make thereon and further agrees to hold City harmless from any liability or liens therefore.

Lessee shall have the right, during the term of this Agreement to make minor alterations in and upon Jennings Ranch, subject to prior written approval of City's Deputy Director of Public Works - Operations. Building permits shall be taken out by Lessee for such minor alterations if required by provisions of the building regulations of

the County of Stanislaus. All such minor alterations shall become the property of City upon termination or expiration of this Agreement.

Lessee shall, upon the expiration of this Agreement, leave the leased premises in good order, condition and repair. Reasonable and ordinary wear and tear, and damages by the elements or circumstances over which Lessee has no control are exempted.

13. RIGHT OF ENTRY UPON PREMISES

City, its agents and employees shall have the right to enter Jennings Ranch at all reasonable times to inspect the same to determine if Lessee is performing the covenants of this Agreement on their part to be performed and to post such reasonable notices as City may desire to protect its rights.

Lessee hereby grants permission for the term of this Agreement to City, acting through its duly authorized agents, representatives, or contractors, to enter Jennings Ranch in order to perform any necessary labor, to install any equipment or facilities, and to maintain and operate said equipment or facilities referred to in this Agreement including new construction of facilities, removal or demolition of ranch improvements, including houses, barns, fences, etc, and the replacement of said facilities. In the event Lessee fails to comply with the terms of this section, City may exercise its rights as outlined in Section 5 – Special Provisions.

14. TAXES

A. City agrees to pay any and all real property taxes, Turlock Irrigation District taxes and assessments, and Turlock Irrigation Improvement District taxes and assessments assessed during the term of this Agreement.

B. Lessee agrees to pay any and all personal property taxes assessed against their property on the Jennings Ranch, and such portion of any real property taxes as may be levied against improvements owned by Lessee and erected upon land owned by City.

15. UTILITIES

Lessee agrees to pay for electrical service to the houses, barns, and miscellaneous outbuildings located on Jennings Ranch. Lessee also shall pay for telephone service, gas service including tank rental, garbage service, and electrical service to the domestic irrigation water pumps located on Jennings Ranch. City shall pay the utility bills for the five (5) booster pumps referred to in Section 9 – Maintenance and Repairs.

16. ASSIGNMENT BY LESSEE

Lessee shall not assign this Agreement nor any right hereunder, nor sublet the Jennings Ranch, nor any part thereof, or suffer any other person or entity to occupy or use Jennings Ranch or any portion thereof, whether through direct assignment, merger, sale of stock or business assets, or otherwise without the prior written consent of City's City Manager first had and obtained. Consent by City to one assignment, subletting, written notification, plans, and copies of any agreements, occupation, or use by any other person or entity shall not be deemed to be consent to any subsequent assignment, subletting, occupation or use by another person or entity. As part of any request, Lessee shall provide City's Director of Public Works with any agreements, plans or other pertinent data required by City's Director of Public Works to approve such request. City agrees that such will not be unreasonably withheld or unreasonably exercised. Any such assignment, subletting and occupation or use by

any other person or entity without such consent shall be void, and shall at the option of City's City Manager, terminate this Agreement. This Agreement shall not, nor shall any interest therein, be assignable, as to the interest of Lessee by operation of law, without the prior written consent of City.

17. WASTEWATER DISCHARGE REQUIREMENTS

Lessee agrees to use said premises in conformance with existing and any future Wastewater Discharge Requirements as prescribed by the Central Valley Regional Water Quality Control Board. Violation of the WDR's resulting in monetary fines, caused by actions of the Lessee shall be the responsibility of Lessee.

18. QUALITY OF WASTEWATER

City agrees that treated wastewater delivered to Lessee shall, as to quality and composition, and taking into account the agricultural irrigation use to which the treated wastewater will be put, will meet all state discharge permits. Said treated wastewater shall be treated to meet all wastewater discharge standards as prescribed by the California Water Quality Control Board. City does not guarantee or warrant the chemical composition of said treated wastewater or cannery segregation water as to its suitability for agricultural crops.

19. USE OF TREATED WASTEWATER

Lessee agrees that said treated wastewater shall be used as prescribed by Wastewater Reclamation Criteria, California Administrative Code, Title 22, Division 4, Sections 60301 to 60355 (see attached Exhibit 5).

20. BIOSOLIDS AND CO-COMPOST APPLICATION STATEMENT

Lessee agrees to allow City access to Jennings Ranch for annual Biosolids and Co-Compost Applications. City shall coordinate such applications with Lessee to time such applications to conform to Lessees annual crop rotation program and shall work with Lessee as to the location for said application. City shall have the right at City's sole discretion to apply such materials to Jennings Ranch fields not presently used for that purpose. Lessee agrees that application of biosolids is not an allowed used in organic farming as set forth in Section 8 – Organic Certification And Use.

21. CO-COMPOST SITE AND EXPANSION

The City reserves the right to expand the Co-compost site and such expansion in combination with other possible City uses shall not exceed 100-acres over the 10-year term of this Agreement. City shall provide timely notification to Lessee of such changes and the net irrigated acreage shall be revised to properly adjust the annual lease amount as provided for in Section 2 – Annual Lease Amount and Payment Terms.

22. CITY TERTIARY WASTEWATER TREATMENT FACILITY

Lessee acknowledges that City has constructed a new tertiary wastewater treatment facility. Said treatment facility will be used for advanced treatment of wastewater to be discharged in a method that best fits City's needs. These needs include discharge that meets Regulatory standards and effluent discharge water that could be used for direct sale to local agricultural users or in water exchange contracts. The delivery of tertiary treated wastewater to Jennings Ranch is not included as part of this Agreement and any such delivery shall be at the sole option of City.

23. RANCH OPERATION PLAN

The intent of this Agreement is to provide City with a means of disposing treated wastewater and/or cannery segregation water through land disposal, and Biosolids and Co-composting materials in a manner which meets Regional Water Quality Control Board discharge requirements. Therefore, City has developed a Ranch Operation Plan, a copy of which is attached as Exhibit 6, which Lessee shall be responsible to adhere to as a condition of this Lease. Lessee agrees to operate Jennings Ranch in accordance with the provisions contained in the Ranch Operation Plan, in so far as such provisions do not conflict with the terms and conditions of this Agreement. The Ranch Operation Plan provides for the daily operation and flow control of the treated wastewater to maximize the greatest beneficial use and long-term maintenance of the irrigation system and Jennings Ranch for both City and Lessee. Said Ranch Operation Plan also defines Lessees responsibility regarding soil management, use of other water sources, and general operation of Jennings Ranch facilities. Lessee agrees to implement and adhere to the Ranch Operation Plan for the duration of this Agreement.

24. RANCH MANAGEMENT PLAN

Lessee shall submit a Ranch Management Plan that describes the daily operation and flow control of the treated wastewater and cannery segregation water system. Said plan shall be submitted to City for approval within thirty (30) days of commencement of this Agreement. The intent of the plan is to maximize the greatest beneficial use and long-term maintenance of the irrigation system and Jennings Ranch for the benefit of both City and Lessee. The Ranch Management Plan also will define Lessees responsibility and approach for managing and maintaining soil quality, the use of other water sources, and general operation of Jennings Ranch. The Plan shall include a summary of anticipated cropping activities, crop rotation and crop acreage. Once approved by City, Lessee agrees to implement the Ranch Management Plan for the term of the lease. As part of this process, City will contract at City's cost with an agronomist or soils engineer annually to evaluate sections of Jennings Ranch to ensure that overall quality is not diminished. This monitoring will be performed on a rotating basis with approximately 500 acres assessed. The results of these studies may result in modifications to Lessees Ranch Management Plan and Lessee shall implement the recommendations of City's agronomist or soils engineer. Lessee shall provide City with an updated Ranch Management Plan by March 1st of each year. Lessee agrees to provide City with an annual Nutrient Management Plan, which will be incorporated into the Ranch Management Plan beginning the 2nd year of the lease term and then annually thereafter. The Nutrient Management Plan shall include a fertilizer management plan for each crop. The initial Nutrient Management Plan will be provided by March1, 2011. Lessee also agrees to provide City with monthly reports identifying pesticide usage that includes a copy of County pesticide permits or reports, as well as any proposed changes to the annual Nutrient Management Plan.

Lessee shall submit a monthly report summarizing quantity of tailwater pumped and applied for irrigation. Lessee shall use a computer aided approach to schedule irrigation, such as CIMIS.

25. PERFORMANCE MEASUREMENTS

City, at City's sole expense, shall retain the right to hire the services of consultants to assist City staff in assessing the performance of Lessee in operating and

managing Jennings Ranch. The following general criteria will be used by City to monitor Lessees performance, and compliance with the terms and conditions of this Agreement:

A. Agronomic monitoring performed annually on a rotating basis. City shall retain and pay for the services of an agronomist or agricultural engineer to assess soil quality and crop management on approximately 500 acres per year.

B. Lessees adherence to the Ranch Operation Plan as set forth in Section 23 – Ranch Operation Plan hereinabove.

C. Lessees submittal and City's review of the Ranch Management Plan as set forth in Section 24 – Ranch Management Plan hereinabove.

D. Timely and appropriate maintenance of Jennings Ranch premises as set forth in Section 9 – Maintenance and Repairs hereinabove.

In the event Lessee fails to comply with the terms of this Agreement relative to the evaluation of and compliance with these performance measures, City may exercise its rights as outlined in Section 5 – Special Provisions hereinabove.

26. <u>LESSEE INDEMNIFICATION</u>

Lessee agrees to indemnify, defend, and hold City, its officers, agents and employees, harmless from and against all liabilities or injuries to persons or damage to Property arising out of Lessees use, occupancy, or operation of Jennings Ranch.

Lessee agrees to indemnify. defend, and hold harmless City, it officers, agents and employees from and against any and all claims, demands, defense costs, or liability of any kind or nature resulting from, arising out of, or connected with Lessees negligent use, operation, maintenance and delivery of treated wastewater and cannery segregation water under the terms of this Agreement.

Lessee understands, acknowledges, and agrees that any non-performance by them of the requirement to satisfactorily operate a land disposal irrigation system as set forth in Section 4 – Additional Consideration hereof may cause City to suffer some other penalty imposed by the California State Water Resources Control Board, the Environmental Protection Agency, or some other public entity having jurisdiction over City regarding such non-performance. In the event of such non-performance by Lessee, Lessee agrees to indemnify, hold harmless and defend City against all liability, costs, expenses (including without limitation, any fines, penalties, judgments, litigation costs, and attorney's fees as related to regulatory actions, citizen groups legal actions, third party lawsuits and/or a private citizen's legal actions) incurred by City as a result of such non-performance by Lessee, regardless of whether such liability, cost, or expense arises during or after the term of this Agreement. The right of indemnity is not exclusive; it is cumulative in addition to any other remedy now or later allowed by law or by the expressed provisions of this Agreement. Notwithstanding the foregoing, City agrees that Lessee shall not be liable for any damages caused by the negligent or intentional acts or omissions of City, its employees, agents or contractors, nor shall Lessee be obliged to defend City against any such acts or omission, or pay any costs of such defense.

27. <u>CITY INDEMNIFICATION</u>

City agrees to indemnify, defend, and hold harmless Lessee, their officers, agents and employees from and against any and all claims, demands, losses, defense costs, or liability of any kind or nature which Lessee, their officers and employees may sustain or incur, or which may be imposed upon them, or any of them, for injury to or death of persons, or damage to property as a result of, arising out

of, or connected with, City's sole negligence in the performance of any of City's duties under this Agreement.

28. LIABILITY INSURANCE

The Consultant shall provide at its own expense and maintain at all times the following insurance with insurance companies licensed in the State of California and shall provide evidence of such insurance to the City as may be required by the Risk Manager of the City. The policies or certificates thereof shall provide that, thirty (30) days prior to cancellation or material change in the policy, notices of same shall be given to the Risk Manager of the City by certified mail, return receipt requested, for all of the following stated insurance policies.

(a) Worker's Compensation - in compliance with the statutes of the State of California, plus employer's liability with a minimum limit of liability of $1,000,000.

(b) General Liability insurance with a minimum limit of liability per occurrence of $1,000,000 for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit. This insurance shall indicate on the certificate of insurance the following coverages and indicate the policy aggregate limit applying to: premises and operations; broad form contractual; independent consultants and subcontractors; products and completed operations as applicable.

(c) Automobile Liability insurance with a minimum limit of liability per occurrence of $1,000,000 for bodily injury and property damage. This insurance shall cover any automobile for bodily injury and property damage.

(d) Professional Liability insurance with a minimum limit of $1,000,000 per claim and policy aggregate. If coverage is on a claims made basis it shall be maintained for at least three (3) years following completion of the work.

If at any time any of said policies shall be unsatisfactory to the City, as to form or substance, or if a company issuing such policy shall be unsatisfactory to the City, the Consultant shall promptly obtain a new policy, submit the same to the Risk Manager for approval and submit a certificate thereof as hereinabove provided. Upon failure of the Consultant to furnish, deliver or maintain such insurance and certificates as above provided, this Agreement, at the election of the City, may be forthwith declared suspended, or terminated. Failure of the Consultant to obtain and/or maintain any required insurance shall not relieve the Consultant from any liability under this Agreement, nor shall the insurance requirements be construed to conflict with or otherwise limit the obligations of the Consultant concerning indemnification. The City, its agents, officers, employees, and volunteers shall be named as an additional insured on all insurance policies required herein, except Workers' Compensation and Professional Liability. The Workers' Compensation insurer shall agree to waive all rights of subrogation against the City, its agents, officers, employees, and volunteers for losses arising from work performed by Consultant for the City. The Consultant's insurance policy(ies) shall include a provision that the coverage is primary as respects the City; shall include no special limitations to coverage provided to additional insured; and, shall be placed with insurer(s) with acceptable Best's rating of A:VII or with approval of the Risk Manager. The Consultant must deliver certificates evidencing existence of the insurance listed above to the City Clerk at the time the contract is signed.

CONSULTANT shall provide CITY with separate endorsements evidencing proof of the CITY's additional insured status as to both the general liability and automobile liability insurance policies. In addition, CONSULTANT shall provide CITY with a Workers Compensation subrogation waiver by way of a separate endorsement. All endorsements referenced above must include the applicable policy

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number.

For any claims related to this project, the CONSULTANT'S insurance coverage shall be primary insurance as respects the Entity, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the Entity, its officers, officials, employees, or volunteers shall be excess of the CONSULTANT'S insurance and shall not contribute with it.

29. SUBCONTRACTOR INDEMNIFICATION AND LIABILITY INSURANCE REQUIREMENTS

Subcontractors retained by Lessee to perform work at Jennings Ranch shall comply with all terms and conditions of this Agreement including indemnification and liability insurance requirements as set forth in Sections 26 and 28 hereinabove. Prior to commencing any work at Jennings Ranch, subcontractors shall comply with all relevant City contracting requirements as determined at City's sole discretion, and shall not begin work until receiving written authorization to proceed from City.

30. TERMINATION BY CITY PRIOR TO EXPIRATION

City's City Manager shall have the right to immediately terminate this Agreement, in whole or in part for cause, on the occurrence of any of the following events:

A. Failure of Lessee to make monthly lease payments when due.

B. Filing by or the final adjudication of Lessee of any petition in bankruptcy or the making of any transfer of general assignment for the benefit of creditors, which has not been previously authorized by City.

C. Failure of Lessee to perform substantially or keep or observe any of the terms, covenants, and conditions set forth herein, excepting insurance, the requirement which it is obligated to perform, keep or observe under this Agreement after the expiration of a thirty (30) day period after written warning or ultimatum given by City's City Manager to Lessee to correct any such deficiency or default.

D. Failure of Lessee to provide liability insurance as provided for in Section 28 – Liability Insurance herein after the expiration of a fifteen (15) day period after written warning given by City's City Manager to Lessee to correct any such deficiency or default.

E. The abandonment of Jennings Ranch or any portion thereof, or discontinuance of Lessees business operations, or any portion thereof. Should this occur, City shall not be responsible for the custodial protection of merchandise, fixtures, or equipment abandoned, even though it may necessary for City to remove such from Jennings Ranch for storage or disposal. Such removal under said conditions shall be at the sole option of City.

F. WDR Permit revisions limit or otherwise restrict the application of treated wastewater and/or cannery segregation water on Jennings Ranch, such that land application is no longer an approved or reasonable option.

G. If Lessee defaults with respect to any of the terms, provisions, covenants, and conditions of this Lease, including but not limited to the payment of monthly lease amount, the repair of damages to Jennings Ranch caused by Lessee, or the cleaning of Jennings Ranch upon termination of this Agreement, City may use, apply, or retain the whole or any part of the security deposit of Twenty-Five Thousand Dollars ($25,000.00) as security for the payment of any or all of the above-mentioned specific purposes. Any remaining portion of such deposit shall be returned to Lessee no later than sixty (60) days after termination of this Agreement. Lessee shall not be entitled to security for the full and faithful performance of each and every term, provision, covenant, and condition of this Agreement.

31. SAFETY TRAINING AND COMPLIANCE

Lessees employees shall complete the safety training program developed by City for the Jennings Road Wastewater Treatment Facility and shall comply with all requirements set forth therein. Lessee also shall conduct safety training in compliance will all applicable federal, state, and local laws and regulations. Lessee shall certify to City in writing that all employees working for Lessee at Jennings Ranch have received applicable training and are in compliance with all said laws and regulations. Such written certification shall be provided by Lessee to City by May 31, 2011 during the first year of the lease, and then annually by January 15 for each successive year during the lease term.

32. COMPLIANCE WITH LAWS

Lessee shall not do or suffer to be done on or about Jennings Ranch anything that would or does violate or conflict with any applicable law, ordinance, rule or regulation which is now in force or effect, which may hereafter be enacted or adopted by federal, state, county or municipal authority.

33. FAILURE TO VACATE

Lessee agrees to vacate Jennings Ranch upon termination of this Agreement, and failing to vacate as herein provided, agrees that City or its authorized agents may enter upon said Jennings Ranch and remove all personal property and, in this event, Lessee waives any and all claims for damages against City, its agents and employees. Nothing herein shall be deemed a waiver of any rights of City to demand and obtain possession of Jennings Ranch in accordance with law in the event of a violation on Lessees part of any of the terms or conditions hereof.

34. NON –WAIVER

Any waiver of any breach of covenants or conditions herein contained to be kept and performed by either party shall be effective only if in writing and shall not be deemed or considered as a continuing waiver and shall not operate to bar or prevent the other party from declaring a forfeiture or exercising its rights for any succeeding breach of either the same or other condition or covenant.

35. CO-PARTNERSHIP DISCLAIMER

It is mutually understood and agreed that nothing in this Agreement is intended or shall be construed as in any wise creating or establishing the relationship of co-partners between the parties hereto, or as constituting Lessee as agents or representatives of City for any purpose or in any manner whatsoever.

36. REMOVAL OF TREES

Trees shall not be removed from the leased premises except with the consent and under the written direction of City's Deputy Director of Public Works - Operations.

37. SIGNS

Lessee agrees that City may post Jennings Ranch with "No Hunting or No Shooting" signs and Lessee agrees to abide by such signs and shall not allow their employees, agents, or guests to discharge any firearms or weapons on the premises. Lessee also agrees and acknowledges that City has posted Jennings Ranch with signs as required by the Regional Water Quality Control Board, stating that Jennings Ranch is being irrigated with treated wastewater.

38. WILDLIFE PROTECTION

Lessee agrees to comply with City's Fish and Wildlife Protection Policy, a copy of which is included as Exhibit 7 attached hereto and by this reference incorporated herein.

39. TIME OF ESSENCE, BINDING UPON HEIRS, ETC.

Time is of the essence of each and all the terms and provisions of this Agreement and the terms and provisions of this Agreement shall extend to and be binding upon and inure to the benefit of the heirs, executors, administrators, successors and assigns of the respective parties hereto.

40. NUMBER AND GENDER

All words used herein in the singular number shall include the plural, and the present tense shall include the future, and the masculine gender shall include the feminine and neuter.

41. ENTIRE LEASE AGREEMENT

This Agreement contains the sole and only agreement of the parties. Any prior agreements, promises, negotiations or representations not expressly set forth in this Agreement are of no force or effect.

42. LANGUAGE CONSTRUCTION

The language of each and all paragraphs, terms and/or provisions of this Agreement shall, in all cases and for any and all purposes, and any and all circumstances whatsoever, be construed as a whole, according to its fair meaning not for or against any party hereto and with no regard whatsoever to the identity or status of any person or persons who drafted all or any portion of this Agreement.

43. GOVERNING LAW

This Agreement is entered into and shall be construed and interpreted in accordance with the laws of the State of California.

44. INVALID TERMS

If any of the terms, provisions, covenants, or conditions of this Agreement are held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of this Agreement shall remain in full force and effect, and shall in no way be affected, impaired or invalidated.

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45. AMENDMENT

This Agreement, including any exhibits hereto, shall not be amended, except in writing signed by the parties. Any amendment or addendum to this Agreement shall expressly refer to this Agreement.

46. BINDING ON SUCCESSORS IN INTEREST

This Agreement shall be binding on and shall inure to the benefits of the heirs, executors, administrators, successors and assigns of each party.

47. REPRESENTATION

Lessee shall at all times retain in the local area a qualified, competent and experienced representative to supervise their operations and be authorized to represent and act for Lessee in matters pertaining to the day-to-day conduct of Lessees operations. During any temporary periods of absence by said representative, an alternate representative of Lessee with like authorization shall be present. Lessee shall, at all times in writing, keep City's Director of Operation and Maintenance or his authorized representative informed as to the identity of Lessees authorized representative and how immediate communication can be established with that representative on a twenty-four (24) hour day, seven (7) day per week basis.

48. EXERCISE OF DISRETION

Where the term of this Agreement requires approval or the exercise of discretion by Lessee, or by City, discretion shall not be exercised in an unreasonable, arbitrary or capricious manner.

49. INDEPENDENT CONTRACTOR

Both parties hereto in the performance of this Agreement will be acting in an independent capacity and not as agents, employees, partners or joint ventures with one another. Lessee is an not employee of City for the purpose of this Agreement and is not entitled to any of the rights, benefits, or privileges of City employees, including but not limited to medical, unemployment or worker's compensation insurance. This Agreement contemplates the personal services of Lessee, and it is recognized by the parties that a substantial inducement to City for entering into this Agreement was, and is, the reputation and competence of Lessee. Neither City nor its officers, agents or employees shall have any control over the conduct of Lessee except as herein set forth, and Lessee expressly agrees not to represent that Lessee is in any manner agents, servants, or employees of City, it being understood that Lessee is as to City a wholly independent contractor and that Lessees obligations to City are solely such as are prescribed by this Agreement.

50. LEASE AGREEMENT SUPERSEDES

This Agreement cancels and supersedes all former leases whether verbal or written.

51. ARBITRATION

Any controversy or dispute arising out of or relating to this Agreement or the breach thereof shall be settled by binding arbitration. Such arbitration shall be effected by arbitrators selected as hereinafter provided and shall be conducted in the State of California, County of Stanislaus, in accordance with the Rules of the American Arbitration Association existing on the data thereof. The dispute shall be submitted to three (3) arbitrators each of whom shall have had at least five (5) years

arbitration experience, one arbitrator being selected by City, one arbitrator being selected by Lessee, and the third arbitrator being selected by the American Arbitration Association. In the event either party hereto, within one (1) month after any notification of any demand for arbitration hereunder, shall not have selected its arbitrator and given notice thereof to the other, such arbitrator shall be selected by the American Arbitration Association. The meetings of the arbitrators shall be held at such place or places in the State of California, County of Stanislaus, as may be agreed upon by the arbitrators. Judgment may be entered on any decision rendered for the arbitrators in any Federal or State court having jurisdiction. Each party hereto shall bear the costs of the fees and expenses of the arbitrator selected by or for it, and the fees and expenses of the third arbitrator shall be borne by the party demanding arbitration.

IN WITNESS WHEREOF, the City of Modesto, a municipal corporation, has authorized the execution of this Agreement in duplicate by its City Manager and attestation by its City Clerk under authority of Resolution No. 2010-468, adopted by the Council of the City of Modesto on the 3 day of November, 2010, and Lesee has caused this agreement to be duly executed in duplicate as of the Effective Date.

CITY OF MODESTO,
a municipal corporation

By _____
GREG NYHOFF, City Manager
Title

Lessee,

By _____
Wendel Trinkler Jr., Owner

By _____
Name Title

ATTEST:

(Seal)

By _____
STEPHANIE LOPEZ, City Clerk

Lessee Federal ID #94-2862302

APPROVED AS TO FORM:
SUSANA ALCALA WOOD, City Attorney

By _____
(Name of reviewing City Attorney), (Title)

APPROVED AS TO FORM:

By _____
for MARY AKIN, Risk Manager

** Corporations - signature of two (2) officers required or one (1) officer plus corporate seal.*

Partnership - signature of a partner required

Sole Proprietorship - signature of proprietor required

ATTACHMENTS

Exhibit 1: Jennings Ranch Map

Exhibit 2: RWQCB Order No. 99-112

Exhibit 3: RWQCB Order No. 94-030

Exhibit 4: Field Acreage Tabulation

Exhibit 5: Wastewater Reclamation Criteria, California Administrative Code, Title 22, Division 4, Sections 60301 to 60355

Exhibit 6: Ranch Operation Plan

Exhibit 7: Fish and Wildlife Protection Policy

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333 East Canal Drive • P O Box 949 • Turlock, CA 95381-0949

SUBMITTED VIA E-MAIL (blawrence@usbr.gov and wwong@modestogov.com) AND U.S. MAIL

May 20, 2014

United States Bureau of Reclamation
Attn: Benjamin Lawrence
1243 N Street, SCC-412
Fresno, CA 93721

William Wong
City of Modesto
Deputy Director, Utility Planning & Projects Department
1010 Tenth Street, 4th Floor
Modesto, CA 95354

Subject: Scoping Comments for the Proposed North Valley Regional Recycled Water Program EIS/EIR

Dear Mr. Lawrence and Mr. Wong:

Turlock Irrigation District (TID) is thankful for the opportunity to provide the following scoping comments for the above proposed project EIS/EIR.

TID was formed in 1887 as the first publicly owned irrigation district in California. Today, TID serves water to approximately 5,800 growers who irrigate approximately 150,000 acres within TID's irrigation boundary, in addition to providing electric service to nearly 100,000 accounts. The conjunctive use of Tuolumne River surface water applied on farmland to recharge groundwater resources is a key water management strategy that has been employed by TID for decades.

Planned recharge in wet years, combined with strategic pumping in dry years has been to the long-term benefit of the 347,000 acres that overlie the Turlock Subbasin. TID continues to search for alternatives to bolster the long-term sustainability of the Turlock Subbasin. This is one example of TID's willingness to find solutions to current and future groundwater problems that affect the entire Subbasin, not just the portion of the basin underneath TID's irrigation boundary. In addition to surface water application, TID sees promise in the future application of recycled water to TID irrigated lands and the Turlock Subbasin as a groundwater replenishment tool. Additionally, TID operates in accordance with a Groundwater Management Plan that was created in conjunction with the Turlock Groundwater Basin Association, of which TID is a founding member.

Section 3.5 of Reclamation's NEPA Handbook sets forth the USBR's scoping requirements. It states that the purpose of scoping is to obtain information that will focus the NEPA analysis on the potentially significant issues and deemphasize insignificant issues. The information gathered either identifies or can be used to identify all or some of the following: Significant resource issues, resources available for the

study, study constraints, alternatives to be considered, potentially affected geographic area, and potential effects.

1. USBR is required to identify and assess the "potentially affected geographical area." Reclamation's NEPA Handbook (2012), Section 3.5. The proposed scope of the affected Project area is too narrowly limited to the area of Stanislaus County located west of the San Joaquin River.

1.1. The stated "objective of the Proposed Action is to maximize use of a sustainable, alternative water supply for the region that addresses reductions in water supplies from the Central Valley Project (CVP) and offsets pressure on groundwater use." Within Stanislaus County, only the area west of the San Joaquin River (SJR) receives CVP water supplies, whereas the affected geographic area is both west and east of the SJR. The affected geographic area of the proposed project includes San Joaquin River Hydrologic Region subbasins 5-22.02 (Modesto), 5-22.03 (Turlock), and 5-22.07 (Delta-Mendota) as described in DWR Bulletin 118.

1.2. All of the sewer effluent for the Proposed Action comes from the Turlock and Modesto subbasins, which are located east of the SJR. The source water for all of the effluent derived from the cities of Turlock, Ceres, and Modesto south of the Tuolumne River is 100% groundwater from the Turlock Subbasin. Both subbasins are experiencing greater pressure on groundwater use than the area west of the SJR. However, since there is no CVP water delivered east of the SJR, the scope of the affected geographic area must be expanded to include the area east of the SJR where the sewage effluent originates and where there is greater pressure on the groundwater subbasins.

1.3. Both the NEPA and CEQA notices of preparation fail to include the Turlock and Modesto Subbasins within the scope of the proposed EIS/EIR and, therefore, fail to include mitigation for the export of this groundwater-based sewage effluent from the Turlock Subbasin.

2. Stanislaus County Groundwater Issues

The Turlock Subbasin is described in the 2008 Turlock Groundwater Basin Groundwater Management Plan. The Subbasin is bounded by the Tuolumne River on the north, the Merced River on the south, the San Joaquin River on the west, and on the east by the western extent of the outcrop of crystalline basement rock in the foothills of the Sierra Nevada Mountains. The City of Turlock, the City of Ceres, and the portion of the City of Modesto south of the Tuolumne River ("South Modesto") are within this Subbasin and within TID's political and irrigation boundaries. The Subbasin underlies an area of approximately 347,000 acres, with irrigated crops (245,000 acres), native vegetation (69,000 acres), and urban development (20,000 acres) as the predominant land uses. Urban development and irrigated lands have expanded since 2008, most of which expanded uses are in 100% groundwater supplied areas.

While the Turlock Irrigation District provides surface water from the Tuolumne River for agricultural uses within the Subbasin, the City of Turlock, the City of Ceres, and South Modesto rely 100% on groundwater. Much of the cities' groundwater ends up as sewer effluent treated at the City of Turlock's and the City of Modesto's respective publicly owned treatment plants or works ("POTW"). The proposed use of the recycled water from the two POTWs to offset pressure on groundwater use is at the heart of the proposed project and needs to be examined within the context of all three subbasins.

Stanislaus County has formed a Water Advisory Committee to address short-term and long-term groundwater management issues within the County that have been accentuated by the three-year drought. Adverse groundwater quantity and elevation issues have arisen within the Turlock and Modesto subbasins and have resulted in a lawsuit against the County for the issuance of new agricultural well permits in Eastern Stanislaus County.

3. Preliminary list of issues that the EIS/EIR will need to examine, discuss, and analyze. TID reserves the right to supplement the following list as more project information is provided by the NEPA and CEQA lead agencies and the project proponents:

3.1. As explained about, the USBR's stated "objective of the Proposed Action is to maximize use of a sustainable, alternative water supply for the region that addresses reductions in water supplies from the Central Valley Project (CVP) and offsets pressure on groundwater use." That objective is too narrowly worded. The affected geographic area of the project needs to expressly include the Turlock and Modesto groundwater subbasins with the greater focused placed on the Turlock Subbasin.

3.2. Because a significant portion of the project's treated sewage effluent to be exported to the Delta-Mendota Subbasin originates as Turlock Subbasin groundwater, the EIS/EIR needs to analyze in depth mitigation measures for that export.

3.3. Concurrent with inclusion of the Turlock and Modesto subbasins in the "affected geographic area" to be assessed by the EIS/EIR, the EIS/EIR needs to recognize and discuss the probable reductions in surface water supplies to those two subbasins from proposed actions by Federal and State regulatory agencies and the resulting increased pressure on those subbasins' groundwater uses due to reduced surface water availability.

3.4. Given the expected reduction in surface water supplies to the three subbasins, the EIS/EIR will need to describe and analyze how the project could reduce groundwater pressures within each of the three subbasins and feasibility of providing a portion of the project's recycled water to the Turlock and Modesto Subbasins.

3.5. The Notice states that the recycled water from the project would be allocated between Del Puerto Water District and South of Delta CVPIA wildlife refuges. The EIS/EIR will need to discuss how much Incremental Level 4 water for wildlife refuges is proposed to be met by the project during Critical, Dry, Below Normal, Above Normal, and Wet water years using the State Water Resources Control Board's "San Joaquin Valley Water Year Hydrologic Classification." The EIS/EIR will need to describe what alternate water supplies are available to the wildlife refuges during each of the five water year types.

3.6. The EIS/EIR will need to describe how the project's recycled water is proposed to be allocated among DPWD, Incremental Level 4 water supplies, and at least the Turlock Subbasin during each of the five water year types. The benefits and impacts of the Proposed Action cannot be adequately assessed until that allocation formula, and alternatives thereof, is described and analyzed in

the EIS/EIR.

3.7. USBR is required to identify and assess the "Alternatives to be considered." Reclamation's NEPA Handbook (2012), Section 3.5. USBR's Notice of Intent to Prepare a Draft EIS/EIR provides no information on alternative uses for the project's recycled water.

a. As described above, the EIS/EIR will need to describe and analyze the use of a portion of the recycled water for groundwater recharge within the Turlock Subbasin through direct recharge or in-lieu groundwater recharge. This in depth analysis is required both as a mitigation measure for the export of the Turlock Subbasin groundwater-based sewer effluent and as an alternative use for the project's recycled water.

b. The cities of Turlock, Ceres, and Modesto have an obligation to investigate the use their recycled water for the irrigation of city parks, medians, landscaping, golf courses, and other areas in order to offset the potable water currently being used for those purposes. The EIS/EIR needs to address the cities' alternative uses of the project's recycled water to reduce potable water use within their own cities. The sale of the project's recycled water would appear to discourage the cities from making the capital investments needed to increase in-city uses of the recycled water, especially if coupled with an agreement with TID to purchase Tuolumne River water to supplement the cities' groundwater supplies.

3.8. Related to 3.6 b. above, the EIS/EIR will need to describe to what extent existing uses of reclaimed water within the Turlock and Modesto Subbasins will be terminated or curtailed as a result of exporting the recycled water out of those subbasins.

3.9. The EIS/EIR will need to describe and analyze proposed alternative recycled water pipeline alignments both east and west of the SJR and the locations of proposed SJR crossings. From the May 13, 2014 scoping meeting, TID now understands that the so-called "Separate Alignments" project configuration, where there would be a separate SJR crossing and pipeline to the DMC from each POTW is not the preferred project and that the so-called "Combined Alignment" is the preferred project. The Combined Alignment consists of a single SJR crossing connected to the City of Modesto POTW and the construction of a 37,800 linear feet, 42-inch inner diameter pipeline from the end of the City of Turlock's Harding Drain Bypass Project pipeline to the City of Modesto POTW via South Carpenter Road, West Main Avenue, and Jennings Road. Alternative alignments for this connecting pipeline should be investigated. A Combined Alignment whereby the single SJR crossing is located at the end of the Harding Drain Bypass Project pipeline should also be investigated.

3.10. The EIS/EIR will need to describe and analyze the history of each POTW's compliance with existing water quality standards. The EIS/EIR will also need to describe and analyze how each POTW will prevent the discharge into the DMC or for agricultural use before the DMC of any recycled, which fails to meet the required water quality standards for discharge into the DMC or for unrestricted agricultural water use.

3.11. One of the objectives of the Proposed Action is to "Deliver agricultural water to DPWD at a cost that supports regional economic sustainability." The EIS/EIR will need to define what the term "supports regional economic sustainability" means. Further, it will need to identify the projected "all-in"

cost per acre-foot of recycled water from the project for agricultural use by DPWD, the "all-in" cost components, and how those cost components will be determined.

3.12. Similarly, the EIS/EIR will need to identify the projected "all-in" cost per acre-foot of recycled water from the project for Incremental Level 4 water supply, the "all-in" cost components, and how those cost components will be determined.

3.13. Will the projected "all-in" costs per acre-foot of recycled water from the Proposed Action be the same for both agricultural use by DPWD and for wildlife refuge use? If not, why not? Is the Federal Government requiring that water for wildlife refuge use be priced at a lower per-acre-foot cost?

4. The following is a very preliminary list of resources available, which need to be considered by USBR in preparing the EIS/EIR:

Department of Water Resources, State of California (2003). *California's Groundwater Bulletin 118 Update 2003*. Sacramento, CA; Department of Water Resources.

Department of Water Resources, State of California (2014). *Public update for drought response: Groundwater basins with potential water shortages and gaps in groundwater monitoring*. Sacramento, CA; Department of Water Resources.

Durbin, Timothy J. (2008). Assessment of Future Groundwater Impacts Due to Assumed Water-Use Changes – Turlock Groundwater Basin, California. Carmichael, CA; Timothy J. Durbin, Inc., Consulting Hydrologists.

Stanislaus County Water Advisory Committee (2014). Various documents produced. Modesto, CA; Stanislaus County.

Stantec Consulting Inc. (2007). *West Park Water System Master Plan*. Modesto, CA; Stantec Consulting Inc.

Turlock Irrigation District (2008). *Turlock Groundwater Basin Groundwater Management Plan*. Turlock, CA; Turlock Irrigation District.

If you have any questions or need any information to clarify or supplement the above comments, please contact Tou Her at 209.883.8365 or e-mail tbher@tid.org.

Sincerely,

Tou Her
Assistant General Manager, Water Resources
Turlock Irrigation District

Exhibit C

TURLOCK GROUNDWATER BASIN

Groundwater Management Plan

Prepared for:

Turlock Irrigation District
333 East Canal Drive/P.O. Box 949
Turlock, CA 95381

March 18, 2008

Prepared by:

Turlock Groundwater Basin Association

EXECUTIVE SUMMARY

This Groundwater Management Plan (Plan) provides an overview of the local agencies, land uses, and status of groundwater resources in the local groundwater basin, the Turlock Subbasin. The local water agencies, through the Turlock Groundwater Basin Association (TGBA or Association), have taken a cooperative, basin-wide approach to coordinate groundwater management activities and prepare this Plan. The overall goal of the Association is to ensure that groundwater remains a reliable, safe, efficient, and cost-effective water supply for the local area. This Plan presents the basin-wide management objectives proposed to achieve this goal, and concludes with recommended measures that can be drawn from to meet the basin management objectives and the long-term goal of ensuring the viability of the groundwater supply.

THE TURLOCK GROUNDWATER BASIN ASSOCIATION

Many local agencies are eligible to participate in groundwater management within the local groundwater basin. These agencies include the Turlock and Merced irrigation districts; the cities of Ceres, Turlock, Modesto and Hughson; the Hilmar and Delhi county water districts; the Keyes, Denair and Ballico community services districts; the Eastside and Ballico-Cortez water districts; and Stanislaus and Merced counties. These agencies have been cooperating on groundwater management activities in the Turlock Groundwater Basin since the mid-1990s.

A formal group for coordinating groundwater management activities, the Turlock Groundwater Basin Association (TGBA or Association), was initiated in 1995. The TGBA developed the first basin-wide Groundwater Management Plan in 1997. Although the founding Memorandum of Understanding expired upon completion of the Groundwater Management Plan, TGBA members continued to meet and discuss basin-wide planning activities. In 2001 the TGBA was formally reestablished to provide a mechanism to implement groundwater management activities and provide guidance for the management, preservation, protection, and enhancement of the Turlock Subbasin.

The TGBA has prepared this updated Plan to reflect current knowledge and to comply with changes to the Groundwater Management Act (California Water Code Section 10750 et seq.) resulting from the enactment of Senate Bill 1938 in 2002.

LAND USE IN THE TURLOCK GROUNDWATER BASIN AREA

The Turlock Subbasin lies on the eastern side of California's San Joaquin Valley, and encompasses portions of both Stanislaus and Merced counties. The groundwater system is bounded by the Tuolumne River on the north, the Merced River on the south, and the San Joaquin River on the west. The eastern boundary of the system is the western extent of the outcrop of crystalline basement rock in the foothills of the Sierra Nevada. Land uses in the Turlock Subbasin are diverse and include agriculture, urban, and commercial or industrial uses distributed in a mosaic throughout the region.

The Turlock Subbasin underlies an area of approximately 347,000 acres, with irrigated crops (245,000 acres), native vegetation (69,000 acres), and urban development (20,000 acres) as the predominant land uses. The general trend in land use throughout the Subbasin has been an increase in urbanization from less than 4,000 acres in 1952 to approximately 20,000 acres in

2006. The majority of this urbanization has occurred within the cities and unincorporated urban areas within the Turlock Irrigation District boundary. Lands in the Eastside Water District, Ballico-Cortez Water District, and Merced Irrigation District have not seen the substantial increase in urbanization that has occurred in other portions of the Subbasin. However, in the Eastside Water District, there has been a shift from non-irrigated lands to irrigated agriculture as the principal land use. The majority of this agricultural development occurred between 1952 and 1984; land use patterns in the Eastside Water District have generally stabilized since the mid-1980s. The shift to irrigated agriculture has occurred to a lesser extent in the Ballico-Cortez Water District. Land use patterns in the foothill areas in the eastern portion of the Subbasin have also shifted from non-irrigated to irrigated agriculture, but most of this shift has occurred in recent years. Between 1952 and 1992, irrigated agriculture in the foothills non-district area increased gradually from 8,600 acres to 10,800 acres. Following 1992, the irrigated area nearly doubled, reaching 19,500 acres in 2006.

Urban land uses, irrigators in the Eastside and Ballico-Cortez water districts, and irrigators in the foothills and other non-District areas depend on groundwater for water supply. Increases in these types of land uses throughout the Turlock Subbasin increase the demands on the groundwater supply. Consequently, evaluating the status of the groundwater supply and continuing coordination of water agencies are essential for maintaining the viability of the groundwater basin.

WATER RESOURCES IN THE TURLOCK SUBBASIN

Both surface water and groundwater supplies are used to meet the water needs in the management area. The local groundwater source is the Turlock Subbasin, which is a subunit of the San Joaquin Valley Groundwater Basin. The Turlock Subbasin lies in the eastern portions of Stanislaus and Merced counties and has an areal extent of approximately 347,000 acres. As described above, the Subbasin is bounded by the Tuolumne River to the north, the Merced River to the south, the San Joaquin River to the west, and by crystalline basement rock of the Sierra Nevada foothills to the east. Groundwater supplies municipal, industrial, and agricultural demands of the region. Surface water from the Tuolumne River and to a lesser extent, the Merced River, supplies a large proportion of agricultural irrigation demands within the Turlock Subbasin. The following sections summarize the Subbasin hydrogeology, water balance, and water quality issues described in the Groundwater Management Plan.

Hydrogeologic Setting

The primary hydrogeologic units in the Turlock Subbasin consist of either consolidated or unconsolidated sedimentary deposits. The consolidated deposits include the Ione Formation, the Valley Springs Formation, and the Mehrten Formation. The Ione and Valley Springs formations lie beneath the Mehrten Formation and typically contain saline water of marine origin. These consolidated deposits are found at shallower depths in the eastern portion of the Subbasin and generally yield small quantities of water to wells. The Mehrten Formation, however, yields greater quantities of water and is an important water source for the eastern portion of the Turlock Subbasin.

The unconsolidated deposits of the Turlock Lake, Riverbank, and Modesto formations overlie the consolidated deposits. These deposits generally yield moderate to large quantities of water to wells and are the main water-yielding units of the Subbasin. Fine grained deposits within the

Modesto and Turlock Lake formations do not transmit substantial quantities of water and function as aquitards. In the western portion of the Subbasin, where surface deposits are of the Modesto Formation, a discontinuous shallow aquitard creates areas of shallow groundwater. The Corcoran Clay aquitard also occurs in the western portion of the Subbasin within the Turlock Lake hydrogeologic unit. The Corcoran Clay aquitard separates groundwater in the Turlock Subbasin into an upper, unconfined aquifer and a lower, confined aquifer.

The unconfined aquifer is generally 150 feet in thickness and is the water-table aquifer, except in western portions of the Subbasin that are locally confined by the shallow aquitard. The unconfined aquifer is used for both private domestic supply and agricultural supply in the western part of the Subbasin. Wells less than 200 feet in depth draw from this aquifer. The confined aquifer, which is contained under pressure by the Corcoran Clay, occurs in the deeper hydrogeologic units of the Subbasin. In the eastern part of the Turlock Subbasin, the confined aquifer is only semi-confined. The confined aquifer provides extensive municipal and agricultural supplies to the Subbasin. Wells greater than 200 feet deep draw from the confined aquifer, but also may receive flow from the unconfined aquifer.

Below the principal water bearing units of the Turlock Subbasin is a deeply buried confined aquifer that contains saline brine. This saline confined aquifer is under sufficient hydraulic pressure to push water up toward the land surface. This phenomenon results in the migration of saline brines in certain areas (e.g., in groundwater wells or along cracks, fissures, and faults), sometimes as far upward as the unconsolidated sediments. Upwelling also occurs near the San Joaquin River, resulting in elevated concentrations of total dissolved solids (TDS) in groundwater near the river. The saline confined aquifer can be found from depths as shallow as 100 feet in the western portion of the Subbasin to as deep as 1,500 feet in the eastern portion of the Subbasin. Although the saline confined aquifer is not used as a source of supply, migration of the saline brines results in high TDS groundwater that may not be of sufficient quality for agricultural or municipal use where mixing occurs.

Water Balance in the Turlock Basin

A water balance study of the Turlock Subbasin was prepared in 2003 and updated in 2007 to estimate the inflows and outflows from the Subbasin between 1952 and 2006. Outflows from the Subbasin result from municipal, domestic, and agricultural supply and drainage well pumping, discharge to the local rivers, discharges from subsurface agricultural drains, and consumption by riparian vegetation. The estimated average total outflow for the 1997-2006 period is 541,000 AF/yr. The majority of outflow comes from estimated agricultural, municipal and rural residential, and drainage well pumping, which collectively averaged 457,000 AF/yr for the 1997-2006 period.

Inflows to the Subbasin result primarily from deep percolation of agricultural and landscape irrigation water and infiltration of precipitation. The estimated average total inflow for the 1997-2006 period is 519,000 AF/yr. Approximately 72 percent of this quantity occurs on 245,000 irrigated acres of cropland within the Subbasin.

Most of the inflows and outflows can be estimated for the Turlock Basin. The net discharge to rivers is an unknown outflow and must be derived through a mass balance calculation of the known inflows, outflows, and storage change in the Basin. Storage change is calculated from the

groundwater contour maps derived from local monitoring data, and confirmed using the groundwater model.

The contour maps used in the water budget study indicate that estimated groundwater storage decreased by approximately 21,500 AF/yr between 1997 and 2006. Recent reductions in the California Department of Water Resources (DWR) monitoring network have introduced uncertainty in the measurement of groundwater levels. Uncertainty in the estimated groundwater elevation translates into uncertainty in storage estimates. Therefore, the magnitude and direction of changes in groundwater storage cannot be fully characterized through an analysis based solely on the groundwater contours. The Turlock Subbasin groundwater model was used to supplement this analysis and confirm that groundwater storage has decreased slightly in recent years, particularly between 2002 and 2006.

The estimated reduction in storage between 2002 and 2006 suggests that the Subbasin may no longer be in the equilibrium state that existed in the 1990s. Increases in land use types that rely on groundwater for supply have increased the net discharge from the Subbasin. Slight decreases in storage are likely to continue if urban or irrigated land uses are developed in areas dependent upon groundwater.

In any groundwater basin, groundwater storage will fluctuate both seasonally and annually, depending upon the water year classification, distribution of rainfall, and numerous other physical and biological factors. Alternating periods of decline and recovery in groundwater levels are a response to this natural variation. Long-term declines in storage without recovery could be a concern and represent net declines in storage. Continued monitoring by the local public agencies will be important for tracking changes in groundwater conditions and evaluating whether additional management actions should be considered. As part of the Association's goals and objectives, the Association should consider the need to evaluate changes in land use patterns to understand the range of potential impacts to the groundwater supply. The TGBA has initiated a study to evaluate future land use change scenarios and the potential impacts to groundwater resources. This study will help the Association understand how groundwater storage may change in the future and what types of management actions may be appropriate for maintaining adequate storage in the groundwater basin.

Deep percolation of irrigation water is the largest inflow to the groundwater basin and plays an important role in maintaining groundwater storage. Surface water from the Turlock Irrigation District, and to a lesser extent, the Merced Irrigation District is used to supply more than half of the total irrigation water applied within the Basin. Hence, under current conditions the continued use of surface water for agricultural irrigation is vital for sustaining recharge in the Subbasin. Future changes to inflows or outflows resulting from shifts in land use patterns have the potential to reduce recharge and create reductions in groundwater storage.

Water Quality in the Turlock Subbasin

Groundwater quality in the Turlock Subbasin remains high throughout most of the region. Current knowledge indicates that salinity, nitrates, iron and manganese, boron, arsenic, radionuclides, bacteria, pesticides, trichloroethylene, and other trace organics have been found in the Turlock Subbasin. The U.S. Geological Survey, in coordination with numerous state and federal agencies, is conducting an extensive investigation of groundwater quality in the local area

through the Groundwater Ambient Monitoring and Assessment Program. This study evaluates a broader range of constituents and will provide additional information on water quality issues in the Subbasin.

Some of the constituents described above and in detail in this Groundwater Management Plan occur naturally, while others have been introduced into groundwater from anthropogenic sources. Where the constituent concentrations have exceeded drinking water limitations, the municipal water purveyors have implemented actions ranging from wellhead protection to well closure to maintain viable supplies.

Protecting water quality is as important to maintaining the local groundwater supply as sustaining groundwater recharge. The Groundwater Management Plan is intended to create a framework for coordinating actions among different agencies with management authority to protect both the quality and quantity of groundwater resources.

GROUNDWATER MANAGEMENT PLAN

The local agencies within the Turlock Subbasin agree that groundwater and surface waters within the Turlock Subbasin are vitally important resources that provide the foundation for maintaining current and future water needs. Preservation of these resources is essential to maintaining the economic viability and prosperity of the Subbasin area. It is the overall goal of the local water agencies that groundwater will continue to be a reliable, safe, efficient, and cost-effective water supply. This Groundwater Management Plan includes seven Basin Management Objectives (BMOs) to meet this goal. The BMOs serve as targets to guide the groundwater management actions of the local water agencies. The BMOs described in this Groundwater Management Plan include:

1. Maintain an adequate water level in the groundwater basin.
2. Protect groundwater quality and implement measures, where feasible, to reduce the potential movement of existing contaminants.
3. Monitor groundwater extraction to reduce the potential for land subsidence.
4. Promote conjunctive use of groundwater and surface waters.
5. Support and encourage water conservation.
6. Develop and support alternate water supplies, and educate users on the benefits of water recycling.
7. Continue coordination and cooperation between the TGBA members and customers.

Water agencies in the Turlock Subbasin, individually and collectively, are pursuing water management strategies under each of the BMOs to ensure that groundwater continues to be a reliable, safe, efficient, and cost-effective water supply.

GROUNDWATER PROTECTION MEASURES

The water agencies within the Turlock Subbasin are committed to protecting the quantity and quality of groundwater resources. The TGBA has assembled a number of activities of the local water agencies that can be coordinated through the TGBA to support the BMOs of protecting groundwater quality and quantity. These groundwater protection measures are ongoing activities

that local agencies may be engaged in, or that agencies may implement in the future. Although the TGBA does not have authority for implementing these actions, the TGBA can serve as a forum for sharing and researching information, and members can provide feedback and guidance to the local agencies involved with these actions. The groundwater protection measures described in the Plan include:

1. Identification and management of wellhead protection areas.
2. Regulation of the migration of contaminated groundwater.
3. Identification of well construction policies.
4. Administration of well abandonment and destruction programs.
5. Mitigation of overdraft conditions.
6. Replenishment of groundwater extracted by water producers.
7. Construction and operation of recharge, storage, conservation, water recycling, and extraction projects.
8. Control of saline water intrusion.

IMPLEMENTATION OF THE GROUNDWATER MANAGEMENT PLAN

The Groundwater Management Plan is intended to provide a flexible, adaptive plan for achieving the overall goal that groundwater will continue to be a reliable, safe, efficient, and cost-effective water supply. The Plan presents numerous potential actions that can be undertaken by local water agencies and coordinated through the TGBA. The following measures are proposed as suggested management actions that the local agencies may draw from to achieve the Basin Management Objectives:

1. **Protection of natural recharge areas** through mapping and identification, education of the public and planning entities, and encouraging the maintenance of land use practices that promote groundwater recharge.
2. **Feasibility evaluation of artificial recharge projects,** by building upon mapping efforts to protect natural recharge and investigating additional water supplies for percolation, and promoting in-lieu recharge.
3. **Management and optimization of well field operations** to reduce well interference, control the migration of contaminant plumes, and optimize supply blending programs.
4. **Support of public health programs** to protect water quality through proper well construction and destruction.
5. **Water quality management**, beginning with conducting a hydrogeologic assessment to identify contaminant sources and develop strategies to control the migration and movement of poor quality water into or within the Basin.
6. Continue the **groundwater monitoring and subsidence monitoring program** and evaluate the effectiveness of the groundwater level and quality monitoring programs as well as the database used to store and manipulate the data.

7. Provide a forum for **policy assessment** and coordination of regional programs with policy implications or requirements.
8. Continue **promoting coordination and cooperation between water agencies** on regional issues, outreach programs, and actions to implement the BMOs.
9. **Identification and feasibility study of conjunctive use projects** to increase supply flexibility and promote recharge in years when water is available.

The implementation of several of these recommended actions is contingent upon securing funding. Both grant funding and local funding options will be evaluated. Local funding may be especially important for grant eligibility because of matching or local contribution requirements. Availability of funding for groundwater management activities, as well as future regulatory requirements, will influence the speed and level to which each of the measures is evaluated and implemented.

Progress on implementing the BMOs will be evaluated through periodic reports. The reports will also summarize the condition of the groundwater basin and discuss groundwater management activities. The reports may be prepared by the TGBA as a group or by individual agencies. The reporting process will also provide an opportunity to review the Groundwater Management Plan and determine whether the Plan requires modification to meet the goal of ensuring the viability of groundwater resources in the Turlock Basin.

8.8 Comment Letter 8 – Turlock Irrigation District, submitted through Remy, Moose, Manley LLP, Whitman F. Manley

8.8.1 Response to Comment 8-1

Comment Summary: The comment contends that the EIR does not provide an adequate description of the project and that it contains insufficient information about groundwater impacts, and suggests that a revised EIR/EIS should be recirculated.

Responses to each specific issue summarized in the comment are provided below. The following responses explain why recirculation of the Draft EIR/EIS is not necessary or appropriate.

8.8.2 Response to Comment 8-2

Comment Summary: The comment claims that the EIR/EIS fails to adequately describe the Harding Drain Bypass Pipeline as an element of the project, and suggests that the Harding Drain Bypass EIR should be incorporated by reference and impacts of the Harding Drain Bypass combined with the project should be assessed. The comment explains that TID pumps water from the Harding Drain for use in the Turlock subbasin, and suggests that a portion of the water pumped from the drain is recycled water produced by the City of Turlock.

The Draft EIR/EIS clearly describes the Harding Drain Bypass Pipeline on page 1-9:

> *"Turlock currently discharges an average annual flow of 10 mgd to the San Joaquin River via the Harding Drain Bypass Pipeline, consistent with the city's NPDES permit requirements.*
>
> *Constructed in 2013, the primary goal of the Harding Drain Bypass Pump Station and Pipeline Project was to eliminate the discharge of treated wastewater to the Harding Drain, which is an open channel owned by Turlock Irrigation District (TID), and discharge directly to the San Joaquin River. Changing the point of discharge from Harding Drain to the San Joaquin River serves at least two beneficial purposes. First, removal of the City's permitted wastewater discharges from Harding Drain relieved the City of the need to coordinate with TID regarding management of wastewater flows in the Harding Drain, allowing TID to more efficiently operate and maintain its system. Second, the project allows TID and agricultural operations that discharge to Harding Drain to separately monitor and manage water quality associated with agricultural activities, which are subject to separate regulatory requirements.*
>
> *The Harding Drain Bypass Pump Station and Pipeline Project also allows Turlock to deliver recycled water to other beneficial uses, potentially minimizing and/or eliminating wastewater discharges to the San Joaquin River. Turlock estimates that by buildout year of 2030, 25.4 mgd will be available after other currently existing recycled water contractual commitments have been fulfilled. These commitments include a 50-year contract with the TID-owned Walnut Energy Center for 2 mgd as well as the Turlock-owned Pedretti Park for 0.1 mgd with no expiration date."*

The comment's description of the Harding Drain is generally accurate, and it is correct that operation of the Harding Drain Bypass Pipeline has resulted in a discontinuation of the wastewater discharges from the City of Turlock to the Harding Drain. The Harding Drain Bypass Pipeline has been in operation since February 10, 2014. Because the pipeline was in operation prior to distribution of the NOP for the Draft EIR, the operation of the pipeline is correctly considered as part of the environmental baseline for the Proposed Action.

The comment appears to suggest that the Harding Drain Bypass Pipeline is a part of the NVRRWP. The Harding Drain Bypass Pipeline project was developed and implemented completely independen of the NVRRWP, and the purpose of the pipeline, as noted in the Draft EIR/EIS for the proposed NVRRWP, was to eliminate discharges of treated wastewater to the Harding Drain, and necessary to comply with a cease and desist order issued to the City of Turlock on May 11, 2001 by the Regional Water Quality Control Board, Region 5. Although the comment suggests that flow in the Harding Drain still includes treated wastewater discharge from the City of Turlock, this is incorrect, as the City of Turlock's discharge to the Harding Drain has stopped completely. Removing discharges from the Harding Drain was necessary to comply with requirements of the City of Turlock NPDES Permit No. CA 0078948, Order No. 5-01-122. Subsequently, the Regional Water Quality Control Board issued Order No. R5-2010-0002-01, which established requirements for discharge to the Harding Drain (Discharge Point No. 001) and the San Joaquin River (Discharge Point No. 002). That order required that *"Upon commencement of discharges to the San Joaquin River from Discharge Point No. 002, the discharge of wastewater to Harding Drain from Discharge Point No. 001 is prohibited"* (CVRWQCB 2010). While it is correct that the NVRRWP would use many existing facilities operated by the Cities of Turlock and Modesto, such as the existing wastewater treatment plants and the Harding Drain Bypass Pipeline, it is not necessary for the Draft EIR/EIS to reevaluate impacts of operation of these existing facilities that are not interrelated or interdependent of the Proposed Action. The Harding Drain Bypass Pipeline was constructed for a specific purpose that is independent of the NVRRWP and thus exhibits independent utility and is therefore not central to the NVRRWP. The Harding Drain Bypass Pipeline was constructed and is operated by the City of Turlock regardless of whether the City does or does not become a part of the NVRRWP. The comment requests a summary of relevant impact discussions from the Harding Drain Bypass Pipeline EIR (City of Turlock 2009). The evaluation of impacts presented in that document has little relevance to the NVRRWP, which is demonstrated by the fact that the Harding Drain Bypass Pipeline would not have a measurable effect on groundwater or agricultural resources. As noted on page 3.1-14 of the Harding Drain Bypass Pipeline EIR:

> *"…the Harding Drain is an artificial irrigation drain that captures poor quality irrigation flows. Since groundwater elevations are relatively shallow, groundwater "dewaters" or "rises" from the local shallow aquifer into the Harding Drain. The removal of wastewater flows from Harding Drain may create a steeper gradient that may from time to time (depending on climate and other hydrologic conditions) allow more groundwater to flow from the local shallow aquifer into the Drain until the groundwater and Drain water systems reach equilibrium (Timothy J. Durbin, Inc., 2004)…*
>
> *Further, the Drain and the San Joaquin River will not be affected by channel losses due to the presence of rising groundwater in both systems. If the Proposed Project is*

> *implemented, this rising groundwater (from the local shallow aquifer in the vicinity the Harding Drain) may replace some of the flow in the Harding Drain as a result of a steeper gradient between the groundwater and the surface water levels. Any resulting impact on water levels in the local shallow aquifer would be minimal and might ultimately provide some slight benefit by reducing the need to pump high groundwater."*

The comment claims a connection between construction of the Harding Drain Bypass Pipeline, implementation of the NVRRWP and "exportation of recycled water outside of the water's groundwater basin of origin". The Harding Drain Bypass Pipeline EIR, which, as noted above, found that the Harding Drain Bypass Pipeline would have minimal impacts on the shallow aquifer. In addition, as noted in the Draft EIR/EIS, the City of Turlock currently discharges their recycled water to the San Joaquin River, and that the combined flows currently travel downstream, ultimately out through the Delta to the ocean. The NVRRWP would use recycled water that currently flows out of the local region to supply water to local agricultural land uses, including over 28,000 acres in western Stanislaus County.

The comment states that in 2013 TID diverted 3,166 AF from the Harding Drain, and diverted 2,295 AF from the same in 2014. The comment appears to be suggesting that without wastewater discharge from the City of Turlock, there would be insufficient water in the Harding Drain to continue to supply water to TID's irrigation service area. Water in the Harding Drain is a combination of TID operational spill water, tailwater from row and orchard crops, irrigation discharges from dairy feed lots that are located adjacent to the Harding Drain, local runoff due to precipitation, and flows from groundwater dewatering. This is substantiated by the analysis of impacts that was completed as part of the Harding Drain Bypass Pipeline EIR, which found that:

> *The data indicates that over a base period of 14 years (168 months) there would be substantial flow in the Drain at all times even absent the City's discharge.*

Table 3.1-2 in the Harding Drain Bypass Pipeline Final EIR demonstrates that even without the City of Turlock's wastewater discharge, flows in the Harding Drain range from 8,000 to 40,000 AFY, which would be ample to support the amount of pumping that TID reports for 2013 and 2014, two of the most hydrologically critical years in TID's history. Thus, the Harding Drain Bypass Pipeline would not have adverse effects on local groundwater or agricultural resources. During preparation of the Harding Drain Bypass Project EIR, TID was consulted, and their comments were addressed. The conclusion of no adverse effects on local groundwater or agricultural resources is also supported by the findings of the SWRCB Division of Water Rights, which approved the City of Turlock's Wastewater Change Petition to change the City's discharge location from the Harding Drain to the San Joaquin River. The Order approving the Petition concluded that "The State Board has determined that the petition for change in the point of discharge does not cause injury to any other lawful user of water." The Order approving the Petition also cited the findings of the Harding Drain Bypass Project EIR that the project would have a less-than-significant impact on water resources (SWRCB 2006). The Order clearly approves a new point of discharge directly to the San Joaquin River.

It is relevant to note that when the City of Turlock was contemplating a recycled water project in 2002 within the Turlock subbasin, the primary concern expressed by TID in its comment letters

for that proposal was the possibility that the project would exacerbate problems associated with high groundwater levels in the subbasin. TID specifically commented that "Any increases in groundwater levels, resulting from the import of recycled water, would have an adverse impact on agricultural production, flood basements, and create other high groundwater related problems" (TID, letter from Brent Harrison regarding the Turlock Water Reclamation Project, dated October 7, 2002). The Turlock Groundwater Subbasin Groundwater Management Plan cited by TID in their comment letter confirms that the western part of the subbasin continues to have high groundwater levels, citing "high groundwater table in the western portion of the Subbasin" on page 33 of the plan (TID 2008). The concern about high groundwater levels is inconsistent with TID's current claims that the Harding Drain Bypass Pipeline would result in reduced availability of groundwater in the Turlock subbasin. Also see Response to Comment 8-11, which explains that the pre-existing, long-term groundwater problems in the eastern Turlock subbasin cannot be attributed to the NVRRWP.

In summary, there are no measurable impacts of the Harding Drain Bypass Pipeline that could combine with the impacts of the NVRRWP to result in adverse effects to groundwater or agricultural resources in the Turlock subbasin.

8.8.3 Response to Comment 8-3

Comment Summary: The comment suggests that the Draft EIR/EIS does not accurately identify the Turlock Groundwater subbasin as the source of the City of Turlock's recycled water, and does not identify the quantity of recycled water currently available.

The groundwater setting section on page 3.11-6 of the Draft EIR/EIS identifies the source of the water treated by the City of Turlock: "*The Turlock wastewater treatment plant is located in the Turlock subbasin and treats water that originates from that subbasin. The Modesto Jennings Plant is located in the Turlock subbasin and treats water that originates from the Modesto and Turlock subbasins. The discharge point for both plants is located in the Turlock subbasin.*"

Please also refer to Response to Comment 8-6, which addresses a more detailed comment about the amount of recycled water that could be made available to DPWD at the outset of the project (estimated to be in year 2018) and at buildout (estimated at year 2045).

8.8.4 Response to Comment 8-4

Comment Summary: The comment asserts that the Draft EIR/EIS does not describe the City of Turlock's use of the Harding Drain in 2014 and use by TID and others of the City's recycled water from the Harding Drain in 2014.

The statement on page 1-9 of the Draft EIR/EIS is accurate; the City of Turlock does currently discharge about 10 mgd of recycled water via the Harding Drain Bypass Pipeline, which became operational in February 2014. Discharge increases as population increases, and varies from year to year depending on weather conditions. Over the time period from 2000 to 2014 discharge to the San Joaquin River ranged from about 9,500 AFY to 13,500 AFY; discharge occurred either through the Harding Drain or, starting in 2014, through the Harding Drain Bypass Pipeline. Although it is true that some discharge to the Harding Drain continued during 2014, all discharge to the Harding Drain ceased after October 2014. Please refer to Response to Comment 8-2,

which documents the fact that the cessation of discharge to the Harding Drain does not mean that water is no longer available to TID. Water is still present in the Drain.

8.8.5 Response to Comment 8-5

Comment Summary: The comment claims that the Draft EIR/EIS fails to describe the City of Modesto's application of wastewater to agricultural lands in TID's service area and does not describe when application of recycled water will be reduced or curtailed entirely.

The Draft EIR/EIS states that the City of Modesto currently disposes of treated wastewater through a combination of land disposal and river discharge. As noted on page 1-8 of the Draft EIR/EIS, "*The secondary effluent is applied to Modesto-owned ranch land (approximately 2,500 acres) or is discharged to the San Joaquin River from October 1 through May 31…*" The City of Modesto would continue to supply both secondary treated wastewater and water from local canneries for application to their ranch lands within TID's service area. No significant changes to existing irrigation practices are proposed. To clarify this, the Final EIS has been revised to reflect the continuation of irrigation of ranch lands. The following text is added at the end of the first paragraph on page 1-10:

> <u>Under the Proposed Action, the City of Modesto would continue to irrigate ranch lands using secondary effluent, which is blended with cannery process water that is available during the July to September canning season.</u>

The City of Modesto has historically discharged treated secondary wastewater from its Jennings Road treatment plant to either the San Joaquin River or to the Modesto Ranch. The City's existing NPDES permit places significant restrictions on discharges to the San Joaquin River, particularly related to minimum levels of dilution. Currently, a minimum 20-to-1 dilution ratio is required for any secondary-treated effluent discharges to the river. When this dilution ratio is not attainable, the City has historically placed its secondary treated wastewater into storage in the on-site ponds, and has discharged secondary treated wastewater to the City-owned Modesto Ranch, where grasses are grown to provide an agronomic use of the treated wastewater.

The City has a cannery-segregation line that conveys cannery process flows directly to Modesto Ranch lands. The City blends the cannery flows with its RWQCF flows for discharge to Ranch lands. It is critical to the City of Modesto's overall wastewater management operations that the City maintain its ability to discharge cannery process water to Modesto Ranch lands in order to blend secondary treated effluent to meet existing and projected Waste Discharge Requirementss for these discharges. The City will continue to apply both cannery process water and secondary effluent to the Modesto Ranch lands, and will do so at agronomic rates.

Presented in the **Table 8-2** is a summary of historic annual flows from the City's Jennings Plant, deliveries to Modesto Ranch, evaporation and percolation losses, and discharges to the San Joaquin River. The historic flows are presented for the years 2000 through 2014, which represent recent flow amounts during both wet and extreme drought hydrologic conditions.

Table 8-2: City of Modesto Historic Flows 2000-2014 (AFY)

Year	Total Inflow to Jennings Plant (domestic+cannery)	Historic Ranch Deliveries (domestic+cannery)	Estimated Losses[1]	Historic Discharges to the San Joaquin River
2000	31,843	14,182	5,268	12,393
2001	31,899	13,860	9,313	8,727
2002	31,713	16,988	4,623	10,102
2003	29,993	12,619	8,036	9,338
2004	30,110	12,863	8,066	9,181
2005	32,947	11,266	7,307	14,374
2006	34,225	12,034	9,852	12,340
2007	33,019	16,088	9,076	7,855
2008	31,145	15,995	8,289	6,861
2009	29,239	15,458	10,096	3,686
2010	26,185	13,464	7,224	5,498
2011	26,157	9,620	7,970	8,567
2012	26,276	12,624	9,393	4,259
2013	26,264	14,610	6,922	4,732
2014	25,775	18,563	6,073	1,139
Average	29,786	14,015	7,834	7,937

[1] Losses include evaporation, percolation, and a factor for errors in reporting.

During drought conditions (2012 through 2014), discharges to the San Joaquin River were substantially below the annual average, due to the minimum dilution requirement in the City's NPDES permit for discharges to the river. For example, the City only discharged 1,139 AF of water to the San Joaquin River in 2014.

The estimated losses, as shown in the **Table 8-2**, represent the total amounts of water that evaporated from the plant pond system, percolated through the bottoms of the ponds and plant flow channels, or were used for in-plant water uses, plus a factor for errors in reporting. The total estimated average annual loss to percolation from the ponds and channels at the treatment plant was approximately 1,400 AFY. The remainder of the losses occurred through evaporation.

When the new tertiary treatment process becomes fully operational, the smaller of the storage ponds will become a standby pond that initially will be used only for emergency storage. It is estimated that the removal of this pond from normal storage operations will reduce the net percolation from the treatment plant pond and channel system by approximately 450 AFY. Additional estimated reductions in losses of 1,194 AFY will occur due to the reduced total pond surface area and the resulting reductions in evaporation from the ponds.

To estimate the effects of the proposed initial NVRRWP operations on the Jennings Plant and cannery flows, the plant operations for the proposed project under initial operating conditions were applied to the historic flows for 2000 through 2014. The results of that analysis are presented in the following **Table 8-3**.

Table 8-3: Projected City of Modesto Wastewater Production and Disposal if NVRRWP Had Been Operating in 2000-2014 (AFY), Representing Initial Operating Conditions in 2018

Year	Total Inflow to Jennings Plant (domestic+cannery)	Estimated Deliveries to Ranch (domestic+cannery)	Estimated Losses[1]	Estimated Water Available for Recycled Water Uses
2000	31,843	10,500	4,162	17,181
2001	31,899	10,500	7,358	14,041
2002	31,713	10,500	3,653	17,560
2003	29,993	10,500	6,349	13,143
2004	30,110	10,500	6,373	13,237
2005	32,947	10,500	5,773	16,674
2006	34,225	10,500	7,784	15,941
2007	33,019	10,500	7,171	15,348
2008	31,145	10,500	6,549	14,096
2009	29,239	10,500	7,977	10,762
2010	26,185	10,500	5,708	9,977
2011	26,157	10,500	6,297	9,360
2012	26,276	10,500	7,422	8,354
2013	26,264	10,500	5,469	10,295
2014	25,775	10,500	4,798	10,477
Average	29,786	10,500	6,190	13,096

[1] Losses include evaporation, percolation, and a factor for errors in reporting.

The City of Modesto is committed to continuing irrigation of the Ranch lands as a means of maintaining cost-effective treatment of the cannery wastewater flows. In this analysis, the estimated deliveries to the Modesto Ranch were assumed to be constant, 10,500 AFY. This amount was calculated by assuming that cannery flows would continue at their average historical rate of approximately 3,770 AFY, and that 6,730 AFY of secondary treated wastewater would be blended with these cannery flows. This is the minimum amount of secondary treated wastewater that would be necessary to meet Waste Discharge Requirement for the City's discharges to Modesto Ranch while applying secondary-treated effluent at agronomic rates for irrigation of the Ranch. The reductions in estimated average annual evaporation and percolation losses of 1,644 AFY between **Table 8-2** and **Table 8-3** are due to the reductions in pond percolation of 450 AFY and the reductions in pond evaporation of 1,194 AFY discussed above.

Water deliveries to the Ranch during the historical period were at an agronomic rate of approximately 6 AF per acre. The projected application rate on the ranch with the NVRRWP is approximately 4 to 6 AF per acre, which will require more efficient irrigation practices. The 4 to 6 AF per acre rate of applied water at the Modesto Ranch will be reasonable for grassland irrigation, and it is not expected that any additional sources of water will be necessary to meet the irrigation needs for the Modesto Ranch.

A similar analysis was performed for the estimated future/build-out flow conditions with the NVRRWP in operation. The results of this analysis are presented in the following **Table 8-4.**

Table 8-4: Projected City of Modesto Wastewater Production and Disposal at NVRRWP Build-Out (AFY)

Year	Total Inflow to Jennings Plant (domestic+cannery)	Estimated Deliveries to Ranch	Estimated Losses[1]	Estimated Water Available for Recycled Water Uses
2030	49,767	10,500	4,162	35,105
2031	49,823	10,500	7,358	31,965
2032	49,636	10,500	3,653	35,484
2033	47,916	10,500	6,349	31,067
2034	48,033	10,500	6,373	31,160
2035	50,871	10,500	5,773	34,597
2036	52,149	10,500	7,784	33,865
2037	50,942	10,500	7,171	33,271
2038	49,068	10,500	6,549	32,019
2039	47,163	10,500	7,977	28,686
2040	44,109	10,500	5,708	27,901
2041	44,081	10,500	6,297	27,284
2042	44,200	10,500	7,422	26,278
2043	44,187	10,500	5,469	28,218
2044	43,699	10,500	4,798	28,400
Average	47,710	10,500	6,190	31,020

[1] Losses include evaporation, percolation, and a factor for errors in reporting.

This analysis assumes the 2000 to 2014 flows as a basis for the analysis, and that deliveries of cannery process water and secondary treated effluent to the Modesto Ranch will continue at the same rates as for the previous scenario. As a result, the estimated total average annual evaporation and percolation loss of 6,190 AFY for this scenario is the same as for the previous scenario.

Under existing conditions, some of the wastewater in the ponds and some of the water applied to irrigate Modesto Ranch lands percolates into the western portion of the Turlock groundwater subbasin, which underlies the Modesto Ranch lands. When the current tertiary project is completed, the City will be authorized to make year-round discharges to the river, and the present requirement for a minimum level of dilution in the river no longer will apply. For this reason, when the NVRRWP begins operations, it will no longer be necessary to increase irrigation of Modesto Ranch lands when river flows are low and the storage ponds are reaching their capacities. Instead this water will be conveyed through the NVRRWP to the DMC or, if necessary, discharged to the river. As a result, water will be used to irrigate the ranch lands at a consistent agronomic rate to meet grassland crop requirements. If the NVRRWP were not implemented, irrigation of the Modesto Ranch lands would still be modified because of the ability to discharge tertiary effluent to the river year round. This change in irrigation practices will result in a more efficient use of water and reductions in the amounts of runoff and water percolating into the portion of the subbasin underlying the Ranch. These reductions are illustrated by the difference between the 14,015 AFY of average annual historic deliveries to the Ranch during 2000-2014 (shown in the **Table 8-2**) and the estimated deliveries of 10,500 AFY to Ranch lands shown in **Tables 8-3** and **8-4** above.

The Turlock Groundwater Management Plan (TID 2008) indicates that estimated average total inflow to the subbasin is 519,000 AFY. This inflow is primarily due to deep percolation resulting from applied irrigation water on agricultural lands and landscape irrigation, and from precipitation. While this estimate is for the 1997-2006 period, it still demonstrates that the change in average annual inflow to the subbasin that will result from reductions in applications of wastewater to irrigate the Modesto Ranch, as explained below, will be a very small percentage of the total subbasin average annual inflow.

Table 8-5 shows the estimated total percolation into the Turlock groundwater subbasin from channels, storage ponds and Modesto Ranch lands under historic conditions and under the conditions that are estimated to occur with NVRRWP operations and 10,500 AFY of deliveries to the Modesto Ranch.

Table 8-5: Historic and Projected Percolation at Modesto Ranch (AFY)

Year	Historic Ranch Deliveries	Historic Percolation Losses	Estimated Deliveries to Ranch With NVRRWP	Projected Percolation Loss with NVRRWP
2000	14,182	4,934	10,500	2,378
2001	13,860	4,019	10,500	2,509
2002	16,988	6,527	10,500	1,580
2003	12,619	2,351	10,500	1,865
2004	12,863	2,990	10,500	1,868
2005	11,266	2,802	10,500	2,458
2006	12,034	3,672	10,500	2,208
2007	16,088	4,814	10,500	1,132
2008	15,995	4,710	10,500	1,444
2009	15,458	4,694	10,500	1,837
2010	13,464	5,571	10,500	2,897
2011	9,620	437	10,500	1,888
2012	12,624	3,664	10,500	2,049
2013	14,610	3,401	10,500	602
2014	18,563	7,861	10,500	2,473
Average	14,015	4,163	10,500	1,946

These historic percolation loss amounts include percolation from the storage ponds and channels (estimated to be 450 AFY) and deep percolation from irrigation of Modesto Ranch lands. The rate of deep percolation from irrigation is estimated to be 30 percent of the total deliveries of irrigation water to the Ranch.

As shown in **Table 8-5**, the estimated reduction in average annual amount of water that would percolate into the portion of the subbasin underlying the Modesto Ranch is 1,946 AFY, which is approximately 0.4 percent of the total average annual deep percolation into the subbasin. This reduction in deep percolation will result from the more efficient applications of irrigation water to Ranch lands that will become possible when the tertiary treatment facilities are completed, and would occur regardless of whether or not the NVRRWP is implemented. This reduction is not expected to have any significant effects on groundwater conditions in the western portion of the

Turlock groundwater subbasin, both because the change will be only a very small percentage of total subbasin average annual inflow and because the change will occur in a portion of the subbasin where groundwater levels are high.

8.8.6 Response to Comment 8-6

Comment Summary: The comment suggests that the Draft EIR/EIS does not describe existing groundwater conditions and uses in the area, and does not disclose the amount of water that would be provided to DPWD at the outset of the project and at buildout. The comment claims that existing uses of water would be displaced when water is provided to DPWD.

As described in Responses to Comments 8-3, 8-4 and 8-5, the existing groundwater conditions are described at an appropriate level of detail in the Draft EIR/EIS, sources of recycled water are identified, the Harding Drain will still contain water that can be used by TID's water users, and the City of Modesto will continue to irrigate their Ranch land with secondary treated wastewater and cannery process water.

The analysis of groundwater impacts correctly focuses on the minimal effects on groundwater recharge that would result from the slight reduction in stream flows in the San Joaquin River. A detailed description of historic groundwater use in the area is not warranted because the project would not result in increased groundwater pumping or any significant reductions in groundwater recharge (see pages 3.11-20 through 3.11-22 in the Draft EIR/EIS).

However, given the fact that TID contends that application of recycled water in the western portion of the Turlock subbasin is critical to maintaining adequate groundwater supplies, it is pertinent to point out that TID has in the past consistently made it clear that the groundwater problem in the western portion of the basin is one of high groundwater, not lowered groundwater levels caused by excessive pumping. In their letter to the CVRWQCB commenting on the proposed Waste Discharge permit for the City of Turlock, TID states that:

> *"Groundwater levels on the western side of the Turlock Irrigation District are typically high, even during the most severe drought on record, resulting in the need for drainage in the form of groundwater pumping, drainage ditches and in some cases subsurface drains. The TID owns and operates approximately 160 drainage wells within its boundaries. In addition, there are numerous miles of drainage ditches, as well as some private and improvement district subsurface drainage facilities within the District. All of which were designed to help lower groundwater levels. The depth of these facilities allows groundwater seepage into the drain, through which it is then conveyed to the river. The Harding Drain is one such facility… Due to the persistently high groundwater levels in the area, it is unlikely that the drain provides recharge, even during the lowest flow periods."* (Letter dated April 3, 2001, from Debra C. Liebersbach, Associate Civil Engineer, Turlock Irrigation District to Greg K. Vaughn, Central Valley Regional Water Quality Control Board).

Comment 8-6 further suggests that there are users of water in the Turlock subbasin that are dependent on the recycled water that is proposed to be transferred to DPWD, when this is not the case. TID users supplied directly by TID from the Harding Drain will continue to have access to

sufficient supplies from the Harding Drain given TID's current operations. There is no element of the NVRRWP that would create conditions that would result in an increase in groundwater pumping in the Turlock, Modesto, or Delta-Mendota subbasins and there are no existing uses of recycled water, contractual or otherwise, that would be displaced by virtue of the NVRRWP. In fact, the project would supply water that would enable a reduction in groundwater pumping by DPWD customers. Currently DPWD landowners must rely on groundwater when CVP supplies are not available. As explained on page 4-2 of the Draft EIR/EIS, without the NVRRWP "*landowners within DPWD would continue to pump additional groundwater from private wells, which could ultimately lead to overdraft of the groundwater basin*". The comment does not supply any documentation that the NVRRWP would cause an increase in groundwater pumping in any of the subbasins in the project area. Please refer to Response to Comment 8-22 which explains that the NVRRWP does not export water from the Turlock subbasin.

Information defining current and future recycled water availability is provided in the Draft EIR/EIS and is based on the Feasibility Study prepared for the NVRRWP, and referenced in Chapter 1 of the Draft EIR/EIS (RMC 2013). In calculating the amount of recycled water that would be available to DPWD under the NVRRWP, only tertiary treated water was included, and treated wastewater and recycled water committed to other sources was not included. Estimates of recycled water availability thus do reflect the net "available recycled water". The City of Modesto will continue to irrigate existing Ranch lands using secondary treated and cannery process water, and the City of Turlock will continue to meet its existing obligations to provide recycled water to TID for the Walnut Energy Center and within the City of Turlock for irrigation at Pedretti Park.

For clarification, **Table 1-2** on page 1-9 of the Final EIS has been revised as follows to more directly compare recycled water availability in 2018, the expected start of NVRRWP project operations, and at buildout:

Table 1-2: Recycled Water Availability at Project Start-up and at Buildout[1]

Agency	2018 Recycled Water (AFY)	2018 Recycled Water (mgd)	2045 Recycled Water (AFY)	2045 Recycled Water (mgd)
Modesto	16,500	14.7	30,600	27.5
Turlock	14,100	12.6	28,400	25.4
Total	30,600	27.3	59,000	52.9

Source: RMC, 2013

[1] Available recycled water is calculated after accounting for all currently contracted uses

Tables 8-6 and **8-7** show total wastewater produced by the City of Turlock from 2000 to 2014. **Table 8-6** shows quantities that were provided to existing recycled water users during that period. From 2002 to 2005 the City provided secondary effluent to a local farmer, and from 2010 onward recycled water has been provided to Pedretti Park and the Walnut Energy Center. The remaining water has been discharged to the river, as shown in **Table 8-6**. As can be seen from **Table 8-6** the wastewater quantities vary over the years, and are influenced by factors such as total population, amount of precipitation, and the extent of water conservation. **Table 8-7** portrays the quantities of water that would have been provided to existing users and to NVRRWP during the same time period if the NVRRWP had been in operation. As can be seen

by comparing **Tables 8-6** and **8-7**, if the NVRRWP had been operating from 2000 to 2014, the water discharged to the river would instead have been provided to DPWD through the NVRRWP. Once the NVRRWP is operational, existing users at Pedretti Park and Walnut Energy Center would continue to be served, and regular discharge to the river would cease.

Table 8-6: City of Turlock Historic Wastewater Production and Disposal 2000-2014 (AFY)

Year	Total Wastewater Produced	Recycled Water to Existing Users[a]	Discharge to River[b]
2000	11,732	0	11,732
2001	11,315	0	11,315
2002	12,238	683	11,555
2003	12,350	529	11,821
2004	12,287	569	11,718
2005	13,451	144	13,307
2006	13,363	0	13,363
2007	12,629	0	12,629
2008	12,076	0	12,076
2009	11,562	0	11,562
2010	11,543	831	10,711
2011	11,057	792	10,265
2012	10,916	1,240	9,676
2013	10,537	1,023	9,514
2014	9,543	1,032	8,510

Source: City of Turlock

Notes: [a]Recycled water quantities in 2002 through 2005 represent secondary effluent provided to an irrigation demonstration project. Quantities for 2010 through 2014 include recycled water provided to Pedretti Park and the Walnut Energy Center.

[b]Discharge to the San Joaquin River occurred either through the Harding Drain or, starting in 2014, through the Harding Drain Bypass Pipeline.

Table 8-7: Projected City of Turlock Wastewater Production and Disposal if NVRRWP Had Been Operating in 2000-2014 (AFY)

Year	Total Wastewater Produced	Recycled Water to Existing Users[a]	Recycled Water to NVRRWP[b]	Discharge to River[c]
2000	11,732	0	11,732	0
2001	11,315	0	11,315	0
2002	12,238	683	11,555	0
2003	12,350	529	11,821	0
2004	12,287	569	11,718	0
2005	13,451	144	13,307	0
2006	13,363	0	13,363	0
2007	12,629	0	12,629	0
2008	12,076	0	12,076	0
2009	11,562	0	11,562	0
2010	11,543	831	10,711	0
2011	11,057	792	10,265	0
2012	10,916	1,240	9,676	0
2013	10,537	1,023	9,514	0
2014	9,543	1,032	8,510	0

Source: City of Turlock

Notes: [a]Recycled water quantities in 2002 through 2005 represent secondary effluent provided to an irrigation demonstration project. Quantities for 2010 through 2014 include recycled water provided to Pedretti Park and the Walnut Energy Center.

[b]Quantities represent the amount of water that would have been available to NVRRWP if the NVRRWP had been in operation from 2000 to 2014.

[c]With operation of the NVRRWP there would no longer be any routine discharge to the San Joaquin River.

Table 8-8 shows projected Turlock flows at buildout, which is estimated to occur in 2045. The estimated quantities of water to be provided to the Walnut Energy Center and Pedretti Park are based on the commitments rather than historic usage. The City of Turlock has committed to provide up to 2,350 AFY (2 mgd) of recycled water to TID for the Walnut Energy Center.

Table 8-8: Projected City of Turlock Average Wastewater Production and Disposal at Buildout (AFY)

Buildout Year	Total Wastewater Produced	Recycled Water to Existing Users[a]	Recycled Water to NVRRWP	Discharge to River
2045	30,750	2,350	28,400	0

Source: RMC, 2013

Notes: [a]Recycled water quantities reserved for Pedretti Park and the Walnut Energy Center.

8.8.7 Response to Comment 8-7

Comment Summary: The comment claims that the NVRRWP would have impacts from the termination of groundwater recharge in the Turlock subbasin and contends that recharge currently occurs by "allowing the City of Turlock's recycled water to recharge the Turlock groundwater basin through application of that water to agricultural lands within the same basin."

Implementation of the NVRRWP would not result in a reduction of application of water from the City of Turlock to agricultural lands in the Turlock subbasin. See Response to Comment 8-2, 8-5, and 8-6.

8.8.8 Response to Comment 8-8

Comment Summary: The comment suggests that the NVRRWP would have impacts associated with curtailment of application of treated wastewater to Modesto Ranch lands.

See Response to Comment 8-5. Application of secondary treated wastewater and cannery process water to Modesto Ranch lands will continue. No replacement water supply is required.

8.8.9 Response to Comment 8-9

Comment Summary: The comment suggests that the Draft EIR/EIS does not support its conclusions regarding impacts to groundwater because the project does not analyze extraction of water from the Turlock subbasin, which ends up as sewage to be treated at the Turlock and Modesto Wastewater Treatment Plants.

It is correct that wastewater treated by Turlock, and a small portion of Modesto, comes from groundwater that is extracted from the Turlock subbasin (in a normal year more than 50 percent of Modesto's water supply comes from surface water from the Tuolumne River). The sources of groundwater are identified on page 3.11-6 of the Draft EIR/EIS: "*The Turlock wastewater treatment plant is located in the Turlock subbasin and treats water that originates from that subbasin. The Modesto Jennings Plant is located in the Turlock subbasin and treats water that originates from the Modesto and Turlock subbasins. The discharge point for both plants is located in the Turlock subbasin.*" However, a detailed analysis of the ongoing effects of groundwater extraction in the Turlock subbasin would be outside the scope of the Draft EIR/EIS. As documented in the preceding responses, the NVRRWP will have no impact on groundwater extraction rates for the Turlock subbasin, because it will have no effect on the availability of water for existing users. TID's existing water supply would not be affected by the NVRRWP.

8.8.10 Response to Comment 8-10

Comment Summary: The comment claims that the NVRRWP would disrupt the water balance of the Turlock subbasin by exporting water to DPWD, and asserts that recycled water that would be provided to DPWD was being used to recharge groundwater in the Turlock subbasin. The comment references the fact that the Turlock subbasin is already suffering from a cone of depression on the eastern side of the subbasin where irrigation use exceeds recharge and claims that the NVRRWP would further disrupt the water balance in the subbasin.

As noted in the preceding responses, the Cities of Turlock and Modesto would not reduce or curtail any existing uses of recycled water in the Turlock subbasin.

It is incorrect that existing use of secondary treated wastewater and cannery process water for irrigation of Modesto Ranch lands provides recharge to the portion of the subbasin where irrigation use exceeds recharge. In fact, as shown in the exhibits that are attached to the comment, the cone of depression is in the eastern part of the subbasin. The cross section of the

subbasin provided by TID shows that the cone of depression (where the groundwater surface is over 100 feet from the ground surface) is east of the City of Turlock and that groundwater levels adjacent to the San Joaquin River in the vicinity of the Modesto Ranch lands and Harding Drain are actually fairly high (within about 10 feet of the ground surface) and have not changed substantially from the groundwater levels in 1960. Secondary treated wastewater and cannery process water that is used to irrigate Modesto Ranch lands does not recharge the portion of the subbasin where additional recharge is needed. As noted in Response to Comment 8-5, the upgrade of the Jennings Plant to provide tertiary treatment would enable the City of Modesto to reduce their reliance on land disposal at the Modesto Ranch, but irrigation of the Ranch lands using cannery process water and secondary treated effluent would continue, and the change in recharge would be minor.

The only potential impact of the Proposed Action is the minor reduction in groundwater recharge from the river that is identified in **Impact HYD-3** on page 3.11-20 of the Draft EIR/EIS. As described in the Draft EIR/EIS, the NVRRWP will not have a measurable impact on the Turlock subbasin.

8.8.11 Response to Comment 8-11

Comment Summary: The comment asserts that the analysis of cumulative groundwater impacts is inadequate because it relies on the fact that impacts of the NVRRWP on groundwater are less than significant, and does not address cumulative impacts to the Turlock subbasin or TID's surface water supplies. The comment also states that the Draft EIR/EIS should have included additional projects in its list of projects considered in the evaluation of cumulative effects. The comment cites the Harding Drain Bypass Pipeline Project and other projects relevant to groundwater impacts on the Turlock subbasin, including instream flow mandates for the San Joaquin River such as those that could be imposed as part of the Bay-Delta Water Quality Control Plan.

The comment is correct in that the cumulative impact analysis must consider whether the combined effects from the Proposed Action and other projects would be cumulatively significant. As is documented in the previous responses, the only way in which the NVRRWP would affect groundwater is through reductions in discharge to the San Joaquin River, which would, in turn, result in a very limited reduction in groundwater recharge from the river.

Table 3.11-6 on page 3.11-22 of the Draft EIR/EIS shows the change in groundwater storage in each subbasin along the river both on an average annual and cumulative basis. The Turlock subbasin is projected to have a 2 AFY reduction in average annual groundwater recharge due to changes in river flows. When compared to the estimated total groundwater storage in the Turlock subbasin, which DWR estimates as 12,800,000 AF of groundwater to a depth of 300 feet (DWR 2003), a 2 AFY reduction in recharge to storage represents a 0.000016 percent change in storage. The reduction in groundwater recharge due to the project is thus considered to be less than significant. Because the only mechanism for groundwater impacts is through the reduction in river flows, the discussion of cumulative impacts to river flows on page 3.11-27 of the Draft EIR/EIS is relevant. As noted there, the effects of the project were modeled using the C2VSim Model, which considers cumulative impacts of multiple environmental factors: "*C2VSim simulates water movement through the interconnected land surface, water surface and*

groundwater flow systems in the 20,000 mi^2 of the alluvial Central Valley aquifer. C2VSim dynamically calculates groundwater conditions based on urban and crop water demands, long-term hydrologic and meteorologic records, land use, cropping patterns and other inputs."

Table 3.0-1, which starts on page 3-3 of the Draft EIR/EIS, provides the list of cumulative projects that were determined to have a potential nexus with the project that could produce cumulative impacts. The list of projects with a potential nexus includes the Jennings Road Treatment Plant Phase 2 Improvements, and three transportation projects that could affect the same roads that would be affected by pipeline construction. None of the cumulative projects identified in **Table 3.0-1** would be expected to reduce flows in the San Joaquin River, or substantially reduce groundwater recharge through other mechanisms. The road improvements would not reduce groundwater recharge and would not entail pumping of groundwater. The Jennings Road Treatment Plant Phase 2 Improvements would allow disposal of tertiary treated effluent to the San Joaquin River year-round, which would reduce the need to use the Modesto Ranch lands for disposal of effluent beyond the volumes of cannery process water blended with secondary effluent. However, irrigation of the Modesto Ranch lands with cannery process water and secondary effluent would continue, and only modest changes in percolation are expected to result from the projected changes in irrigation practices. The Initial Study/Mitigated Negative Declaration for the Phase 2 improvements identified no groundwater impacts associated with the project.

In regard to the additional cumulative projects suggested in the comment, the possibility of cumulative impacts on groundwater recharge associated with those projects has been considered. As has been discussed in Responses to Comments 8-2 and 8-6, the Harding Drain Bypass Pipeline project is not expected to reduce groundwater recharge in the Turlock subbasin. Given that the Harding Drain Bypass Pipeline project is not expected to affect groundwater it would not have cumulative impacts when combined with the NVRRWP.

The SWRCB's Preferred Lower San Joaquin River Alternative, if implemented, would increase flows in the Tuolumne, Stanislaus and Merced Rivers. The impact assessment presented in the Draft Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the Bay Delta: San Joaquin River Flows and Southern Delta Water Quality, concluded that there could be indirect impacts on groundwater and other resources if there is an increase in groundwater pumping in response to reduced surface water diversions (SWRCB 2012). However, the NVRRWP does not involve groundwater pumping, but instead only involves the use of recycled water, a portion of which originates in the Turlock subbasin. The NVRRWP would have no effect on groundwater pumping in the Turlock subbasin, and so cannot have any cumulative effects on groundwater when combined with increased groundwater pumping by TID or any other parties.

The only effect of the proposed project is to change what happens to the recycled water after it has already left the subbasin. The Cities would not increase groundwater pumping for the purposes of the project, and there would be no need to find additional water supplies to make up for the water the Cities propose to provide to DPWD, because that water – i.e., the recycled water that currently leaves the region via the San Joaquin River – is not currently being used.

To provide clarification regarding the cumulative analysis of groundwater impacts associated with the NVRRWP, the cumulative impacts discussion in the *Hydrology and Water Quality* Section beginning on Page 3.11-27 of the Final EIS is revised as follows:

> **Cumulative Impacts to Groundwater Storage** As discussed under **Impact HYD-3,** cumulative or long-term impacts of reduced San Joaquin River flows on groundwater storage due to changes in the stream-aquifer interaction would be less than significant. None of the cumulative projects identified in the Proposed Action area would have any effect on the stream-aquifer interaction, and thus there is no cumulative impact to which the Proposed Action contributes. The NVRRWP would not result in increased groundwater pumping in the Turlock, Modesto, or Delta-Mendota subbasins, and thus does not have the potential to combine with other projects to result in a significant impact. In fact, the NVRRWP could reduce the impacts of groundwater pumping in the Delta-Mendota subbasin, by providing a reliable alternative source of irrigation water to DPWD. There are pre-existing, long-term groundwater problems in the Turlock subbasin, which are part of the baseline conditions, but these conditions in the eastern portion of the basin would occur regardless of whether the Proposed Action is implemented. There is also the possibility that groundwater pumping for both municipal and agricultural uses in the Turlock subbasin could occur in the future, and this is a potentially significant impact; such increased pumping, however, would not result from the project. The very minor changes in groundwater storage in the western portion of the basin that are associated with reduced San Joaquin River flows are not expected to combine with pumping in the eastern portion of the basin to result in an incremental effect that would be cumulatively considerable.

8.8.12 Response to Comment 8-12

Comment Summary: The comment asserts that the project objectives are crafted to be artificially narrow, so the Draft EIR/EIS fails to analyze reasonable alternative uses of recycled water other than exporting the water outside of its groundwater basin of origin. The comment suggest that the Draft EIR/EIS must analyze alternatives that would address significant impacts to agricultural water supplies and groundwater in the Turlock subbasin.

The NVRRWP is a collaborative partnership that includes the Cities of Modesto, Turlock, Ceres, the DPWD, and Stanislaus County, and the primary purpose of the program as described on page ES-4 of the Draft EIR/EIS is to *"Establish an alternative, reliable, long-term water supply of up to 59,000 acre feet per year (AFY) of recycled water for DPWD and refuges."* It is appropriate for the Partner Agencies to develop an objective that is mutually beneficial to all of the Partner Agencies, and it is not practical to expect DPWD to entertain project objectives that would not supply their growers with critically needed water supplies.

The U.S. Department of the Interior's implementing procedures for NEPA specify that alternatives should "meet the purpose and need of the proposed action, and address one or more significant issues … related to the proposed action." As noted in the responses to previous comments, the NVRRWP does not create significant impacts to agricultural water supplies or groundwater in the TID service area, and does not make a cumulatively considerable contribution to existing or potential future impacts to the Turlock subbasin. The Draft EIR/EIS

thus does not need to consider alternatives that would avoid effects that the NVRRWP does not cause.

As noted in Response to Comment 8-11, the pre-existing, long-term groundwater problems in the eastern Turlock subbasin cannot be attributed to the NVRRWP. Neither CEQA nor NEPA require the project proponents to cure problems that are not caused by the NVRRWP, and the prospect that a different project could ameliorate existing problems is not evidence that the NVRRWP would have any significant adverse environmental impacts.

8.8.13 Response to Comment 8-13

Comment Summary: The comment provides introductory remarks and claims that TID's scoping comments were not adequately addressed in the Draft EIR/EIS, stating that the document is legally deficient and must contain a broader analysis in a recirculated Draft EIR/EIS or more comprehensive Final EIR/EIS.

Specific comments from TID and their legal counsel are addressed both in the previous responses (Responses to Comments 8-1 through 8-12) and in the responses below, which explain why the Draft EIR/EIS adequately addresses TID's scoping comments and why recirculation is not required. No new impacts or substantial increase in the severity of impacts has been identified as a result of information brought forward in the comments. Recirculation of the Draft EIR/EIS is not necessary.

8.8.14 Response to Comment 8-14

Comment Summary: The comment suggests that the Draft EIR/EIS does not accurately identify the Turlock Groundwater subbasin as the source of the City of Turlock's recycled water, and does not identify the quantity of recycled water currently available.

See Responses to Comments 8-3 and 8-6.

8.8.15 Response to Comment 8-15

Comment Summary: The comment asserts that the Draft EIR/EIS does not describe the City of Turlock's use of the Harding Drain in 2014 and use by TID and others of the City's recycled water from the Harding Drain in 2014.

See Response to Comment 8-4.

8.8.16 Response to Comment 8-16

Comment Summary: The comment claims that the Draft EIR/EIS fails to describe the City of Modesto's application of wastewater to agricultural lands in TID's service area and does not describe when application of recycled water will be reduced or curtailed entirely.

See Response to Comment 8-5.

8.8.17 Response to Comment 8-17

Comment Summary: The comment provides a detailed description of the groundwater conditions in the Turlock subbasin (referencing excerpts from the Turlock Groundwater Subbasin

Groundwater Management Plan), and claims that providing recycled water to DPWD would redirect impacts to the Turlock subbasin because the NVRRWP would eliminate the ability to reuse the recycled water in the subbasin where the water originated.

The description of the Turlock subbasin and existing groundwater conditions is not in dispute. While it is true that the Draft EIR/EIS contained a less detailed description of existing groundwater conditions, a detailed description of historic groundwater use in the area is not warranted because the NVRRWP would not result in increased groundwater pumping. The analysis of groundwater impacts correctly focuses on the minimal effects on groundwater recharge that would result from the NVRRWP. Given the minimal impact on groundwater, additional detail about historic groundwater use is not necessary. See also Response to Comments 8-5 to 8-12.

8.8.18 Response to Comment 8-18

Comment Summary: The comment states that the Draft EIR/EIS does not describe the City of Turlock's recycled water use within the Turlock subbasin during the baseline period and that the statement that the City of Turlock discharges flows to the San Joaquin River via the Harding Drain Bypass Pipeline is untrue because Turlock only started bypassing the Harding Drain and using the Harding Drain Bypass Pipeline in January 2015.

As noted in Response to Comment 8-2, the Harding Drain Bypass Pipeline has been in intermittent operation since February 10, 2014, which is prior to the distribution of the NOP and NOI for the Draft EIR/EIS. Operation of the Harding Drain Bypass Pipeline is thus correctly considered as part of the environmental baseline for the project. See Response to Comment 8-2 for additional information about the source of water in the Harding Drain, use of the Harding Drain Bypass Pipeline, the conclusions of the Harding Drain Bypass Pipeline EIR, and the findings of the Division of Water Rights that moving the City of Turlock's discharge from the Harding Drain to the Harding Drain Bypass Pipeline would not cause injury to any lawful user of the water.

8.8.19 Response to Comment 8-19

Comment Summary: The comment states that the conditions in 2014 reflect the relevant baseline condition for analysis of the project's impacts and that removal of recycled water from the Harding Drain will place demands on TID. The comment also cites existing uses of the recycled water from the City of Turlock.

See Responses to Comment 8-2 and 8-6. The comment is correct that the City of Turlock currently provides recycled water to Pedretti Park and to TID's Walnut Energy Center. These recycled water uses would continue.

8.8.20 Response to Comment 8-20

Comment Summary: The comment contains a description of the City of Modesto's application of recycled water to Modesto Ranch lands, and claims that limitations on discharge to the San Joaquin River have benefited groundwater in the Turlock subbasin. The comment cites the City's agreement to lease the Modesto Ranch lands for agricultural use (and includes the lease as an

exhibit), and claims that continued application of wastewater at existing quantity levels must be required until groundwater sustainability is achieved in the Turlock subbasin.

The comment is incorrect in stating that the City of Modesto did not discharge to the San Joaquin River in 2014. Although discharge was severely constrained because the City may discharge only during October through May, and only when there is sufficient water in the river to provide a 20:1 dilution of the discharge, the City did discharge 1,139 AF of secondary treated wastewater to the river in 2014. While it is correct that the City of Modesto uses a substantial amount of treated wastewater to irrigate the Modesto Ranch lands, the application of wastewater occurs in the western side of the subbasin, where groundwater levels are high, and thus does not benefit the eastern portion of the subbasin where groundwater levels have been depleted by pumping for irrigation. In addition, as noted previously, the City of Modesto will continue to apply secondary treated wastewater and cannery generated process water to the Modesto Ranch lands, and will fulfill its obligation to provide the water supply necessary to meet the crop water demand for the crops grown by the current tenant. While the amount of treated wastewater supplied may vary from year to year, as it does now, there is no proposal to terminate or substantially reduce the amount of secondary treated wastewater supplied to the Modesto Ranch lands. It is, however, highly doubtful, given the elevation of groundwater in the western portion of the Turlock subbasin, that the application of treated wastewater in that area would provide any benefits to the "long-term groundwater sustainability" of the subbasin. See Response to Comments 8-5 and 8-6.

8.8.21 Response to Comment 8-21

Comment Summary: The comment states that the groundwater conditions in western Stanislaus County are better than within the eastern side of the Turlock subbasin, and that once water is discharged to the DMC it would flow out of Stanislaus County for use within Merced and Fresno counties.

The poor groundwater conditions in the eastern side of the Turlock subbasin are irrelevant to the analysis of project impacts because the NVRRWP would have no effect on the eastern side of the Turlock subbasin. See Response to Comments 8-5 and 8-6. The NVRRWP would benefit all DPWD water users, including citizens of Stanislaus County farming about 28,000 acres of land in the local area, plus users in southern San Joaquin and northwestern Merced counties. Recycled water introduced into the DMC would have the capability of being stored in Federal Facilities and thus can be used by DPWD customers, through a system of year-round accounting of inputs and withdrawals from the system. If recycled water is discharged to the San Joaquin River it would, in fact, continue to be leave Stanislaus County and flow out through the Delta to the ocean as it does now.

8.8.22 Response to Comment 8-22

Comment Summary: The comment provides information about the Sustainable Groundwater Management Act (SGMA) and contends that the Draft EIR/EIS fails to discuss extraction of groundwater in the Turlock subbasin, which ends up as recycled water; and fails to discuss the consequences to the basin of exporting 59,000 AF of recycled water that was being used to recharge the subbasin.

The comment is incorrect in its contention that the NVRRWP would export water that is currently being used to recharge the basin. The Draft EIR/EIS identifies the fact that the source of recycled water is the Modesto and Turlock subbasins, as page 3.11-6 states that: "*The Turlock wastewater treatment plant is located in the Turlock subbasin and treats water that originates from that subbasin. The Modesto Jennings Plant is located in the Turlock subbasin and treats water that originates from the Modesto and Turlock subbasins.*" However, the wastewater from both plants, if not conveyed to DPWD under the NVRRWP, would be discharged to the San Joaquin River. The discharge is occurring now, and recycled water is not currently being used to recharge the Turlock subbasin. Groundwater recharge projects using recycled water are strictly regulated and there is no groundwater recharge currently being operated in the Turlock subbasin. The City of Modesto does irrigate its Ranch lands in the western part of the subbasin, but as noted in previous responses, irrigation using cannery process water and secondary treated wastewater would continue after implementation of the NVRRWP. There is no evidence that the irrigation of the Modesto Ranch lands provides recharge of the portion of the Turlock subbasin that is affected by excessive pumping because the irrigation occurs at agronomic rates in the western portion of the subbasin, which has high groundwater levels.

8.8.23 Response to Comment 8-23

Comment Summary: The comment states that data in the Draft EIR/EIS is misleading, difficult to analyze or provides conflicting information, and claims that the Draft EIR/EIS is not providing "full disclosure".

See Response to Comment 8-6, which provides additional information about the availability of recycled water at project inception and at buildout.

It is correct that the Draft EIR/EIS does not report the quantity of recycled water available in 2014, because the City of Modesto is currently in the process of upgrading their treatment facilities to provide the higher level of treatment required to meet its revised NPDES permit requirements, which will also provide tertiary treated recycled water for the NVRRWP. As is explained on page 1-9 of the Draft EIR/EIS: "*Phase 1 of the treatment upgrades was completed in 2010 and provides 2.3 million gallons per day (mgd) of tertiary effluent, all of which is applied to Modesto-owned ranch land. The Phase 2 treatment facilities are scheduled to be online by February 2016 and will provide an additional 12.6 mgd of tertiary treatment capacity, bringing the total capacity to 14.9 mgd. Modesto is planning to continue to increase tertiary treatment capacity to 27.5 mgd by build-out year 2040 and this water would be available for the proposed project. No tertiary treated water is presently discharged to the San Joaquin River.*" The information provided in the Draft EIR/EIS was consistent and as accurate as possible, given that some predictions about future wastewater flows must be made to estimate availability of recycled water at buildout of the two cities.

8.8.24 Response to Comment 8-24

Comment Summary: After its previous claim that the information provided is insufficient, this comment quotes the sections of the Draft EIR/EIS that provide detailed information about the City of Modesto's existing facilities and ongoing improvements. The comment also cites information provided in response to TID's scoping comments.

The comment provides an accurate citation of information provided in the Draft EIR/EIS.

8.8.25 Response to Comment 8-25

Comment Summary: The comment questions the use of the term recycled water to refer to tertiary treated wastewater that would comply with Reclamation water quality standards, and asks if it is correct to state that secondary treated wastewater would not be classified as recycled water for purposes of this EIR/EIS.

The section of the Draft EIR/EIS cited in the comment provides a description of the quality of the recycled water that would be introduced into the DMC as part of the NVRRWP. It is correct that the NVRRWP would not provide any secondary treated wastewater to DPWD. Although secondary treated wastewater can be used for some purposes, and is currently applied to the Modesto Ranch lands, it will notbe introduced into the DMC for conveyance to DPWD and certain SOD wildlife refuges. For purposes of the NVRRWP, the recycled water discharged to the DMC and thus provided to DPWD would only be tertiary treated wastewater. The City of Modesto will continue to produce secondary treated wastewater for use on the Modesto Ranch lands, and none of this water would be supplied to DPWD.

8.8.26 Response to Comment 8-26

Comment Summary: The comment asks for a definition of the term "Available Recycled Water" as used in the Draft EIR/EIS Table 1-2 and in the Feasibility Study, and asks if all of the tertiary treated recycled water produced at the Turlock and Modesto WWTPs will be sold to DPWD.

Recycled water availability was calculated based on the estimated quantities of tertiary treated effluent that could be produced by the cities of Modesto and Turlock, after subtracting the quantities that are committed to other recycled water uses. While the Draft EIR/EIS does not provide a detailed explanation of the calculation of the quantity of recycled water that could be made available, that information is provided in the Feasibility Study, which is a reference document for the Draft EIR/EIS that was made publicly available on the NVRRWP website As noted in the Feasibility Study:

> *"The City of Turlock has several long term commitments for recycled water use from the facility. The first commitment is for 2 mgd for 50 years for use at Turlock Irrigation District's (TID) Walnut Energy Center… The other current recycled water use in Turlock is for irrigation at Pedretti Park. The average irrigation use for the park is assumed to be 0.1 mgd, which was the average use in 2012. Therefore, in calculating the recycled water that would be available for NVRRWP, it is assumed that 2.1 mgd will be reserved for in-City use, leaving a flow rate of 25.4 mgd available at buildout for NVRRWP."* (RMC. 2013. North Valley Regional Recycled Water Program Feasibility Study, December 2013)

It is thus not correct that all of the tertiary treated water produced at both the Turlock and Modesto WWTPs will be sold to DPWD. Both cities will continue existing uses of recycled water, which is consistent with the information provided in the Scoping Report.

8.8.27 Response to Comment 8-27

Comment Summary: The comment asks where the Draft EIR discloses the amount of "net" recycled water proposed to be provided to DPWD, and asks if 30,600 AFY is the net amount to be provided in 2018 and if 59,000 AFY is the net amount to be sold at Buildout.

The quantities provided in **Table 1-2** are, in fact, net quantities of recycled water that could be made available, after supplying other users of recycled water, including Pedretti Park, the Walnut Energy Center, and the Modesto Ranch lands. It is estimated that 30,600 AFY would be available in 2018, and up to 59,000 AFY would be available at buildout of the Cities. The details of the water purchase agreement between the cities of Modesto and Turlock and DPWD have yet to be agreed upon, but for the purposes of environmental analysis, the Draft EIR/EIS has evaluated the environmental impacts associated with providing up to 59,000 AFY of recycled water at buildout. This is consistent with the first objective of the project listed on page 1-12 of the Draft EIR/EIS: "*Establish an alternative, reliable, long-term water supply of up to 59,000 acre feet per year (AFY) of recycled water for DPWD and refuges*".

8.8.28 Response to Comment 8-28

Comment Summary: The comment asks if the City of Modesto intends to discontinue using tertiary treated recycled water on City-owned ranch land and sell all such water to DPWD, and if so, the City's previous statement that there will be no change in the existing uses of recycled water at the Modesto Ranch is untrue.

The Modesto Ranch is currently irrigated with secondary effluent combined with cannery process water. As noted in Response to Comment 8-27, the details of the water purchase agreement have yet to be determined, but the Draft EIR/EIS has evaluated providing up to 59,000 AFY of tertiary treated water to DPWD. As part of the NVRRWP the City of Modesto may, indeed, supply most or all of the tertiary treated water produced at the Jennings Plant to DPWD. However, the City will continue to produce sufficient quantities of secondary treated effluent and will also receive cannery process water, both of which would be used to irrigate the 2,500 acres of City-owned Ranch land. It is estimated that at project buildout there would be over 10,500 AF of secondary treated effluent and cannery process water available to irrigate the Modesto Ranch lands. Because irrigation needs of the Ranch lands are primarily supplied by secondary treated wastewater and, during the summer canning season, cannery process water, use of recycled water at the Modesto Ranch is expected to continue, which is consistent with the City's previous response.

8.8.29 Response to Comment 8-29

Comment Summary: The comment claims that the analysis of groundwater impacts is inadequate because impact HYD-3 focuses on the impact of reductions in streamflows on groundwater storage, and contends that the Draft EIR/EIS must be recirculated with additional information about groundwater impacts.

See Response to Comments 8-1 to 8-29.

8.8.30 Response to Comment 8-30

Comment Summary: The comment suggests that the cumulative impacts discussion is inadequate.

See Response to Comment 8-11 for discussion of the cumulative impacts analysis.

8.8.31 Response to Comment 8-31

Comment Summary: The comment states that the Draft EIR/EIS should evaluate alternatives that avoid exporting water outside of the Turlock groundwater subbasin of origin and claims that the project objective of regional economic sustainability has been overridden by the SGMA requirement that the Turlock subbasin achieve groundwater sustainability.

See Response to Comment 8-12 for a discussion of alternatives. As noted there, and in the responses to previous comments, the NVRRWP does not create significant impacts to agricultural water supplies or groundwater, and does not make a cumulatively considerable contribution to existing or potential future impacts to the Turlock subbasin. The Draft EIR/EIS thus does not need to consider alternatives that would avoid effects that the NVRRWP does not cause. The comment suggests that the NVRRWP is inconsistent with the SGMA. The SGMA requires the formation of local groundwater sustainability agencies (GSAs) that must assess conditions in their local water basins and adopt locally-based management plans. At the present time a GSA has not been formed for the Proposed Action area, and a plan has not been formulated. The NVRRWP cannot be inconsistent with a plan that has not been developed.

8.8.32 Response to Comment 8-32

Comment Summary: The remainder of the comment letter provides attachments, including the scoping comments that TID had previously submitted and excerpts from the Turlock Groundwater Basin's Groundwater Management Plan.

The exhibits do not include any comments specifically addressing the adequacy of the Draft EIR/EIS, and the issues that the exhibits are intended to illustrate are addressed in Responses to Comments 8-1 through 8-31.

(209) 826-5188
Fax (209) 826-4984
Email: veronica@gwdwater.org

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March 10, 2015

VIA U.S. MAIL AND E-MAIL

Benjamin Lawrence
Bureau of Reclamation
1243 N Street
Fresno, CA 93721
E-mail: blawrence@usbr.gov

RE: Comments on the Draft EIS/EIR for the North Valley Regional Recycled Water Program

Dear Mr. Lawrence:

Grassland Water District and Grassland Resource Conservation District (collectively, GWD) submit the following comments on the Draft EIS/EIR for the North Valley Regional Recycled Water Program (NVRRWP) prepared by the Bureau of Reclamation (Reclamation), Del Puerto Water District (DPWD), and the Cities of Turlock and Modesto (Cities). The NVRRWP involves the conveyance of up to 59,000 acre-feet per year (AFY) of recycled water from the Cities through a pipeline and into the Delta-Mendota Canal, for delivery to DPWD and Central Valley Project Improvement Act (CVPIA) refuges south of the Delta, to meet their need for water supplies. 9-1

GWD supports the Project because it will provide much-needed water supplies to refuge habitat areas, particularly during those times of year when the demand for agricultural irrigation water is low. The CVPIA has been in place for more than 20 years, yet south-of-delta (SOD) refuges continue to lack reliable sources of Incremental Level 4 water supplies, which has caused a significant and persistent shortfall in CVPIA refuge water deliveries.

Comments on the text of Draft EIS/EIR Section 1.1.3

9-2 This section discusses refuge water supply needs and describes how the Project would help reduce the refuge water supply shortfall. The first sentence should be changed to read "the privately-managed wetlands of the Grassland Resource Conservation District," instead of "one privately-managed wetland (Grassland Resource Conservation District)." The Grassland Resource Conservation District is made up of numerous privately owned wetlands encompassing tens of thousands of acres.

9-3 This section should also be expanded upon in the Final EIS/EIR, to describe the various benefits of delivering NVRRWP water supplies to CVPIA refuges. First, refuges can take water throughout the year, which will help fully utilize NVRRWP supplies when there is a lack of irrigation demand or unexpected problems with water conveyance facilities. Second, by including refuges as recipients of NVRRWP supplies, Reclamation would have the option of entering into future agreements to provide Level 2 refuge water supplies to DPWD in exchange for greater deliveries of NVRRWP supplies to refuges. This could help meet peak irrigation demands in exchange for an increased amount of recycled water for refuges in the fall and winter.

9-4 Third, the delivery of recycled water to refuges when irrigation demand is low will minimize or eliminate the Cities' need to construct additional storage ponds or discharge recycled water to the San Joaquin River during periods when DPWD's water demands are less than the volume of recycled water produced. Eliminating the need for additional storage ponds will have significant costs savings, and the problems associated with discharging directly to the San Joaquin River are already outlined in the Draft EIS/EIR.

9-5 Section 1.1.3 should also describe the benefits that NVRRWP water supplies will bring to the refuges. Among other things, refuges will have an increased ability to conduct spring and summer irrigations, which will greatly improve the production and availability of food supplies for wintering migratory waterfowl. Refuges will be better able to utilize refuge water supplies to protect the last known remaining population of the threatened Giant Garter Snake in the western San Joaquin Valley, an area where the snake is at high risk of extinction. Refuges will also be able to provide higher quality brood habitat for local breeding bird populations.

Comments on Figures 1-3, 1-4, and 1-5

9-6 Figures 1-4 and 1-5 do not illustrate the magnitude of the shortfall in refuge water deliveries under the CVPIA. A new figure should be added to the EIS/EIR, similar to Figure 1-3, so that the SOD refuges' total water supplies and shortfalls

are depicted. The new figure should compare full Level 4 refuge water supplies (376,515 AFY) with actual deliveries over the same five year period used in Figure 1-3. It should also reflect the reduced Level 2 and Incremental Level 4 (IL4) refuge water allocations in 2014, similar to Figure 1-3. The SOD refuges only received a 65% Level 2 allocation in 2014, and 16,525 acre-feet of the 105,514 acre-feet of IL4 water required under the CVPIA. 9-6 Cont'd

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Figure 1-4 should also be revised to depict the average monthly demand pattern for the SOD refuges when receiving full Level 4 water supplies (376,515 AFY). This revision would more accurately show that the refuges' demand for water exceeds the availability of the Project's recycled water in every month. The current figure indicates that in 6 out of every 12 months the volume of recycled water available from the Project exceeds the refuges' demand for water. This is far from true. The refuges' demand can accommodate the full flow of recycled water in all months. Revising Figure 1-4 to depict the refuges' full Level 4 monthly demands would best show the true demand curve for the refuges and how well it complements DPWD's demand curve, which will be critical for managing the nonstop year-round flow of recycled water produced by the Cities. 9-7

Thank you for considering these comments. GWD looks forward to further involvement with the NVRRWP to ensure that it achieves the purposes and objectives described in the Draft EIS/EIR.

Sincerely,

Ricardo Ortega
General Manager

cc (via e-mail):

Anthea Hansen, DPWD (ahansen@delpuertowd.org)
William Wong, City of Modesto Utilities Department (wwong@modestogov.com)
Dale Garrison, U.S. Fish & Wildlife Service (dale_garrison@fws.gov)
Dave Mooney, Reclamation (dmmooney@usbr.gov)
Paul Forsberg, Cal. Department of Fish & Wildlife (paul.forsberg@wildlife.ca.gov)
Jeffrey Shu, Cal. Department of Fish & Wildlife (jeffrey.shu@wildlife.ca.gov)

8.9 Comment Letter 9 – Grassland Water District, Ricardo Ortega, General Manager

8.9.1 Response to Comment 9-1

Comment Summary: The comment expresses support for the project because it would provide water supply to refuges, which have experienced a persistent shortfall in water supplies.

The Partner Agencies appreciate the support of the Grassland Water District.

8.9.2 Response to Comment 9-2

Comment Summary: The comment requests that text be revised to reflect the fact that Grassland Resource Conservation District is made up of numerous privately owned wetlands.

The first sentence in Section 1.1.3 on page 1-6 of the Draft EIR/EIS has been revised in the Final EIS as follows:

> In addition to provision of water to the DPWD service area, the NVRRWP would make recycled water available to certain SOD CVPIA designated federal National Wildlife Refuges (NWRs), State Wildlife Areas (SWAs), and ~~one~~ the privately-managed wetlands of the ~~(~~Grassland Resource Conservation District~~)~~, collectively referred to herein as "refuges".

8.9.3 Response to Comment 9-3

Comment Summary: The comment states that Section 1.1.3 should be expanded to describe the various benefits of delivering water to refuges.

The comment accurately describes potential benefits of providing water to refuges. The Draft EIR/EIS does state, on page 1-8, that "*refuges need water year-round, however, their fall and winter water demand occurs in a season when there is less of a need for irrigation water.*" While it is true that Reclamation and DPWD could develop an agreement that would allow seasonal exchanges of refuge water supplies for water from the NVRRWP, these details are still in development and have not yet been agreed upon, and are thus not discussed in the Draft EIR/EIS.

8.9.4 Response to Comment 9-4

Comment Summary: The comment states that delivery of recycled water when irrigation demand is low would minimize the need to construct storage ponds or discharge water to the river when DPWD water demands are low.

The NVRRWP has been planned so as to avoid the need for additional seasonal storage of recycled water. As noted on page 1-10 of the Draft EIR/EIS, "*Tertiary-treated water conveyed into the DMC during low-demand periods could be stored in the SOD CVP system, which includes San Luis Reservoir*." As described on page 2-1 of the Draft EIR/EIS, the Warren Act Contract will be structured for conveyance and storage of non-CVP water in federal facilities so that water can be discharged year-round and used by DPWD and the refuges when it is needed.

8.9.5 Response to Comment 9-5

Comment Summary: The comment states that the Draft EIR/EIS should provide a more detailed description of the benefits that NVRRWP water supplies would bring to refuges. The comment cites increased ability to conduct spring and summer irrigation, improving the production and availability of food supplies for wintering migratory water fowl and higher quality brood habitat for local breeding bird populations, plus improved ability to manage habitat to protect the threatened giant garter snake in western San Joaquin Valley where the snake is at high risk of extinction.

The comment is correct that the NVRRWP could provide a number of benefits to refuges. The text of the Draft EIR/EIS on page 1-8 has been modified in the Final EIS to include the description of benefits provided in the comment, as follows:

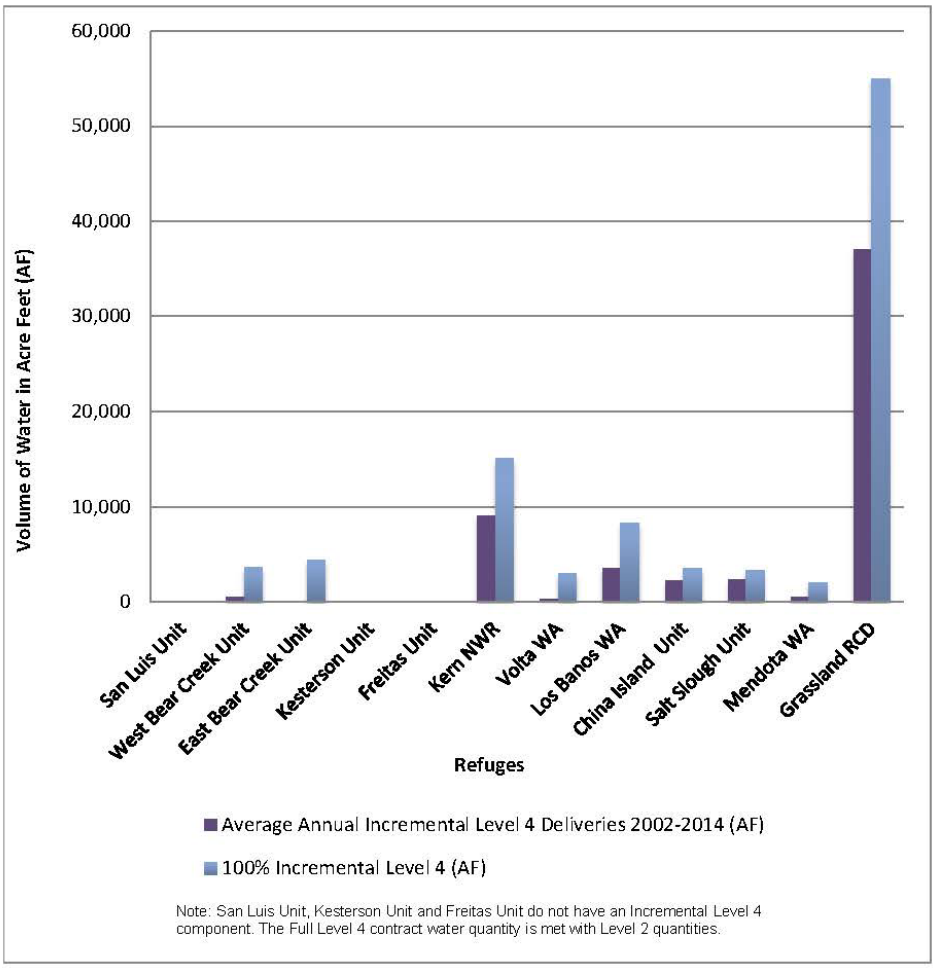
> The NVRRWP could potentially benefit the refuges shown in **Table 1-1**. Additional water supplies would provide refuges an increased ability to conduct spring and summer irrigations, which would improve the production and availability of food supplies for wintering migratory waterfowl. Refuges would be able to use water supplies to protect giant garter snake habitat, and to provide higher quality brood habitat for local breeding bird populations (Grassland Water District, Comments on the Draft EIS/EIR for the NVRRWP, see Chapter 8).

8.9.6 Response to Comment 9-6

Comment Summary: The comment requests the addition of a new figure depicting SOD refuges total water supplies and shortfalls and suggests that the figure should compare full Level 4 refuge water supplies (376,515 AFY) with actual deliveries. The comment points out that SOD refuges only received a 65 percent Level 2 allocation in 2014, and 16,525 of the 105,514 acre-feet of the IL4 water required under the CVPIA.

The comment correctly points out that SOD refuges have experienced substantial shortfalls of water supply in recent years. It appears that the comment is concerned about the distinction between full Level 4 supplies, which is the quantity of water needed to achieve optimal waterfowl habitat management, and IL4 water, which is defined as the difference between historic annual average water deliveries (L2) and the full Level 4 quantity. Although it has not yet been determined if the supplemental water that could be provided to SOD refuges would be considered to be IL4 water, the historic shortfalls in IL4 water are illustrative of the refuges need for water. Because the purpose of the NVRRWP is to provide supplemental water supplies, Reclamation and the Partner Agencies believe that it is most appropriate to show the demand for IL4 water. Reclamation staff have updated **Figure 1-5** from the Draft EIR/EIS in the Final EIS, which now shows average annual IL4 deliveries from 2002 through 2014 as compared to the full demand for IL4 water. The following figure replaces the original figure on page 1-7 of the Draft EIR/EIS:

Figure 1-5 (Revised): Refuge Full IL4 Water Demand vs Average Annual IL4 Deliveries (2002-2014)



8.9.7 Response to Comment 9-7

Comment Summary: The comment requests that Figure 1-4 be revised to reflect the average monthly demand pattern for SOD refuges when receiving full Level 4 water supplies, which would more accurately show that the refuges water demand exceeds the availability of NVRRWP water in every month. The current figure incorrectly indicates that recycled water availability exceeds refuge demand in 6 out of 12 months.

As noted in Response to Comment 9-6, because the NVRRWP is intended to provide supplemental water, not to meet the full demand for refuge water supply, it has been deemed most appropriate to depict the demand for IL4 water (even though it has not been determined if NVRRWP water would be considered IL4 water). To clarify the information presented in **Figure 1-4**, the figure caption is revised in the Final EIS as follows:

> Figure 1-4: Projected Monthly Demands from DPWD and IL4 Demand from Refuges and Monthly Volume of Recycled Water Production

THE ZUMWALT LAW FIRM

A Limited Liability Partnership
1600 G STREET, SUITE 104
MODESTO, CA 95354
WWW.THEZUMWALTLAWFIRM.COM

FRANK T. ZUMWALT
FrankZumwalt@TheZumwaltLawFirm.com

TELEPHONE: (209) 577-6100
FACSIMILE: (209) 577-1038

GRAHAM SCOTT
Graham@TheZumwaltLawFirm.com

March 9, 2015

Via Email to wwong@modestogov.com and mogas@modestogov.com

William Wong
City of Modesto
1010 10th Street 4th Floor
Modesto, California 95354

Re: North Valley Regional Recycled Water Program

Dear Mr. Wong:

Our office represents Patterson Frozen Foods, Inc. ("PFF") and Lakeside Hills, LLC ("Lakeside"). Our clients are headquartered in the City of Patterson and are concerned about the impact the proposed North Valley Regional Recycled Water Program ("NVRRWP") would have on their business operations. Since 1946, PFF has been growing vegetables in the Patterson area and together with its wholly-owned subsidiary Lakeside, they have contributed to the rich agricultural heritage of the Patterson area. However, the NVRRWP appears to be an unwarranted burden on their farming activities and it exposes their underground pipeline to an undue risk of harm.

For those reasons, PFF and Lakeside oppose the primary and the two alternative proposals that do not involve a continued river discharge. 10-1

It is our clients' understanding that the NVRRWP would install a subsurface pipeline down Lemon Avenue and Zacharias Road. This pipeline would transverse the Patterson Irrigation District ("PID") and the West Stanislaus Irrigation District ("West Stan"), but neither of those districts would receive any of the water. That is, the farmers and stakeholders in PID and West Stan districts would shoulder the burden of the delays and impediments that the construction

would necessarily entail, but they would not get any of the benefit of the NVRRWP. With an estimated time of construction of 21 months, the interference is substantial and onerous, especially as it involves some of the major thoroughfares for the Patterson farming community, including our clients.

The construction also appears to bisect the underground pipeline owned by PFF on Zacharias Road. This pipeline is a valuable conduit for irrigation water and any damage or obstruction caused by the NVRRWP would be a punishing to PFF's business. Again, PFF would be exposed to the risk, but without <u>any</u> of the benefits accruing to the customers of the Del Puerto
10-2 Water District.

The Patterson farming community is already subject to a multitude of outside influences beyond its control, thus, adding a major construction project that does not directly benefit the PID or West Stan customers is unduly burdensome.

For all of those reasons, PFF and Lakeside request that the NVRRWP not go forward in its present form.

Respectfully Submitted,

FRANK T. ZUMWALT, ESQ.
THE ZUMWALT LAW FIRM, LLP

cc: Angelo Ielmini

8.10 Comment Letter 10 – Patterson Frozen Foods, Inc., and Lakeside Hills, LLC, submitted through The Zumwalt Law Firm, Frank T. Zumwalt, Esq.

8.10.1 Response to Comment 10-1

Comment Summary: The comment expresses opposition to the two alternatives that do not involve a continued river discharge because the NVRRWP would install a pipeline along Lemon Avenue and Zacharias Road, which would cross roads and lands within the Patterson Irrigation District and West Stanislaus Irrigation District, but not provide water to those districts. The comment expresses concern that farmers from those districts would be affected adversely by 21 months of construction but would not benefit from the project.

In regard to project benefits, it is important to note that the farmers and stakeholders in PID and West Stanislaus Irrigation District (WSID) would all benefit from the fact that the NVRRWP provides a reliable water supply that can reduce dependence on groundwater pumping in the Delta-Mendota subbasin during years when CVP water supplies are limited. As explained on page 4-2 of the Draft EIR/EIS, without the NVRRWP "*landowners within DPWD would continue to pump additional groundwater from private wells, which could ultimately lead to overdraft of the groundwater basin*". Conserving groundwater in the Delta-Mendota subbasin would benefit all of those who use the basin as a source of irrigation water, including those in PID and WSID. The project thus provides regional benefits that extend beyond the growers in DPWD.

While it is true that pipeline construction would result in some short-term disruption, the Draft EIR/EIS has evaluated the impacts associated with construction of the proposed pipelines and has included mitigation for traffic and transportation impacts to ensure that thoroughfares in the Patterson farming community would continue to operate acceptably. **Mitigation Measure TR-1: Implement a Construction Management Plan to Minimize Interference with Traffic and Emergency Response Hazards**, which is presented on page 3.19-8 of the Draft EIR/EIS and repeated below, includes a variety of measures to minimize the effects of construction.

> ***"Mitigation Measure TR-1: Implement a Construction Management Plan to Minimize Interference with Traffic and Emergency Response Hazards (Alternatives 1, 2 and 3)***
> *The Partner Agencies (DPWD, the City of Modesto, and the City of Turlock) or the construction contractor, in consultation with the County, will prepare and implement a Traffic Management Plan (TMP). The Partner Agencies will be responsible for ensuring that the plan is adequately developed and implemented. The Partner Agencies will provide the TMP to the Stanislaus County Department of Public Works and Caltrans. The TMP will include recommended traffic-control and traffic-reduction measures as identified in the Transportation Management Plan Guidelines issued by the Division of Traffic Operations Office of System Management Operations (Caltrans 2009). The Partner Agencies will require all traffic-control or traffic-reduction measures described in the TMP to be implemented. In addition, to the extent feasible, construction-related traffic and any temporary road closures shall be scheduled during non-peak traffic periods.*

The measures included in the TMP shall be consistent with any applicable guidelines outlined in the Standard Specifications for Public Works Construction, the U.S. Department of Transportation's Manual on Uniform Traffic Control Devices, and the Work Area Traffic Control Handbook. The plan will include the following items:

- *Definition of location and timing of any temporary lane or roadway closures;*
- *Identification and provision for circumstances requiring the use of temporary traffic control measures, such as flag persons, warning signs, lights, barricades, and cones to provide safe work areas in the vicinity of the project site or along the haul routes, including for narrow roadway segments, and to warn, control, protect, and expedite vehicular, bicycle, and pedestrian traffic and access by emergency responders;*
- *Implementation of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak-hour traffic, placement of detour signs (if required), lane closure procedures (if required), flaggers (if required), placement of cones for drivers, and designated construction access routes and access points;*
- *Notification to adjacent property owners, transit agencies and public safety personnel regarding when major deliveries, detours, and lane closures will occur;*
- *Measures to address the potential for construction-related traffic to impede emergency response vehicles and a specific training and information program for construction workers to ensure awareness of emergency procedures for project-related accidents;*
- *Identification of haul routes for movement of construction vehicles that will minimize impacts on vehicular and pedestrian traffic and circulation and safety, and provision for monitoring surface streets used for haul routes so that any damage and debris attributable to the haul trucks can be identified and corrected by the Partner Agencies in coordination with the construction contractor;*
- *Consideration of other projects in the vicinity that could also affect the same roadways as the project;*
- *Development of a process for responding to and tracking complaints pertaining to construction activity, including identification of an onsite complaint manager; and*
- *Documentation of road pavement conditions for all routes that would be used by construction vehicles both before and after project construction. Roads damaged by construction vehicles will be repaired to the level at which they existed before project construction."*

It is also important to note that the 21-month period required for construction includes the time required for construction of all facilities including construction of pipelines on the east side of the San Joaquin River, construction of the river crossing and DMC discharge structure, and improvements to pump stations. As explained on page 2-19 of the Draft EIR/EIS, "*It is expected that open trench construction within paved roadways would proceed at the rate of 200 to 500 feet per day within rural areas*." It is thus projected that the portion of the pipeline on Lemon Avenue could be completed in two to four months and the segment on Zacharias Road would be constructed in a similar time frame.

8.10.2 Response to Comment 10-2

Comment Summary: The comment expresses concern that construction of the NVRRWP would bisect an underground pipeline owned by Patterson Frozen Foods on Zacharias Road, and that any damage to that pipeline could damage their business.

Construction of the NVRRWP facilities would be accomplished in a manner so as to avoid interference with existing utilities. **Mitigation Measure PUB-4** on page 3.16-8 of the Draft EIR/EIS, which is repeated below, includes measures to ensure that water lines and other utilities are not adversely affected during construction.

> ***"Mitigation Measure PUB-4: Coordinate Relocation and Interruptions of Service with Utility Providers during Construction (Alternatives 1, 2 and 3)***
> *The construction contractor shall be required to verify the nature and location of underground utilities before the start of any construction that would require excavation. The contractor shall be required to notify and coordinate with public and private utility providers at least 48 hours before the commencement of work adjacent to any utility. The contractor shall be required to notify the service provider in advance of service interruptions to allow the service provider sufficient time to notify customers. The contractor shall be required to coordinate timing of interruptions with the service providers to minimize the frequency and duration of interruptions."*

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Letter 11

Capitol Mall, Suite 1535
amento, California 95814
www.ca.audubon.org

Audubon CALIFORNIA

March 10, 2015

Benjamin Lawrence
Bureau of Reclamation
1243 N Street
Fresno, CA 93721

Re: Comments on North Valley Regional Recycled Water Program Draft EIS/EIR

Dear Mr. Lawrence:

On behalf of Audubon California and our more than 150,000 members and supporters statewide, I am writing to express support for the North Valley Regional Recycled Water Program (NVRRWP). This program will convey up to 59,000 acre feet of recycled water per year which can help achieve the objectives and mandates of the Central Valley Project Improvement Act (CVPIA), specifically for refuges south of the Delta.

California has lost roughly 95 percent of its historic wetlands, making optimal management of the remaining wetlands on refuges, state wildlife areas, and places like Grasslands Ecological Area critical for the millions of birds that migrate through the Central Valley each year. Unfortunately, wetland managers are often limited by water availability and timing, significantly reducing their ability to create and maintain habitat for birds and other sensitive species such as the Giant Garter Snake. This issue is particularly pronounced south of the Delta, where this year refuges received as little as 30 percent their mandated water supply. The NVRRWP will help address the constraint of water availability by providing additional water supplies, particularly during times of the year when agricultural irrigation demand is minimal. This program will also help achieve the CVPIA by providing water for refuges. 11-1

The prioritization of refuges as a recipient of this recycled water has many benefits including 1) helping fully utilize water supply generated from this program when not in demand from agriculture; 2) potentially allowing for creative and flexible management of water by the Bureau of Reclamation, opening the door to water exchanges with agriculture; and 3) inclusion of refuges as a recipient will reduce or eliminate costs associated with creating additional storage ponds for periods of time when recycled water produced exceeds demand.

Overall, the inclusion of refuges as a recipient of this water not only provides benefits to the program but also helps support the few remaining wetlands in the Central Valley which make up the backbone of the Pacific Flyway. We appreciate the opportunity to comment on this draft document and look forward to reviewing the final EIR/EIS.

Sincerely,

Meghan Hertel

Meghan Hertel
Working Lands Director

8.11 Comment Letter 11 – Audubon California, Meghan Hertel, Working Lands Director

8.11.1 Response to Comment 11-1

Comment Summary: The comment expresses support for the project because it would provide water supply to refuges, and enumerates the benefits of supplying water to refuges.

Reclamation and the Partner Agencies appreciate the support of Audubon California.

DUCKS UNLIMITED

Western Regional Office
3074 Gold Canal Drive
Rancho Cordova, CA 95670-6116
(916) 852-2000 fax (916) 852-2200
www.ducks.org

March 10, 2015

Benjamin Lawrence
Bureau of Reclamation
1243 N Street
Fresno, CA 93721

Re: Comments on North Valley Regional Recycled Water Program Draft EIS/EIR

Dear Mr. Lawrence,

Ducks Unlimited, Inc. is focused on ensuring wetlands sufficient to fill the skies with waterfowl, today, tomorrow and forever. This wetland conservation goal also provides habitat for other wildlife and people through groundwater recharge, flood abatement, and water quality benefits to name a few. It is for this reason that Ducks Unlimited and our members strongly support the North Valley Regional Recycled Water Project and its benefits to the Refuge Water Supply Program (RWSP).

As you know, water supplies for private and public wetlands afforded through the Central Valley Project Improvement Act have not been fully realized. We feel this multi-benefit effort can provide a dependable supply of water to help meet the Incremental Level-4 water needs of the RWSP. It also provides additional water supplies to agricultural lands on the west side of the Central Valley where water is scarce, and this benefits the local economy and creates jobs. 12-1

Further, development of water supplies south of the Sacramento/San Joaquin Delta is highly desirable; this helps bring California's water supplies more in balance with need.

We thank you for your involvement in this important project and hope to see more water supplies made available to the RWSP.

Sincerely,

Mark E. Biddlecomb

Mark E. Biddlecomb
Director, Western Region
Ducks Unlimited, Inc.

8.12 Comment Letter 12 – Ducks Unlimited, Mark E. Biddlecomb, Director, Western Region

8.12.1 Response to Comment 12-1

Comment Summary: The comment expresses support for the project because it would provide water supply to refuges, and provide additional water supplies to agricultural lands where water is scarce.

Reclamation and the Partner Agencies appreciate the support of Ducks Unlimited.

March 10, 2015

Mr. Ben Lawrence
U.S. Bureau of Reclamation
1243 "N" Street
Fresno, CA 93721

e-mail: blawrence@usbr.gov

Mr. William Wong
City of Modesto, Utilities Department
1010 Tenth Street, 4th Floor
Modesto, CA 95354

e-mail: wwong@modestogov.com

STATE WATER CONTRACTORS
SWC
Served by the State Water Project
FOUNDED IN 1982

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Ray Stokes
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Stephen Arakawa
Metropolitan Water District of Southern California

Curtis Creel
Kern County Water Agency

Mark Gilkey
Tulare Lake Basin Water Storage District

Cindy Kao
Santa Clara Valley Water District

Dan Masnada
Castaic Lake Water Agency

David Okita
Solano County Water Agency

General Manager
Terry Erlewine

Subject: Comments of the State Water Contractors Regarding the Draft Environmental Impact Report/Environmental Impact Statement for the North Valley Regional Recycled Water Program.

Dear Mr. Lawrence and Mr. Wong:

The State Water Contractors[1] (SWC) appreciates the opportunity to provide comments on the U.S. Bureau of Reclamation's and City of Modesto's Draft Environmental Impact Report/Environmental Impact Statement (DEIR/S) for the North Valley Regional Recycled Water Program (NVRRWP). As proposed, the NVRRWP would deliver up to 59,000 acre-feet per year of recycled water produced by the cities of Modesto and Turlock wastewater treatment plants via the Central Valley Project (CVP) Delta Mendota Canal (DMC) to the Del Puerto Water District and to Central Valley Project Improvement Act (CVPIA) designated wildlife refuges located south of the Delta, to meet their need for water supply. The SWC has a significant interest in the health of the Sacramento-San Joaquin Delta ecosystem and in protecting water quality in the State Water Project (SWP) system. We have reviewed the DEIR/S and have several comments noted below concerning the evaluation of project impacts on SWP water quality and San Joaquin River flows.

The purpose of the proposed project is to deliver recycled water produced by the cities of Modesto and Turlock via the DMC to the Del Puerto Water District and CVPIA-designated wildlife refuges. As noted in the DEIR/S, the recycled water would be stored in CVP facilities during low water demand periods. These facilities include O'Neill Forebay and the San Luis Reservoir. However, the DEIR/S does not clearly acknowledge that O'Neill Forebay and San Luis Reservoir are facilities jointly used by the State Water Project (SWP) and CVP, and that SWP and CVP water is blended in these facilities. Further, the maps and figures showing 13-1

[1] The State Water Contractors (SWC) is a non-profit association of 27 public agencies from Northern, Central and Southern California that receive water under contract from the California State Water Project. The 27 member SWC agencies are: Alameda County Flood Control and Water Conservation District Zone 7, Alameda County Water District, Antelope Valley-East Kern Water Agency, Casitas Municipal Water District, Castaic Lake Water Agency, Central Coast Water Authority, City of Yuba City, Coachella Valley Water District, County of Kings, Crestline-Lake Arrowhead Water Agency, Desert Water Agency, Dudley Ridge Water District, Empire-West Side Irrigation District, Kern County Water Agency, Littlerock Creek Irrigation District, Metropolitan Water District of Southern California, Mojave Water Agency, Napa County Flood Control and Water Conservation District, Oak Flat Water District, Palmdale Water District, San Bernardino Valley Municipal Water District, San Gabriel Valley Municipal Water District, San Gorgonio Pass Water Agency, San Luis Obispo County Flood Control and Water Conservation District, Santa Clara Valley Water District, Solano County Water Agency, and Tulare Lake Basin Water Storage District.

13-1 Cont'd	the proposed project location and facilities do not show the SWP's California Aqueduct, and do not clearly illustrate the connections between the California Aqueduct, DMC, O'Neill Forebay and San Luis Reservoir. As a result, it is not clear that the proposed NVRRWP recycled water would be blended with SWP supplies in the jointly used facilities. The DEIR/S text and figures should be revised to clearly show the facilities that will be used to convey and store recycled water and to indicate where the recycled water would be blended with SWP supplies. In addition, the evaluation of potential water quality impacts in Section 3.11 should include an evaluation of water quality impacts on SWP water supplies.
13-2	The proposed project is the first time, to our knowledge, that an entity has proposed discharging recycled wastewater to the DMC, which would result in the blending of the recycled water with SWP drinking water supplies in the jointly used facilities. By proposing to store recycled water in the San Luis Reservoir, the project proposes to augment surface water with recycled water. Given the potentially precedent setting nature of the proposed project, it is important that the DEIR/S fully evaluate potential water quality impacts of introducing recycled water to a drinking water source.
	The following specific comments address areas of the DEIR/S where more information and analyses are needed to evaluate potential water quality impacts.
13-3	• Page ES-2 - All figures should show the California Aqueduct, O'Neill Forebay, and San Luis Reservoir so it is clear to the reader that the DMC water mingles with SWP water in O'Neill Forebay and San Luis Reservoir.
13-4	• Pages 1-8, 9 - The Cities of Modesto and Turlock propose to provide tertiary treatment for recycled water and will remove ammonia; only the City of Modesto facilities would provide denitrification. The DEIR/S should evaluate the proposed treatment processes for addressing key recycled water quality concerns related to drinking water including pathogen, nutrient, and chemical removal. Of interest, the DEIR/S should discuss potential impacts of nutrient loading to the San Luis Reservoir. Increased nutrient loading can lead to the production of algae growth, potentially causing taste and odor issues, toxins, and other operational issues.
13-5	• Page 1-10 - The importance of O'Neill Forebay, San Luis Reservoir, and the California Aqueduct as a source of drinking water to over 25 million people is greatly understated in the DEIR/S. Although water is primarily released from San Luis Reservoir between April and August, some water is released in every month of the year to O'Neill Forebay and used as a drinking water supply in Central and Southern California. Water is also released year-round from San Luis Reservoir through the Pacheco Pumping Plant and is used as a drinking water supply in the Santa Clara Valley.
13-6	• Page 1-14 - The State Water Resources Control Board, Division of Drinking Water Programs should be added to Table 1-3 as one of the State agencies that should be consulted for the proposed project.
13-7	• Section 3.11 Hydrology and Water Quality - By proposing to store project water in the San Luis Reservoir, the project proposes to augment surface water with recycled water. The *Less than Significant* findings for the water quality elements did not evaluate potential water quality impacts related to introducing recycled water to a drinking water source. Also, the State Water Resources Control Board Division of Drinking Water (DDW) is in the process of developing criteria for these types of surface water augmentation projects.
13-8	• Page 3.11-2 - The schematic in Figure 3.11-1 should show the intertie between the DMC and California Aqueduct near Tracy, O'Neill Forebay, and San Luis Reservoir.
13-9	• Page 3.11-4 - The project proposes to deliver up to 59,000 acre-feet/year of recycled water via the DMC. The DEIR/S does not explicitly compare this flow to current DMC flows and address related impacts. Based on Figure 3.11-3, the percentage of the recycled water in the DMC can range between 2% (DMC flow of 4100 cfs) and 33% (DMC flow of 250 cfs), during critical flow

years. The DEIR/S should provide an appropriate water quality analysis addressing the variability of the recycled water influence on DMC flows.

- Page 3.11-4 - The DEIR/S indicates that the U.S. Bureau of Reclamation has historically accepted groundwater into the DMC to supplement CVP water. However, the DEIR/S should clarify that there is no precedence for accepting recycled wastewater to augment surface water. 13-10

- Page 3.11-5 - The DEIR/S must evaluate potential water quality impacts to San Luis Reservoir since it indicates (Table 3.11-2) that recycled water quality is estimated to be of lesser quality than DMC water, which can be stored in San Luis Reservoir. The effluent quality data for Turlock and Modesto should be presented and the methodology for estimating the blended water quality should be described. Is this blended water quality at full build-out of both wastewater treatment plants? What is the worst case scenario for blended water quality? For example, for nitrate, it would be when the only water in the proposed pipeline is from Turlock since the Turlock facility does not remove nitrate. Analysis should also be provided for San Luis Reservoir under lower lake elevations (i.e., during drought conditions) to determine water quality impacts with blends of recycled water. 13-11

- Pages 3.11-8 to 3.11-12 - The Regulatory Framework section in the DEIR/S must include all regulations, plans and policies guiding the use of recycled water for indirect potable reuse (i.e., surface water augmentation). These include but are not limited to Title 22 Regulations for Drinking Water, the California Toxics Rule, and the Federal Antidegradation Policy. 13-12

- Page 3.11-11 - Regional Water Quality Control Boards have jurisdiction over the distribution of recycled wastewater and the enforcement of Title 22 regulations. DDW ensures that recycled water permit conditions are protective of public health. As related to this project, DDW is required to adopt water recycling criteria for surface water augmentation by December 31, 2016. The project proponents should consult with DDW for project approval prior to adoption of such criteria, per California Health & Safety Code §116551. 13-13

- Page 3.11-17 - The evaluation of water quality impacts should be expanded to include potential impacts on SWP drinking water supplies in O'Neill Forebay and San Luis Reservoir. Also, the discussion of water quality impacts should be expanded to discuss the impact of nutrients (nitrogen and phosphorus) on algal and macrophyte growth and the potential for algal toxins to be present if nutrients result in cyanobacteria blooms. Has the Central Valley Regional Water Quality Control Board been consulted on potential changes to effluent water quality that may be required when the point of discharge is changed to the DMC? 13-14

- Page 3.11-18 - Table 3.11-4 should also contain estimated recycled water quality and water quality standards for perchlorate and hexavalent chromium. The California primary MCLs for perchlorate and hexavalent chromium are 0.006 mg/L and 0.010 mg/L, respectively. The table should also contain information on the recycled water quality for total organic carbon and total phosphorus. The discussion of the results in this table needs to be expanded. The effluent quality data for Turlock and Modesto should be presented and the methodology for estimating the blended water quality should be described. Is this blended water quality at full build-out of both wastewater treatment plants? What is the worst case scenario for blended water quality? The methodology for mixing the recycled wastewater with DMC water should also be described. Are the results based on a model or a simple mass balance calculation? Overall, the full suite of Title 22 constituents should be evaluated. A table should be provided to identify the constituents with exceedances of the detection limit for purposes of reporting (DLR). 13-15

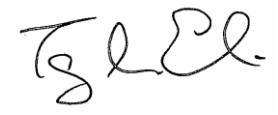
- Page 3.11-23, Table 3.11-7 - The DEIR/S compares Constituents of Emerging Concern (CEC) monitoring trigger levels (per the Recycled Water Policy) with recycled water effluent from the Cities of Modesto and Turlock. Turlock's caffeine levels exceed the monitoring trigger level; however, the DEIR/S states that the project is not a groundwater recharge project and, therefore, not subject to compliance with the Recycled Water Policy. Treated wastewater and recycled water, depending on how it is treated, is a major source of CECs in source water. The project should evaluate overall water quality concerns involving CECs (e.g., nitrosamine precursors) that are not currently regulated but may have potential impacts on public health. 13-16

13-17

- Page 3.11-24,25 - The DEIR/S evaluation of potential reduction of flows in the San Joaquin River only considers average annual flows. Flows in the San Joaquin River are highly managed and can be very low in dry and critically dry years. The DEIR/S should evaluate the potential reduction of flows in the San Joaquin River in dry and critically dry years, in addition to evaluating annual average flow changes.

We appreciate the opportunity to provide input to your planning process and we look forward to receiving future information concerning the proposed project. We would be happy to meet with you to discuss any of our comments. Please contact me at terlewine@swc.org or Lynda Smith at lsmith@mwdh2o.com.

Sincerely,



Terry L. Erlewine
General Manager

8.13 Comment Letter 13 – State Water Contractors, Terry L. Erlewine, General Manager

8.13.1 Response to Comment 13-1

Comment Summary: The comment states that figures in the Draft EIR/EIS should be revised to clearly show the facilities that would be used to convey and store recycled water and to indicate where recycled water would be blended with State Water Project (SWP) supplies, so as to illustrate that NVRRWP recycled water would be blended with SWP supplies. The comment also states that evaluation of water quality impacts should include an evaluation of water quality impacts on SWP supplies.

The comment provides a summary of more detailed comments that are addressed below. Please refer to Responses to Comment 13-2 through 13-7 for response to each specific comment.

8.13.2 Response to Comment 13-2

Comment Summary: The comment suggests that the NVRRWP is the first time that a project would directly discharge recycled water to the DMC, which would result in blending of recycled water with SWP drinking water in jointly used facilities, including the San Luis Reservoir. The comment contends that the project should thus be considered a surface water augmentation project.

While it is true that the NVRRWP would be the first project to directly discharge "recycled water" (i.e. tertiary treated wastewater effluent) to the DMC, it is important to understand this in the context of other wastewater inputs to the SWP. The mechanism for permitting the discharge is also relevant, because the NVRRWP is not considered to be a surface water augmentation project.

The NVRRWP proposes to convey recycled water generated by the Cities of Modesto and Turlock to DPWD by introducing the "recycled water" into the DMC. DPWD would take delivery of the water from the DMC via existing turnouts from the DMC to DPWD lands. Certain SOD CVPIA refuges may also receive "recycled water" delivered via the DMC.

Because it is not a surface water augmentation project the project is not directly under the jurisdiction of the CDPH. As stated on page 1-10 of the Draft EIR/EIS, "*Although recycled water discharged to the DMC would not technically be required to meet criteria that are established by the California Department of Public Health (CDPH), it would have to meet the standards of the NPDES Permit for discharge issued by the RWQCB.*" Although the NVRRWP has been conceived as a recycled water project, from a regulatory standpoint it is more accurately characterized as a wastewater discharge project. To that end, the CVRWQCB is processing application(s) for NPDES permit(s) for discharge to the DMC (whether the CVRWQCB issues a single permit for the two cities' combined discharge or a permit to each city has not been determined at the time of this document). As such, a Recycled Water Permit is not required for discharge of "recycled water" to the DMC for conveyance to DPWD. Water diverted from the

DMC is considered surface water, and would not be re-characterized as recycled water based on an approved discharge to the canal.

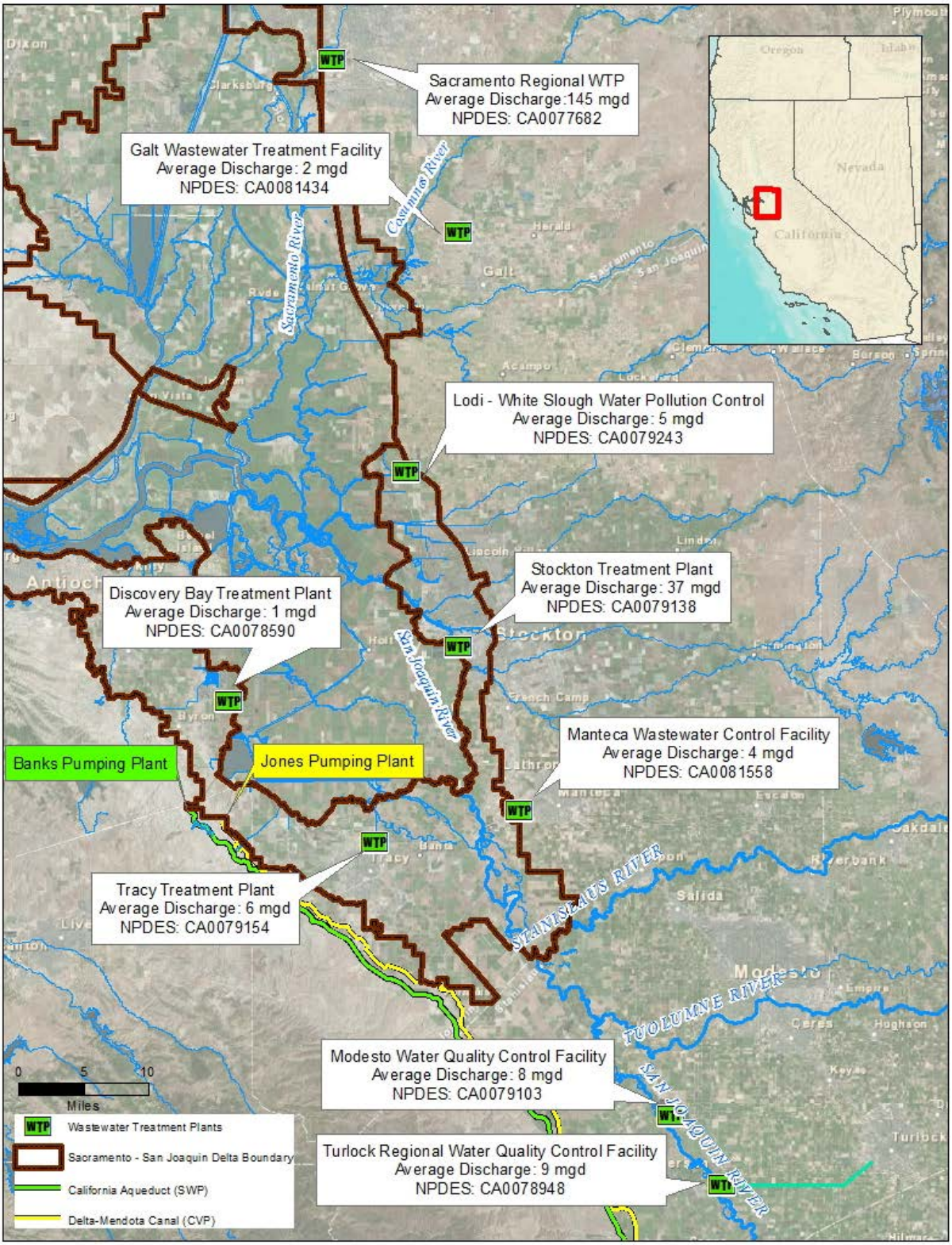
The NPDES permit(s) will establish discharge standards based on the beneficial uses of the receiving water as defined in the Basin Plan for the Sacramento River and San Joaquin River Basins (CVRWQCB, rev October 2011).

Once the "recycled water" is discharged to the DMC under the provisions of the proposed NPDES permit, the "recycled water" becomes comingled with the receiving water, similar to any other surface water discharge in the State, including the existing discharges by the two cities to the San Joaquin River. Under current operations, discharges from the Modesto and Turlock treatment plants comingle with San Joaquin River Water. A portion of the comingled San Joaquin River is diverted downstream and pumped into the DMC, including diversion and pumping operations at PID, WSID, Banta-Carbona Irrigation District, and at the Jones Pumping Plant, the Delta intake for the DMC.

The DMC is categorized as a Water of the State in the Basin Plan, and one of the beneficial uses is municipal water supply, due to the interconnection of the DMC with the SWP through O'Neill Forebay and San Luis Reservoir. In recognition of this downstream beneficial use, Reclamation has established standards for introduction of non-CVP water into the DMC (Reclamation 2014). Reclamation's standards for introduction of water into the DMC include the full suite of EPA drinking water constituents above the interconnection of the DMC and the SWP, with a reduced set of water quality standards south of the interconnection that are more reflective of agricultural water quality standards. Similarly, the NPDES permit being considered by the Regional Water Quality Control Board, Region 5, will also consider the identified beneficial uses of the DMC, including its interconnection to the SWP.

Irrespective of these operations on the San Joaquin River, as noted on page 3.11-24 of the Draft EIR/EIS, the California State Water Project Watershed Sanitary Survey 2011 Update (State Water Project 2012) estimated that the discharge from the Sacramento, Stockton, and Manteca wastewater treatment plants (three of the largest wastewater dischargers to Delta tributaries) can comprise up to approximately 3 percent of the flow in the DMC. At build-out of the cities flow conditions (year 2045), the maximum concentration of tertiary effluent discharged into the DMC through the NVRRWP would be approximately 2.7 percent and 3.4 percent of DMC historic average flows for the months of April and May, respectively. The remaining months of the year the tertiary effluent contribution to the DMC is projected to be 1.5 percent or less. Thus, the NVRRWP contribution to the tertiary effluent present in the DMC is similar or less than current practices based on the 2011 California State Water Project Watershed Sanitary Survey. The figure below shows representative existing wastewater inputs into the Delta System.

Figure 8-2: Representative Wastewater Discharges to Sacramento-San Joaquin Delta System



Specific comments regarding water quality impacts of the NVRRWP are addressed below.

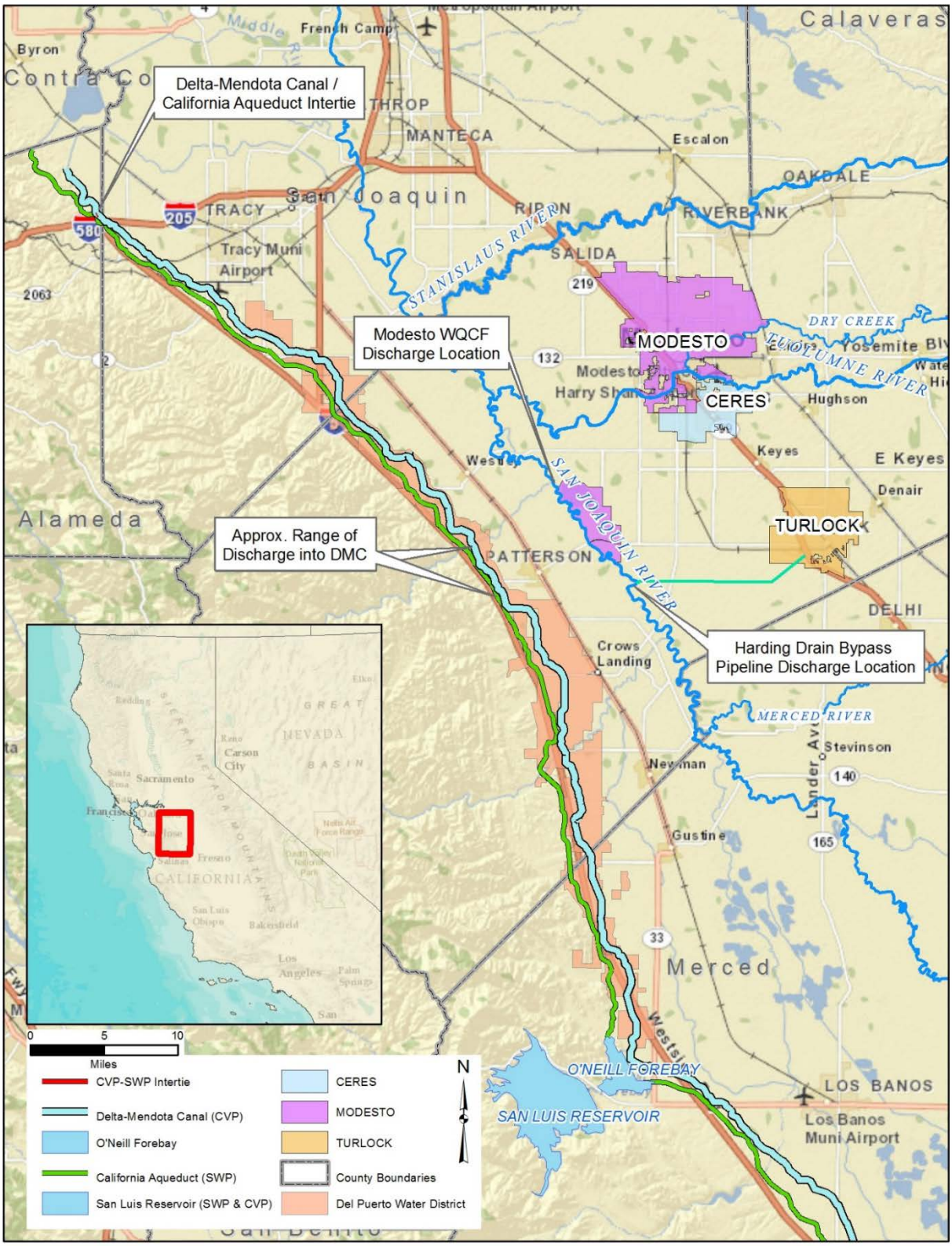
8.13.3 Response to Comment 13-3

Comment Summary: The comment references page ES-2 and states that all figures should show the California Aqueduct, O'Neill Forebay, and San Luis Reservoir so that it is clear to the reader the DMC water mingles with SWP water in O'Neill Forebay and San Luis Reservoir.

The scale of most figures does not allow depiction of the California Aqueduct, O'Neill Forebay, and San Luis Reservoir, so it is not practical to add those features to all figures in the Final EIS. However, those facilities can be depicted on the project vicinity maps in order to provide clarification regarding the relationship of the proposed project facilities and other major water supply infrastructure. In addition, the intertie between the DMC and California Aqueduct near Tracy has been added to the figure in the Final EIS. As shown in the revised figure, all of the potential discharge locations for introducing recycled water into the DMC would be downstream of the intertie, so recycled water would not move through the intertie.

Figure ES-1 on page ES-2 of the Draft EIR/EIS and **Figure 1-1** on page 1-2 are both revised as follows in the Final EIS:

Figure ES-1 (REVISED): Project Vicinity



8.13.4 Response to Comment 13-4

Comment Summary: The comment states that the Draft EIR/EIS should evaluate proposed treatment processes for addressing water quality concerns related to drinking water including pathogen, nutrient and chemical removal and should discuss potential impact of nutrient loading to San Luis Reservoir potentially causing algae problems.

The Draft EIR/EIS showed expected recycled water quality as compared to water quality of the DMC (see **Table 3.11-2** on page 3.11-5) and evaluated potential water quality impacts of discharging recycled water to the DMC (see discussion beginning on page 3.11-17). The Draft EIR/EIS found that while the level of nutrients is slightly higher in recycled water than in the DMC, the proposed discharge would meet Reclamation standards for acceptance of non-CVP water in the DMC, and levels of chemicals and nutrients were similarly determined to be acceptable for discharge. Those conclusions have been supported by subsequent studies (see **Appendix I** in the Final EIS).

Since completion of the Draft EIR/EIS, an antidegradation analysis for the proposed introduction of NVRRWP flows into the DMC was prepared for the CVRWQCB to provide the agency the information it needs to determine whether the proposed discharge to the DMC is consistent with state and federal antidegradation policies. The *Antidegradation Analysis for Proposed Recycled Water Discharge to the Delta-Mendota Canal* (Larry Walker and Associates 2015) has been incorporated in the Final EIS as **Appendix I**. The antidegradation analysis addresses, among other constituents and issues, pathogens, nutrients, and chemicals of concern to the beneficial uses of the DMC.

In regard to potential effects of nutrients on algae problems, the CVRWQCB is currently developing a Delta Nutrient Management Strategy process (http://www.waterboards.ca.gov/rwqcb5/water_issues/delta_water_quality/public_involvement_stag_meetings/index.shtml). This ongoing process is looking at the question of how nutrients affect algae problems to determine if any management action could have an effect on macrophytes, cyanobacteria/microcysts, and other outcomes. The CVRWQCB has noted that if elevated nutrient concentrations affect algal growth this could result in "*taste and odor problems in State Water Project terminal drinking water reservoirs*", such as San Luis Reservoir. There are a number of other significant factors affecting algal growth such as temperature and residence time, and it has not yet been determined whether an incremental change (either reduction or increase) in nutrient concentrations would have any influence on these effects. Thus, at this time it is not possible to predict the effect that small changes in nutrient levels might have on algal growth. Once the Delta Nutrient Management Strategy has been developed by the Regional Water Quality Control Board, the NPDES permitting process and Reclamation's water quality requirements can and likely will be used to adequately address any potential impacts.

8.13.5 Response to Comment 13-5

Comment Summary: The comment states that the Draft EIR/EIS understates the importance of the O'Neill Forebay, San Luis Reservoir and California Aqueduct as a source of drinking water for Southern California and the Santa Clara Valley.

The Draft EIR/EIS describes both the DMC and San Luis Reservoir and associated facilities beginning on page 1-9. The description in the Draft EIR/EIS was certainly not intended to minimize the importance of any of the water supply facilities, and does identify the fact that the DMC conveys water that is used for municipal purposes (i.e. drinking water). Additional clarification regarding the California Aqueduct has been added to the description of the San Luis Reservoir. The description of the DMC starting on page 1-9 of the Draft EIR/EIS is provided below:

1.1.5 Delta-Mendota Canal (DMC)

"Completed in 1951, the DMC carries CVP water southeasterly from the Tracy (C.W. "Bill" Jones) Pumping Plant along the west side of the San Joaquin Valley, delivering water for irrigation and municipal uses, as well as for wildlife refuges en route. Water from the DMC replaces San Joaquin River flows in the Mendota Pool. The DMC also transports CVP water to the O'Neill Forebay for delivery to the San Luis Unit. The canal extends 70 miles from the Sacramento-San Joaquin Delta to the O'Neill Forebay and then 46 miles to the Mendota Pool on the San Joaquin River, about 30 miles west of Fresno. The initial diversion capacity is 4,600 cubic feet per second (cfs), which is gradually decreased to 3,211 cfs at the terminus."

A discussion of the California Aqueduct has been added to the description of the San Luis Reservoir. The description of the San Luis Reservoir on page 1-10 of the Draft EIR/EIS is revised as follows in the Final EIS:

1.1.6 San Luis Reservoir

The DMC is connected to the San Luis Reservoir via O'Neill Forebay midway along the length of the canal. This 2 million-AF artificial lake on San Luis Creek in the eastern slopes of the Diablo Range of Merced County is jointly owned and operated by Reclamation and the California Department of Water Resources (DWR) and is one of California's largest reservoirs (Reclamation 2013c). During the summer or dry season, water in San Luis Reservoir is used by CVP contractors, as well as State Water Project contractors. <u>The California Aqueduct also flows into the O'Neill Forebay at San Luis Reservoir; from the O'Neill Forebay, the aqueduct continues south to serve municipal users in southern California including Kern, Los Angeles, San Bernardino, San Diego and Santa Barbara Counties. Under the Proposed Action, t</u>ertiary-treated water introduced and conveyed in the DMC during low-demand periods could be stored in the federal portion of San Luis Reservoir. Storage may be done either through operational exchanges with Reclamation or through direct delivery. Any storage of recycled water would occur after the water has been blended with flows in the DMC as it moves down the DMC from the introdcuction point north of O'Neill Forebay (see **Figure 1-1**).

8.13.6 Response to Comment 13-6

Comment Summary: The comment suggests that the State Water Resources Control Board, Division of Drinking Water Programs should be added to Table 1-3 as an agency that should be consulted.

Because the NVRRWP proposes a discharge of wastewater to a water of the State, it is under the jurisdiction of the CVRWQCB, and not the SWRCB, Division of Drinking Water Programs (DDW). The CVRWQCB can consult with DDW if they deem it appropriate, but this consultation is at the discretion of the CVRWQCB. It is likely that the CVRWQCB will consult with DDW during the process of issuing an NPDES permit for the discharge to the DMC. However, the project would not need a permit from DDW, and thus has not been included in **Table 1-3**.

8.13.7 Response to Comment 13-7

Comment Summary: The comment claims that the evaluation of water quality did not consider impacts related to introducing recycled water into a drinking water source, and references the fact that the State Water Resources Control Board Division of Drinking Water is developing criteria for surface water augmentation projects.

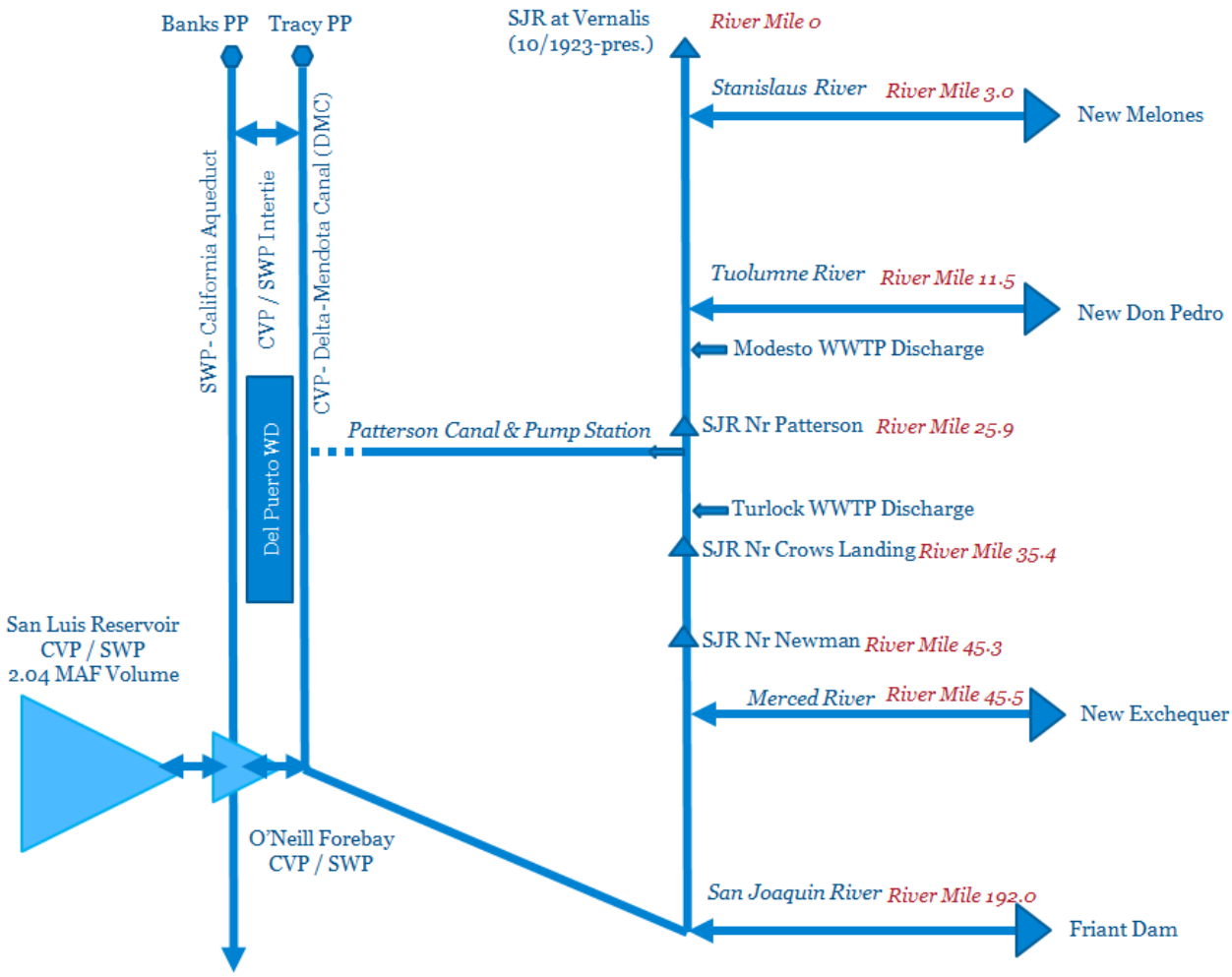
See Response to Comment 13-2, which explains that the NVRRWP is not a surface water augmentation project. In addition, the antidegradation analysis submitted to the CVRWQCB, as referenced above, does address impacts associated with discharging into the DMC, which is connected to a drinking water source at the O'Neill Forebay. This has been included as **Appendix I** in the Final EIS.

8.13.8 Response to Comment 13-8

Comment Summary: The comment requests that the schematic in Figure 3.11-1 be revised to show the intertie between the DMC and California Aqueduct near Tracy O'Neill Forebay, and San Luis Reservoir.

The intertie has been added to both **Figure 1-1** and **Figure 3.11-1** in the Final EIS, but it is important to note that the intertie is upstream of the potential recycled water discharge location on the DMC, so no NVRRWP water would be moved through the intertie to the California Aqueduct. **Figure 3.11-1** on page 3.11-2 of the Draft EIR/EIS is revised in the Final EIS as follows:

Figure 3.11-1 (REVISED): Schematic of San Joaquin River Inflows, Outflows and Monitoring Points



8.13.9 Response to Comment 13-9

Comment Summary: The comment states that the Draft EIR/EIS should provide a water quality analysis that addresses the variability of recycled water influence on DMC flows, which it suggests vary between 2 percent and 33 percent.

As noted on page 3.11-19 of the Draft EIR/EIS, water quality in the DMC after the addition of recycled water was estimated based on "*assumed recycled water flow of 82 cfs and DMC flow of 900 cfs, which roughly corresponds to the 10th percentile flow rate for the Tracy Pumping Plant. This is a conservatively large amount of recycled water (9 percent) as a percentage of the total DMC flow.*" The Antidegradation Analysis, which is presented in **Appendix I** of the Final EIS, uses two flow conditions to evaluate water quality impacts of discharge to the DMC. Extremely low flow conditions were represented by the "7Q10" flow of 397 cfs, which is the lowest 7-day average flow that occurs on average once every 10 years. Water quality effects were also calculated using the harmonic mean flow of 2,153 cfs. Both flows were calculated from DMC

flow data measured at the Jones Pumping Plant during the years 1994 – 2013. Evaluation using these flows is deemed to reasonably represent the variability of the recycled water influence on DMC flows.

8.13.10 Response to Comment 13-10

Comment Summary: The comment states that the Draft EIR/EIS should clarify that there is no precedence for accepting recycled water to augment surface water.

See Response to Comment 13-2.

8.13.11 Response to Comment 13-11

Comment Summary: The comment requests that the effluent quality data for Turlock and Modesto be presented along with the methodology for estimating blended water quality. The comment asks if blended water quality has been determined at full build-out of both wastewater treatment plants and asks if the analysis considered the worst case scenario for blended water quality, which for nitrate would occur when the discharge consists solely of recycled water from Turlock. The comment also requests an evaluation of effects on San Luis Reservoir under lower lake elevations.

As described previously, since the completion of the Draft EIR/EIS, an antidegradation analysis for the proposed NVRRWP discharge to the DMC was prepared for the CVRWQCB to provide the information it needs to determine whether the proposed discharge to the DMC is consistent with state and federal antidegradation policies. The antidegradation analysis has been incorporated in the Final EIS as **Appendix I**, and the results are summarized below.

The antidegradation analysis evaluated “near-field” and “far-field” water quality impacts. Within this study, near-field and far-field were defined as follows:

- Near-field - the point in the DMC downstream of the proposed discharge at which the discharge is fully mixed. Per the modeling conducted for this study, this point occurs between 0.5 and 3 miles downstream depending on flow conditions.
- Far-field - two locations near the San Luis Joint-Use Complex, which is approximately 32.7 miles downstream of the discharge. The first of these locations is Check 13 (which is the point where the DMC connects with the O’Neill Forebay and is also the outlet of the O’Neill Forebay to the California Aqueduct). The second of these locations is the Pacheco Pumping station, which pumps water from the San Luis Reservoir to San Benito and Santa Clara County for municipal and irrigation use.

The near-field and far-field water quality impacts scenario considered in this analysis utilized the estimated NVRRWP discharge rate of 52.9 mgd (27.5 mgd from Modesto and 25.4 mgd from Turlock) at project buildout (projected to occur in 2045) to represent future conditions. The anti-degradation analysis did not evaluate water quality impacts of a scenario in which discharge to the DMC is composed only of tertiary effluent from Turlock as this circumstance is unlikely to occur. Also, if Modesto were not discharging, total nitrate discharge to the DMC would be less than for the combined flow scenario evaluated in the antidegradation analysis. Even if the nitrate levels in the Turlock discharge were slightly higher than Modesto’s tertiary effluent, if Modesto

were not discharging, the substantial reduction in the total volume of the discharge would reduce the loading of nitrate.

The far-field assessment used the historical operational data for the San Luis Joint-Use Complex from 1980 through 2012 to estimate the proportion of DMC water at the two outflows (Check 13 and the Pacheco Pumping Station); at NVRRWP buildout, water exiting the San Luis Reservoir is estimated to contain an average of 1.54 percent NVRRWP water. The far field assessment is conservative in that it assumes a "worst case" scenario in which DPWD makes zero diversions from the DMC. During the irrigation season (also generally the time in which water levels in the San Luis Reservoir are lowest), it is very unlikely that DPWD will not divert water from the DMC. Given that DPWD received only 10 percent (14,000 AFY) of its contracted allocation in 2009, 20 percent (28,000 AFY) of its contracted allocation in 2013, and 0 percent of its allocation in 2014 and 2015, it is very likely DPWD will divert the full 52.9 mgd NVRRWP allocation.

The antidegradation analysis confirms the evaluation of impacts presented in the Draft EIR/EIS, and concludes that:

> *"Overall, the very minor changes in water quality identified with implementation of the proposed project are expected to result in the following outcomes:*
> - *Project would not be expected to cause, or increase the frequency of, exceedances of applicable criteria/objectives in the DMC or downstream receiving waters, would not cause nuisance conditions;*
> - *Project would not adversely affect beneficial uses in the DMC or downstream waters; and*
> - *Project would not result in water quality less than that prescribed in state or federal policies."*

Please see the antidegradation analysis (**Appendix I**) for the water quality impacts of individual parameters.

8.13.12 Response to Comment 13-12

Comment Summary: The comment states that the Regulatory Framework section should include all regulations, plans and policies guiding the use of recycled water for indirect potable reuse, including Title 22 Regulations for Drinking Water, the California Toxics Rule, and the Federal Antidegradation Policy.

See Response to Comment 13-2, which explains that the NVRRWP would be permitted by the CVRWQCB as a discharge to the DMC. The Title 22 regulations cited in the comment are included in Reclamation's water quality standards.

As discussed in the Response to Comment 13-11, an antidegradation analysis has been prepared since the publication of the Draft EIR/EIS and is included in the Final EIS as **Appendix I**. The antidegradation analysis includes an extensive discussion of the federal and State antidegradation policies. The antidegradation analysis also references the California Toxics Rule and includes a

discussion of applicable water quality criteria including water quality objectives in the California Toxics Rule.

8.13.13 Response to Comment 13-13

Comment Summary: The comment states that DDW is required to adopt water recycling criteria for surface water augmentation by December 31, 2016, and that project proponents should consult with DDW for project approval before adoption of those criteria.

See Response to Comment 13-2. A Recycled Water Permit is not required nor is it appropriate for discharge of "recycled water" to the DMC for conveyance to DPWD.

8.13.14 Response to Comment 13-14

Comment Summary: The comment states that impacts on SWP drinking water supplies in O'Neill Forebay and San Luis Reservoir should be evaluated, and should include a discussion of the impact of nutrients on algal and macrophyte growth. The comment also asks if the Central Valley Regional Water Quality Control Board has been consulted in regard to potential discharge to the DMC.

The CVRWQCB has been consulted throughout the development of the NVRRWP. NVRRWP discharge to the DMC cannot occur without an NPDES permit from the CVRWQCB. As discussed in Response to Comment 13-11 and Response to Comment 13-12, an antidegradation analysis has been prepared for the NVRRWP in order to provide the CVRWQCB with information it needs to determine whether the proposed discharge to the DMC is consistent with state and federal anti-degradation policies. As detailed in Response to Comment 13-11, the antidegradation analysis evaluated water quality impacts of the discharge in the O'Neill Forebay and the San Luis Reservoir.

For the conservative conditions used in the antidegradation analysis, that analysis found that the NVRRWP maximum discharge of 52.9 mgd to the DMC would increase nitrate + nitrite (as N) concentrations from 0.60 mg/L to 0.78 mg/L at Check 13 and from 0.80 mg/L to 1.00 mg/L at the Pacheco Pumping Plant. These concentrations are well below the most stringent application water quality objective (10 mg/L nitrite + nitrate as N). It is also noted that the San Luis Reservoir is not 303(d) listed for nutrients. The CVRWQCB is in the process of developing a Delta Nutrient Management Strategy, which considers potential effects of algal growth on terminal drinking water reservoirs such as San Luis Reservoir. However, at this point it is not possible to determine whether small increases in nutrients in the San Luis Reservoir and O'Neill Forebay would affect algal or macrophyte growth. See Response to Comment 13-4 for discussion of nutrients.

8.13.15 Response to Comment 13-15

Comment Summary: The comment states that additional parameters should be included in Table 3.11-4 and requests evaluation of recycled water quality for perchlorate, hexavalent chromium, total organic carbon, and total phosphorus, and reiterates the request for a description of the methodology for estimating blended water quality and for determining mixing with DMC water. The comment requests evaluation of the full suite of Title 22 constituents, with a table identifying constituents with exceedance of the detection limit.

Table 3.11-4, which is presented on page 3.11-19 of the Draft EIR/EIS is intended to evaluate recycled water quality in comparison to Reclamation's water quality standards for acceptance of non-CVP water into the DMC. As such, parameters for which there are no Reclamation standards were not included in that table. Additional information is provided to address specific parameters about which the comment expresses concern, but it would not be appropriate to add those parameters to **Table 3.11-4**, because there are no Reclamation DMC water quality standards for any of the parameters mentioned in the comment.

As noted in Response to Comment 13-11, an antidegradation analysis was conducted for the NVRRWP discharge, and is included in **Appendix I** of the Final EIS. Water quality constituents were selected for quantitative near-field analyses based on two or more of the following conditions:

1. Modesto's Jennings Road Secondary Treatment Facility received a limitation for a particular constituent for discharge of tertiary treated effluent in Order No. R5-2012-0031.
2. Turlock RWQCF received a limitation for a particular constituent for discharge of tertiary treated effluent in Tentative Draft Order No. R5-2015-0027.
3. Constituent was identified as a pollutant/stressor on the 2010 CWA Section 303(d) list for a water body downstream of the proposed NVRRWP discharge.
4. Constituent for which an adopted TMDL exists in a water body downstream of the proposed NVRRWP discharge.
5. Constituent is a known water quality concern of the CVRWQCB.
6. Constituent has a water quality objective or criteria applicable to the DMC and/or downstream water body.

Seventeen parameters were ultimately selected for near-field analyses. Perchlorate, hexavalent chromium, total organic carbon, and total phosphorus were not selected for antidegradation analysis because they did not meet the criteria listed above. Each parameter mentioned in the comment is discussed below.

Perchlorate

The NPDES permits for Turlock and Modesto do not require effluent monitoring for perchlorate, thus there is no data available regarding concentrations of perchlorate in the effluent from either plant. Perchlorate has not been detected in drinking water supplies in Stanislaus County (State Water Resources Control Board 2015) and there are no known industrial sources of perchlorate within the service areas of either the Modesto or Turlock plants. As such, it is highly unlikely that perchlorate is present in the effluent from either plant.

Hexavalent chromium

Table 3.11-4 includes data for total chromium, which includes chromium-6 (hexavalent chromium) and chromium-3. Levels of hexavalent chromium thus must **always** be below the concentration of total chromium. Recycled water quality is estimated to have a total chromium concentration of 0.001 mg/L, which is below both the Reclamation criterion for the DMC (0.05

mg/L), and below the California primary MCL of 0.010 mg/L for hexavalent chromium that is cited in the comment.

Total Organic Carbon

Data for total organic carbon are not available. As with most municipal wastewater treatment plants, Modesto and Turlock have effluent limitations for BOD within their NPDES permits. Like Total Organic Carbon, BOD is a measure of the organic content of water. Modesto and Turlock consistently meet their effluent limitations for BOD. Tertiary effluent average monthly BOD effluent limitations are presently 10 mg/L for both Turlock and Modesto. BOD effluent limitations will undoubtedly be maintained in future NPDES permits for the Modesto and Turlock plants.

Phosphorus

The NPDES permit for Modesto does not require monitoring for phosphorus, so regular effluent sampling for phosphorus is not performed. The City of Turlock conducts limited annual monitoring of effluent as part of their required sampling for standard minerals. Based on annual sampling conducted from 2007 to 2009 phosphorus levels in the effluent have averaged 4 mg/L (with a range of 3.5 to 5.2 mg/L).

8.13.16 Response to Comment 13-16

Comment Summary: The comment requests an evaluation of overall water quality concerns involving CECS that are not currently regulated but may have potential impacts on public health.

As noted in the Draft EIR/EIS on page 3.11-24, "*The source water in the DMC is drawn from the Delta and multiple wastewater treatment plants discharge treated effluent to the Delta or to waterways that flow into the Delta…. Because the proposed project would not significantly change the extent of CECs in the DMC, this impact is considered less than significant*." As part of their issuance of an NPDES permit the CVRWQCB can include CEC monitoring requirements if deemed necessary. It is beyond the scope of this document to create a framework for the evaluation of impacts of unregulated CECs on public health.

8.13.17 Response to Comment 13-17

Comment Summary: The comment states that the evaluation of flow reductions in the San Joaquin River only considers average annual flows and the Draft EIR/EIS should also evaluate reductions of river flows in dry and critically dry years.

See Response to Comment 5-4 for a discussion of the impact of flow reductions in dry and critically dry years.

Letter 14

Chevron

MAR
Capital Improvement Services

Mike N. Oliphant
Project Manager
Mining and Specialty
Portfolio

Chevron Environmental Management Company
P.O. Box 6012
San Ramon, CA 94583
Tel (925) 790 6431
Fax (925) 790 6772
mike.oliphant@chevron.com

March 9, 2015

Stakeholder Communication – City of Modesto

Mr. William Wong
City of Modesto
Utilities Department
1010 Tenth Street, 4th Floor
Modesto, California 95354

Subject: **Comments on the North Valley Regional Recycled Water Program Draft Environmental Impact Report/Statement**
Chevron Environmental Management Company
Historical Pipeline Portfolio–Bakersfield to Richmond

Dear Mr. Wong:

On behalf of Chevron Environmental Management Company (CEMC), Leidos Engineering LLC (Leidos; CEMC contract consultant) recently reviewed the Draft Environmental Impact Report/Statement for the North Valley Regional Recycled Water Program (proposed project). The information contained in this letter may help you in planning this project and to understand something about Chevron's former pipeline operations in Stanislaus County, as residual weathered crude oil, abandoned pipeline, and asbestos-containing materials (ACM) could potentially be encountered during subsurface construction activities in these former pipeline rights of way (ROWs).

Portions of the former Old Valley Pipeline (OVP) and Tidewater Associated Oil Company (TAOC) pipelines existed in the vicinity of the proposed project area. These formerly active pipelines were constructed in the early 1900s and carried crude oil from the southern San Joaquin Valley to the San Francisco Bay Area. Pipeline operations for the OVP ceased in the 1940s, and in the 1970s for the TAOC pipelines. When pipeline operations ceased, the pipelines were taken out of commission. The degree and method of decommissioning varied: in some instances the pipelines were removed, while in others they remained in place. Because these pipelines have been decommissioned, with the majority of pipelines having been removed, they are not readily identified as underground utilities through the Underground Service Alert North System or utility surveys. Figures 1 through 3 illustrate the location of the former OVP and TAOC ROWs with respect to Project Alternatives 1 through 3 of the proposed project area. The location of the pipelines shown on Figures 1 through 3 is based on historical as-built drawings and the approximated positional accuracy of the alignments is generally +/- 50 feet. The OVP and TAOC pipelines were installed at depths of up to 10 feet below ground surface. The steel pipelines were typically encased in a protective coating composed of coal tar and ACM. 14-1

Working under the direction of State regulatory agencies, CEMC conducted risk assessments at numerous locations with known historical crude-oil release points along the former OVP and TAOC pipelines. Analytical results from these risk assessments indicated that the crude-contaminated soil was non-hazardous. Accordingly, it is likely that if soil affected by the historical release of crude oil from these former pipelines is encountered during construction

activities it may be reused as backfill on site. Properly abandoned crude-oil pipeline may be left in the ground. Parties conducting construction activities in the vicinity of these former pipeline ROWs may wish to use the information provided in this letter to help prepare for the possibility of encountering abandoned pipelines and pipeline-related ACM during the course of their work.

For more information regarding these historic pipelines, please visit http://www.hppinfo.com/. If you would like additional information, or would like to request more detailed maps, please contact Leidos consultants Mike Hurd (michael.t.hurd@leidos.com) at (510) 466-7161 or Daniel Anzelon (daniel.b.anzelon@leidos.com) at (858) 826-3316.

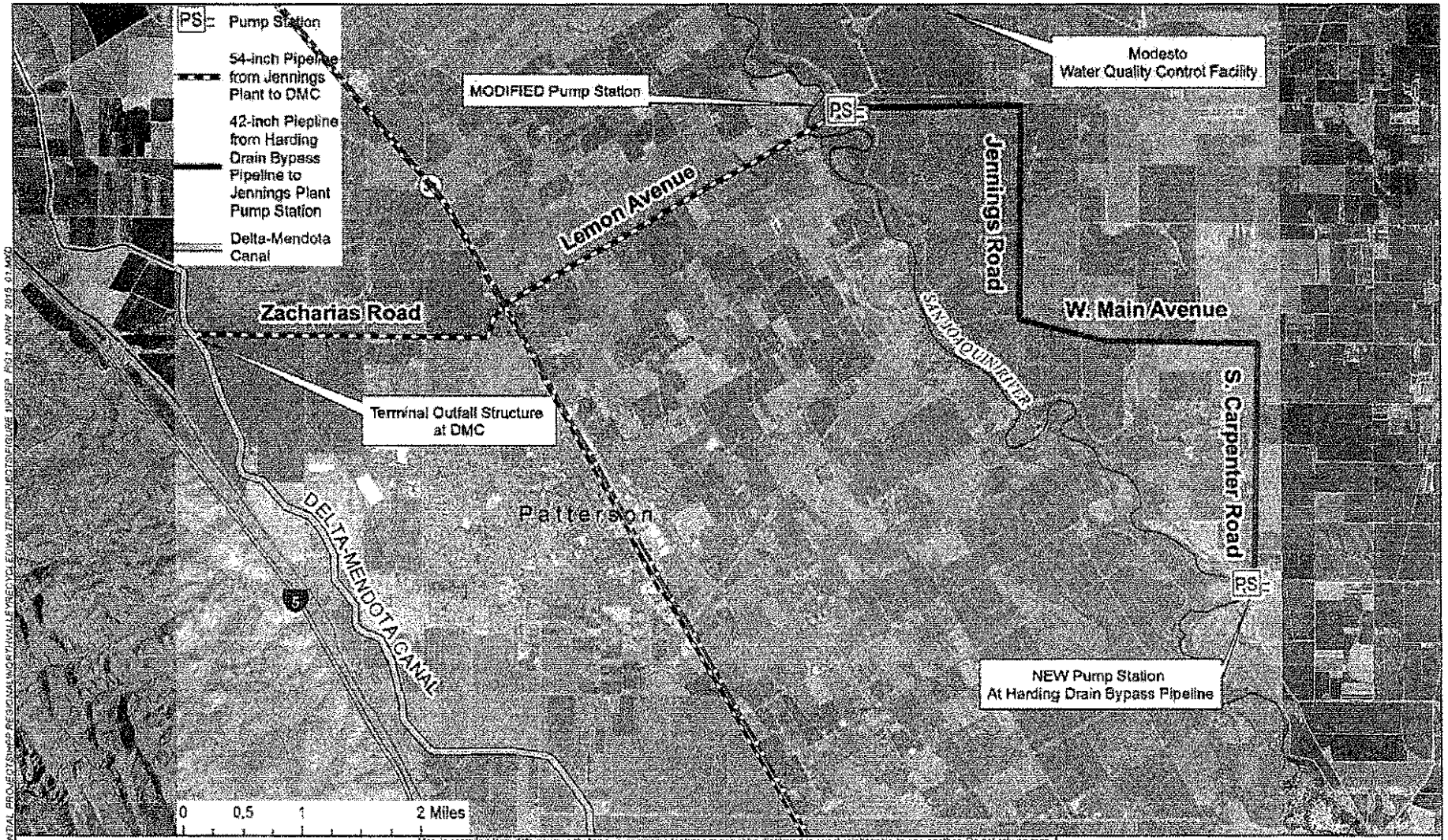
Sincerely,

Mike Oliphant

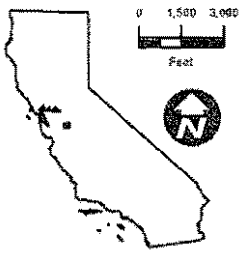
MO/klg

Enclosure:
Figure 1. Historical Pipeline Rights of Way – Combined Alignment Alternative (Alternative 1)
Figure 1. Historical Pipeline Rights of Way – Separate Alignment Alternative (Alternative 2)
Figure 1. Historical Pipeline Rights of Way – PID Conveyance Alternative (Alternative 3)

cc: Mr. Ben Lawrence – U.S. Bureau of Reclamation
1243 "N" Street, Fresno, California 93721
Mr. Mike Hurd – Leidos
1000 Broadway, Suite 675, Oakland, California 94607



Map is compiled from data sources that vary in accuracy; features may not be displayed in exact relationship to one another. Do not rely on map for legal information or underground work. Source: U.S. Department of the Interior, Bureau of Reclamation, "Figure 2-2: Combined Alignment Alternative (Alternative 1)," Draft Environmental Impact Report/Statement - North Valley Regional Recycled Water Program, January 2015.



CALIFORNIA LOCATION MAP

Historical Old Valley Pipeline (OVP)

Historical Tidewater Associated Oil Company (TAOC) Pipeline

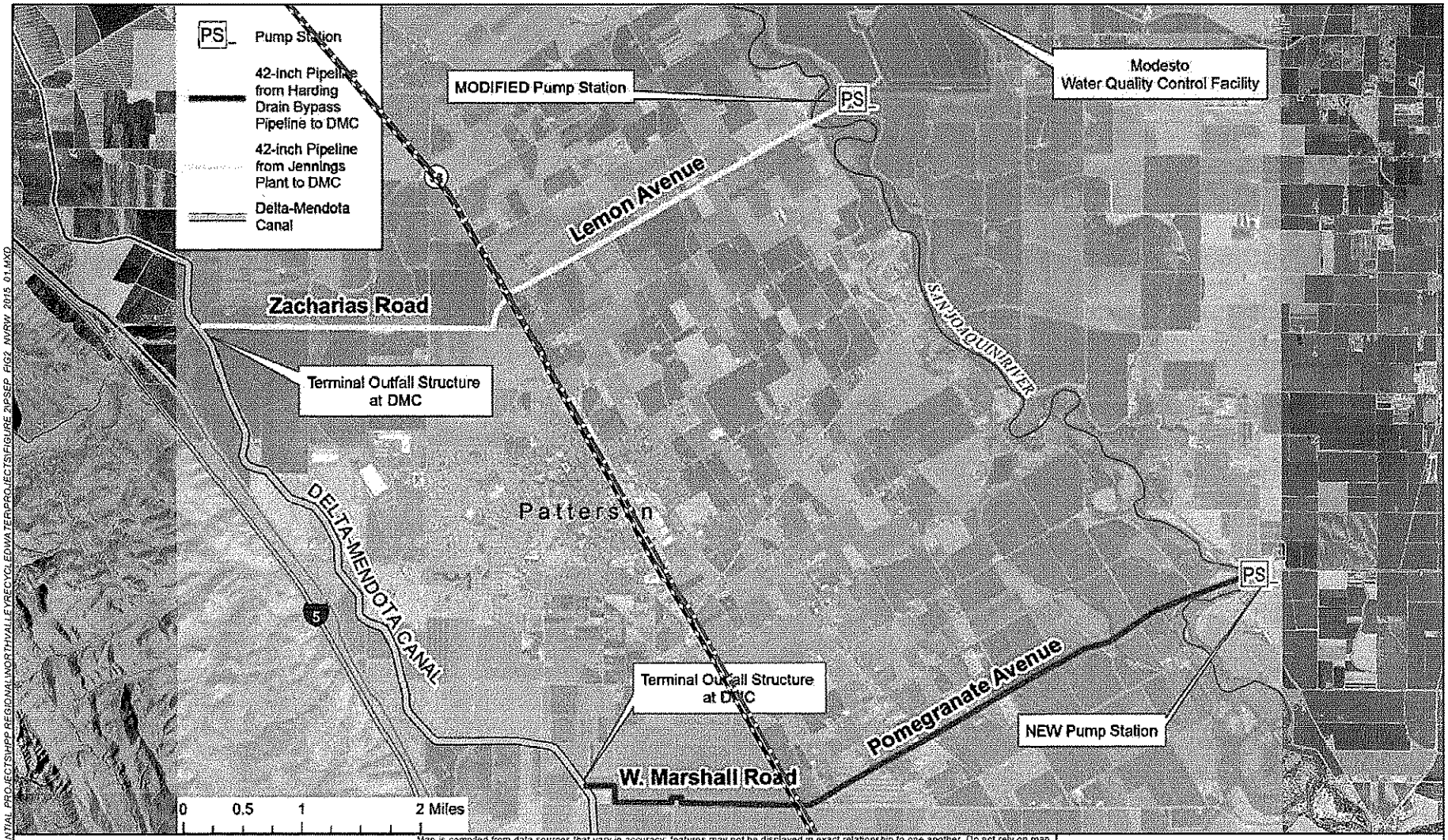
HISTORICAL PIPELINE RIGHTS OF WAY

COMBINED ALIGNMENT ALTERNATIVE (ALTERNATIVE 1)

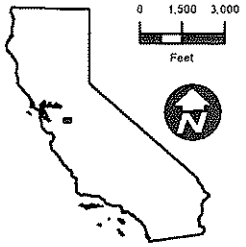
Stanislaus County, California

DATE: 1/16/2015	ANALYST: HOANGTA	FIGURE:
leidos		1

FILE: Q:\HPPA\TRIMANGEMENT\STRATEGY\POTENTIAL PROJECTS\HPP REGIONAL\NORTH VALLEY\CVC EOVA TIFIER\MERGE\FIGURE HORIZ PG1 NVRW 2015 01.MXD



Map is compiled from data sources that vary in accuracy; features may not be displayed in exact relationship to one another. Do not rely on map for legal information or underground work. Source: U.S. Department of the Interior, Bureau of Reclamation, "Figure 2-3: Separate Alignment Alternative (Alternative 2)," Draft Environmental Impact Report/Statement - North Valley Regional Recycled Water Program, January 2015.



CALIFORNIA LOCATION MAP

Historical Old Valley Pipeline (OVP)

Historical Tidewater Associated Oil Company (TAOC) Pipeline

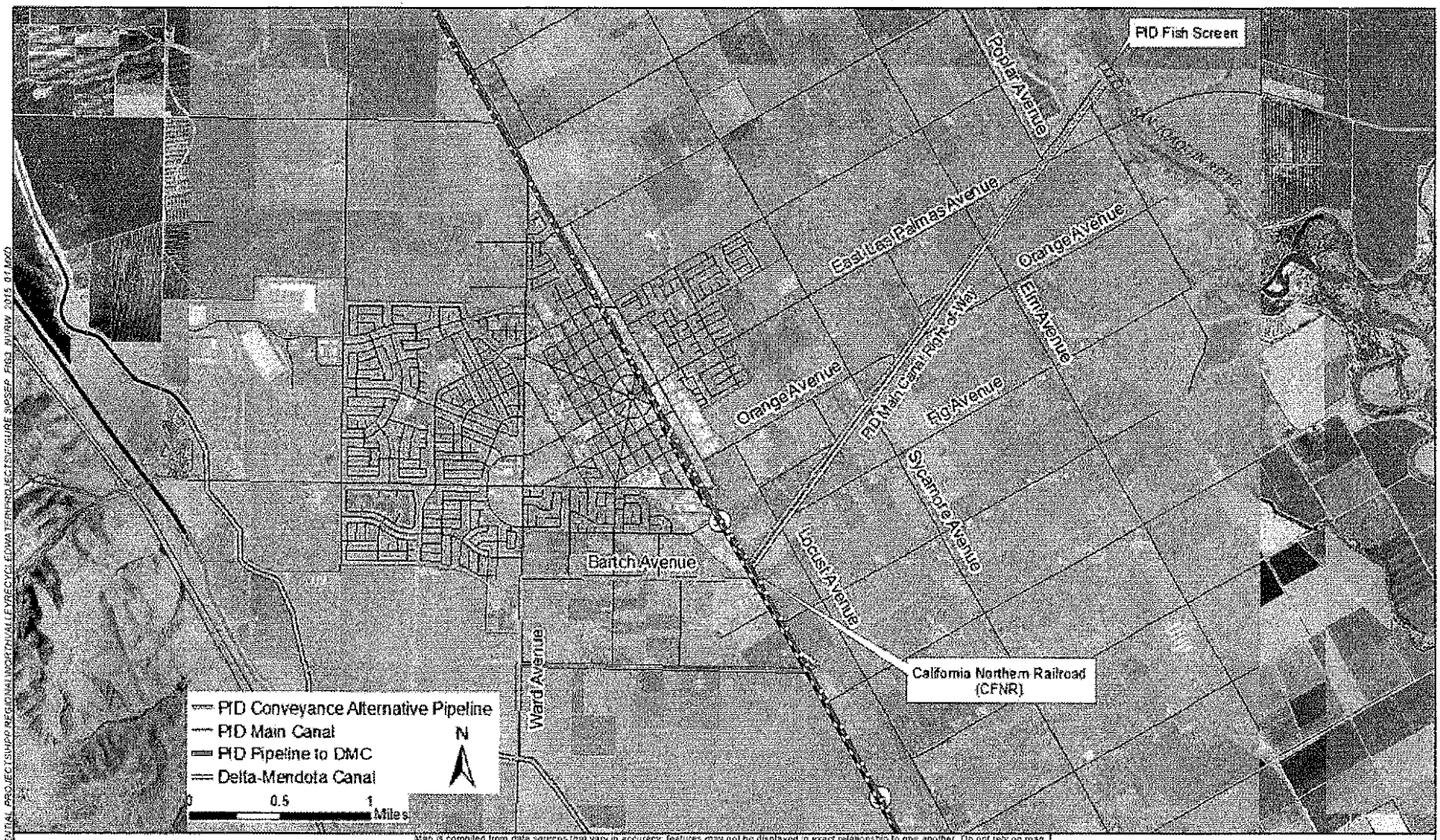
HISTORICAL PIPELINE RIGHTS OF WAY

SEPARATE ALIGNMENT ALTERNATIVE (ALTERNATIVE 2)

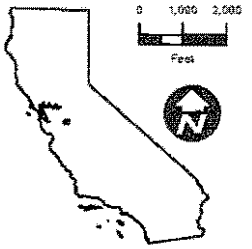
Stanislaus County, California

DATE: 1/16/2015	ANALYST: HOANGTA	FIGURE:
leidos		2

FILE: Q:\HPPBTR\MANAGEMENTSTRATEGY\POTENTIAL PROJECTS\HPP REGIONAL\NORTHVALLEYRECYCLEDWATERPROJECTS\FIGURE 2\PSEP_FIG2_NVRW_2015_01.MXD



Map is compiled from data sources that vary in accuracy; features may not be displayed in exact relationship to one another. Do not rely on map for legal information or underground work. Source: U.S. Department of the Interior, Bureau of Reclamation, "Figure 2-4: PID Conveyance Alternative (Alternative 3)," Draft Environmental Impact Report/Statement - North Valley Regional Recycled Water Program, January 2015.



CALIFORNIA LOCATION MAP

Historical Old Valley Pipeline (OVP)

Historical Tidewater Associated Oil Company (TAOC) Pipeline

HISTORICAL PIPELINE RIGHTS OF WAY

PID CONVEYANCE ALTERNATIVE (ALTERNATIVE 3)

Stanislaus County, California

DATE: 1/16/2015	ANALYST: HOANGTA	FIGURE:
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FILE: Q:\HPPB\TRMANAGEMENT\STRATEG\KPOTENTIAL PROJECTS\HDR REGIONAL\NORTHVALLEYRECYCLE\DMATE\PROJECTS\FIGURE 3\PSEP_FIG3_RIVRW_2015_01.MXD

8.14 Comment Letter 14 – Chevron

8.14.1 Response to Comment 14-1

Comment Summary: The comment provides information about the presence of abandoned Chevron pipelines that could be encountered during construction activities that cross former pipeline rights-of-way.

Reclamation and the Partner Agencies appreciate the information provided in the comment and would make sure that contractors involved in project construction are made aware of the possibility of encountering abandoned pipelines.

From: Lawrence, Benjamin
To: Robin Cort; Will Wong; Anthea Hansen; Scott Taylor; Douglas Kleinsmith
Subject: Fwd: Recycled sewer water
Date: Friday, February 06, 2015 10:13:54 AM

All,

I just received this comment on the North Valley Regional Recycled Water Program DEIS.

___
Ben Lawrence
Natural Resource Specialist
Bureau of Reclamation
South-Central California Area Office
Fresno, CA 93721
(559) 487-5039
blawrence@usbr.gov

---------- Forwarded message ----------
From: **Linda M** <martelli.linda13@yahoo.com>
Date: Fri, Feb 6, 2015 at 10:10 AM
Subject: Recycled sewer water
To: "blawrence@usbr.gov" <blawrence@usbr.gov>

As a citizen of Stanislaus county I believe that the recycled water should be available to our local farmers at a reasonable rate and not sold to outside agency. The farmers are the reason we all live in this area, they created the value from a desert and swap land. Robert Martelli 15-1
Sent from my iPad

8.15 Comment Letter 15 – Robert Martelli

8.15.1 Response to Comment 15-1

Comment Summary: Recycled water should be available to local farmers at a reasonable rate and not sold to an outside agency.

As noted on page 1-1 of the Draft EIR/EIS, "*DWPD provides irrigation water to approximately 45,000 acres of productive farmland in western San Joaquin, Stanislaus, and Merced Counties.*" A majority of the irrigated land is in Stanislaus County where DPWD landowners farm about 28,000 acres. Providing recycled water to DPWD would help to alleviate major shortfalls in water supply for local agriculture, which has suffered severe shortages due to reductions in delivery of water from the CVP. In 2014 and 2015, DPWD farmers received no water from the CVP due to drought conditions and regulatory requirements.

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Appendix A – Scoping Report

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Memorandum

North Valley Regional Recycled Water Program

Subject:	**Scoping Report**
Prepared For:	Bureau of Reclamation, NVRRWP Staff
Prepared by:	Robin Cort
Reviewed by:	Lyndel Melton, Carrie Del Boccio
Date:	June 23, 2014

This Scoping Report has been prepared to summarize the scoping process completed for the North Valley Regional Recycled Water Program (NVRRWP) Environmental Impact Report/Environmental Impact Statement (EIR/EIS). It provides an overview of the scoping process completed for both the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) and summarizes the comments received during scoping.

1 NEPA Scoping Process

On April 22, 2014 the NEPA Lead Agency, the U.S. Bureau of Reclamation (Reclamation), published a Notice of Intent (NOI) in the Federal Register. The Federal Register Notice established a 36-day public review period, which closed on May 28, 2014. During the public review period, NVRRWP held a local scoping meeting, which is described below. Reclamation received 6 comments during the NOI public review period.

2 CEQA Scoping Process

The City of Modesto, the CEQA Lead Agency, circulated a Notice of Preparation (NOP) on April 22, 2014. The NOP began a 30-day public review period, which ended May 22, 2014. The NOP was mailed to the State Clearinghouse, and was mailed directly to 13 responsible and trustee agencies. A postcard announcing the availability of the NOP and NOI and the date of the scoping meeting was mailed to 116 organizations and individuals. The NOP was also posted in the local newspaper, The Modesto Bee, and an announcement of the meeting was published in the "News & Notes" section of the newspaper.

The NVRRWP held a publicly advertised scoping meeting on May 13, 2014 at the location below:

3:00 pm – 7:00 pm
City of Modesto City Hall, Room 2001
1010 10th Street, Modesto

The scoping meeting was held in an open house format, and comment cards were provided for those attending the meeting to facilitate submittal of written comments. Because of the format of the meeting there were no verbal comments.

In addition to the scoping meeting, presentations were made to interested stakeholders, including the Farm Bureau and Almond Board of California, and Del Puerto Water District sent notices about the project to 200 landowners/customers. During the NOP review period, the City of Modesto received 13 comment submittals.

3 Comment Summary

A total of 15 comment submittals (letters, comment cards, phone calls and emails) were received (some comment submittals were sent to both Reclamation and the City of Modesto). Comment submittals are included in Attachment A. Table 1 provides a summary of the comments received during the public scoping process, and identifies the commenter, affiliation, date and comment format, summary of comments, and disposition of each comment.

Table 1: NOP/NOI Scoping Summary

Commenter, Affiliation	Format/Date	Comments	Response
State Water Resources Control Board	Letter, May 2, 2014	• Project is subject to Federal Endangered Species Act and must obtain Section 7 Clearance from U.S. Fish and Wildlife Service and/or National Marine Fisheries Service	• A Biological Assessment meeting requirements for Section 7 consultation will be prepared
		• Project must comply with Section 106 of National Historic Preservation Act and must identify an Area of Potential Effects (APE)	• A Cultural Resources Study meeting requirements for Section 106 consultation will be prepared
		• Project must comply with Clean Air Act	• Air quality conformity will be addressed in the Air Quality Section of the EIR/EIS
		• Project must comply with other federal requirements, including Coastal Zone Management Act, Protection of Wetlands, Farmland Protection Policy Act, Migratory Bird Treaty Act, Flood Plain Management Act and Wild and Scenic Rivers Act	• Compliance will be addressed in appropriate sections, including Biological Resources, Agriculture and Hydrology Sections of the EIR/EIS
		• Please provide a copy of draft CEQA document, and notice of any hearing or meetings held regarding project environmental review.	• A copy of the Draft EIR/EIS will be provided to the SWRCB
San Joaquin Valley Air Pollution Control District	Letter, May 6, 2014	• Identify and quantify criteria pollutant emissions during construction and operation	• This will be included in the Air Quality Section of the EIR/EIS
		• Discuss methodology, model assumptions, inputs and results, including project phasing, project design elements and mitigation, and evaluation of cumulative effects	• This will be included in the Air Quality Section of the EIR/EIS
		• Project is subject to District Rules including those regarding fugitive dust and internal combustion engines	• This will be addressed in the Air Quality Section of the EIR/EIS
		• Project is not subject to Indirect Source Review	• Agreed

Commenter, Affiliation	Format/Date	Comments	Response
Central Valley Regional Water Quality Control Board	Letter, May 9, 2014	• Projects that disturb one or more acre of soil are subject to Construction Storm Water General Permit	• This requirement will be identified in the Water Quality/Hydrology Section of the EIR/EIS.
		• New development must reduce pollutants and runoff flows using Best Management Practices in accordance with MS4 Permits	• This requirement will be identified in the Water Quality/Hydrology Section of the EIR/EIS.
		• Storm water discharges from industrial sites must comply with the Industrial Storm Water General Permit	• Facilities proposed as part of the NVRRWP are not expected to require coverage under the Industrial Storm Water General Permit.
		• If the project will involve discharge of fill material in navigable waters or wetlands, a Section 404 Permit would be needed	• If applicable, this requirement will be identified in the Biological Resources Section of the EIR/EIS.
		• If a 404 Permit is required then a Water Quality Certification would be needed from the Regional Board	• If applicable, this requirement will be identified in the Water Quality/Hydrology Section of the EIR/EIS.
		• If there is fill in a non-jurisdictional water of the state the project would require a Waste Discharge Requirements (WDR)	• If applicable, this requirement will be identified in the Biological Resources Section of the EIR/EIS.
		• Discharge of water from construction dewatering would need to be covered under the Low or Limited Threat General NPDES Permit	• This requirement will be identified in the Water Quality/Hydrology Section of the EIR/EIS.
U.S. Army Corps of Engineers	Letter, May 9, 2014	• Prepare wetland delineation to identify any areas within Corps jurisdiction in the project area	• Results of a preliminary wetlands delineation will be included in the EIR/EIS
		• Range of alternatives considered should include alternatives that avoid impacts to wetlands or other waters of the U.S.	• Project will be designed to avoid fill of wetlands to the extent possible
		• If effects on wetlands or water of the U.S. cannot be avoided, mitigation plans should compensate for loss	• Mitigation will be provided for any unavoidable impacts caused by the project.

Commenter, Affiliation	Format/Date	Comments	Response
Stanislaus County Planning & Community Development Department	Comment Card, May 13, 2014	• Define long-term	• Del Puerto Water District (DPWD) hopes to enter into a 40-year contract with Reclamation to convey recycled water through the Delta-Mendota Canal.
		• Will the project affect current groundwater recharge flows and patterns?	• This will be evaluated in the Water Quality/Hydrology Section of the EIR/EIS.
		• Is there a financial report that estimates project costs and cost impacts to rate payers?	• Funding issues are outside the scope of the EIR/EIS, which focuses on environmental impacts. Financial information is available in the Feasibility Study for the project, which is posted on the Project website: http://www.nvr-recycledwater.org/documents.asp Additional financial analyses and funding opportunities will be evaluated outside the scope of the EIR/EIS.
California Department of Fish and Wildlife	Phone call May 20, 2014	• Would like to know about water volume and timing of water available for refuges	• This information will be included in the Project Description Chapter of the EIR/EIS
		• Concerned about water quality including salinity, selenium and pharmaceutical residuals in treated water	• The Water Quality/Hydrology Section of the EIR/EIS will evaluate the quality of the recycled water.
		• Will there be dispersion/dilution modeling in the Delta-Mendota Canal (DMC)	• Results of dispersion/dilution modeling will be included in the Water Quality/Hydrology Section of the EIR/EIS

Commenter, Affiliation	Format/Date	Comments	Response
Turlock Irrigation District	Letter, May 20, 2014	• The scope of the affected Project area is too narrowly limited to the area of Stanislaus County west of the San Joaquin River (SJR)	• The geographic scope for analysis of each environmental resource will be defined in each Section of the EIR/EIS, and will vary depending on the resource. The area will not be limited to Stanislaus County west of the San Joaquin River.
		• The affected geographic area is located both east and west of the SJR and includes the Modesto, Turlock and Delta-Mendota subbasins.	• The Water Quality/Hydrology Section of the EIR/EIS will address the potential for groundwater impacts caused by the project in the Modesto, Turlock and Delta-Mendota subbasins.
		• The scope of the affected area must be expanded to include the area east of the SJR.	• The Water Quality/Hydrology Section of the EIR/EIS will address the potential for groundwater impacts caused by the project east of the SJR, including the Modesto, Turlock and Delta-Mendota subbasins.
		• The NEPA and CEQA notices fail to include the Turlock and Modesto subbasins in the scope of the EIR/EIS and therefore fail to include mitigation for export of groundwater-based effluent.	• Neither of the Notices identified a geographic scope for the analysis of effects on groundwater. The geographic scope for analysis of each environmental resource will be defined in each Section of the EIR/EIS, and will include the Modesto, Turlock and Delta-Mendota basins. Because impacts have not yet been determined there was no mitigation included in the Notices.
		• Use of recycled water from Modesto and Turlock needs to be examined within the context of all three subbasins because adverse groundwater issues have arisen in the Turlock and Modesto subbasins due the drought.	• The Water Quality/Hydrology Section of the EIR/EIS will address the potential for groundwater impacts caused by the east of the SJR, including the Modesto, Turlock and Delta-Mendota subbasins. The analysis will compare the existing condition, in which treated wastewater is discharged to the San Joaquin River, to the proposed project, which would convey recycled water to the DMC instead of to the river.
		• Affected geographic area needs to expressly include the Turlock and Modesto groundwater subbasins, with greater focus placed on the Turlock Subbasin	• The Water Quality/Hydrology Section of the EIR/EIS will address the potential for groundwater impacts from the project east of the SJR, including the Modesto, Turlock and Delta-Mendota subbasins.

Commenter, Affiliation	Format/Date	Comments	Response
		• Because a significant portion of the treated sewage effluent would be exported from the Turlock Subbasin the EIR/EIS needs to analyze in depth mitigation measures for the export of groundwater.	• The Water Quality/Hydrology Section of the EIR/EIS will address the potential for groundwater impacts from the project east of the SJR, including the Modesto, Turlock and Delta-Mendota subbasins. However, it should be noted that the project does not include export of groundwater, and would not increase pumping of groundwater. The EIR/EIS would evaluate the extent to which groundwater recharge along the San Joaquin River could be reduced by discontinuing discharges to the river.
		• EIR/EIS needs to discuss probable reductions in surface water supplies from proposed actions by Federal and State regulatory agencies, and the resulting increased pressure on groundwater due to reduced surface water availability.	• The EIR/EIS will evaluate cumulative impacts on groundwater associated with the project combined with other reasonably foreseeable projects/actions.
		• EIR/EIS needs to describe how the project could reduce groundwater pressures within each of the three subbasins, and feasibility of providing a portion of the project's recycled water to the Turlock and Modesto Subbasins.	• The comment is suggesting an alternative that would provide recycled water to additional users. Evaluation of delivery of recycled water to the Turlock and Modesto subbasin areas is not included in the scope or purpose of the project as proposed.
		• EIR/EIS should discuss how much incremental Level 4 water for wildlife refigures would be provided by the project in Critical, Dry, Below Normal, Above Normal, and Wet water years, and address what alternate water supplies are available to the wildlife refuges during each year type.	• The Project Description will discuss the quantity and timing for providing water to the refuges. One purpose of the Project is to provide additional water to the refuges, but it is outside the scope of the EIR/EIS to identify other potential sources of water for refuges.
		• EIR/EIS needs to describe how recycled water would be allocated amount DPWD, refuges, and the Turlock Subbasin during each of the five water year types.	• The Project Description will describe how water is allocated between DPWD and the refuges. However, providing recycled water to the Turlock Subbasin is not part of the project as proposed.

Commenter, Affiliation	Format/Date	Comments	Response
		• Reclamation is required to identify alternatives to be considered, but the Notice of Intent provides no information on alternative uses.	• Alternative uses would not achieve the objectives of the project, which are to provide water to DPWD and to refuges. Alternative options for conveying water to the DMC are being considered and will be presented in the EIR/EIS.
		• EIR/EIS needs to analyze use of a portion of the recycled water for groundwater recharge in the Turlock Subbasin.	• The project, as proposed does not include recharge in the Turlock Subbasin. The Water Quality/Hydrology Section of the EIR/EIS will address the potential for groundwater impacts caused by the project in the Modesto, Turlock and Delta-Mendota subbasins, As noted above, the analysis will compare the existing condition, in which treated wastewater is discharged to the San Joaquin River, to the proposed project, which would convey recycled water to the DMC instead of to the river.
		• Cities of Turlock, Ceres and Modesto have an obligation to investigate the use of their recycled water for irrigation within their own cities.	• Such an investigation is outside the scope of the EIR/EIS. The EIR/EIS will evaluate the impact of the project, as proposed, and will consider alternatives for accomplishing the project objectives of providing water to DPWD and to the wildlife refuges.
		• EIR/EIS needs to describe to what extent existing uses of reclaimed water in the Turlock and Modesto Subbasins would be terminated or curtailed as a result of the project.	• There will be no change to the existing uses of recycled water; these uses are as follows: o Turlock Irrigation District Walnut Energy Center o Modesto Ranch Irrigation (adjacent to treatment plant) o City of Turlock Pedretti Park

Commenter, Affiliation	Format/Date	Comments	Response
		• EIR/EIS should also evaluate a Combined Alignment where the single SJR crossing is located at the end of the Harding Drain Bypass Pipeline.	• The EIR/EIS will evaluate an SJR crossing located at the end of the Harding Drain Bypass Pipeline as part of the Separate Alignments Alternative, and the alignment between Modesto and Turlock would be the same whether the single crossing was located near the Modesto Publicly Owned Treatment Works (POTW) or the Harding Drain Bypass. It will thus not be necessary to evaluate a different configuration of the Combined Alignment.
		• The EIR/EIS should analyze the history of each POTW's compliance with existing water quality standards, and describe how the Project will prevent discharge to the DMC or agricultural use before the DMC of any recycled water that does not meet water quality standards.	• The Project Description of the EIR/EIS will discuss how the treatment system and monitoring of water quality will be done to ensure adequate water quality for discharge to the DMC. The project does not include agricultural use of recycled water before it is discharged into the DMC. A discussion of the history of POTW compliance is outside the scope of the EIR/EIS.
		• EIR/EIS needs to define what it means to deliver water to DPWD at a cost that "supports regional economic sustainability". EIR/EIS needs to identify "all-in" cost per acre-foot of recycled water for DPWD, the "all-in" cost components and how those cost components will be determined	• The objective cited in the comment is intended to reflect the fact that recycled water needs to be provided at a cost that is affordable to the land owners within DPWD and is fair, reasonable, and agreed to by the Cities of Modesto and Turlock. This objective reflects the fact that the project would not be feasible if the water were not affordable to local irrigators. Cost information is available in the Feasibility Study for the project, which is posted on the Project website: http://www.nvr-recycledwater.org/documents.asp. The Feasibility Study identifies the cost components included in the cost estimate and provides cost per acre-foot for the recommended alternative and for other options that were considered. Additional detailed cost and financial information is outside the scope of the environmental document.

Commenter, Affiliation	Format/Date	Comments	Response
		• EIR/EIS needs to provide similar cost information for Incremental Level 4 water supply.	• Detailed cost and financial information is outside the scope of the environmental document.
		• Will cost for recycled water be the same for DPWD and for refuges?	• This type of cost information is outside the scope of the environmental document.
		• The comment lists resources which need to be considered in preparation of the EIR/EIS	• The references provided in the comment will be reviewed in preparation of the EIR/EIS.
Stanislaus County Environmental Review Committee	Letter May 23, 2014	• Project should be coordinated with the South County Corridor StanCOG Study.	• The Cities of Modesto and Turlock will coordinate with the County regarding the South County Corridor Study.
California Department of Fish and Wildlife	Letter May 20, 2014	• Special status species potentially occurring in the project area include: Swainson's hawk, white-tailed kite, golden eagle, bald eagle, giant garter snake, burrowing owl, western pond turtle, and tricolored blackbird.	• The Biological Resources Section of the EIR/EIS will address the potential for these species to be present in the project area.
		• The California Department of Fish and Wildlife (CDFW) is a Trustee Agency for the Project.	• The EIR/EIS will identify CDFW as a Trustee Agency.
		• CDFW would need to issue an Incidental Take Permit if the project would result in take of any species listed by the State as threatened or endangered.	• The Biological Resources Section of the EIR/EIS will address the potential for take of state-listed species, and will include mitigation to avoid or mitigate potential effects.
		• CDFW has regulatory authority over activities in streams or lakes. The Project may require a Streambed Alteration Agreement.	• The Project would include a pipeline crossing the San Joaquin River, which would be constructed using trenchless technology so as to avoid impacts to the river. A Streambed Alteration Agreement would still be required for the Project, and the Project would include provisions to ensure that the river is not affected by "frac-out" during construction.
		• CDFW has jurisdiction over actions that could disturb nesting birds or result in take of birds.	• The Biological Resources Section of the EIR/EIS will address the potential for impacts from the project on birds, and will include mitigation to avoid or mitigate potential effects.

Commenter, Affiliation	Format/Date	Comments	Response
		• The Project could result in pollution of Waters of the State from storm water runoff, sediment, and/or construction debris.	• Potential water quality impacts from the project will be identified in the Water Quality/Hydrology Section of the EIR/EIS, which will include measures to avoid or mitigate potential effects.
		• Take of fully-protected species, including bald eagle, white-tailed kite, and golden eagle, is prohibited.	• The Biological Resources Section of the EIR/EIS will address the potential for impacts from the project on protected species, and will include mitigation to avoid effects.
		• CDFW recommends measures to protect nesting birds, including construction outside the nesting season, preconstruction surveys, enforcement of no-disturbance buffers around identified nests, and monitoring by a qualified biologist.	• The Biological Resources Section of the EIR/EIS will address the potential for impacts from the project on birds, and will include mitigation to avoid or mitigate potential effects.
		• A qualified biologist should conduct surveys for Swainson's hawk, and no-disturbance buffers should be established around any active nests.	• The Biological Resources Section of the EIR/EIS will address the potential for impacts from the project on Swainson 's hawk, and will include mitigation to avoid or mitigate potential effects.
		• A qualified biologist should conduct surveys for protected raptors, and no-disturbance buffers should be established around any active nests.	• The Biological Resources Section of the EIR/EIS will address the potential for impacts from the project on protected raptors, and will include mitigation to avoid or mitigate potential effects.
		• Surveys should be conducted for burrowing owls, and CDFW recommendations regarding avoidance should be followed.	• The Biological Resources Section of the EIR/EIS will address the potential for impacts from the project to burrowing owls, and will include mitigation to avoid or mitigate potential effects.
		• Potential impacts to giant garter snake should be addressed and impacts should be avoided or minimized.	• The Biological Resources Section of the EIR/EIS will address the potential for impacts from the project to giant garter snake, and will include mitigation to avoid or mitigate potential effects.
		• U.S. Fish and Wildlife Service should be consulted regarding any potential impacts to federally listed species.	• The U.S. Bureau of Reclamation, as NEPA lead agency, will consult with U.S. Fish and Wildlife Service.

Commenter, Affiliation	Format/Date	Comments	Response
California State Lands Commission	Letter May 22, 2014	• The pipeline crossing of the San Joaquin River would require a lease from the California State Lands Commission (CSLC).	• The EIR/EIS will identify the jurisdiction of CSLC and the need for a lease for the pipeline crossing the San Joaquin River.
		• The Project Description should have a thorough description of proposed activities, including types of equipment, methods of construction and timing and length of activities.	• The Project Description for the EIR/EIS will provide the requested information.
		• Mitigation measures should be specific, feasible, enforceable obligations, or should include performance standards.	• Mitigation measures will be developed as requested by the comment.
		• California Department of Fish and Wildlife, California Natural Diversity Data Base and U.S. Fish and Wildlife Service databases should be consulted to identify special status species that could occur in the area. The EIR should analyze potential for occurrence, impacts to special status species, and consult with agencies to identify mitigation.	• The Biological Resources Section of the EIR/EIS will address the potential for impacts from the project on sensitive species, and will include mitigation to avoid effects.
		• GHG emissions analysis should be conducted, and mitigation should be identified.	• The EIR/EIS will include a section on greenhouse gas (GHG) emissions, which will quantify emissions and identify mitigation measures, if needed.
		• The EIR should evaluate impacts to cultural resources in the Project area, including potential for shipwrecks to occur in submerged lands.	• The Cultural Resources Section of the EIR/EIS will address the potential for impacts from the project on cultural resources, including shipwrecks, and will include mitigation to avoid effects. The City's consultant has requested shipwrecks data from the CSLC.
		• Title to all shipwrecks, archaeological sites, and historic or cultural resources in submerged lands is vested in the State under the jurisdiction of CSLC, who should be consulted if any cultural resources are discovered on state sovereign land during construction.	• The City will consult with CSLC if any resources are found within areas under CSLC jurisdiction.

Commenter, Affiliation	Format/Date	Comments	Response
		• The EIR should address potential impacts on recreational uses of the San Joaquin River	• The Recreation Section of the EIR/EIS will address the potential for impacts from the project on recreational use of the river, and will include mitigation if needed to avoid effects.
Mark Serpa	Letter May 26, 2014	• Concerned that there may be less water available in the groundwater table because project will not use recycled water to improve groundwater problem	• The Water Quality/Hydrology Section of the EIR/EIS will address the potential for the project to result in groundwater impacts.
		• Concerned about water quality.	• The Water Quality/Hydrology Section of the EIR/EIS will address the potential for the project to result in water quality impacts.
Amber Madden	Letter May 26, 2014	• Concerned that there may be less water available in the groundwater table because project will not use recycled water to improve groundwater problem	• The Water Quality/Hydrology Section of the EIR/EIS will address the potential for the project to result in groundwater impacts.
		• Concerned about water quality.	• The Water Quality/Hydrology Section of the EIR/EIS will address the potential for the project to result in water quality impacts.
Matt Anderson	Letter May 26, 2014	• Concerned that there may be less water available in the groundwater table because project will not use recycled water to improve groundwater problem	• The Water Quality/Hydrology Section of the EIR/EIS will address the potential for the project to result in groundwater impacts.
		• Concerned about water quality.	• The Water Quality/Hydrology Section of the EIR/EIS will address the potential for the project to result in water quality impacts.

Commenter, Affiliation	Format/Date	Comments	Response
Robert Gioletti & Sons, Dairy, Inc.	Letter May 28, 2014	• Concerned that redirecting recycled water from the Harding Drain will create a deficit of water for those farming west of Turlock, which would require additional groundwater pumping or more surface water deliveries from Don Pedro.	• The NVRRWP does not reduce flows within the Harding Drain. Wastewater flows have been removed from the Harding Drain as part of the Harding Drain Bypass project. The issue of flow reductions in the Harding Drain was previously addressed in the Harding Drain Bypass Pipeline project Environmental Impact Report (EIR) in 2004/2005 by the City of Turlock. In March of 2014, the City of Turlock completed construction of the Harding Drain Bypass pipeline which effectively removes Turlock's wastewater flows from the Harding Drain. Turlock's recycled water will now be discharged directly to the San Joaquin River. Therefore, the City of Turlock's wastewater will no longer be discharged to the Harding Drain – regardless of the status of the North Valley Regional Recycled Water Project.
U.S. Environmental Protection Agency	Letter May 30, 2014	• EIS needs to clearly identify underlying purpose and need that is the basis for the range of alternatives.	• The purpose and need for the project was identified in the Notice of Intent that was published in the Federal Register, and will be included in the EIS. The purpose and need identifies Reclamation's role in the project.
		• The EIS should include a comprehensive description of the regulatory context of the project, including any permits that will be needed.	• The EIS will identify permits that are expected to be required. The project partners will work with the Central Valley Regional Water Quality Control Board to determine the appropriate permitting vehicle for discharge to the Delta-Mendota Canal.
		• All reasonable alternatives that fulfill the project's purpose and need should be evaluated in detail, and should include options for avoiding significant environmental effects.	• The EIS will evaluate a range of alternatives, and will include discussion of alternatives that were considered during the project planning phases, but were determined to be infeasible, or not to achieve the project objectives.
		• Project should describe rationale for determining significance of impacts and thresholds of significance should consider context of the action and its effects.	• The EIS will identify significance thresholds. Because this is a combined NEPA/CEQA document significance thresholds will consider the CEQA checklist and its listing of impacts that would be considered significant.

Commenter, Affiliation	Format/Date	Comments	Response
		• Impacts of alternatives should be compared and potential impacts quantified to the greatest extent possible.	• The EIS will present a tabular comparison of alternatives and will include quantification where possible.
		• The No Action Alternative should describe the current wastewater discharge regimes in Turlock and Modesto, specify the regulatory vehicle that governs discharge and include details of all discharge permits. Any existing compliance concerns should be identified.	• This information will be included in the EIR/EIS.
		• Each action alternative should describe the distribution of project water between irrigation and wildlife refuges.	• The Project Description will describe how water is allocated between DPWD and the refuges.
		• The range of alternatives should explore aquifer recharge as an alternate use for recycled water and should evaluate impacts of spreading basins and their uses in flood management.	• While aquifer recharge is a viable use for recycled water, it does not achieve the project objective of providing a reliable long-term water supply to DPWD, and it would not provide water for the refuges. Aquifer recharge is thus not a viable option for achieving the project purpose or addressing the need for water supply.
		• The EIR/EIS should include a robust discussion of water quality impacts, including identification of applicable water quality standards and beneficial uses of receiving waters	• The Water Quality/Hydrology Section of the EIR/EIS will address the potential for the project to result in water quality impacts.
		• The EIR/EIS should describe impacts from reduced discharge volume including impacts to San Joaquin River flow.	• The Water Quality/Hydrology Section of the EIR/EIS will address the potential for the project to affect flows in the San Joaquin River.

Commenter, Affiliation	Format/Date	Comments	Response
		• The water quality analysis should describe DPWD customers and whether any would be irrigating selenium-enriched land.	• The project would not allow irrigation of any areas that are not already being irrigated. Recycled water would provide a long-term agricultural water supply to a CVP contractor who has experienced a substantial reduction in CVP allocations due to drought conditions and Delta pumping restrictions. Substitution of recycled water for CVP water would not result in any new impacts associated with selenium runoff. In addition, DPWD irrigators are not located on any areas that have been identified as selenium-enriched.
		• Analysis should include a description of Waters of the U.S. in wildlife refuges and how any discharges to Waters of the U.S. will impact water quality.	• Recycled water would be discharged to the DMC, and would not be discharged directly to Waters of the U.S. in the wildlife refuges. The Water Quality/Hydrology Section of the EIR/EIS will address the effect of the project on water quality in the DMC.
		• The EIR/EIS should describe future environmental impacts of climate change on the project area and how the project will cope with, contribute to, or be affected by those impacts.	• The project would provide a long-term reliable water source for an area where water supplies may be reduced over time. Supplies of recycled water are far less subject to effects of climate change than other water sources. The EIR/EIS will discuss the effect of the project on climate change.
		• Submissions of environmental documents to EPA Headquarters should be made through *e-NEPA*.	• Reclamation will submit environmental documents to EPA as requested.

3.1 Issues Identified in Comments

Most of the comment submittals identified overall regulatory and environmental analysis requirements for the project. Issues identified during the scoping period are summarized below. Responses to each issue are identified in Table 1.

3.1.1 Water Quality Impacts

- Quality of water including levels of salinity, selenium and pharmaceutical residuals
- Dispersion/dilution modeling in the Delta-Mendota Canal
- Safeguards to ensure that recycled water that does not meet water quality standards is not discharged to the Delta-Mendota Canal.

3.1.2 Groundwater Impacts

- Impact on current groundwater recharge flows and patterns.
- Groundwater impacts on both sides of San Joaquin River, including Modesto, Turlock and Delta-Mendota Subbasins
- Export of groundwater from the Turlock and Modesto Subbasin
- Increasing pressure on groundwater supplies

3.1.3 Water Supply

- Potential future reductions in surface water supplies
- Potential reduction of existing use of recycled water in Turlock and Modesto

3.1.4 Alternatives

- Request for alternative that provides groundwater recharge in the Turlock and Modesto Subbasins
- Combined Alignment with single San Joaquin River crossing located at the end of the Harding Drain Bypass Pipeline

3.1.5 Project Description/Water Allocation

- Allocation of water between DPWD and wildlife refuges

3.1.6 Cumulative Impacts/Coordination with Other Projects

- Coordination with South County Corridor StanCOG Study

3.2 Comments Outside the Scope of the EIR/EIS

Detailed comments regarding cost of recycled water, and effects on ratepayers are not directly related to the environmental impact analysis, and will not be addressed in the EIR/EIS. The Feasibility Report for the project provides basic cost information, including overall cost and cost per acre-foot, that was used to evaluate whether project alternatives meet the objective of providing affordable water. The Feasibility Report is available on the project website: http://www.nvr-recycledwater.org/documents.asp. Additional financial analyses and funding opportunities will be evaluated outside the scope of the EIR/EIS.

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Attachment A – Communications Received During Scoping

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

MAY 02 2014

William Wong
City of Modesto
1010 Tenth Street, 4th Floor
Modesto, CA 95353

Dear Mr. Wong:

NOTICE OF PREPARATION (NOP) FOR CITY OF MODESTO (CITY); NORTH VALLEY REGIONAL RECYCLED WATER PROGRAM (PROJECT); STANISLAUS COUNTY; STATE CLEARINGHOUSE NO. 2014042068

We understand that the City may be 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 preparation of the California Environmental Quality Act (CEQA) for the Project.

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, 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 of 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.

The CWSRF Program is partially funded by the United States Environmental Protection Agency and requires additional "CEQA-Plus" environmental documentation and review. Three enclosures are included that further explain the CWSRF Program environmental review process and the additional federal requirements. For the complete environmental application package please visit:
http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/srf_forms.shtml. 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 that the Project has the potential to impact if the Project is to be funded under the CWSRF Program. The City 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.

In addition, CWSRF projects must comply with federal laws pertaining to cultural resources, specifically Section 106 of the National Historic Preservation Act (Section 106). The State Water Board has responsibility for ensuring compliance with Section 106 and the State Water Board must consult directly with the California State Historic Preservation Officer (SHPO). SHPO consultation is initiated when sufficient information is provided by the CWSRF applicant. The City must retain a consultant that meets the Secretary of the Interior's Professional Qualifications Standards (http://www.nps.gov/history/local-law/arch_stnds_9.htm) to prepare a Section 106 compliance report.

Note that the City 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 extend to a ½-mile beyond project 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.

Other federal environmental requirements pertinent to the Project under the CWSRF Program include the following (for a complete list of all environmental requirements please visit: http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/docs/forms/application_environmental_package.pdf):

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 United States Army Corps of Engineers (USACE), or requires 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.

Following the preparation of the draft CEQA document for the Project, please provide us a copy of the document to review if the City is considering CWSRF financing. In addition, we would appreciate notices of any hearings or meetings held regarding environmental review for the Project.

Thank you for providing us a copy of your NOP, and the consideration of the CWSRF for the financing of the City's Project. If you have any questions or concerns, please feel free to contact me at (916) 341-5855 or by email at Ahmad.Kashkoli@waterboards.ca.gov, or contact Vicki Lin at (916) 327-9117, or by email at Vicki.lin@waterboards.ca.gov.

Sincerely,

Ahmad Kashkoli
Senior Environmental Scientist

Enclosures (3)

1. Clean Water State Revolving Fund Environmental Review Requirements
2. Quick Reference Guide to CEQA Requirements for State Revolving Fund Loans
3. Basic Criteria for Cultural Resources Reports

cc: State Clearinghouse
(Re: SCH# 2014042068)
P.O. Box 3044
Sacramento, CA 95812-3044

May 6, 2014

William Wong
City of Modesto
Utility Planning and Projects Department
1010 Tenth Street, 4th Floor
Modesto, CA 95353

Agency Project: North Valley Regional Recycled Water Program

District CEQA Reference No: 20140255

Dear Mr. Wong:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the Notice of Preparation for the North Valley Regional Recycled Water Program. The City of Modesto, Del Puerto Water District (DPWD) and City of Turlock (Partner Agencies) propose to implement a regional solution to address water supply shortages within DPWD's service area. The project proposes to deliver up to 59,000 acre feet per year of recycled water produced by the cities of Modesto and Turlock via the Delta-Mendota Canal. Recycled water would be conveyed from Modesto and Turlock through pipelines from their wastewater treatment facilities, crossing the San Joaquin River, and ending at the Delta-Mendota Canal. The water would then be conveyed directly to Del Puerto Water District customers. The proposed project facilities consist of pipelines and pump stations. The District offers the following comments:

Emissions Analysis

1) The District is currently designated as extreme nonattainment for the 8-hour ozone standard, attainment for PM10 and CO, and nonattainment for PM2.5 for the federal air quality standards. At the state level, the District is designated as nonattainment for the 8-hour ozone, PM10, and PM2.5 air quality standards. The District recommends that the Air Quality section of the Environmental Impact Report (EIR) include a discussion of the following impacts:

   a) **Criteria Pollutants:** Project related criteria pollutant emissions should be identified and quantified. The discussion should include existing and post-project emissions.

i) Construction Emissions: Construction emissions are short-term emissions and should be evaluated separate from operational emissions. The District recommends preparation of an Environmental Impact Report (EIR) if annual construction emissions cannot be reduced or mitigated to below the following levels of significance: 10 tons per year of oxides of nitrogen (NOx), 10 tons per year of reactive organic gases (ROG), or 15 tons per year particulate matter of 10 microns or less in size (PM10).

- Recommended Mitigation: To reduce impacts from construction related exhaust emissions, the District recommends feasible mitigation for the project to utilize off-road construction fleets that can achieve fleet average emissions equal to or cleaner than the Tier II emission standards, as set forth in §2423 of Title 13 of the California Code of Regulations, and Part 89 of Title 40 Code of Federal Regulations. This can be achieved through any combination of uncontrolled engines and engines complying with Tier II and above engine standards.

ii) Operational Emissions: Permitted (stationary sources) and non-permitted (mobile sources) sources should be analyzed separately. The District recommends preparation of an Environmental Impact Report (EIR) if the sum of annual permitted and non-permitted emissions cannot be reduced or mitigated to below the following levels of significance: 10 tons per year of oxides of nitrogen (NOx), 10 tons per year of reactive organic gases (ROG), or 15 tons per year particulate matter of 10 microns or less in size (PM10).

2) In addition to the discussions on potential impacts identified above, the District recommends the EIR also include the following discussions:

a) A discussion of the methodology, model assumptions, inputs and results used in characterizing the project's impact on air quality. To comply with CEQA requirements for full disclosure, the District recommends that the modeling outputs be provided as appendices to the EIR. The District further recommends that the District be provided with an electronic copy of all input and output files for all modeling.

b) A discussion of the components and phases of the project and the associated emission projections, including ongoing emissions from each previous phase.

c) A discussion of project design elements and mitigation measures, including characterization of the effectiveness of each mitigation measure incorporated into the project.

d) A discussion of whether the project would result in a cumulatively considerable net increase of any criteria pollutant or precursor for which the San Joaquin Valley Air Basin is in non-attainment. More information on the District's attainment status can be found online by visiting the District's website at: http://valleyair.org/aqinfo/attainment.htm.

District Rules and Regulations

3) The proposed project may be subject to District Rules and Regulations, including: Regulation VIII (Fugitive PM10 Prohibitions), Rule 4102 (Nuisance), and Rule 4702 (Internal Combustion Engines). The above list of rules is neither exhaustive nor exclusive. More information regarding compliance with District rules and regulation can be obtained by:

- Visiting the District's website at http://www.valleyair.org/rules/1ruleslist.htm for a complete listing of all current District rules and regulation; or

- Visiting the District's website at http://www.valleyair.org/busind/comply/PM10/compliance_PM10.htm for information on controlling fugitive dust emissions

4) Based on the information provided to the District, the proposed project does not meet the definition of a development project. Therefore, the District concludes the proposed project is not subject to District Rule 9510 (Indirect Source Review).

5) The District recommends that a copy of the District's comments be provided to the project proponent.

If you have any questions or require further information, please contact Georgia Stewart by phone at (559) 230-5937 or by e-mail at georgia.stewart@valleyair.org.

Sincerely,

Arnaud Marjollet
Director of Permit Services

Georgia Stewart

For: Chay Thao
Permit Services Manager

AM: gs

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

9 May 2014

William Wong
City of Modesto
1010 Tenth Street, 4th Floor
Modesto, CA 95353

CERTIFIED MAIL
7013 2250 0000 3465 9830

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION OF DRAFT ENVIRONMENTAL IMPACT REPORT, NORTH VALLEY REGIONAL RECYCLED WATER PROGRAM PROJECT, SCH# 2014042068, STANISLAUS COUNTY

Pursuant to the City of Modesto's 22 April 2014 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation of the Draft Environmental Impact Report* for the North Valley Regional Recycled Water Program Project, located in Stanislaus County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

For more information on the Construction General Permit, visit the State Water Resources Control Board website at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/.

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 97-03-DWQ.

For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml.

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACOE). If a Section 404 permit is required by the USACOE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements.

If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACOE at (916) 557-5250.

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[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

Clean Water Act Section 401 Permit – Water Quality Certification
If an USACOE permit, or any other federal permit, is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications.

Waste Discharge Requirements
If USACOE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project will require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation.

For more information on the Water Quality Certification and WDR processes, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/help/business_help/permit2.shtml.

Low or Limited Threat General NPDES Permit
If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Dewatering and Other Low Threat Discharges to Surface Waters* (Low Threat General Order) or the General Order for *Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water* (Limited Threat General Order). A complete application must be submitted to the Central Valley Water Board to obtain coverage under these General NPDES permits.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0074.pdf

For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0073.pdf

If you have questions regarding these comments, please contact me at (916) 464-4684 or tcleak@waterboards.ca.gov.

Trevor Cleak
Environmental Scientist

cc: State Clearinghouse Unit, Governor's Office of Planning and Research, Sacramento

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

May 9, 2014

Regulatory Division SPK-2014-00413

William Wong
City of Modesto,
Utility Planning and Projects Department
1010 Tenth Street
Modesto, California 95354

Dear Mr. Wong:

We are responding to your April 22, 2014 request for comments on the North Valley Regional Recycled Water Program Draft Environmental Impact Report. The project is located in the Del Puerto Water District's service area, on the west side of the San Joaquin River in San Joaquin, Stanislaus and Merced Counties, South of the Sacramento-San Joaquin River Delta, in California.

The Corps of Engineers' jurisdiction within the study area is under the authority of Section 404 of the Clean Water Act for the discharge of dredged or fill material into waters of the United States, and Section 10 of the Rivers and Harbors Act. Waters of the United States include, but are not limited to, rivers, perennial or intermittent streams, lakes, ponds, wetlands, vernal pools, marshes, wet meadows, and seeps. Project features that result in the discharge of dredged or fill material into, or activities crossing waters of the United States, will require Department of the Army authorization prior to starting work. This would include the crossing of the San Joaquin River that is mentioned in the notice provided by the City of Modesto.

To ascertain the extent of waters on the project site, the applicant should prepare a wetland delineation, in accordance with the "Minimum Standards for Acceptance of Preliminary Wetlands Delineations", under "Jurisdiction" on our website at the address below, and submit it to this office for verification. A list of consultants that prepare wetland delineations and permit application documents is also available on our website at the same location.

The range of alternatives considered for this project should include alternatives that avoid impacts to wetlands or other waters of the United States. Every effort should be made to avoid project features which require the discharge of dredged or fill material into waters of the United States. In the event it can be clearly demonstrated there are no practicable alternatives to filling waters of the United States, mitigation plans should be developed to compensate for the unavoidable losses resulting from project implementation.

Please refer to identification number SPK-2014-00413 in any correspondence concerning this project. If you have any questions, please contact Stephen Willis at our California South Branch Office, 1325 J Street, Room 1350, Sacramento, California 95814-2922, by email at *Stephen.M.Willis2@usace.army.mil*, or by telephone at 916-557-7355. For more information regarding our program, please visit our website at *www.spk.usace.army.mil/Missions/Regulatory.aspx.*

Sincerely,

Kathleen A. Dadey, Ph.D
Chief, California South Branch

RECLAMATION

Managing Water in the West

North Valley Regional Recycled Water Program
EIR/EIS Scoping Meeting

COMMENT CARD

The Bureau of Reclamation is preparing an Environmental Impact Statement in accordance with the National Environmental Policy Act.

Please provide your written comments to the mailing address on the back, or fax **559-487-5397**, or e-mail **blawrence@usbr.gov**
Reclamation must receive all comments by Wednesday, May 28, 2014. Thank you.
(Please print clearly)

1. Please define the term of time for "long term"

2. Will the transporting of the recycled water & treated water away from the City of Turlock and Modesto affect current ground water recharge flows and patterns.

3. Is there a financial report that estimates project costs and cost impacts to rate payers?

Stanislaus County

MIGUEL A. GALVEZ
Manager III

PLANNING & COMMUNITY DEVELOPMENT DEPARTMENT

www.stancounty.com/planning

1010 10th Street, Suite 3400
Modesto, CA 95354

Phone:209.525.6330
Fax:209.525.5911

email: galvezm@stancounty.com

STRIVING TO BE THE BEST

From:	Lawrence, Benjamin
To:	Robin Cort; ELIZABETH VASQUEZ; Scott Taylor; NED GRUENHAGEN
Cc:	Anthea Hansen
Subject:	Contact from Fish and Wildlife Service re: North Valley Recycled Water Program
Date:	Tuesday, May 20, 2014 12:05:14 PM

All,

I got a call this morning from Andy Gordus with the Fish and Wildlife Service. He was mainly looking for general project information and how the refuges could be affected.

His first area of interest was water volume and timing. I told him we haven't worked out all of the details, but the cities discharge year-round, and we don't expect agricultural users and the refuges to need water at the same time, so timing should be compatible.

His other questions were about water quality. He mentioned salinity and selenium, but he seemed most interested in pharmaceutical residuals in the treated water. He asked about dispersion/dilution modeling in the DMC, and I told him that would be part of the CEQA/NEPA/NPDES process.

It was generally a positive discussion. I'm sure we'll be hearing more from him in the future.

___
Ben Lawrence
Natural Resource Specialist
Bureau of Reclamation
South-Central California Area Office
Fresno, CA 93721
(559) 487-5039
blawrence@usbr.gov

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SUBMITTED VIA E-MAIL (blawrence@usbr.gov and wwong@modestogov.com) AND U.S. MAIL

May 20, 2014

United States Bureau of Reclamation
Attn: Benjamin Lawrence
1243 N Street, SCC-412
Fresno, CA 93721

William Wong
City of Modesto
Deputy Director, Utility Planning & Projects Department
1010 Tenth Street, 4th Floor
Modesto, CA 95354

Subject: Scoping Comments for the Proposed North Valley Regional Recycled Water Program EIS/EIR

Dear Mr. Lawrence and Mr. Wong:

Turlock Irrigation District (TID) is thankful for the opportunity to provide the following scoping comments for the above proposed project EIS/EIR.

TID was formed in 1887 as the first publicly owned irrigation district in California. Today, TID serves water to approximately 5,800 growers who irrigate approximately 150,000 acres within TID's irrigation boundary, in addition to providing electric service to nearly 100,000 accounts. The conjunctive use of Tuolumne River surface water applied on farmland to recharge groundwater resources is a key water management strategy that has been employed by TID for decades.

Planned recharge in wet years, combined with strategic pumping in dry years has been to the long-term benefit of the 347,000 acres that overlie the Turlock Subbasin. TID continues to search for alternatives to bolster the long-term sustainability of the Turlock Subbasin. This is one example of TID's willingness to find solutions to current and future groundwater problems that affect the entire Subbasin, not just the portion of the basin underneath TID's irrigation boundary. In addition to surface water application, TID sees promise in the future application of recycled water to TID irrigated lands and the Turlock Subbasin as a groundwater replenishment tool. Additionally, TID operates in accordance with a Groundwater Management Plan that was created in conjunction with the Turlock Groundwater Basin Association, of which TID is a founding member.

Section 3.5 of Reclamation's NEPA Handbook sets forth the USBR's scoping requirements. It states that the purpose of scoping is to obtain information that will focus the NEPA analysis on the potentially significant issues and deemphasize insignificant issues. The information gathered either identifies or can be used to identify all or some of the following: Significant resource issues, resources available for the

study, study constraints, alternatives to be considered, potentially affected geographic area, and potential effects.

1. USBR is required to identify and assess the "potentially affected geographical area." Reclamation's NEPA Handbook (2012), Section 3.5. The proposed scope of the affected Project area is too narrowly limited to the area of Stanislaus County located west of the San Joaquin River.

1.1. The stated "objective of the Proposed Action is to maximize use of a sustainable, alternative water supply for the region that addresses reductions in water supplies from the Central Valley Project (CVP) and offsets pressure on groundwater use." Within Stanislaus County, only the area west of the San Joaquin River (SJR) receives CVP water supplies, whereas the affected geographic area is both west and east of the SJR. The affected geographic area of the proposed project includes San Joaquin River Hydrologic Region subbasins 5-22.02 (Modesto), 5-22.03 (Turlock), and 5-22.07 (Delta-Mendota) as described in DWR Bulletin 118.

1.2. All of the sewer effluent for the Proposed Action comes from the Turlock and Modesto subbasins, which are located east of the SJR. The source water for all of the effluent derived from the cities of Turlock, Ceres, and Modesto south of the Tuolumne River is 100% groundwater from the Turlock Subbasin. Both subbasins are experiencing greater pressure on groundwater use than the area west of the SJR. However, since there is no CVP water delivered east of the SJR, the scope of the affected geographic area must be expanded to include the area east of the SJR where the sewage effluent originates and where there is greater pressure on the groundwater subbasins.

1.3. Both the NEPA and CEQA notices of preparation fail to include the Turlock and Modesto Subbasins within the scope of the proposed EIS/EIR and, therefore, fail to include mitigation for the export of this groundwater-based sewage effluent from the Turlock Subbasin.

2. Stanislaus County Groundwater Issues

The Turlock Subbasin is described in the 2008 Turlock Groundwater Basin Groundwater Management Plan. The Subbasin is bounded by the Tuolumne River on the north, the Merced River on the south, the San Joaquin River on the west, and on the east by the western extent of the outcrop of crystalline basement rock in the foothills of the Sierra Nevada Mountains. The City of Turlock, the City of Ceres, and the portion of the City of Modesto south of the Tuolumne River ("South Modesto") are within this Subbasin and within TID's political and irrigation boundaries. The Subbasin underlies an area of approximately 347,000 acres, with irrigated crops (245,000 acres), native vegetation (69,000 acres), and urban development (20,000 acres) as the predominant land uses. Urban development and irrigated lands have expanded since 2008, most of which expanded uses are in 100% groundwater supplied areas.

While the Turlock Irrigation District provides surface water from the Tuolumne River for agricultural uses within the Subbasin, the City of Turlock, the City of Ceres, and South Modesto rely 100% on groundwater. Much of the cities' groundwater ends up as sewer effluent treated at the City of Turlock's and the City of Modesto's respective publicly owned treatment plants or works ("POTW"). The proposed use of the recycled water from the two POTWs to offset pressure on groundwater use is at the heart of the proposed project and needs to be examined within the context of all three subbasins.

Stanislaus County has formed a Water Advisory Committee to address short-term and long-term groundwater management issues within the County that have been accentuated by the three-year drought. Adverse groundwater quantity and elevation issues have arisen within the Turlock and Modesto subbasins and have resulted in a lawsuit against the County for the issuance of new agricultural well permits in Eastern Stanislaus County.

3. Preliminary list of issues that the EIS/EIR will need to examine, discuss, and analyze. TID reserves the right to supplement the following list as more project information is provided by the NEPA and CEQA lead agencies and the project proponents:

3.1. As explained about, the USBR's stated "objective of the Proposed Action is to maximize use of a sustainable, alternative water supply for the region that addresses reductions in water supplies from the Central Valley Project (CVP) and offsets pressure on groundwater use." That objective is too narrowly worded. The affected geographic area of the project needs to expressly include the Turlock and Modesto groundwater subbasins with the greater focused placed on the Turlock Subbasin.

3.2. Because a significant portion of the project's treated sewage effluent to be exported to the Delta-Mendota Subbasin originates as Turlock Subbasin groundwater, the EIS/EIR needs to analyze in depth mitigation measures for that export.

3.3. Concurrent with inclusion of the Turlock and Modesto subbasins in the "affected geographic area" to be assessed by the EIS/EIR, the EIS/EIR needs to recognize and discuss the probable reductions in surface water supplies to those two subbasins from proposed actions by Federal and State regulatory agencies and the resulting increased pressure on those subbasins' groundwater uses due to reduced surface water availability.

3.4. Given the expected reduction in surface water supplies to the three subbasins, the EIS/EIR will need to describe and analyze how the project could reduce groundwater pressures within each of the three subbasins and feasibility of providing a portion of the project's recycled water to the Turlock and Modesto Subbasins.

3.5. The Notice states that the recycled water from the project would be allocated between Del Puerto Water District and South of Delta CVPIA wildlife refuges. The EIS/EIR will need to discuss how much Incremental Level 4 water for wildlife refuges is proposed to be met by the project during Critical, Dry, Below Normal, Above Normal, and Wet water years using the State Water Resources Control Board's "San Joaquin Valley Water Year Hydrologic Classification." The EIS/EIR will need to describe what alternate water supplies are available to the wildlife refuges during each of the five water year types.

3.6. The EIS/EIR will need to describe how the project's recycled water is proposed to be allocated among DPWD, Incremental Level 4 water supplies, and at least the Turlock Subbasin during each of the five water year types. The benefits and impacts of the Proposed Action cannot be adequately assessed until that allocation formula, and alternatives thereof, is described and analyzed in

the EIS/EIR.

3.7. USBR is required to identify and assess the "Alternatives to be considered." Reclamation's NEPA Handbook (2012), Section 3.5. USBR's Notice of Intent to Prepare a Draft EIS/EIR provides no information on alternative uses for the project's recycled water.

a. As described above, the EIS/EIR will need to describe and analyze the use of a portion of the recycled water for groundwater recharge within the Turlock Subbasin through direct recharge or in-lieu groundwater recharge. This in depth analysis is required both as a mitigation measure for the export of the Turlock Subbasin groundwater-based sewer effluent and as an alternative use for the project's recycled water.

b. The cities of Turlock, Ceres, and Modesto have an obligation to investigate the use their recycled water for the irrigation of city parks, medians, landscaping, golf courses, and other areas in order to offset the potable water currently being used for those purposes. The EIS/EIR needs to address the cities' alternative uses of the project's recycled water to reduce potable water use within their own cities. The sale of the project's recycled water would appear to discourage the cities from making the capital investments needed to increase in-city uses of the recycled water, especially if coupled with an agreement with TID to purchase Tuolumne River water to supplement the cities' groundwater supplies.

3.8. Related to 3.6 b. above, the EIS/EIR will need to describe to what extent existing uses of reclaimed water within the Turlock and Modesto Subbasins will be terminated or curtailed as a result of exporting the recycled water out of those subbasins.

3.9. The EIS/EIR will need to describe and analyze proposed alternative recycled water pipeline alignments both east and west of the SJR and the locations of proposed SJR crossings. From the May 13, 2014 scoping meeting, TID now understands that the so-called "Separate Alignments" project configuration, where there would be a separate SJR crossing and pipeline to the DMC from each POTW is not the preferred project and that the so-called "Combined Alignment" is the preferred project. The Combined Alignment consists of a single SJR crossing connected to the City of Modesto POTW and the construction of a 37,800 linear feet, 42-inch inner diameter pipeline from the end of the City of Turlock's Harding Drain Bypass Project pipeline to the City of Modesto POTW via South Carpenter Road, West Main Avenue, and Jennings Road. Alternative alignments for this connecting pipeline should be investigated. A Combined Alignment whereby the single SJR crossing is located at the end of the Harding Drain Bypass Project pipeline should also be investigated.

3.10. The EIS/EIR will need to describe and analyze the history of each POTW's compliance with existing water quality standards. The EIS/EIR will also need to describe and analyze how each POTW will prevent the discharge into the DMC or for agricultural use before the DMC of any recycled, which fails to meet the required water quality standards for discharge into the DMC or for unrestricted agricultural water use.

3.11. One of the objectives of the Proposed Action is to "Deliver agricultural water to DPWD at a cost that supports regional economic sustainability." The EIS/EIR will need to define what the term "supports regional economic sustainability" means. Further, it will need to identify the projected "all-in"

cost per acre-foot of recycled water from the project for agricultural use by DPWD, the "all-in" cost components, and how those cost components will be determined.

3.12. Similarly, the EIS/EIR will need to identify the projected "all-in" cost per acre-foot of recycled water from the project for Incremental Level 4 water supply, the "all-in" cost components, and how those cost components will be determined.

3.13. Will the projected "all-in" costs per acre-foot of recycled water from the Proposed Action be the same for both agricultural use by DPWD and for wildlife refuge use? If not, why not? Is the Federal Government requiring that water for wildlife refuge use be priced at a lower per-acre-foot cost?

4. The following is a very preliminary list of resources available, which need to be considered by USBR in preparing the EIS/EIR:

Department of Water Resources, State of California (2003). *California's Groundwater Bulletin 118 Update 2003*. Sacramento, CA; Department of Water Resources.

Department of Water Resources, State of California (2014). *Public update for drought response: Groundwater basins with potential water shortages and gaps in groundwater monitoring*. Sacramento, CA; Department of Water Resources.

Durbin, Timothy J. (2008). Assessment of Future Groundwater Impacts Due to Assumed Water-Use Changes – Turlock Groundwater Basin, California. Carmichael, CA; Timothy J. Durbin, Inc., Consulting Hydrologists.

Stanislaus County Water Advisory Committee (2014). Various documents produced. Modesto, CA; Stanislaus County.

Stantec Consulting Inc. (2007). *West Park Water System Master Plan*. Modesto, CA; Stantec Consulting Inc.

Turlock Irrigation District (2008). *Turlock Groundwater Basin Groundwater Management Plan*. Turlock, CA; Turlock Irrigation District.

If you have any questions or need any information to clarify or supplement the above comments, please contact Tou Her at 209.883.8365 or e-mail tbher@tid.org.

Sincerely,

Tou Her
Assistant General Manager, Water Resources
Turlock Irrigation District

CHIEF EXECUTIVE OFFICE

Stan Risen
Chief Executive Officer

Patricia Hill Thomas
Chief Operations Officer/
Assistant Executive Officer

Keith D. Boggs
Assistant Executive Officer

Jody Hayes
Assistant Executive Officer

1010 10th Street, Suite 6800, Modesto, CA 95354
Post Office Box 3404, Modesto, CA 95353-3404

Phone: 209.525.6333 Fax 209.544.6226

STANISLAUS COUNTY ENVIRONMENTAL REVIEW COMMITTEE

May 23, 2014

William Wong, Acting Director
City of Modesto, Utility Planning and Projects Department
1010 Tenth Street, 4th Floor
Modesto, CA 95357

SUBJECT: ENVIRONMENTAL REFERRAL – CITY OF MODESTO, UTILITY PLANNING AND PROJECTS DEPARTMENT – NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT AND SCOPING MEETING FOR THE NORTH VALLEY REGIONAL RECYCLED WATER PROGRAM

Mr. Wong:

Thank you for the opportunity to review the Notice of Preparation of a Draft Environmental Impact Report and Scoping Meeting for the above-referenced project.

The Stanislaus County Environmental Review Committee (ERC) has reviewed the subject project and submits the following comments:

The ERC is requesting / recommending that the City of Modesto Utility Planning and Projects Department coordinate their project with the South County Corridor StanCOG study.

The ERC appreciates the opportunity to comment on this project. If you have any questions regarding this request/recommendation, please contact me at the number listed above.

Sincerely,

Delilah Vasquez, Management Consultant
Environmental Review Committee

DV:ss

cc: ERC Members

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4005
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

5.27.14
MAY 2014
Received
Capital Improvement Services

May 20, 2014

William Wong
City of Modesto
1010 10th Street, 4th Floor
Modesto, California 95353

Subject: Notice of Preparation
North Valley Regional Recycled Water Program
SCH#: 2014042068

Dear Mr. Wong:

The California Department of Fish and Wildlife (Department) has reviewed the North Valley Regional Recycled Water Program (Project) submitted by the City of Modesto. The City of Modesto, Del Puerto Water District (DPWD), and City of Turlock propose to implement a regional solution to address water supply shortage within DPWD's service area on the west side of the San Joaquin River in San Joaquin, Stanislaus, and Merced Counties, south of the Sacramento-San Joaquin River Delta (Delta). Specifically, the Project proposes to deliver up to 59,000 acre feet per year of recycled water produced by the cities of Modesto and Turlock via the Delta-Mendota Canal (DMC), a feature of the Central Valley Project owned by the United Stated Bureau of Reclamation (USBR). Recycled water would be conveyed from Modesto and Turlock through pipelines from their wastewater treatment facilities, crossing the San Joaquin River, and ending at the DMC. The recycled water would be conveyed directly to DPWD customers. In addition to uses within DPWD's service area, the Project proposes to provide water to Central Valley Project Improvement Act designated Refuges located south of the Delta to meet their need for water supply. The overall objective of the proposed Project is to maximize beneficial use of a sustainable, alternative water supply within the region to address reductions in water supplies from the Central Valley Project, and reduce the reliance on groundwater use. Two construction alternatives are proposed for the pipeline and pump stations in Stanislaus County. Alternative 1 is a separate alignment alternative involving two connections to the DMC routed along Lemon Avenue and Zacharias Avenue, and along Pomegranate Avenue and West Marshall Avenue. Alternative 2 is a combined alignment alternative that involves Turlock's Harding Drain Pipeline being routed to the Modesto treatment facility and then connecting to the DMC with one connection along Lemon Avenue and Zacharias Avenue.

Special status species such as the State threatened Swainson's hawk (*Buteo swainsoni*), the State fully protected white-tailed kite (*Elanus leucurus*) and golden eagle (*Aquila chrysaetos*), the State endangered and fully protected bald eagle (*Haliaeetus*

leucocephalus), the State and federally threatened giant garter snake (*Thamnophis gigas*), and the State Species of Special Concern burrowing owl (*Athene cunicularia*), western pond turtle (*Actinemys marmorata*), and tricolored blackbird (*Agelaius tricolor*) may occur in or adjacent to the Project area. The Department recommends that Project-related impacts to these biological resources are evaluated and addressed prior to Project approval and implementation. The Department also recommends that the avoidance, minimization, and mitigation measures provided in this comment letter are included as enforceable conditions of Project approval in the Environmental Impact Report (EIR) document to reduce potential impacts to biological resources to less than significant. Our specific comments follow.

Department Jurisdiction

Trustee Agency Authority: The Department is a Trustee Agency with responsibility under the California Environmental Quality Act (CEQA) for commenting on projects that could impact plant and wildlife resources. Pursuant to Fish and Game Code Section 1802, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species. As a Trustee Agency for fish and wildlife resources, the Department is responsible for providing, as available, biological expertise to review and comment upon environmental documents and impacts arising from project activities, as those terms are used under CEQA (Division 13 [commencing with Section 21000] of the Public Resources Code).

Responsible Agency Authority: The Department has regulatory authority over projects that could result in the "take" of any species listed by the State as threatened or endangered, pursuant to Fish and Game Code Section 2081. If the Project could result in the "take" of any species listed as threatened or endangered under the California Endangered Species Act (CESA), the Department may need to issue an Incidental Take Permit (ITP) for the Project. CEQA requires a Mandatory Finding of Significance if a project is likely to substantially impact threatened or endangered species (sections 21001{c}, 21083, Guidelines sections 15380, 15064, 15065). Impacts must be avoided or mitigated to less than significant levels unless the CEQA Lead Agency makes and supports a Statement of Overriding Consideration (SOC). The CEQA Lead Agency's SOC does not eliminate the Project proponent's obligation to comply with Fish and Game Code Section 2080. The Project has the potential to reduce the number or restrict the range of endangered, rare, or threatened species (as defined in Section 15380 of CEQA).

Lake or Stream Alteration Agreement (LSAA): The Department also has regulatory authority with regard to activities occurring in streams and/or lakes that could adversely affect any fish or wildlife resource, pursuant to Fish and Game Code sections 1600 *et seq.* If any Project-planned activities will substantially divert or obstruct the natural flow of any river, stream or lake; substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into

any river, stream, or lake; a Lake or Streambed Alteration Notification to the Department is warranted and an LSAA may be necessary to comply with Fish and Game Code. The Department is required to comply with CEQA in the issuance or the renewal of a Stream Alteration Agreement. Therefore, for efficiency in environmental compliance, we recommend that the stream disturbance be described, and mitigation for the disturbance be developed as part of the environmental review process. This will reduce the need for the Department to require extensive additional environmental review to issue an LSAA, if necessary, for this Project in the future. For additional information on notification requirements, please contact our staff in the Stream Alteration Program at (559) 243-4593.

Bird Protection: The Department has jurisdiction over actions which may result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections that protect birds, their eggs and nests include sections 3503 (regarding unlawful take, possession or needless destruction of the nest or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird).

Water Pollution: Pursuant to Fish and Game Code Section 5650, it is unlawful to deposit in, permit to pass into, or place where it can pass into "Waters of the State" any substance or material deleterious to fish, plant life, or bird life, including non-native species. It is possible that without mitigation measures this Project could result in pollution of Waters of the State from storm water runoff, sediment, and/or construction debris. The Department recommends consultation with the Central Valley Regional Water Quality Control Board and the United States Army Corps of Engineers regarding potential impacts to Waters of the State.

Fully Protected Species: The Department has jurisdiction over fully protected species of birds, mammals, amphibians, reptiles, and fish pursuant to Fish and Game Code Sections 3511, 4700, 5050, and 5515. Take of any fully protected species is prohibited and the Department cannot authorize their take. Bald eagle, white-tailed kite, and golden eagle are fully protected species that could be present within or adjacent to the Project area. Application of avoidance and minimization measures in the CEQA document is advised if this species is detected.

Potential Project Impacts and Recommendations

Nesting Birds: The trees, shrubs, and grasses within and in the vicinity of the Project site likely provide nesting habitat for songbirds and raptors. The Department encourages Project implementation to occur during the non-nesting bird season. However, if ground or vegetation-disturbing activities must occur during the breeding season (February through mid-September), the Project applicant is responsible for ensuring that implementation of the Project does not result in any violation of the Migratory Bird Treaty Act or relevant Fish and Game Codes as referenced above. Prior to work commencing, the recommends surveys for active nests be conducted by a qualified wildlife biologist no more than 10 days prior to the start of any ground or

vegetation disturbance and that the surveys be conducted in a sufficient area around the work site to identify any nests that are present and to determine their status. A sufficient area means any nest within an area that could potentially be affected by the Project. In addition to direct impacts, such as nest destruction, nests may be affected by noise, vibration, odors, and movement of workers or equipment. Identified nests should be continuously surveyed for the first 24 hours prior to any construction-related activities to establish a behavioral baseline. Once work commences, all nests should be continuously monitored to detect any behavioral changes as a result of the Project. If behavioral changes are observed, the work causing that change should cease and the Department consulted for additional avoidance and minimization measures.
If continuous monitoring of identified nests by a qualified wildlife biologist is not feasible, the Department recommends a minimum no-disturbance buffer of 500-foot no-disturbance buffer around the nests of unlisted raptors and 250 feet around active nests of other non-listed bird species until the breeding season has ended, or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. Variance from these no-disturbance buffers may be implemented when there is compelling biological or ecological reason to do so, such as when the Project area would be concealed from a nest site by topography. Any variance from these buffers is advised to be supported by a qualified wildlife biologist and it is recommended the Department be notified in advance of implementation of a no-disturbance buffer variance.

Swainson's Hawk (SWHA): This State threatened species is known to nest and forage within Stanislaus County. To evaluate potential Project-related impacts, the Department recommends that a qualified wildlife biologist conduct surveys for nesting raptors following the survey methodology developed by the Swainson's Hawk Technical Advisory Committee (SWHA TAC, 2000) prior to ground-disturbing activities.

If ground and vegetation disturbing Project activities will occur during the normal bird breeding season (February 1 through September 15), the Department recommends that additional pre-construction surveys for active nests be conducted by a qualified biologist no more than 10 days prior to the start of construction. The Department recommends a minimum no-disturbance buffer of 0.5 miles around active nests until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and is no longer reliant upon the nest or parental care for survival to avoid potential take of SWHA. We also recommend the buffer is clearly delineated for Project employees. If a 0.5 mile buffer is not feasible, we recommend consultation with the Department to discuss how to implement the Project and avoid "take". If "take" cannot be avoided, an ITP is warranted to comply with CESA.

Fully Protected Raptors: The State fully protected white tailed kite, State fully protected golden eagle, and the State endangered and fully protected bald eagle are known to nest and forage in Stanislaus County. Projects within occupied territories have the potential to significantly impact the species. The Department recommends that focused surveys be conducted by experienced biologists prior to Project implementation. To avoid impact to these species, following the survey methodology

developed by the Department (CDFG, 2010) is advised. In the event that the species are found within ½-mile of a proposed activity site, implementation of avoidance measures are warranted. The Department recommends that a qualified wildlife biologist be on-site during all ground-disturbing/construction related activities and that a 0.5 mile no-disturbance buffer be put into effect. If the 0.5 mile no-disturbance buffer cannot feasibly be implemented, contacting the Department is advised to assist with providing and implementing additional avoidance measures. The Department recommends fully addressing mitigation measures for fully protected raptor species in the EIR.

Burrowing Owl: Burrowing owl has the potential to be present in and adjacent to the Project area. It is possible Project activities could impact this species. Burrowing owls have the potential to be year-round residents, dispersing juveniles, migrants, transients or new colonizers and can utilize the Project site year round. Therefore, the Department recommends the survey methodology described in the Staff Report on Burrowing Owl Mitigation dated March 7, 2012 (CDFG 2012) be followed prior to ground-disturbing activities. In the event that burrowing owls are found, the Department's Staff Report on Burrowing Owl Mitigation (CDFG 2012) recommends that impacts to occupied burrows be avoided in accordance with the following table unless a qualified biologist approved by the Department verifies through non-invasive methods that either: 1) the birds have not begun egg laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

* meters (m)

Giant Garter Snake: There is the potential for this State and federally listed species to utilize the surface waters and upland habitat along the San Joaquin River. The Department advises that potential impacts to the species be fully addressed in the EIR for the Project. The Department recommends "Appendix C Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake (*Thamnophis gigas*) Habitat" of the United States Fish and Wildlife Service's (USFWS) "Programmatic Consultation with the United States Army Corps of Engineers, 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California", be followed to avoid and minimize potential impacts to giant garter snake. This document can be found at http://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/ggs%20appendix%20c.pdf.

Please note that these measures do not authorize take of giant garter snake pursuant to CESA. We recommend consultation with the Department to discuss how to implement the Project and avoid "take" under CESA after a habitat assessment for this species is completed. If "take" cannot be avoided, an ITP is warranted to comply with CESA.

Federally Listed Species: The Department also recommends consulting with the USFWS on potential impacts to federally listed species including, but not limited to giant garter snake. "Take" under the Federal Endangered Species Act (FESA) is more broadly defined than CESA; take under FESA also includes significant habitat modification or degradation that could result in death or injury to a listed species by interfering with essential behavioral patterns such as breeding, foraging, or nesting. Consultation with the USFWS in order to comply with FESA is advised well in advance of Project implementation.

More information on survey and monitoring protocols for sensitive species can be found at the Department's website (www.dfg.ca.gov/wildlife/nongame/survey_monitor.html). If you have any questions on these issues, please contact Jim Vang, Environmental Scientist, at the address provided on this letterhead, by telephone at (559) 243-4014, extension 254, or by electronic mail at Jim.Vang@wildlife.ca.gov.

Sincerely,

Jeffrey R. Single, Ph.D.
Regional Manager

cc: Thomas Leeman
United States Fish and Wildlife Service
2800 Cottage Way, Suite W-2605
Sacramento, California 95825

California Regional Water Quality Control Board
Central Valley Region
1685 "E" Street
Fresno, California 93706-2020

United States Army Corps of Engineers
1325 "J" Street, Suite #1350
Sacramento, California 95814-2928

Literature Cited

CDFG. 2010. Bald Eagle Breeding Survey Instructions. California Department of Fish and Game, April 2010.

CDFG. 2012. Staff Report on Burrowing Owl Mitigation. California Department of Fish and Game.

SWHA TAC. 2000. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley. Swainson's Hawk Technical Advisory Committee, May 31, 2000.

USFWS. Programmatic Consultation with the United States Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California, Appendix C Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake (*Thamnophis gigas*) Habitat USFWS.

STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

JENNIFER LUCCHESI, *Executive Officer*
(916) 574-1800 *Fax* (916) 574-1810
California Relay Service TDD Phone 1-800-735-2929
from Voice Phone 1-800-735-2922

Contact Phone: **(916) 574-1890**
Contact FAX: **(916) 574-1885**

Established in 1938

May 22, 2014

File Ref: SCH #2 014042068

City of Modesto
William Wong
1010 Tenth Street, 4th Floor
Modesto, CA 95353

Subject: Notice of Preparation (NOP) for an Environmental Impact Report (EIR) for the North Valley Regional Recycled Water Program in San Joaquin, Stanislaus, and Merced Counties

Dear Mr. Wong,

The California State Lands Commission (CSLC) staff has reviewed the subject NOP for an EIR for the North Valley Regional Recycled Water Program (Project), which is being prepared by the city of Modesto (Modesto). Modesto, as a public agency proposing the Project, is the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The CSLC is 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, because the Project involves work on sovereign lands, the CSLC will act as a responsible agency.

CSLC Jurisdiction and Public Trust Lands

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 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.

After reviewing the information contained in the NOP, CSLC staff has determined the Project will be located along areas of the natural bed of the San Joaquin River on State-owned sovereign land under the jurisdiction of the CSLC. Therefore, a lease from the CSLC will be required for Modesto to implement the Project on sovereign lands. Please contact Wendy Hall (see contact information below) for further information about the extent of the CSLC's sovereign ownership and leasing requirements.

Please also be advised that the waterways involved in the Project are subject to a public navigational easement. This easement provides that the public has the right to navigate and exercise the incidences of navigation in a lawful manner on State waters that are capable of being physically navigated by oar or motor-propelled small craft. Such uses may include, but are not limited to, boating, rafting, sailing, rowing, fishing, fowling, bathing, skiing, and other water-related public uses. The activities completed under the Project must not restrict or impede the easement right of the public.

These comments are made without prejudice to any future assertion of State ownership or public rights, should circumstances change, or should additional information become available. This letter is not intended, nor should it be construed as a waiver or limitation of any right, title, or interest of the State of California in any lands under its jurisdiction.

Project Description

Modesto, Del Puerto Water District (DPWD), and city of Turlock (Partner Agencies) proposed to implement a regional solution to address water supply shortages within DPWD's service area on the west side of the San Joaquin River in San Joaquin, Stanislaus, and Merced Counties; south of the Sacramento-San Joaquin River Delta (Delta). The Project proposes to deliver up to 59,000 acre feet per year (AFY) of recycled water produced from Modesto and Turlock through pipelines from their wastewater treatment facilities, crossing the San Joaquin River, and ending at the Delta-Mendota Canal (DMC). The recycled water would then be conveyed directly to DPWD customers.

The overall objective of the proposed Project is to maximize beneficial use of a sustainable, alternative water supply within the region to address reductions in water supplies from the Central Valley Project (CVP), and to reduce reliance on groundwater. Since DMC is a feature of the Central Valley Project owned by the United States Bureau of Reclamation (USBR), the Project also proposes to provide water to Central Valley Project Improvement Act (CVPIA) designated Refuges located south of the Delta to

meet their need for water supply. Specifically, the objectives of the Project are as follows:

- Establish an alternative, reliable, long-term water supply of up to 59,000 AFY of recycled water for DPWD;
- Maximize the beneficial use of recycled water to DPWD customers and south of Delta CVPIA designated wildlife refuges;
- Maximize Project Partners' control of operations and delivery of water;
- Establish a long-term water right to allow for the beneficial reuse of recycled water;
- Maximize use of existing facilities for treatment / delivery of recycled water;
- Provide supplemental annual water supplies to south of Delta CVPIA designated refuges as available to meet Federal requirements;
- Avoid or minimize, through incorporation of design constraints and management practices, impacts to environmental resources such as surface water, groundwater levels, land subsidence, groundwater quality and biological resources including sensitive species; and
- Deliver agricultural water to DPWD at a cost that supports regional economic sustainability.

Environmental Review

CSLC staff requests that Modesto consider the following comments when preparing the Draft EIR.

General Comments

1. Project Description: A thorough and complete Project Description should be included in the EIR in order to facilitate meaningful environmental review of potential impacts, mitigation measures, and alternatives. The Project Description should be as precise as possible in describing the details of all allowable activities (e.g., types of equipment or methods that may be used), as well as the details of the timing and length of activities. Thorough descriptions will facilitate CSLC staff's determination of the extent and locations of its leasing jurisdiction, make for a more robust analysis of the work that may be performed, and minimize the potential for subsequent environmental analysis to be required.

2. Mitigation Measures: The EIR should not include any deferred mitigation measures. The mitigation measures should either be presented as specific, feasible, enforceable obligations, or should be presented as formulas containing "performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way" (State CEQA Guidelines, § 15126.4, subd. (b)).

Biological Resources

3. Sensitive Species: Modesto should conduct queries of the California Department of Fish and Wildlife's (CDFW), California Natural Diversity Database (CNDDB), and U.S. Fish and Wildlife Service's (USFWS) Special Status Species Database to identify any special-status plant or wildlife species that may occur in the Project area. The EIR should analyze the potential for such species to occur in the Project area and, if impacts to special-status species are found to be significant, consult with the above agencies to identify feasible mitigation measures.

Climate Change

4. Greenhouse Gases: A greenhouse gas (GHG) emissions analysis consistent with the California Global Warming Solutions Act (AB 32) and required by the State CEQA Guidelines should be included in the EIR. This analysis should identify a threshold for significance for GHG emissions, calculate the level of GHGs that will be emitted as a result of construction and ultimate build-out of the Project, determine the significance of the impacts of those emissions, and, if impacts are significant, identify mitigation measures that would reduce them to less than significant.

Cultural Resources

5. Submerged Resources: The EIR should evaluate potential impacts to cultural resources in the Project area. The CSLC maintains a shipwrecks database that can assist with this analysis. The database includes known and potential vessels located on the State's tide and submerged lands; however, the locations of many shipwrecks remain unknown. Therefore, CSLC staff requests that Modesto contact Senior Staff Counsel Pam Griggs at the contact information noted at the end of this letter to obtain shipwrecks data from the database and CSLC records for the Project site. Please also note that any submerged archaeological site or submerged historic resource that has remained in State waters for more than 50 years is presumed to be significant.

6. Title to Resources: The EIR should also mention that the title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands and school lands of California is vested in the State and under the jurisdiction of the CSLC. CSLC staff requests that Modesto consult with Senior Staff Counsel Pam Griggs at the contact information noted at the end of this letter, should any cultural resources on state sovereign be discovered during construction of the proposed Project.

Public Access

7. Recreational Activities: The public recreational activities such as, but not limited to, kayaking, swimming, rafting, sailing, rowing, bathing, skiing, and water-related public uses of the San Joaquin River (as explained above under the "CSLC Jurisdiction and Public Trust Lands" section) may be impacted from carrying out the proposed Project. CSLC staff requests that these possible impacts be thoroughly addressed in the EIR. If impacts are potentially significant, CSLC staff recommends proposing feasible mitigation measures to reduce these impacts to less-than-significant. Such mitigation measure may include posting public notice signs before carrying out Project-related activities.

Thank you for the opportunity to comment on the NOP for the Project. As a responsible agency, the CSLC will need to rely on the Final EIR for the issuance of a lease as specified above and, therefore, we request that you consider our comments prior to certification of the EIR. Please send copies of future Project-related documents, including electronic copies of the Final EIR, Mitigation Monitoring and Reporting Program (MMRP), Notice of Determination (NOD), CEQA Findings and, if applicable, Statement of Overriding Considerations when they become available, and refer questions concerning environmental review to Afifa Awan, Environmental Scientist, at (916) 574-1891 or via e-mail at Afifa.Awan@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 Wendy Hall, Public Land Manager at (916) 574-0994, or via email at Wendy.Hall@slc.ca.gov.

Sincerely,

for

Cy R. Oggins, Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
Afifa Awan, DEPM, CSLC
Warren Crunk, Legal, CSLC
Jennifer DeLeon, DEPM, CSLC
Pamela Griggs, Legal, CSLC
Wendy Hall, LMD, CSLC
Eric Milstein, Legal, CSLC
Mara Noelle, DEPM, CSLC

May 26, 2014

William Wong
City of Modesto, Utility Planning & Projects Dept.
1010 Tenth Street, Suite 4600
Modesto, CA 95354

Benjamin Lawrence
Bureau of Reclamation
1243 N Street, SCC-412
Fresno, CA 93721

Re: North Valley Regional Recycled Water Project

Mr. Wong and Mr. Lawrence,

I have a few concerns with the proposed North Valley Regional Recycled Water Project. My main worry is that, as a City of Turlock resident who relies entirely on the city to pump groundwater for mine and others water supply, I'm concerned there may be less water available in the groundwater table. The reason why I say this is that the project is not looking to see if it's possible to use Turlock's recycled water to improve the current groundwater problem in our area that I keep reading about.

Water quality is also a concern of mine, for the same reason I mention above. If the water is pumped here, used here, and recycled here, shouldn't it be reused here?

Sincerely,

Name	Mark Serpa
Address	2520 Tigers Dr. Turlock, Ca. 95382 209-678-1686
e-mail	mserpa@customlockandalarm.com

May 26, 2014

William Wong
City of Modesto, Utility Planning & Projects Dept.
1010 Tenth Street, Suite 4600
Modesto, CA 95354

Benjamin Lawrence
Bureau of Reclamation
1243 N Street, SCC-412
Fresno, CA 93721

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Water quality is also a concern of mine, for the same reason I mention above. If the water is pumped here, used here, and recycled here, shouldn't it be reused here?

Sincerely,

Amber Madden
2700 Lander Ave #4
Turlock, Ca. 95380
amidaynow@hotmail.com

May 26, 2014

William Wong
City of Modesto, Utility Planning & Projects Dept.
1010 Tenth Street, Suite 4600
Modesto, CA 95354

Benjamin Lawrence
Bureau of Reclamation
1243 N Street, SCC-412
Fresno, CA 93721

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Water quality is also a concern of mine, for the same reason I mention above. If the water is pumped here, used here, and recycled here, shouldn't it be reused here?

Sincerely,

ROBERT GIOLETTI & SONS DAIRY, INC.
118 N. BLAKER ROAD
TURLOCK, CALIFORNIA 95380
(209) 667-6024 or (209) 602-9110
giodairy@sbcglobal.net

May 28, 2014

Benjamin Lawrence
Bureau of Reclamation
1243 N Street, SCC-412
Fresno, CA 93721

William Wong
City of Modesto, Utility Dept.
1010 Tenth Street, Suite 4600
Modesto, CA 95354

Re: North Valley Recycled Water Project

Dear Mr. Lawrence and Mr. Wong:

I am writing to voice my concerns about the present proposal to redirect the City of Turlock's recycled water from the Turlock Irrigation District's Harding Drain to the Delta-Mendota Canal as part of the "North Valley Project."

My family and I have owned and operated a dairy and farming business in Turlock, California, for four generations. We employ 40 people in both operations. We have relied on TID water to irrigate our crops throughout these years, and still rely on TID to irrigate approximately 1750 acres of forage crops and over 250 acres of almonds, year around.

We receive TID water from the Harding Drain to irrigate 70 acres and another 440 acres that are in combination therewith. I am concerned about the prospect that the City of Turlock may redirect its recycled water away from the Harding Drain and into the Delta-Mendota Canal. I am concerned that this plan will adversely affect the water supply to my family's fields, particularly at crucial points when our crops absolutely need water to grow. Removing water that originated in the TID basin and exporting it across the river will probably create a deficit of water for those of us farming west of Turlock. Such water would have to be replaced by increased groundwater pumping or more surface water deliveries from Don Pedro, creating an additional burden for all involved. Therefore, I feel strongly that the reliability and quality of our water supply is in jeopardy should this diversion take effect.

Any material interruption in water supply will adversely affect our whole operation, as we rely on the ability to grow quality forage crops to feed our dairy cattle, and we rely on our orchard crop to diversify our business. There are many families relying on our operations for their livelihood, so I am asking that you please carefully consider these and other impacts to farmers utilizing the Harding Drain to irrigate their crops.

I thank you in advance for your consideration. Please feel free to contact me if you would like to discuss this matter further.

Kindest Regards,

Justin Gioletti

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAY 30 2014

Benjamin Lawrence
U.S. Bureau of Reclamation
1243 N Street, SCC-412
Fresno, CA 93721

Subject: Notice of Intent to Prepare a Draft Environmental Impact Statement for the North Valley Regional Recycled Water Program, San Joaquin, Stanislaus, and Merced Counties, CA

Dear Mr. Lawrence:

The U.S. Environmental Protection Agency has reviewed the Federal Register Notice published April 22, 2014 requesting comments on the U.S. Bureau of Reclamation's decision to prepare a Draft Environmental Impact Statement / Environmental Impact Report for the North Valley Regional Recycled Water Program. 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.

Reclamation, along with the Del Puerto Water District, is beginning the preparation of a DEIS / EIR to evaluate alternatives that would provide recycled water from the Cities of Turlock and Modesto via the Central Valley Project's Delta-Mendota Canal to the Del Puerto Water district for irrigation and annual Incremental Level 4 water to Central Valley Project Improvement Act-designated wildlife refuges.

EPA recognizes the impacts of the current drought on water availability and delivery in California and encourages the use of recycled wastewater to address water supply concerns and to reduce pressure on groundwater use. To assist in the scoping process for the project, EPA has identified several issues for consideration in the development of the DEIS.

Purpose and Need

The DEIS for the proposed project should clearly identify the underlying purpose and need that is the basis for proposing the range of alternatives (40 CFR 1502.13). The *purpose* of the proposed action is typically the specific objectives of the activity, while the *need* for the proposed action may be to eliminate a broader underlying problem or take advantage of an opportunity.

The purpose and need should be a clear, objective statement of the rationale for the proposed project, as it provides the framework for identifying project alternatives. The DEIS should concisely identify why the project is being proposed, why it is being proposed now, and should focus on the specific desired outcomes of the project (e.g. secure reliable water supply, maximize beneficial use of recycled water) rather than prescribing a predetermined resolution. The purpose and need should also clearly describe Reclamation's role in the project, particularly as it relates to Central Valley Project water allocation and water contract delivery.

Regulatory Framework
The DEIS for the proposed project should include a comprehensive description of the regulatory context of the project. This section should include a description of any permits that the project will require (e.g. National Pollutant Discharge Elimination System permits for discharges to Waters of the United States).

EPA notes that the State Water Resources Control Board has published a proposed statewide General Order titled "General Waste Discharge Requirements for Recycled Water Use"[1] and is expected to consider adoption of this proposal in early June 2014. Should this proposal be adopted, aspects of the North Valley Regional Recycled Water Program may be regulated by these requirements and require coverage under the order.

Range of Alternatives
All reasonable alternatives that fulfill the project's purpose and need should be evaluated in detail, including alternatives outside the legal jurisdiction of Reclamation (40 CFR Section 1502.14(c)). The DEIS should provide a clear discussion of the reasons for the elimination of alternatives which are not evaluated in detail.

A robust range of alternatives will include options for avoiding significant environmental impacts. The DEIS should clearly describe the rationale used to determine whether impacts of an alternative are significant or not. Thresholds of significance should be determined by considering the context and intensity of an action and its effects (40 CFR 1508.27).

The environmental impacts of the proposal and alternatives should be presented in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14). The potential environmental impacts of each alternative should be quantified to the greatest extent possible (e.g. acres of wetlands impacted; change in water quality).

The No Action Alternative should clearly describe the current wastewater discharge regimes in Turlock and Modesto. It should specify the regulatory vehicle that governs the discharge regimes and include details of all permits and transfers related to the current discharge. The description of the No Action Alternative should also indicate if there are existing compliance concerns regarding any aspects of current permits and waste discharge requirements, such as volumetric or pollutant limits.

Each action alternative should describe the proposed percentage distribution of project water for irrigation and wildlife refuges and the mechanism by which this distribution might change over time.

The range of alternatives should explore aquifer recharging as an alternate use for the recycled wastewater. Such an analysis should include the environmental impacts of spreading basins and their uses in flood management.

Water Quality
Each of the Action Alternatives should include a robust discussion of impacts to water quality.

This should include identifying the applicable water quality standards and beneficial uses of receiving waters that receive discharges from the proposed project.

---

[1] http://www.waterboards.ca.gov/water_issues/programs/land_disposal/docs/wd/wdr_general_order.pdf

The analysis should include a description of the impacts from reduced discharge volume to the current discharge locations and waters, including but not limited to any impacts to flow of the San Joaquin River.

Water quality analyses should also include a description of the Del Puerto Water District's irrigation customers, specifically if the customers are situated on and intending to irrigate selenium-enriched land. The analysis should account and mitigate for any selenium-contaminated irrigation runoff from such irrigation.

Further, the analysis should include a description of the Waters of the U.S. within the wildlife refuges that may receive project water and how any discharges to Waters of the U.S. will impact water quality in these locations.

Climate Change

Scientific evidence supports the concern that continued increases in greenhouse gas emissions resulting from human activities will contribute to climate change. Global warming is caused by emissions of carbon dioxide and other heat-trapping gases. On December 7, 2009, the EPA determined that emissions of GHGs contribute to air pollution that "endangers public health and welfare" within the context of the Clean Air Act. Substantially higher temperatures and rising sea levels two of the direct impacts experienced in the west that can be attributed, at least partially, to climate change. We encourage Reclamation to draw on its extensive research into the expected effects of climate change on the arid west to create a well-informed document for the public and the decision makers.[2]

The DEIS should describe future environmental impacts of climate change on the project area and how the project will cope with, contribute to, or be affected by those impacts.

Please note that, as of October 1, 2012, EPA Headquarters no longer accepts paper copies or CDs of EISs for official filing purposes. Submissions must be made through EPA's electronic EIS submittal tool: *e-NEPA*. To begin using *e-NEPA*, you must first register with EPA's electronic reporting site - https://cdx.epa.gov/epa_home.asp. Electronic filing with EPA Headquarters does not change the requirement to submit a hard copy to the EPA Region 9 Office for review.

We appreciate the opportunity to provide comments on the preparation of the DEIS. Please send one hard copy and one CD of the DEIS to this office at the same time it is officially filed with our Washington D.C. Office. If you have any questions, please contact me at (415) 947-4167or prijatel.jean@epa.gov.

Sincerely,

Jean Prijatel
Environmental Review Section
Enforcement Division

[2] http://www.usbr.gov/climate/docs/ClimateChangeLiteratureSynthesis3.pdf

Appendix B – Air Quality and GHG Emissions Calculations

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NVRRWP Alternative 1 Unphased Material Hauling and Tier 3 Mitigation

San Joaquin Valley Unified APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.00	1.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2018
Utility Company	Modesto Irrigation District				
CO2 Intensity (lb/MWhr)	833.46	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Estimate of pump station size.

Construction Phase - Used site-specific construction schedule received from RMC by email July 2014 and Project Description. 5 simultaneous crews assumed to be working starting summer 2016.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

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Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Trips and VMT - 'Used site specific information provided by RMC in construction spreadsheet. Workers were assumed for all phases. Material hauling emissions allocated to the first phase of a construction project.

Grading - Used site specific information provided by RMC in construction spreadsheet. Workers were assumed for all phases. Material hauling emissions allocated to the first phase of a construction project.

Architectural Coating - no coatings since it is a pipeline underground. Phase used as a unique phase type.

Consumer Products - No consumer products since it is an infrastructure underground pipeline.

Area Coating - No coatings since it is a pipeline underground.

Landscape Equipment - no landscaping since infrastructure project.

Energy Use - Based on pump operation provided by RMC in construction spreadsheet.

Water And Wastewater - No emissions estimated as this is just a change in location of where water is discharged. Thus only energy associated with pumping to new discharge location considered.

Solid Waste - No change in solid waste since this is only a change in location of discharge.

Construction Off-road Equipment Mitigation - Assume Tier 3 mitigation on all equipment over 50 hp.

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tblArchitecturalCoating	ConstArea_Nonresidential_Interior	2.00	0.00
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tblAreaCoating	ReapplicationRatePercent	10	0
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
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tblConstructionPhase	NumDays	100.00	48.00
tblConstructionPhase	NumDays	100.00	120.00
tblConstructionPhase	NumDays	2.00	40.00
tblConstructionPhase	NumDays	2.00	450.00
tblConstructionPhase	NumDays	2.00	60.00
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	NumDays	5.00	28.00
tblConstructionPhase	NumDays	1.00	20.00
tblConstructionPhase	NumDays	1.00	19.00
tblConstructionPhase	NumDays	1.00	60.00
tblConstructionPhase	NumDays	1.00	15.00
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tblConstructionPhase	PhaseEndDate	2/10/2017	12/2/2016
tblConstructionPhase	PhaseEndDate	2/8/2017	12/30/2016
tblConstructionPhase	PhaseEndDate	2/3/2017	12/2/2016
tblConstructionPhase	PhaseEndDate	12/20/2016	9/9/2016

tblConstructionPhase	PhaseEndDate	3/30/2018	3/31/2018
tblConstructionPhase	PhaseEndDate	6/22/2018	9/9/2016
tblConstructionPhase	PhaseEndDate	1/13/2017	12/2/2016
tblConstructionPhase	PhaseEndDate	1/11/2017	2/8/2017
tblConstructionPhase	PhaseEndDate	8/11/2016	7/14/2016
tblConstructionPhase	PhaseEndDate	10/6/2016	9/9/2016
tblConstructionPhase	PhaseEndDate	9/30/2016	7/8/2016
tblConstructionPhase	PhaseEndDate	9/13/2017	10/25/2016
tblConstructionPhase	PhaseEndDate	11/11/2016	8/19/2016
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tblConstructionPhase	PhaseStartDate	11/19/2016	9/12/2016
tblConstructionPhase	PhaseStartDate	12/3/2016	10/26/2016
tblConstructionPhase	PhaseStartDate	8/20/2016	6/20/2016
tblConstructionPhase	PhaseStartDate	10/26/2016	7/18/2016
tblConstructionPhase	PhaseStartDate	7/9/2016	6/20/2016
tblConstructionPhase	PhaseStartDate	4/1/2018	6/20/2016
tblConstructionPhase	PhaseStartDate	12/31/2016	11/21/2016
tblConstructionPhase	PhaseStartDate	12/3/2016	1/2/2017
tblConstructionPhase	PhaseStartDate	7/16/2016	6/20/2016
tblConstructionPhase	PhaseStartDate	7/15/2016	6/20/2016
tblConstructionPhase	PhaseStartDate	9/10/2016	6/20/2016
tblConstructionPhase	PhaseStartDate	6/3/2017	7/15/2016
tblConstructionPhase	PhaseStartDate	9/10/2016	6/20/2016
tblEnergyUse	NT24E	0.00	15,442,000.00
tblGrading	AcresOfGrading	0.00	168.75
tblGrading	AcresOfGrading	38.00	47.50
tblGrading	AcresOfGrading	0.00	7.50

tblGrading	MaterialExported	0.00	500.00
tblGrading	MaterialExported	0.00	67,200.00
tblGrading	MaterialExported	0.00	72.00
tblGrading	MaterialImported	0.00	500.00
tblGrading	MaterialImported	0.00	53,730.40
tblGrading	MaterialImported	0.00	322.00
tblLandUse	LandUseSquareFeet	0.00	1.00
tblLandUse	LotAcreage	0.00	1.00
tblOffRoadEquipment	HorsePower	205.00	60.00
tblOffRoadEquipment	HorsePower	171.00	104.00
tblOffRoadEquipment	HorsePower	171.00	215.00
tblOffRoadEquipment	HorsePower	171.00	104.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	6.00	4.00

tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00
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tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	OperationalYear	2014	2018
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
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tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
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tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00

tblTripsAndVMT	HaulingTripNumber	125.00	128.00
tblTripsAndVMT	HaulingTripNumber	15,116.00	15,118.00
tblTripsAndVMT	HaulingTripNumber	49.00	60.00
tblTripsAndVMT	WorkerTripLength	16.80	20.00
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tblTripsAndVMT	WorkerTripLength	16.80	20.00
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tblTripsAndVMT	WorkerTripNumber	60.00	32.00
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tblTripsAndVMT	WorkerTripNumber	0.00	32.00
tblTripsAndVMT	WorkerTripNumber	18.00	14.00
tblTripsAndVMT	WorkerTripNumber	50.00	32.00
tblTripsAndVMT	WorkerTripNumber	35.00	32.00

tblTripsAndVMT	WorkerTripNumber	13.00	18.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	3.00	2.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	3.00	0.00
tblTripsAndVMT	WorkerTripNumber	0.00	24.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	1.4458	16.3420	11.0851	0.0211	0.9116	0.6950	1.6065	0.3623	0.6409	1.0033	0.0000	1,929.9462	1,929.9462	0.3246	0.0000	1,936.7631
2017	0.1660	1.7186	1.0178	2.4500e-003	0.1225	0.0745	0.1970	0.0180	0.0687	0.0866	0.0000	216.6978	216.6978	0.0586	0.0000	217.9281
2018	0.0127	0.1350	0.0720	2.3000e-004	0.0934	4.9200e-003	0.0983	0.0102	4.5300e-003	0.0148	0.0000	20.2911	20.2911	6.1100e-003	0.0000	20.4194
Total	**1.6245**	**18.1956**	**12.1748**	**0.0238**	**1.1275**	**0.7744**	**1.9018**	**0.3905**	**0.7141**	**1.1047**	**0.0000**	**2,166.9351**	**2,166.9351**	**0.3893**	**0.0000**	**2,175.1106**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.5648	8.6695	9.7388	0.0211	0.9116	0.3027	1.2143	0.3623	0.2989	0.6612	0.0000	1,929.9449	1,929.9449	0.3246	0.0000	1,936.7618
2017	0.0651	1.0300	1.2980	2.4500e-003	0.1225	0.0432	0.1657	0.0180	0.0432	0.0611	0.0000	216.6976	216.6976	0.0586	0.0000	217.9279
2018	5.4600e-003	0.1015	0.1173	2.3000e-004	0.0934	3.8400e-003	0.0973	0.0102	3.8400e-003	0.0141	0.0000	20.2911	20.2911	6.1100e-003	0.0000	20.4194
Total	**0.6354**	**9.8009**	**11.1541**	**0.0238**	**1.1275**	**0.3498**	**1.4772**	**0.3905**	**0.3459**	**0.7364**	**0.0000**	**2,166.9336**	**2,166.9336**	**0.3893**	**0.0000**	**2,175.1090**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**60.89**	**46.14**	**8.38**	**0.00**	**0.00**	**54.83**	**22.33**	**0.00**	**51.56**	**33.33**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5,837.8650	5,837.8650	0.2031	0.0420	5,855.1588
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**5,837.8651**	**5,837.8651**	**0.2031**	**0.0420**	**5,855.1589**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5,837.8650	5,837.8650	0.2031	0.0420	5,855.1588
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**5,837.8651**	**5,837.8651**	**0.2031**	**0.0420**	**5,855.1589**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Construction Weir Site Prep	Site Preparation	6/20/2016	7/15/2016	5	20	
2	Construction Pipe Site Prep	Site Preparation	6/20/2016	7/14/2016	5	19	
3	PumpStation Construction	Site Preparation	6/20/2016	9/9/2016	5	60	
4	River Crossing 15	Site Preparation	6/20/2016	7/8/2016	5	15	
5	Water Truck	Grading	6/20/2016	3/31/2018	5	450	
6	River Crossing 60	Grading	6/20/2016	9/9/2016	5	60	
7	River Crossing 45	Trenching	6/20/2016	8/19/2016	5	45	
8	River Crossing 120	Building Construction	6/20/2016	12/2/2016	5	120	
9	River Crossing 240	Architectural Coating	6/20/2016	6/2/2017	5	240	
10	Construction Pipe Trenching	Trenching	7/15/2016	10/25/2016	5	73	
11	Construction Weir Excavation	Grading	7/18/2016	9/9/2016	5	40	
12	Construction Weir Construction	Building Construction	9/12/2016	11/18/2016	5	50	
13	PumpStation Equipment Install	Building Construction	9/12/2016	12/2/2016	5	60	
14	Construction Pipe Pipeline	Building Construction	10/26/2016	12/30/2016	5	48	
15	Construction Weir Paving	Paving	11/21/2016	12/2/2016	5	10	
16	Construction Backfil and Paving	Paving	1/2/2017	2/8/2017	5	28	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Construction Weir Site Prep	Graders	1	8.00	174	0.41
Construction Weir Site Prep	Rubber Tired Dozers	0	7.00	255	0.40

Construction Weir Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Construction Pipe Site Prep	Graders	0	8.00	174	0.41
Construction Pipe Site Prep	Rubber Tired Dozers	2	8.00	255	0.40
Construction Pipe Site Prep	Scrapers	2	8.00	361	0.48
Construction Pipe Site Prep	Signal Boards	10	8.00	6	0.82
Construction Pipe Site Prep	Tractors/Loaders/Backhoes	0	8.00	97	0.37
PumpStation Construction	Cranes	1	4.00	226	0.29
PumpStation Construction	Excavators	1	8.00	162	0.38
PumpStation Construction	Graders	0	8.00	174	0.41
PumpStation Construction	Other Construction Equipment	1	8.00	104	0.42
PumpStation Construction	Rubber Tired Dozers	1	8.00	255	0.40
PumpStation Construction	Rubber Tired Loaders	1	8.00	199	0.36
PumpStation Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
River Crossing 15	Graders	0	8.00	174	0.41
River Crossing 15	Off-Highway Trucks	2	8.00	400	0.38
River Crossing 15	Rubber Tired Dozers	0	7.00	255	0.40
River Crossing 15	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Water Truck	Graders	0	6.00	174	0.41
Water Truck	Off-Highway Trucks	1	4.00	400	0.38
Water Truck	Rubber Tired Dozers	0	6.00	255	0.40
Water Truck	Tractors/Loaders/Backhoes	0	7.00	97	0.37
River Crossing 60	Graders	0	6.00	174	0.41
River Crossing 60	Other Construction Equipment	1	8.00	215	0.42
River Crossing 60	Other Construction Equipment	1	8.00	104	0.42
River Crossing 60	Rubber Tired Dozers	1	8.00	255	0.40
River Crossing 60	Rubber Tired Loaders	1	8.00	199	0.36
River Crossing 60	Tractors/Loaders/Backhoes	0	7.00	97	0.37
River Crossing 45	Bore/Drill Rigs	1	8.00	60	0.50

River Crossing 120	Cranes	0	6.00	226	0.29
River Crossing 120	Excavators	2	8.00	162	0.38
River Crossing 120	Forklifts	0	6.00	89	0.20
River Crossing 120	Generator Sets	0	8.00	84	0.74
River Crossing 120	Off-Highway Trucks	1	4.00	400	0.38
River Crossing 120	Tractors/Loaders/Backhoes	0	6.00	97	0.37
River Crossing 120	Welders	0	8.00	46	0.45
River Crossing 240	Air Compressors	0	6.00	78	0.48
River Crossing 240	Cranes	1	4.00	226	0.29
Construction Pipe Trenching	Excavators	2	8.00	162	0.38
Construction Pipe Trenching	Graders	2	8.00	174	0.41
Construction Pipe Trenching	Rubber Tired Dozers	2	8.00	255	0.40
Construction Pipe Trenching	Scrapers	4	8.00	361	0.48
Construction Pipe Trenching	Signal Boards	10	8.00	6	0.82
Construction Pipe Trenching	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Construction Weir Excavation	Bore/Drill Rigs	1	6.00	205	0.50
Construction Weir Excavation	Concrete/Industrial Saws	1	8.00	81	0.73
Construction Weir Excavation	Excavators	1	2.00	162	0.38
Construction Weir Excavation	Graders	0	6.00	174	0.41
Construction Weir Excavation	Rubber Tired Dozers	1	1.00	255	0.40
Construction Weir Excavation	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Construction Weir Construction	Air Compressors	1	1.00	78	0.48
Construction Weir Construction	Cranes	1	4.00	226	0.29
Construction Weir Construction	Forklifts	2	6.00	89	0.20
Construction Weir Construction	Generator Sets	0	8.00	84	0.74
Construction Weir Construction	Pumps	1	2.00	84	0.74
Construction Weir Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Construction Weir Construction	Welders	0	8.00	46	0.45

PumpStation Equipment Install	Cranes	1	4.00	226	0.29
PumpStation Equipment Install	Forklifts	0	6.00	89	0.20
PumpStation Equipment Install	Generator Sets	0	8.00	84	0.74
PumpStation Equipment Install	Rubber Tired Loaders	1	2.00	199	0.36
PumpStation Equipment Install	Tractors/Loaders/Backhoes	0	6.00	97	0.37
PumpStation Equipment Install	Welders	0	8.00	46	0.45
Construction Pipe Pipeline	Cranes	0	6.00	226	0.29
Construction Pipe Pipeline	Forklifts	0	6.00	89	0.20
Construction Pipe Pipeline	Generator Sets	0	8.00	84	0.74
Construction Pipe Pipeline	Graders	2	8.00	174	0.41
Construction Pipe Pipeline	Scrapers	4	8.00	361	0.48
Construction Pipe Pipeline	Signal Boards	10	8.00	6	0.82
Construction Pipe Pipeline	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Construction Pipe Pipeline	Trenchers	2	8.00	80	0.50
Construction Pipe Pipeline	Welders	0	8.00	46	0.45
Construction Weir Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Construction Weir Paving	Pavers	1	7.00	125	0.42
Construction Weir Paving	Paving Equipment	0	8.00	130	0.36
Construction Weir Paving	Rollers	1	7.00	80	0.38
Construction Weir Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Construction Backfil and Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Construction Backfil and Paving	Off-Highway Trucks	4	8.00	400	0.38
Construction Backfil and Paving	Pavers	0	6.00	125	0.42
Construction Backfil and Paving	Paving Equipment	0	8.00	130	0.36
Construction Backfil and Paving	Rollers	2	8.00	80	0.38
Construction Backfil and Paving	Signal Boards	10	8.00	6	0.82
Construction Backfil and Paving	Tractors/Loaders/Backhoes	4	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Construction Weir Site Prep	2	14.00	0.00	128.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Pipe Site Prep	14	32.00	0.00	15,118.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
PumpStation Construction	5	18.00	0.00	60.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 15	2	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Water Truck	1	2.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 60	4	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 45	1	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 120	3	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 240	1	24.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Pipe Trenching	24	32.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Weir Excavation	6	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Weir Construction	7	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
PumpStation Equipment Install	2	18.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Pipe Pipeline	22	32.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Weir Paving	7	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Backfil and Paving	20	32.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Construction Weir Site Prep - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3800e-003	0.0000	5.3800e-003	5.8000e-004	0.0000	5.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0136	0.1364	0.0734	9.0000e-005		8.3400e-003	8.3400e-003		7.6700e-003	7.6700e-003	0.0000	8.8277	8.8277	2.6600e-003	0.0000	8.8836
Total	**0.0136**	**0.1364**	**0.0734**	**9.0000e-005**	**5.3800e-003**	**8.3400e-003**	**0.0137**	**5.8000e-004**	**7.6700e-003**	**8.2500e-003**	**0.0000**	**8.8277**	**8.8277**	**2.6600e-003**	**0.0000**	**8.8836**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.8800e-003	0.0249	0.0195	7.0000e-005	1.6400e-003	3.9000e-004	2.0400e-003	4.5000e-004	3.6000e-004	8.1000e-004	0.0000	6.4939	6.4939	5.0000e-005	0.0000	6.4949
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**2.5400e-003**	**0.0261**	**0.0308**	**9.0000e-005**	**3.7100e-003**	**4.1000e-004**	**4.1300e-003**	**1.0000e-003**	**3.7000e-004**	**1.3700e-003**	**0.0000**	**8.3270**	**8.3270**	**1.5000e-004**	**0.0000**	**8.3300**

3.2 Construction Weir Site Prep - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3800e-003	0.0000	5.3800e-003	5.8000e-004	0.0000	5.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.2700e-003	0.0465	0.0700	9.0000e-005		2.6200e-003	2.6200e-003		2.6200e-003	2.6200e-003	0.0000	8.8277	8.8277	2.6600e-003	0.0000	8.8836
Total	**2.2700e-003**	**0.0465**	**0.0700**	**9.0000e-005**	**5.3800e-003**	**2.6200e-003**	**8.0000e-003**	**5.8000e-004**	**2.6200e-003**	**3.2000e-003**	**0.0000**	**8.8277**	**8.8277**	**2.6600e-003**	**0.0000**	**8.8836**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.8800e-003	0.0249	0.0195	7.0000e-005	1.6400e-003	3.9000e-004	2.0400e-003	4.5000e-004	3.6000e-004	8.1000e-004	0.0000	6.4939	6.4939	5.0000e-005	0.0000	6.4949
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**2.5400e-003**	**0.0261**	**0.0308**	**9.0000e-005**	**3.7100e-003**	**4.1000e-004**	**4.1300e-003**	**1.0000e-003**	**3.7000e-004**	**1.3700e-003**	**0.0000**	**8.3270**	**8.3270**	**1.5000e-004**	**0.0000**	**8.3300**

3.3 Construction Pipe Site Prep - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1485	0.0000	0.1485	0.0670	0.0000	0.0670	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0552	0.6320	0.4372	5.2000e-004		0.0271	0.0271		0.0250	0.0250	0.0000	46.8398	46.8398	0.0133	0.0000	47.1188
Total	**0.0552**	**0.6320**	**0.4372**	**5.2000e-004**	**0.1485**	**0.0271**	**0.1756**	**0.0670**	**0.0250**	**0.0920**	**0.0000**	**46.8398**	**46.8398**	**0.0133**	**0.0000**	**47.1188**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.2219	2.9421	2.3021	8.3900e-003	0.1939	0.0466	0.2405	0.0533	0.0428	0.0961	0.0000	766.9890	766.9890	5.5700e-003	0.0000	767.1059
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	2.5500e-003	0.0245	5.0000e-005	4.5000e-003	3.0000e-005	4.5300e-003	1.2000e-003	3.0000e-005	1.2300e-003	0.0000	3.9805	3.9805	2.1000e-004	0.0000	3.9849
Total	**0.2233**	**2.9447**	**2.3266**	**8.4400e-003**	**0.1984**	**0.0466**	**0.2450**	**0.0545**	**0.0429**	**0.0974**	**0.0000**	**770.9695**	**770.9695**	**5.7800e-003**	**0.0000**	**771.0908**

3.3 Construction Pipe Site Prep - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1485	0.0000	0.1485	0.0670	0.0000	0.0670	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0165	0.2482	0.2684	5.2000e-004		9.4400e-003	9.4400e-003		9.4400e-003	9.4400e-003	0.0000	46.8397	46.8397	0.0133	0.0000	47.1188
Total	**0.0165**	**0.2482**	**0.2684**	**5.2000e-004**	**0.1485**	**9.4400e-003**	**0.1580**	**0.0670**	**9.4400e-003**	**0.0764**	**0.0000**	**46.8397**	**46.8397**	**0.0133**	**0.0000**	**47.1188**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.2219	2.9421	2.3021	8.3900e-003	0.1939	0.0466	0.2405	0.0533	0.0428	0.0961	0.0000	766.9890	766.9890	5.5700e-003	0.0000	767.1059
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	2.5500e-003	0.0245	5.0000e-005	4.5000e-003	3.0000e-005	4.5300e-003	1.2000e-003	3.0000e-005	1.2300e-003	0.0000	3.9805	3.9805	2.1000e-004	0.0000	3.9849
Total	**0.2233**	**2.9447**	**2.3266**	**8.4400e-003**	**0.1984**	**0.0466**	**0.2450**	**0.0545**	**0.0429**	**0.0974**	**0.0000**	**770.9695**	**770.9695**	**5.7800e-003**	**0.0000**	**771.0908**

3.4 PumpStation Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0908	1.0171	0.6076	8.1000e-004		0.0498	0.0498		0.0458	0.0458	0.0000	75.9900	75.9900	0.0229	0.0000	76.4713
Total	**0.0908**	**1.0171**	**0.6076**	**8.1000e-004**	**0.1807**	**0.0498**	**0.2305**	**0.0993**	**0.0458**	**0.1451**	**0.0000**	**75.9900**	**75.9900**	**0.0229**	**0.0000**	**76.4713**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.8000e-004	0.0117	9.1400e-003	3.0000e-005	7.7000e-004	1.8000e-004	9.5000e-004	2.1000e-004	1.7000e-004	3.8000e-004	0.0000	3.0440	3.0440	2.0000e-005	0.0000	3.0445
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**3.4300e-003**	**0.0162**	**0.0527**	**1.3000e-004**	**8.7600e-003**	**2.4000e-004**	**9.0000e-003**	**2.3300e-003**	**2.2000e-004**	**2.5600e-003**	**0.0000**	**10.1146**	**10.1146**	**3.9000e-004**	**0.0000**	**10.1229**

3.4 PumpStation Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0198	0.3923	0.4900	8.1000e-004		0.0177	0.0177		0.0177	0.0177	0.0000	75.9899	75.9899	0.0229	0.0000	76.4712
Total	**0.0198**	**0.3923**	**0.4900**	**8.1000e-004**	**0.1807**	**0.0177**	**0.1984**	**0.0993**	**0.0177**	**0.1170**	**0.0000**	**75.9899**	**75.9899**	**0.0229**	**0.0000**	**76.4712**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.8000e-004	0.0117	9.1400e-003	3.0000e-005	7.7000e-004	1.8000e-004	9.5000e-004	2.1000e-004	1.7000e-004	3.8000e-004	0.0000	3.0440	3.0440	2.0000e-005	0.0000	3.0445
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**3.4300e-003**	**0.0162**	**0.0527**	**1.3000e-004**	**8.7600e-003**	**2.4000e-004**	**9.0000e-003**	**2.3300e-003**	**2.2000e-004**	**2.5600e-003**	**0.0000**	**10.1146**	**10.1146**	**3.9000e-004**	**0.0000**	**10.1229**

3.5 River Crossing 15 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.9800e-003	0.0000	3.9800e-003	4.3000e-004	0.0000	4.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0141	0.1628	0.0758	2.0000e-004		6.1400e-003	6.1400e-003		5.6500e-003	5.6500e-003	0.0000	18.5997	18.5997	5.6100e-003	0.0000	18.7175
Total	**0.0141**	**0.1628**	**0.0758**	**2.0000e-004**	**3.9800e-003**	**6.1400e-003**	**0.0101**	**4.3000e-004**	**5.6500e-003**	**6.0800e-003**	**0.0000**	**18.5997**	**18.5997**	**5.6100e-003**	**0.0000**	**18.7175**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 River Crossing 15 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.9800e-003	0.0000	3.9800e-003	4.3000e-004	0.0000	4.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8300e-003	0.0933	0.1046	2.0000e-004		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	18.5997	18.5997	5.6100e-003	0.0000	18.7175
Total	**4.8300e-003**	**0.0933**	**0.1046**	**2.0000e-004**	**3.9800e-003**	**3.5400e-003**	**7.5200e-003**	**4.3000e-004**	**3.5400e-003**	**3.9700e-003**	**0.0000**	**18.5997**	**18.5997**	**5.6100e-003**	**0.0000**	**18.7175**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Water Truck - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0925	0.0000	0.0925	9.9800e-003	0.0000	9.9800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0330	0.3798	0.1769	4.6000e-004		0.0143	0.0143		0.0132	0.0132	0.0000	43.3993	43.3993	0.0131	0.0000	43.6742
Total	**0.0330**	**0.3798**	**0.1769**	**4.6000e-004**	**0.0925**	**0.0143**	**0.1068**	**9.9800e-003**	**0.0132**	**0.0232**	**0.0000**	**43.3993**	**43.3993**	**0.0131**	**0.0000**	**43.6742**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**6.6000e-004**	**1.1800e-003**	**0.0113**	**2.0000e-005**	**2.0700e-003**	**2.0000e-005**	**2.0900e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.8331**	**1.8331**	**1.0000e-004**	**0.0000**	**1.8351**

3.6 Water Truck - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0925	0.0000	0.0925	9.9800e-003	0.0000	9.9800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0113	0.2177	0.2440	4.6000e-004		8.2600e-003	8.2600e-003		8.2600e-003	8.2600e-003	0.0000	43.3993	43.3993	0.0131	0.0000	43.6742
Total	**0.0113**	**0.2177**	**0.2440**	**4.6000e-004**	**0.0925**	**8.2600e-003**	**0.1007**	**9.9800e-003**	**8.2600e-003**	**0.0182**	**0.0000**	**43.3993**	**43.3993**	**0.0131**	**0.0000**	**43.6742**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**6.6000e-004**	**1.1800e-003**	**0.0113**	**2.0000e-005**	**2.0700e-003**	**2.0000e-005**	**2.0900e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.8331**	**1.8331**	**1.0000e-004**	**0.0000**	**1.8351**

3.6 Water Truck - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0925	0.0000	0.0925	9.9800e-003	0.0000	9.9800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0567	0.6392	0.3046	8.5000e-004		0.0237	0.0237		0.0218	0.0218	0.0000	79.2671	79.2671	0.0243	0.0000	79.7772
Total	**0.0567**	**0.6392**	**0.3046**	**8.5000e-004**	**0.0925**	**0.0237**	**0.1162**	**9.9800e-003**	**0.0218**	**0.0318**	**0.0000**	**79.2671**	**79.2671**	**0.0243**	**0.0000**	**79.7772**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0600e-003	1.9300e-003	0.0183	5.0000e-005	3.8500e-003	3.0000e-005	3.8700e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.2686	3.2686	1.6000e-004	0.0000	3.2720
Total	**1.0600e-003**	**1.9300e-003**	**0.0183**	**5.0000e-005**	**3.8500e-003**	**3.0000e-005**	**3.8700e-003**	**1.0200e-003**	**2.0000e-005**	**1.0500e-003**	**0.0000**	**3.2686**	**3.2686**	**1.6000e-004**	**0.0000**	**3.2720**

3.6 Water Truck - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0925	0.0000	0.0925	9.9800e-003	0.0000	9.9800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0209	0.4043	0.4531	8.5000e-004		0.0153	0.0153		0.0153	0.0153	0.0000	79.2670	79.2670	0.0243	0.0000	79.7771
Total	**0.0209**	**0.4043**	**0.4531**	**8.5000e-004**	**0.0925**	**0.0153**	**0.1078**	**9.9800e-003**	**0.0153**	**0.0253**	**0.0000**	**79.2670**	**79.2670**	**0.0243**	**0.0000**	**79.7771**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0600e-003	1.9300e-003	0.0183	5.0000e-005	3.8500e-003	3.0000e-005	3.8700e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.2686	3.2686	1.6000e-004	0.0000	3.2720
Total	**1.0600e-003**	**1.9300e-003**	**0.0183**	**5.0000e-005**	**3.8500e-003**	**3.0000e-005**	**3.8700e-003**	**1.0200e-003**	**2.0000e-005**	**1.0500e-003**	**0.0000**	**3.2686**	**3.2686**	**1.6000e-004**	**0.0000**	**3.2720**

3.6 Water Truck - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0925	0.0000	0.0925	9.9800e-003	0.0000	9.9800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0125	0.1346	0.0679	2.1000e-004		4.9100e-003	4.9100e-003		4.5200e-003	4.5200e-003	0.0000	19.5034	19.5034	6.0700e-003	0.0000	19.6309
Total	**0.0125**	**0.1346**	**0.0679**	**2.1000e-004**	**0.0925**	**4.9100e-003**	**0.0974**	**9.9800e-003**	**4.5200e-003**	**0.0145**	**0.0000**	**19.5034**	**19.5034**	**6.0700e-003**	**0.0000**	**19.6309**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	4.3000e-004	4.0700e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.7877	0.7877	4.0000e-005	0.0000	0.7885
Total	**2.3000e-004**	**4.3000e-004**	**4.0700e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.7877**	**0.7877**	**4.0000e-005**	**0.0000**	**0.7885**

3.6 Water Truck - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0925	0.0000	0.0925	9.9800e-003	0.0000	9.9800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2300e-003	0.1011	0.1133	2.1000e-004		3.8300e-003	3.8300e-003		3.8300e-003	3.8300e-003	0.0000	19.5033	19.5033	6.0700e-003	0.0000	19.6308
Total	**5.2300e-003**	**0.1011**	**0.1133**	**2.1000e-004**	**0.0925**	**3.8300e-003**	**0.0963**	**9.9800e-003**	**3.8300e-003**	**0.0138**	**0.0000**	**19.5033**	**19.5033**	**6.0700e-003**	**0.0000**	**19.6308**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	4.3000e-004	4.0700e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.7877	0.7877	4.0000e-005	0.0000	0.7885
Total	**2.3000e-004**	**4.3000e-004**	**4.0700e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.7877**	**0.7877**	**4.0000e-005**	**0.0000**	**0.7885**

3.7 River Crossing 60 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0683	0.7562	0.4599	5.6000e-004		0.0374	0.0374		0.0344	0.0344	0.0000	53.0463	53.0463	0.0160	0.0000	53.3823
Total	**0.0683**	**0.7562**	**0.4599**	**5.6000e-004**	**0.1807**	**0.0374**	**0.2181**	**0.0993**	**0.0344**	**0.1338**	**0.0000**	**53.0463**	**53.0463**	**0.0160**	**0.0000**	**53.3823**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 River Crossing 60 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0138	0.2765	0.3244	5.6000e-004		0.0125	0.0125		0.0125	0.0125	0.0000	53.0463	53.0463	0.0160	0.0000	53.3823
Total	**0.0138**	**0.2765**	**0.3244**	**5.6000e-004**	**0.1807**	**0.0125**	**0.1932**	**0.0993**	**0.0125**	**0.1118**	**0.0000**	**53.0463**	**53.0463**	**0.0160**	**0.0000**	**53.3823**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.8 River Crossing 45 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6600e-003	0.0455	0.0396	6.0000e-005		2.6400e-003	2.6400e-003		2.4200e-003	2.4200e-003	0.0000	5.3099	5.3099	1.6000e-003	0.0000	5.3435
Total	**3.6600e-003**	**0.0455**	**0.0396**	**6.0000e-005**		**2.6400e-003**	**2.6400e-003**		**2.4200e-003**	**2.4200e-003**	**0.0000**	**5.3099**	**5.3099**	**1.6000e-003**	**0.0000**	**5.3435**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.8 River Crossing 45 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.4300e-003	0.0326	0.0441	6.0000e-005		2.2900e-003	2.2900e-003		2.2900e-003	2.2900e-003	0.0000	5.3099	5.3099	1.6000e-003	0.0000	5.3435
Total	**1.4300e-003**	**0.0326**	**0.0441**	**6.0000e-005**		**2.2900e-003**	**2.2900e-003**		**2.2900e-003**	**2.2900e-003**	**0.0000**	**5.3099**	**5.3099**	**1.6000e-003**	**0.0000**	**5.3435**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.9 River Crossing 120 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0748	0.8573	0.5630	1.0300e-003		0.0384	0.0384		0.0354	0.0354	0.0000	97.0647	97.0647	0.0293	0.0000	97.6795
Total	**0.0748**	**0.8573**	**0.5630**	**1.0300e-003**		**0.0384**	**0.0384**		**0.0354**	**0.0354**	**0.0000**	**97.0647**	**97.0647**	**0.0293**	**0.0000**	**97.6795**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.9 River Crossing 120 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0253	0.4889	0.6912	1.0300e-003		0.0217	0.0217		0.0217	0.0217	0.0000	97.0646	97.0646	0.0293	0.0000	97.6794
Total	**0.0253**	**0.4889**	**0.6912**	**1.0300e-003**		**0.0217**	**0.0217**		**0.0217**	**0.0217**	**0.0000**	**97.0646**	**97.0646**	**0.0293**	**0.0000**	**97.6794**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.10 River Crossing 240 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0252	0.2986	0.1045	2.0000e-004		0.0136	0.0136		0.0125	0.0125	0.0000	18.6138	18.6138	5.6100e-003	0.0000	18.7317
Total	**0.0252**	**0.2986**	**0.1045**	**2.0000e-004**		**0.0136**	**0.0136**		**0.0125**	**0.0125**	**0.0000**	**18.6138**	**18.6138**	**5.6100e-003**	**0.0000**	**18.7317**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9500e-003	0.0141	0.1354	3.0000e-004	0.0249	1.8000e-004	0.0250	6.6100e-003	1.7000e-004	6.7700e-003	0.0000	21.9973	21.9973	1.1600e-003	0.0000	22.0217
Total	**7.9500e-003**	**0.0141**	**0.1354**	**3.0000e-004**	**0.0249**	**1.8000e-004**	**0.0250**	**6.6100e-003**	**1.7000e-004**	**6.7700e-003**	**0.0000**	**21.9973**	**21.9973**	**1.1600e-003**	**0.0000**	**22.0217**

3.10 River Crossing 240 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8500e-003	0.0939	0.1052	2.0000e-004		3.5600e-003	3.5600e-003		3.5600e-003	3.5600e-003	0.0000	18.6138	18.6138	5.6100e-003	0.0000	18.7317
Total	**4.8500e-003**	**0.0939**	**0.1052**	**2.0000e-004**		**3.5600e-003**	**3.5600e-003**		**3.5600e-003**	**3.5600e-003**	**0.0000**	**18.6138**	**18.6138**	**5.6100e-003**	**0.0000**	**18.7317**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9500e-003	0.0141	0.1354	3.0000e-004	0.0249	1.8000e-004	0.0250	6.6100e-003	1.7000e-004	6.7700e-003	0.0000	21.9973	21.9973	1.1600e-003	0.0000	22.0217
Total	**7.9500e-003**	**0.0141**	**0.1354**	**3.0000e-004**	**0.0249**	**1.8000e-004**	**0.0250**	**6.6100e-003**	**1.7000e-004**	**6.7700e-003**	**0.0000**	**21.9973**	**21.9973**	**1.1600e-003**	**0.0000**	**22.0217**

3.10 River Crossing 240 - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0178	0.2116	0.0758	1.6000e-004		9.4300e-003	9.4300e-003		8.6800e-003	8.6800e-003	0.0000	14.4007	14.4007	4.4100e-003	0.0000	14.4934
Total	**0.0178**	**0.2116**	**0.0758**	**1.6000e-004**		**9.4300e-003**	**9.4300e-003**		**8.6800e-003**	**8.6800e-003**	**0.0000**	**14.4007**	**14.4007**	**4.4100e-003**	**0.0000**	**14.4934**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3600e-003	9.8000e-003	0.0931	2.3000e-004	0.0195	1.4000e-004	0.0197	5.1900e-003	1.3000e-004	5.3200e-003	0.0000	16.5943	16.5943	8.3000e-004	0.0000	16.6117
Total	**5.3600e-003**	**9.8000e-003**	**0.0931**	**2.3000e-004**	**0.0195**	**1.4000e-004**	**0.0197**	**5.1900e-003**	**1.3000e-004**	**5.3200e-003**	**0.0000**	**16.5943**	**16.5943**	**8.3000e-004**	**0.0000**	**16.6117**

3.10 River Crossing 240 - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8100e-003	0.0738	0.0827	1.6000e-004		2.8000e-003	2.8000e-003		2.8000e-003	2.8000e-003	0.0000	14.4007	14.4007	4.4100e-003	0.0000	14.4933
Total	**3.8100e-003**	**0.0738**	**0.0827**	**1.6000e-004**		**2.8000e-003**	**2.8000e-003**		**2.8000e-003**	**2.8000e-003**	**0.0000**	**14.4007**	**14.4007**	**4.4100e-003**	**0.0000**	**14.4933**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3600e-003	9.8000e-003	0.0931	2.3000e-004	0.0195	1.4000e-004	0.0197	5.1900e-003	1.3000e-004	5.3200e-003	0.0000	16.5943	16.5943	8.3000e-004	0.0000	16.6117
Total	**5.3600e-003**	**9.8000e-003**	**0.0931**	**2.3000e-004**	**0.0195**	**1.4000e-004**	**0.0197**	**5.1900e-003**	**1.3000e-004**	**5.3200e-003**	**0.0000**	**16.5943**	**16.5943**	**8.3000e-004**	**0.0000**	**16.6117**

3.11 Construction Pipe Trenching - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4656	5.2691	3.4466	4.3700e-003		0.2508	0.2508		0.2312	0.2312	0.0000	404.7396	404.7396	0.1189	0.0000	407.2355
Total	**0.4656**	**5.2691**	**3.4466**	**4.3700e-003**		**0.2508**	**0.2508**		**0.2312**	**0.2312**	**0.0000**	**404.7396**	**404.7396**	**0.1189**	**0.0000**	**407.2355**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5300e-003	9.8100e-003	0.0942	2.1000e-004	0.0173	1.3000e-004	0.0174	4.5900e-003	1.2000e-004	4.7100e-003	0.0000	15.2934	15.2934	8.1000e-004	0.0000	15.3103
Total	**5.5300e-003**	**9.8100e-003**	**0.0942**	**2.1000e-004**	**0.0173**	**1.3000e-004**	**0.0174**	**4.5900e-003**	**1.2000e-004**	**4.7100e-003**	**0.0000**	**15.2934**	**15.2934**	**8.1000e-004**	**0.0000**	**15.3103**

3.11 Construction Pipe Trenching - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1219	2.1212	2.5865	4.3700e-003		0.0928	0.0928		0.0928	0.0928	0.0000	404.7391	404.7391	0.1189	0.0000	407.2350
Total	**0.1219**	**2.1212**	**2.5865**	**4.3700e-003**		**0.0928**	**0.0928**		**0.0928**	**0.0928**	**0.0000**	**404.7391**	**404.7391**	**0.1189**	**0.0000**	**407.2350**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5300e-003	9.8100e-003	0.0942	2.1000e-004	0.0173	1.3000e-004	0.0174	4.5900e-003	1.2000e-004	4.7100e-003	0.0000	15.2934	15.2934	8.1000e-004	0.0000	15.3103
Total	**5.5300e-003**	**9.8100e-003**	**0.0942**	**2.1000e-004**	**0.0173**	**1.3000e-004**	**0.0174**	**4.5900e-003**	**1.2000e-004**	**4.7100e-003**	**0.0000**	**15.2934**	**15.2934**	**8.1000e-004**	**0.0000**	**15.3103**

3.12 Construction Weir Excavation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0334	0.3256	0.2220	4.0000e-004		0.0195	0.0195		0.0185	0.0185	0.0000	36.5032	36.5032	8.8100e-003	0.0000	36.6882
Total	**0.0334**	**0.3256**	**0.2220**	**4.0000e-004**	**0.0151**	**0.0195**	**0.0345**	**8.2800e-003**	**0.0185**	**0.0268**	**0.0000**	**36.5032**	**36.5032**	**8.8100e-003**	**0.0000**	**36.6882**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3200e-003	2.3500e-003	0.0226	5.0000e-005	4.1400e-003	3.0000e-005	4.1700e-003	1.1000e-003	3.0000e-005	1.1300e-003	0.0000	3.6662	3.6662	1.9000e-004	0.0000	3.6703
Total	**1.3200e-003**	**2.3500e-003**	**0.0226**	**5.0000e-005**	**4.1400e-003**	**3.0000e-005**	**4.1700e-003**	**1.1000e-003**	**3.0000e-005**	**1.1300e-003**	**0.0000**	**3.6662**	**3.6662**	**1.9000e-004**	**0.0000**	**3.6703**

3.12 Construction Weir Excavation - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2300e-003	0.1951	0.2497	4.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	36.5032	36.5032	8.8100e-003	0.0000	36.6882
Total	**9.2300e-003**	**0.1951**	**0.2497**	**4.0000e-004**	**0.0151**	**0.0110**	**0.0261**	**8.2800e-003**	**0.0110**	**0.0193**	**0.0000**	**36.5032**	**36.5032**	**8.8100e-003**	**0.0000**	**36.6882**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3200e-003	2.3500e-003	0.0226	5.0000e-005	4.1400e-003	3.0000e-005	4.1700e-003	1.1000e-003	3.0000e-005	1.1300e-003	0.0000	3.6662	3.6662	1.9000e-004	0.0000	3.6703
Total	**1.3200e-003**	**2.3500e-003**	**0.0226**	**5.0000e-005**	**4.1400e-003**	**3.0000e-005**	**4.1700e-003**	**1.1000e-003**	**3.0000e-005**	**1.1300e-003**	**0.0000**	**3.6662**	**3.6662**	**1.9000e-004**	**0.0000**	**3.6703**

3.13 Construction Weir Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0403	0.3832	0.2373	3.4000e-004		0.0265	0.0265		0.0247	0.0247	0.0000	31.3256	31.3256	8.5300e-003	0.0000	31.5047
Total	**0.0403**	**0.3832**	**0.2373**	**3.4000e-004**		**0.0265**	**0.0265**		**0.0247**	**0.0247**	**0.0000**	**31.3256**	**31.3256**	**8.5300e-003**	**0.0000**	**31.5047**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6600e-003	2.9400e-003	0.0282	6.0000e-005	5.1800e-003	4.0000e-005	5.2200e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.5828	4.5828	2.4000e-004	0.0000	4.5879
Total	**1.6600e-003**	**2.9400e-003**	**0.0282**	**6.0000e-005**	**5.1800e-003**	**4.0000e-005**	**5.2200e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.5828**	**4.5828**	**2.4000e-004**	**0.0000**	**4.5879**

3.13 Construction Weir Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.0100e-003	0.1769	0.2312	3.4000e-004		0.0113	0.0113		0.0113	0.0113	0.0000	31.3255	31.3255	8.5300e-003	0.0000	31.5047
Total	**8.0100e-003**	**0.1769**	**0.2312**	**3.4000e-004**		**0.0113**	**0.0113**		**0.0113**	**0.0113**	**0.0000**	**31.3255**	**31.3255**	**8.5300e-003**	**0.0000**	**31.5047**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6600e-003	2.9400e-003	0.0282	6.0000e-005	5.1800e-003	4.0000e-005	5.2200e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.5828	4.5828	2.4000e-004	0.0000	4.5879
Total	**1.6600e-003**	**2.9400e-003**	**0.0282**	**6.0000e-005**	**5.1800e-003**	**4.0000e-005**	**5.2200e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.5828**	**4.5828**	**2.4000e-004**	**0.0000**	**4.5879**

3.14 PumpStation Equipment Install - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1765	0.0585	1.3000e-004		7.4600e-003	7.4600e-003		6.8600e-003	6.8600e-003	0.0000	12.3072	12.3072	3.7100e-003	0.0000	12.3851
Total	**0.0145**	**0.1765**	**0.0585**	**1.3000e-004**		**7.4600e-003**	**7.4600e-003**		**6.8600e-003**	**6.8600e-003**	**0.0000**	**12.3072**	**12.3072**	**3.7100e-003**	**0.0000**	**12.3851**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**2.5500e-003**	**4.5400e-003**	**0.0435**	**1.0000e-004**	**7.9900e-003**	**6.0000e-005**	**8.0500e-003**	**2.1200e-003**	**5.0000e-005**	**2.1800e-003**	**0.0000**	**7.0706**	**7.0706**	**3.7000e-004**	**0.0000**	**7.0784**

3.14 PumpStation Equipment Install - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.2200e-003	0.0622	0.0697	1.3000e-004		2.3600e-003	2.3600e-003		2.3600e-003	2.3600e-003	0.0000	12.3072	12.3072	3.7100e-003	0.0000	12.3851
Total	**3.2200e-003**	**0.0622**	**0.0697**	**1.3000e-004**		**2.3600e-003**	**2.3600e-003**		**2.3600e-003**	**2.3600e-003**	**0.0000**	**12.3072**	**12.3072**	**3.7100e-003**	**0.0000**	**12.3851**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**2.5500e-003**	**4.5400e-003**	**0.0435**	**1.0000e-004**	**7.9900e-003**	**6.0000e-005**	**8.0500e-003**	**2.1200e-003**	**5.0000e-005**	**2.1800e-003**	**0.0000**	**7.0706**	**7.0706**	**3.7000e-004**	**0.0000**	**7.0784**

3.15 Construction Pipe Pipeline - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2548	2.8199	1.7335	2.3600e-003		0.1418	0.1418		0.1307	0.1307	0.0000	217.6375	217.6375	0.0635	0.0000	218.9715
Total	**0.2548**	**2.8199**	**1.7335**	**2.3600e-003**		**0.1418**	**0.1418**		**0.1307**	**0.1307**	**0.0000**	**217.6375**	**217.6375**	**0.0635**	**0.0000**	**218.9715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6300e-003	6.4500e-003	0.0619	1.4000e-004	0.0114	8.0000e-005	0.0115	3.0200e-003	8.0000e-005	3.1000e-003	0.0000	10.0559	10.0559	5.3000e-004	0.0000	10.0671
Total	**3.6300e-003**	**6.4500e-003**	**0.0619**	**1.4000e-004**	**0.0114**	**8.0000e-005**	**0.0115**	**3.0200e-003**	**8.0000e-005**	**3.1000e-003**	**0.0000**	**10.0559**	**10.0559**	**5.3000e-004**	**0.0000**	**10.0671**

3.15 Construction Pipe Pipeline - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0676	1.1663	1.4087	2.3600e-003		0.0541	0.0541		0.0541	0.0541	0.0000	217.6373	217.6373	0.0635	0.0000	218.9712
Total	**0.0676**	**1.1663**	**1.4087**	**2.3600e-003**		**0.0541**	**0.0541**		**0.0541**	**0.0541**	**0.0000**	**217.6373**	**217.6373**	**0.0635**	**0.0000**	**218.9712**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6300e-003	6.4500e-003	0.0619	1.4000e-004	0.0114	8.0000e-005	0.0115	3.0200e-003	8.0000e-005	3.1000e-003	0.0000	10.0559	10.0559	5.3000e-004	0.0000	10.0671
Total	**3.6300e-003**	**6.4500e-003**	**0.0619**	**1.4000e-004**	**0.0114**	**8.0000e-005**	**0.0115**	**3.0200e-003**	**8.0000e-005**	**3.1000e-003**	**0.0000**	**10.0559**	**10.0559**	**5.3000e-004**	**0.0000**	**10.0671**

3.16 Construction Weir Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.6000e-003	0.0531	0.0365	6.0000e-005		3.3000e-003	3.3000e-003		3.0600e-003	3.0600e-003	0.0000	4.9151	4.9151	1.3500e-003	0.0000	4.9433
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.6000e-003**	**0.0531**	**0.0365**	**6.0000e-005**		**3.3000e-003**	**3.3000e-003**		**3.0600e-003**	**3.0600e-003**	**0.0000**	**4.9151**	**4.9151**	**1.3500e-003**	**0.0000**	**4.9433**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	5.9000e-004	5.6400e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9166	0.9166	5.0000e-005	0.0000	0.9176
Total	**3.3000e-004**	**5.9000e-004**	**5.6400e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9166**	**0.9166**	**5.0000e-005**	**0.0000**	**0.9176**

3.16 Construction Weir Paving - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.9800e-003	0.0290	0.0385	6.0000e-005		1.6600e-003	1.6600e-003		1.6600e-003	1.6600e-003	0.0000	4.9151	4.9151	1.3500e-003	0.0000	4.9433
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.9800e-003**	**0.0290**	**0.0385**	**6.0000e-005**		**1.6600e-003**	**1.6600e-003**		**1.6600e-003**	**1.6600e-003**	**0.0000**	**4.9151**	**4.9151**	**1.3500e-003**	**0.0000**	**4.9433**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	5.9000e-004	5.6400e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9166	0.9166	5.0000e-005	0.0000	0.9176
Total	**3.3000e-004**	**5.9000e-004**	**5.6400e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9166**	**0.9166**	**5.0000e-005**	**0.0000**	**0.9176**

3.17 Construction Backfil and Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0833	0.8527	0.4943	1.0800e-003		0.0411	0.0411		0.0380	0.0380	0.0000	97.5351	97.5351	0.0286	0.0000	98.1360
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0833**	**0.8527**	**0.4943**	**1.0800e-003**		**0.0411**	**0.0411**		**0.0380**	**0.0380**	**0.0000**	**97.5351**	**97.5351**	**0.0286**	**0.0000**	**98.1360**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8200e-003	3.3300e-003	0.0316	8.0000e-005	6.6300e-003	5.0000e-005	6.6800e-003	1.7600e-003	4.0000e-005	1.8000e-003	0.0000	5.6320	5.6320	2.8000e-004	0.0000	5.6379
Total	**1.8200e-003**	**3.3300e-003**	**0.0316**	**8.0000e-005**	**6.6300e-003**	**5.0000e-005**	**6.6800e-003**	**1.7600e-003**	**4.0000e-005**	**1.8000e-003**	**0.0000**	**5.6320**	**5.6320**	**2.8000e-004**	**0.0000**	**5.6379**

3.17 Construction Backfil and Paving - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0321	0.5369	0.6192	1.0800e-003		0.0249	0.0249		0.0249	0.0249	0.0000	97.5350	97.5350	0.0286	0.0000	98.1359
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0321**	**0.5369**	**0.6192**	**1.0800e-003**		**0.0249**	**0.0249**		**0.0249**	**0.0249**	**0.0000**	**97.5350**	**97.5350**	**0.0286**	**0.0000**	**98.1359**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8200e-003	3.3300e-003	0.0316	8.0000e-005	6.6300e-003	5.0000e-005	6.6800e-003	1.7600e-003	4.0000e-005	1.8000e-003	0.0000	5.6320	5.6320	2.8000e-004	0.0000	5.6379
Total	**1.8200e-003**	**3.3300e-003**	**0.0316**	**8.0000e-005**	**6.6300e-003**	**5.0000e-005**	**6.6800e-003**	**1.7600e-003**	**4.0000e-005**	**1.8000e-003**	**0.0000**	**5.6320**	**5.6320**	**2.8000e-004**	**0.0000**	**5.6379**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG															
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

User Defined Industrial	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

0.411222	0.062718	0.156221	0.175699	0.050886	0.007831	0.019556	0.102845	0.001787	0.001576	0.006435	0.000923	0.002302

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	5,837.8650	5,837.8650	0.2031	0.0420	5,855.1588
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	5,837.8650	5,837.8650	0.2031	0.0420	5,855.1588
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	1.5442e+007	5,837.8650	0.2031	0.0420	5,855.1588
Total		**5,837.8650**	**0.2031**	**0.0420**	**5,855.1588**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	1.5442e+007	5,837.8650	0.2031	0.0420	5,855.1588
Total		**5,837.8650**	**0.2031**	**0.0420**	**5,855.1588**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

NVRRWP Alternative 1 Phased Material Hauling and Tier 3 Mitigation

San Joaquin Valley Unified APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.00	1.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2018
Utility Company	Modesto Irrigation District				
CO2 Intensity (lb/MWhr)	833.46	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Estimate of pump station size.

Construction Phase - Used site-specific construction schedule received from RMC by email July 2014 and Project Description. 5 simultaneous crews assumed to be working starting summer 2016.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

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Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Trips and VMT - 'Used site specific information provided by RMC in construction spreadsheet. Workers were assumed for all phases. Material hauling emissions allocated to the first phase of a construction project.

Grading - Used site specific information provided by RMC in construction spreadsheet. Workers were assumed for all phases. Material hauling emissions allocated to the first phase of a construction project.

Architectural Coating - no coatings since it is a pipeline underground. Phase used as a unique phase type.

Consumer Products - No consumer products since it is an infrastructure underground pipeline.

Area Coating - No coatings since it is a pipeline underground.

Landscape Equipment - no landscaping since infrastructure project.

Energy Use - Based on pump operation provided by RMC in construction spreadsheet.

Water And Wastewater - No emissions estimated as this is just a change in location of where water is discharged. Thus only energy associated with pumping to new discharge location considered.

Solid Waste - No change in solid waste since this is only a change in location of discharge.

Construction Off-road Equipment Mitigation - Assume Tier 3 mitigation on all equipment over 50 hp.

Table Name	Column Name	Default Value	New Value
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tblArchitecturalCoating	ConstArea_Nonresidential_Interior	2.00	0.00
tblAreaCoating	Area_Nonresidential_Interior	2	3750
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
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tblConstructionPhase	PhaseEndDate	12/20/2016	9/9/2016

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tblConstructionPhase	PhaseEndDate	6/22/2018	9/9/2016
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tblTripsAndVMT	WorkerTripNumber	0.00	14.00
tblTripsAndVMT	WorkerTripNumber	0.00	18.00
tblTripsAndVMT	WorkerTripNumber	0.00	32.00
tblTripsAndVMT	WorkerTripNumber	18.00	14.00
tblTripsAndVMT	WorkerTripNumber	50.00	32.00
tblTripsAndVMT	WorkerTripNumber	35.00	32.00
tblTripsAndVMT	WorkerTripNumber	13.00	18.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	3.00	2.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00

tblTripsAndVMT	WorkerTripNumber	3.00	0.00
tblTripsAndVMT	WorkerTripNumber	0.00	24.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	1.3460	15.0186	10.0496	0.0174	0.7229	0.6740	1.3969	0.3274	0.6217	0.9491	0.0000	1,584.9584	1,584.9584	0.3221	0.0000	1,591.7227
2017	0.1660	1.7186	1.0178	2.4500e-003	0.0300	0.0745	0.1045	7.9700e-003	0.0687	0.0767	0.0000	216.6978	216.6978	0.0586	0.0000	217.9281
2018	0.0127	0.1350	0.0720	2.3000e-004	9.6000e-004	4.9200e-003	5.8800e-003	2.6000e-004	4.5300e-003	4.7800e-003	0.0000	20.2911	20.2911	6.1100e-003	0.0000	20.4194
Total	**1.5247**	**16.8723**	**11.1394**	**0.0200**	**0.7538**	**0.7534**	**1.5072**	**0.3356**	**0.6949**	**1.0305**	**0.0000**	**1,821.9473**	**1,821.9473**	**0.3868**	**0.0000**	**1,830.0702**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.4650	7.3461	8.7033	0.0174	0.7229	0.2818	1.0046	0.3274	0.2796	0.6070	0.0000	1,584.9571	1,584.9571	0.3221	0.0000	1,591.7214
2017	0.0651	1.0300	1.2980	2.4500e-003	0.0300	0.0432	0.0732	7.9700e-003	0.0432	0.0512	0.0000	216.6976	216.6976	0.0586	0.0000	217.9279
2018	5.4600e-003	0.1015	0.1173	2.3000e-004	9.6000e-004	3.8400e-003	4.8000e-003	2.6000e-004	3.8400e-003	4.1000e-003	0.0000	20.2911	20.2911	6.1100e-003	0.0000	20.4194
Total	**0.5356**	**8.4775**	**10.1186**	**0.0200**	**0.7538**	**0.3288**	**1.0826**	**0.3356**	**0.3266**	**0.6623**	**0.0000**	**1,821.9458**	**1,821.9458**	**0.3868**	**0.0000**	**1,830.0687**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**64.88**	**49.75**	**9.16**	**0.00**	**0.00**	**56.36**	**28.17**	**0.00**	**52.99**	**35.73**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5,837.8650	5,837.8650	0.2031	0.0420	5,855.1588
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**5,837.8651**	**5,837.8651**	**0.2031**	**0.0420**	**5,855.1589**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5,837.8650	5,837.8650	0.2031	0.0420	5,855.1588
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**5,837.8651**	**5,837.8651**	**0.2031**	**0.0420**	**5,855.1589**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Construction Weir Site Prep	Site Preparation	6/20/2016	7/15/2016	5	20	
2	Construction Pipe Site Prep	Site Preparation	6/20/2016	7/14/2016	5	19	
3	PumpStation Construction	Site Preparation	6/20/2016	9/9/2016	5	60	
4	River Crossing 15	Site Preparation	6/20/2016	7/8/2016	5	15	
5	Water Truck	Grading	6/20/2016	3/31/2018	5	450	
6	River Crossing 60	Grading	6/20/2016	9/9/2016	5	60	
7	River Crossing 45	Trenching	6/20/2016	8/19/2016	5	45	
8	River Crossing 120	Building Construction	6/20/2016	12/2/2016	5	120	
9	River Crossing 240	Architectural Coating	6/20/2016	6/2/2017	5	240	
10	Construction Pipe Trenching	Trenching	7/15/2016	10/25/2016	5	73	
11	Construction Weir Excavation	Grading	7/18/2016	9/9/2016	5	40	
12	Construction Weir Construction	Building Construction	9/12/2016	11/18/2016	5	50	
13	PumpStation Equipment Install	Building Construction	9/12/2016	12/2/2016	5	60	
14	Construction Pipe Pipeline	Building Construction	10/26/2016	12/30/2016	5	48	
15	Construction Weir Paving	Paving	11/21/2016	12/2/2016	5	10	
16	Construction Backfil and Paving	Paving	1/2/2017	2/8/2017	5	28	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Construction Weir Site Prep	Graders	1	8.00	174	0.41
Construction Weir Site Prep	Rubber Tired Dozers	0	7.00	255	0.40

Construction Weir Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Construction Pipe Site Prep	Graders	0	8.00	174	0.41
Construction Pipe Site Prep	Rubber Tired Dozers	2	8.00	255	0.40
Construction Pipe Site Prep	Scrapers	2	8.00	361	0.48
Construction Pipe Site Prep	Signal Boards	10	8.00	6	0.82
Construction Pipe Site Prep	Tractors/Loaders/Backhoes	0	8.00	97	0.37
PumpStation Construction	Cranes	1	4.00	226	0.29
PumpStation Construction	Excavators	1	8.00	162	0.38
PumpStation Construction	Graders	0	8.00	174	0.41
PumpStation Construction	Other Construction Equipment	1	8.00	104	0.42
PumpStation Construction	Rubber Tired Dozers	1	8.00	255	0.40
PumpStation Construction	Rubber Tired Loaders	1	8.00	199	0.36
PumpStation Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
River Crossing 15	Graders	0	8.00	174	0.41
River Crossing 15	Off-Highway Trucks	2	8.00	400	0.38
River Crossing 15	Rubber Tired Dozers	0	7.00	255	0.40
River Crossing 15	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Water Truck	Graders	0	6.00	174	0.41
Water Truck	Off-Highway Trucks	1	4.00	400	0.38
Water Truck	Rubber Tired Dozers	0	6.00	255	0.40
Water Truck	Tractors/Loaders/Backhoes	0	7.00	97	0.37
River Crossing 60	Graders	0	6.00	174	0.41
River Crossing 60	Other Construction Equipment	1	8.00	215	0.42
River Crossing 60	Other Construction Equipment	1	8.00	104	0.42
River Crossing 60	Rubber Tired Dozers	1	8.00	255	0.40
River Crossing 60	Rubber Tired Loaders	1	8.00	199	0.36
River Crossing 60	Tractors/Loaders/Backhoes	0	7.00	97	0.37
River Crossing 45	Bore/Drill Rigs	1	8.00	60	0.50

River Crossing 120	Cranes	0	6.00	226	0.29
River Crossing 120	Excavators	2	8.00	162	0.38
River Crossing 120	Forklifts	0	6.00	89	0.20
River Crossing 120	Generator Sets	0	8.00	84	0.74
River Crossing 120	Off-Highway Trucks	1	4.00	400	0.38
River Crossing 120	Tractors/Loaders/Backhoes	0	6.00	97	0.37
River Crossing 120	Welders	0	8.00	46	0.45
River Crossing 240	Air Compressors	0	6.00	78	0.48
River Crossing 240	Cranes	1	4.00	226	0.29
Construction Pipe Trenching	Excavators	2	8.00	162	0.38
Construction Pipe Trenching	Graders	2	8.00	174	0.41
Construction Pipe Trenching	Rubber Tired Dozers	2	8.00	255	0.40
Construction Pipe Trenching	Scrapers	4	8.00	361	0.48
Construction Pipe Trenching	Signal Boards	10	8.00	6	0.82
Construction Pipe Trenching	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Construction Weir Excavation	Bore/Drill Rigs	1	6.00	205	0.50
Construction Weir Excavation	Concrete/Industrial Saws	1	8.00	81	0.73
Construction Weir Excavation	Excavators	1	2.00	162	0.38
Construction Weir Excavation	Graders	0	6.00	174	0.41
Construction Weir Excavation	Rubber Tired Dozers	1	1.00	255	0.40
Construction Weir Excavation	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Construction Weir Construction	Air Compressors	1	1.00	78	0.48
Construction Weir Construction	Cranes	1	4.00	226	0.29
Construction Weir Construction	Forklifts	2	6.00	89	0.20
Construction Weir Construction	Generator Sets	0	8.00	84	0.74
Construction Weir Construction	Pumps	1	2.00	84	0.74
Construction Weir Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Construction Weir Construction	Welders	0	8.00	46	0.45

PumpStation Equipment Install	Cranes	1	4.00	226	0.29
PumpStation Equipment Install	Forklifts	0	6.00	89	0.20
PumpStation Equipment Install	Generator Sets	0	8.00	84	0.74
PumpStation Equipment Install	Rubber Tired Loaders	1	2.00	199	0.36
PumpStation Equipment Install	Tractors/Loaders/Backhoes	0	6.00	97	0.37
PumpStation Equipment Install	Welders	0	8.00	46	0.45
Construction Pipe Pipeline	Cranes	0	6.00	226	0.29
Construction Pipe Pipeline	Forklifts	0	6.00	89	0.20
Construction Pipe Pipeline	Generator Sets	0	8.00	84	0.74
Construction Pipe Pipeline	Graders	2	8.00	174	0.41
Construction Pipe Pipeline	Scrapers	4	8.00	361	0.48
Construction Pipe Pipeline	Signal Boards	10	8.00	6	0.82
Construction Pipe Pipeline	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Construction Pipe Pipeline	Trenchers	2	8.00	80	0.50
Construction Pipe Pipeline	Welders	0	8.00	46	0.45
Construction Weir Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Construction Weir Paving	Pavers	1	7.00	125	0.42
Construction Weir Paving	Paving Equipment	0	8.00	130	0.36
Construction Weir Paving	Rollers	1	7.00	80	0.38
Construction Weir Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Construction Backfil and Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Construction Backfil and Paving	Off-Highway Trucks	4	8.00	400	0.38
Construction Backfil and Paving	Pavers	0	6.00	125	0.42
Construction Backfil and Paving	Paving Equipment	0	8.00	130	0.36
Construction Backfil and Paving	Rollers	2	8.00	80	0.38
Construction Backfil and Paving	Signal Boards	10	8.00	6	0.82
Construction Backfil and Paving	Tractors/Loaders/Backhoes	4	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Construction Weir Site Prep	2	14.00	0.00	64.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Pipe Site Prep	14	32.00	0.00	8,400.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
PumpStation Construction	5	18.00	0.00	42.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 15	2	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Water Truck	1	2.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 60	4	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 45	1	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 120	3	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 240	1	24.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Pipe Trenching	24	32.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Weir Excavation	6	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Weir Construction	7	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
PumpStation Equipment Install	2	18.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Pipe Pipeline	22	32.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Weir Paving	7	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Backfil and Paving	20	32.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Construction Weir Site Prep - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3800e-003	0.0000	5.3800e-003	5.8000e-004	0.0000	5.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0136	0.1364	0.0734	9.0000e-005		8.3400e-003	8.3400e-003		7.6700e-003	7.6700e-003	0.0000	8.8277	8.8277	2.6600e-003	0.0000	8.8836
Total	**0.0136**	**0.1364**	**0.0734**	**9.0000e-005**	**5.3800e-003**	**8.3400e-003**	**0.0137**	**5.8000e-004**	**7.6700e-003**	**8.2500e-003**	**0.0000**	**8.8277**	**8.8277**	**2.6600e-003**	**0.0000**	**8.8836**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.4000e-004	0.0125	9.7500e-003	4.0000e-005	8.2000e-004	2.0000e-004	1.0200e-003	2.3000e-004	1.8000e-004	4.1000e-004	0.0000	3.2469	3.2469	2.0000e-005	0.0000	3.2474
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**1.6000e-003**	**0.0136**	**0.0210**	**6.0000e-005**	**2.8900e-003**	**2.2000e-004**	**3.1100e-003**	**7.8000e-004**	**1.9000e-004**	**9.7000e-004**	**0.0000**	**5.0801**	**5.0801**	**1.2000e-004**	**0.0000**	**5.0826**

3.2 Construction Weir Site Prep - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3800e-003	0.0000	5.3800e-003	5.8000e-004	0.0000	5.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.2700e-003	0.0465	0.0700	9.0000e-005		2.6200e-003	2.6200e-003		2.6200e-003	2.6200e-003	0.0000	8.8277	8.8277	2.6600e-003	0.0000	8.8836
Total	**2.2700e-003**	**0.0465**	**0.0700**	**9.0000e-005**	**5.3800e-003**	**2.6200e-003**	**8.0000e-003**	**5.8000e-004**	**2.6200e-003**	**3.2000e-003**	**0.0000**	**8.8277**	**8.8277**	**2.6600e-003**	**0.0000**	**8.8836**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.4000e-004	0.0125	9.7500e-003	4.0000e-005	8.2000e-004	2.0000e-004	1.0200e-003	2.3000e-004	1.8000e-004	4.1000e-004	0.0000	3.2469	3.2469	2.0000e-005	0.0000	3.2474
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**1.6000e-003**	**0.0136**	**0.0210**	**6.0000e-005**	**2.8900e-003**	**2.2000e-004**	**3.1100e-003**	**7.8000e-004**	**1.9000e-004**	**9.7000e-004**	**0.0000**	**5.0801**	**5.0801**	**1.2000e-004**	**0.0000**	**5.0826**

3.3 Construction Pipe Site Prep - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1435	0.0000	0.1435	0.0664	0.0000	0.0664	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0552	0.6320	0.4372	5.2000e-004		0.0271	0.0271		0.0250	0.0250	0.0000	46.8398	46.8398	0.0133	0.0000	47.1188
Total	**0.0552**	**0.6320**	**0.4372**	**5.2000e-004**	**0.1435**	**0.0271**	**0.1706**	**0.0664**	**0.0250**	**0.0914**	**0.0000**	**46.8398**	**46.8398**	**0.0133**	**0.0000**	**47.1188**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1233	1.6347	1.2791	4.6600e-003	0.1078	0.0259	0.1336	0.0296	0.0238	0.0534	0.0000	426.1614	426.1614	3.0900e-003	0.0000	426.2264
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	2.5500e-003	0.0245	5.0000e-005	4.5000e-003	3.0000e-005	4.5300e-003	1.2000e-003	3.0000e-005	1.2300e-003	0.0000	3.9805	3.9805	2.1000e-004	0.0000	3.9849
Total	**0.1247**	**1.6373**	**1.3036**	**4.7100e-003**	**0.1123**	**0.0259**	**0.1382**	**0.0308**	**0.0238**	**0.0547**	**0.0000**	**430.1419**	**430.1419**	**3.3000e-003**	**0.0000**	**430.2112**

3.3 Construction Pipe Site Prep - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1435	0.0000	0.1435	0.0664	0.0000	0.0664	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0165	0.2482	0.2684	5.2000e-004		9.4400e-003	9.4400e-003		9.4400e-003	9.4400e-003	0.0000	46.8397	46.8397	0.0133	0.0000	47.1188
Total	**0.0165**	**0.2482**	**0.2684**	**5.2000e-004**	**0.1435**	**9.4400e-003**	**0.1529**	**0.0664**	**9.4400e-003**	**0.0759**	**0.0000**	**46.8397**	**46.8397**	**0.0133**	**0.0000**	**47.1188**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1233	1.6347	1.2791	4.6600e-003	0.1078	0.0259	0.1336	0.0296	0.0238	0.0534	0.0000	426.1614	426.1614	3.0900e-003	0.0000	426.2264
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	2.5500e-003	0.0245	5.0000e-005	4.5000e-003	3.0000e-005	4.5300e-003	1.2000e-003	3.0000e-005	1.2300e-003	0.0000	3.9805	3.9805	2.1000e-004	0.0000	3.9849
Total	**0.1247**	**1.6373**	**1.3036**	**4.7100e-003**	**0.1123**	**0.0259**	**0.1382**	**0.0308**	**0.0238**	**0.0547**	**0.0000**	**430.1419**	**430.1419**	**3.3000e-003**	**0.0000**	**430.2112**

3.4 PumpStation Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0908	1.0171	0.6076	8.1000e-004		0.0498	0.0498		0.0458	0.0458	0.0000	75.9900	75.9900	0.0229	0.0000	76.4713
Total	**0.0908**	**1.0171**	**0.6076**	**8.1000e-004**	**0.1807**	**0.0498**	**0.2305**	**0.0993**	**0.0458**	**0.1451**	**0.0000**	**75.9900**	**75.9900**	**0.0229**	**0.0000**	**76.4713**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.2000e-004	8.1700e-003	6.4000e-003	2.0000e-005	5.4000e-004	1.3000e-004	6.7000e-004	1.5000e-004	1.2000e-004	2.7000e-004	0.0000	2.1308	2.1308	2.0000e-005	0.0000	2.1311
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**3.1700e-003**	**0.0127**	**0.0499**	**1.2000e-004**	**8.5300e-003**	**1.9000e-004**	**8.7200e-003**	**2.2700e-003**	**1.7000e-004**	**2.4500e-003**	**0.0000**	**9.2014**	**9.2014**	**3.9000e-004**	**0.0000**	**9.2095**

3.4 PumpStation Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0198	0.3923	0.4900	8.1000e-004		0.0177	0.0177		0.0177	0.0177	0.0000	75.9899	75.9899	0.0229	0.0000	76.4712
Total	**0.0198**	**0.3923**	**0.4900**	**8.1000e-004**	**0.1807**	**0.0177**	**0.1984**	**0.0993**	**0.0177**	**0.1170**	**0.0000**	**75.9899**	**75.9899**	**0.0229**	**0.0000**	**76.4712**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.2000e-004	8.1700e-003	6.4000e-003	2.0000e-005	5.4000e-004	1.3000e-004	6.7000e-004	1.5000e-004	1.2000e-004	2.7000e-004	0.0000	2.1308	2.1308	2.0000e-005	0.0000	2.1311
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**3.1700e-003**	**0.0127**	**0.0499**	**1.2000e-004**	**8.5300e-003**	**1.9000e-004**	**8.7200e-003**	**2.2700e-003**	**1.7000e-004**	**2.4500e-003**	**0.0000**	**9.2014**	**9.2014**	**3.9000e-004**	**0.0000**	**9.2095**

3.5 River Crossing 15 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0141	0.1628	0.0758	2.0000e-004		6.1400e-003	6.1400e-003		5.6500e-003	5.6500e-003	0.0000	18.5997	18.5997	5.6100e-003	0.0000	18.7175
Total	**0.0141**	**0.1628**	**0.0758**	**2.0000e-004**	**0.0000**	**6.1400e-003**	**6.1400e-003**	**0.0000**	**5.6500e-003**	**5.6500e-003**	**0.0000**	**18.5997**	**18.5997**	**5.6100e-003**	**0.0000**	**18.7175**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 River Crossing 15 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8300e-003	0.0933	0.1046	2.0000e-004		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	18.5997	18.5997	5.6100e-003	0.0000	18.7175
Total	**4.8300e-003**	**0.0933**	**0.1046**	**2.0000e-004**	**0.0000**	**3.5400e-003**	**3.5400e-003**	**0.0000**	**3.5400e-003**	**3.5400e-003**	**0.0000**	**18.5997**	**18.5997**	**5.6100e-003**	**0.0000**	**18.7175**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Water Truck - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0330	0.3798	0.1769	4.6000e-004		0.0143	0.0143		0.0132	0.0132	0.0000	43.3993	43.3993	0.0131	0.0000	43.6742
Total	**0.0330**	**0.3798**	**0.1769**	**4.6000e-004**	**0.0000**	**0.0143**	**0.0143**	**0.0000**	**0.0132**	**0.0132**	**0.0000**	**43.3993**	**43.3993**	**0.0131**	**0.0000**	**43.6742**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**6.6000e-004**	**1.1800e-003**	**0.0113**	**2.0000e-005**	**2.0700e-003**	**2.0000e-005**	**2.0900e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.8331**	**1.8331**	**1.0000e-004**	**0.0000**	**1.8351**

3.6 Water Truck - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0113	0.2177	0.2440	4.6000e-004		8.2600e-003	8.2600e-003		8.2600e-003	8.2600e-003	0.0000	43.3993	43.3993	0.0131	0.0000	43.6742
Total	**0.0113**	**0.2177**	**0.2440**	**4.6000e-004**	**0.0000**	**8.2600e-003**	**8.2600e-003**	**0.0000**	**8.2600e-003**	**8.2600e-003**	**0.0000**	**43.3993**	**43.3993**	**0.0131**	**0.0000**	**43.6742**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**6.6000e-004**	**1.1800e-003**	**0.0113**	**2.0000e-005**	**2.0700e-003**	**2.0000e-005**	**2.0900e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.8331**	**1.8331**	**1.0000e-004**	**0.0000**	**1.8351**

3.6 Water Truck - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0567	0.6392	0.3046	8.5000e-004		0.0237	0.0237		0.0218	0.0218	0.0000	79.2671	79.2671	0.0243	0.0000	79.7772
Total	**0.0567**	**0.6392**	**0.3046**	**8.5000e-004**	**0.0000**	**0.0237**	**0.0237**	**0.0000**	**0.0218**	**0.0218**	**0.0000**	**79.2671**	**79.2671**	**0.0243**	**0.0000**	**79.7772**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0600e-003	1.9300e-003	0.0183	5.0000e-005	3.8500e-003	3.0000e-005	3.8700e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.2686	3.2686	1.6000e-004	0.0000	3.2720
Total	**1.0600e-003**	**1.9300e-003**	**0.0183**	**5.0000e-005**	**3.8500e-003**	**3.0000e-005**	**3.8700e-003**	**1.0200e-003**	**2.0000e-005**	**1.0500e-003**	**0.0000**	**3.2686**	**3.2686**	**1.6000e-004**	**0.0000**	**3.2720**

3.6 Water Truck - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0209	0.4043	0.4531	8.5000e-004		0.0153	0.0153		0.0153	0.0153	0.0000	79.2670	79.2670	0.0243	0.0000	79.7771
Total	**0.0209**	**0.4043**	**0.4531**	**8.5000e-004**	**0.0000**	**0.0153**	**0.0153**	**0.0000**	**0.0153**	**0.0153**	**0.0000**	**79.2670**	**79.2670**	**0.0243**	**0.0000**	**79.7771**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0600e-003	1.9300e-003	0.0183	5.0000e-005	3.8500e-003	3.0000e-005	3.8700e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.2686	3.2686	1.6000e-004	0.0000	3.2720
Total	**1.0600e-003**	**1.9300e-003**	**0.0183**	**5.0000e-005**	**3.8500e-003**	**3.0000e-005**	**3.8700e-003**	**1.0200e-003**	**2.0000e-005**	**1.0500e-003**	**0.0000**	**3.2686**	**3.2686**	**1.6000e-004**	**0.0000**	**3.2720**

3.6 Water Truck - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0125	0.1346	0.0679	2.1000e-004		4.9100e-003	4.9100e-003		4.5200e-003	4.5200e-003	0.0000	19.5034	19.5034	6.0700e-003	0.0000	19.6309
Total	**0.0125**	**0.1346**	**0.0679**	**2.1000e-004**	**0.0000**	**4.9100e-003**	**4.9100e-003**	**0.0000**	**4.5200e-003**	**4.5200e-003**	**0.0000**	**19.5034**	**19.5034**	**6.0700e-003**	**0.0000**	**19.6309**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	4.3000e-004	4.0700e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.7877	0.7877	4.0000e-005	0.0000	0.7885
Total	**2.3000e-004**	**4.3000e-004**	**4.0700e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.7877**	**0.7877**	**4.0000e-005**	**0.0000**	**0.7885**

3.6 Water Truck - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2300e-003	0.1011	0.1133	2.1000e-004		3.8300e-003	3.8300e-003		3.8300e-003	3.8300e-003	0.0000	19.5033	19.5033	6.0700e-003	0.0000	19.6308
Total	**5.2300e-003**	**0.1011**	**0.1133**	**2.1000e-004**	**0.0000**	**3.8300e-003**	**3.8300e-003**	**0.0000**	**3.8300e-003**	**3.8300e-003**	**0.0000**	**19.5033**	**19.5033**	**6.0700e-003**	**0.0000**	**19.6308**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	4.3000e-004	4.0700e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.7877	0.7877	4.0000e-005	0.0000	0.7885
Total	**2.3000e-004**	**4.3000e-004**	**4.0700e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.7877**	**0.7877**	**4.0000e-005**	**0.0000**	**0.7885**

3.7 River Crossing 60 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0683	0.7562	0.4599	5.6000e-004		0.0374	0.0374		0.0344	0.0344	0.0000	53.0463	53.0463	0.0160	0.0000	53.3823
Total	**0.0683**	**0.7562**	**0.4599**	**5.6000e-004**	**0.1807**	**0.0374**	**0.2181**	**0.0993**	**0.0344**	**0.1338**	**0.0000**	**53.0463**	**53.0463**	**0.0160**	**0.0000**	**53.3823**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 River Crossing 60 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0138	0.2765	0.3244	5.6000e-004		0.0125	0.0125		0.0125	0.0125	0.0000	53.0463	53.0463	0.0160	0.0000	53.3823
Total	**0.0138**	**0.2765**	**0.3244**	**5.6000e-004**	**0.1807**	**0.0125**	**0.1932**	**0.0993**	**0.0125**	**0.1118**	**0.0000**	**53.0463**	**53.0463**	**0.0160**	**0.0000**	**53.3823**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.8 River Crossing 45 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6600e-003	0.0455	0.0396	6.0000e-005		2.6400e-003	2.6400e-003		2.4200e-003	2.4200e-003	0.0000	5.3099	5.3099	1.6000e-003	0.0000	5.3435
Total	**3.6600e-003**	**0.0455**	**0.0396**	**6.0000e-005**		**2.6400e-003**	**2.6400e-003**		**2.4200e-003**	**2.4200e-003**	**0.0000**	**5.3099**	**5.3099**	**1.6000e-003**	**0.0000**	**5.3435**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.8 River Crossing 45 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.4300e-003	0.0326	0.0441	6.0000e-005		2.2900e-003	2.2900e-003		2.2900e-003	2.2900e-003	0.0000	5.3099	5.3099	1.6000e-003	0.0000	5.3435
Total	**1.4300e-003**	**0.0326**	**0.0441**	**6.0000e-005**		**2.2900e-003**	**2.2900e-003**		**2.2900e-003**	**2.2900e-003**	**0.0000**	**5.3099**	**5.3099**	**1.6000e-003**	**0.0000**	**5.3435**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.9 River Crossing 120 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0748	0.8573	0.5630	1.0300e-003		0.0384	0.0384		0.0354	0.0354	0.0000	97.0647	97.0647	0.0293	0.0000	97.6795
Total	**0.0748**	**0.8573**	**0.5630**	**1.0300e-003**		**0.0384**	**0.0384**		**0.0354**	**0.0354**	**0.0000**	**97.0647**	**97.0647**	**0.0293**	**0.0000**	**97.6795**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.9 River Crossing 120 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0253	0.4889	0.6912	1.0300e-003		0.0217	0.0217		0.0217	0.0217	0.0000	97.0646	97.0646	0.0293	0.0000	97.6794
Total	**0.0253**	**0.4889**	**0.6912**	**1.0300e-003**		**0.0217**	**0.0217**		**0.0217**	**0.0217**	**0.0000**	**97.0646**	**97.0646**	**0.0293**	**0.0000**	**97.6794**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.10 River Crossing 240 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0252	0.2986	0.1045	2.0000e-004		0.0136	0.0136		0.0125	0.0125	0.0000	18.6138	18.6138	5.6100e-003	0.0000	18.7317
Total	**0.0252**	**0.2986**	**0.1045**	**2.0000e-004**		**0.0136**	**0.0136**		**0.0125**	**0.0125**	**0.0000**	**18.6138**	**18.6138**	**5.6100e-003**	**0.0000**	**18.7317**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9500e-003	0.0141	0.1354	3.0000e-004	0.0249	1.8000e-004	0.0250	6.6100e-003	1.7000e-004	6.7700e-003	0.0000	21.9973	21.9973	1.1600e-003	0.0000	22.0217
Total	**7.9500e-003**	**0.0141**	**0.1354**	**3.0000e-004**	**0.0249**	**1.8000e-004**	**0.0250**	**6.6100e-003**	**1.7000e-004**	**6.7700e-003**	**0.0000**	**21.9973**	**21.9973**	**1.1600e-003**	**0.0000**	**22.0217**

3.10 River Crossing 240 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8500e-003	0.0939	0.1052	2.0000e-004		3.5600e-003	3.5600e-003		3.5600e-003	3.5600e-003	0.0000	18.6138	18.6138	5.6100e-003	0.0000	18.7317
Total	**4.8500e-003**	**0.0939**	**0.1052**	**2.0000e-004**		**3.5600e-003**	**3.5600e-003**		**3.5600e-003**	**3.5600e-003**	**0.0000**	**18.6138**	**18.6138**	**5.6100e-003**	**0.0000**	**18.7317**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9500e-003	0.0141	0.1354	3.0000e-004	0.0249	1.8000e-004	0.0250	6.6100e-003	1.7000e-004	6.7700e-003	0.0000	21.9973	21.9973	1.1600e-003	0.0000	22.0217
Total	**7.9500e-003**	**0.0141**	**0.1354**	**3.0000e-004**	**0.0249**	**1.8000e-004**	**0.0250**	**6.6100e-003**	**1.7000e-004**	**6.7700e-003**	**0.0000**	**21.9973**	**21.9973**	**1.1600e-003**	**0.0000**	**22.0217**

3.10 River Crossing 240 - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0178	0.2116	0.0758	1.6000e-004		9.4300e-003	9.4300e-003		8.6800e-003	8.6800e-003	0.0000	14.4007	14.4007	4.4100e-003	0.0000	14.4934
Total	**0.0178**	**0.2116**	**0.0758**	**1.6000e-004**		**9.4300e-003**	**9.4300e-003**		**8.6800e-003**	**8.6800e-003**	**0.0000**	**14.4007**	**14.4007**	**4.4100e-003**	**0.0000**	**14.4934**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3600e-003	9.8000e-003	0.0931	2.3000e-004	0.0195	1.4000e-004	0.0197	5.1900e-003	1.3000e-004	5.3200e-003	0.0000	16.5943	16.5943	8.3000e-004	0.0000	16.6117
Total	**5.3600e-003**	**9.8000e-003**	**0.0931**	**2.3000e-004**	**0.0195**	**1.4000e-004**	**0.0197**	**5.1900e-003**	**1.3000e-004**	**5.3200e-003**	**0.0000**	**16.5943**	**16.5943**	**8.3000e-004**	**0.0000**	**16.6117**

3.10 River Crossing 240 - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8100e-003	0.0738	0.0827	1.6000e-004		2.8000e-003	2.8000e-003		2.8000e-003	2.8000e-003	0.0000	14.4007	14.4007	4.4100e-003	0.0000	14.4933
Total	**3.8100e-003**	**0.0738**	**0.0827**	**1.6000e-004**		**2.8000e-003**	**2.8000e-003**		**2.8000e-003**	**2.8000e-003**	**0.0000**	**14.4007**	**14.4007**	**4.4100e-003**	**0.0000**	**14.4933**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3600e-003	9.8000e-003	0.0931	2.3000e-004	0.0195	1.4000e-004	0.0197	5.1900e-003	1.3000e-004	5.3200e-003	0.0000	16.5943	16.5943	8.3000e-004	0.0000	16.6117
Total	**5.3600e-003**	**9.8000e-003**	**0.0931**	**2.3000e-004**	**0.0195**	**1.4000e-004**	**0.0197**	**5.1900e-003**	**1.3000e-004**	**5.3200e-003**	**0.0000**	**16.5943**	**16.5943**	**8.3000e-004**	**0.0000**	**16.6117**

3.11 Construction Pipe Trenching - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4656	5.2691	3.4466	4.3700e-003		0.2508	0.2508		0.2312	0.2312	0.0000	404.7396	404.7396	0.1189	0.0000	407.2355
Total	**0.4656**	**5.2691**	**3.4466**	**4.3700e-003**		**0.2508**	**0.2508**		**0.2312**	**0.2312**	**0.0000**	**404.7396**	**404.7396**	**0.1189**	**0.0000**	**407.2355**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5300e-003	9.8100e-003	0.0942	2.1000e-004	0.0173	1.3000e-004	0.0174	4.5900e-003	1.2000e-004	4.7100e-003	0.0000	15.2934	15.2934	8.1000e-004	0.0000	15.3103
Total	**5.5300e-003**	**9.8100e-003**	**0.0942**	**2.1000e-004**	**0.0173**	**1.3000e-004**	**0.0174**	**4.5900e-003**	**1.2000e-004**	**4.7100e-003**	**0.0000**	**15.2934**	**15.2934**	**8.1000e-004**	**0.0000**	**15.3103**

3.11 Construction Pipe Trenching - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1219	2.1212	2.5865	4.3700e-003		0.0928	0.0928		0.0928	0.0928	0.0000	404.7391	404.7391	0.1189	0.0000	407.2350
Total	**0.1219**	**2.1212**	**2.5865**	**4.3700e-003**		**0.0928**	**0.0928**		**0.0928**	**0.0928**	**0.0000**	**404.7391**	**404.7391**	**0.1189**	**0.0000**	**407.2350**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5300e-003	9.8100e-003	0.0942	2.1000e-004	0.0173	1.3000e-004	0.0174	4.5900e-003	1.2000e-004	4.7100e-003	0.0000	15.2934	15.2934	8.1000e-004	0.0000	15.3103
Total	**5.5300e-003**	**9.8100e-003**	**0.0942**	**2.1000e-004**	**0.0173**	**1.3000e-004**	**0.0174**	**4.5900e-003**	**1.2000e-004**	**4.7100e-003**	**0.0000**	**15.2934**	**15.2934**	**8.1000e-004**	**0.0000**	**15.3103**

3.12 Construction Weir Excavation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0334	0.3256	0.2220	4.0000e-004		0.0195	0.0195		0.0185	0.0185	0.0000	36.5032	36.5032	8.8100e-003	0.0000	36.6882
Total	**0.0334**	**0.3256**	**0.2220**	**4.0000e-004**	**0.0151**	**0.0195**	**0.0345**	**8.2800e-003**	**0.0185**	**0.0268**	**0.0000**	**36.5032**	**36.5032**	**8.8100e-003**	**0.0000**	**36.6882**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3200e-003	2.3500e-003	0.0226	5.0000e-005	4.1400e-003	3.0000e-005	4.1700e-003	1.1000e-003	3.0000e-005	1.1300e-003	0.0000	3.6662	3.6662	1.9000e-004	0.0000	3.6703
Total	**1.3200e-003**	**2.3500e-003**	**0.0226**	**5.0000e-005**	**4.1400e-003**	**3.0000e-005**	**4.1700e-003**	**1.1000e-003**	**3.0000e-005**	**1.1300e-003**	**0.0000**	**3.6662**	**3.6662**	**1.9000e-004**	**0.0000**	**3.6703**

3.12 Construction Weir Excavation - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2300e-003	0.1951	0.2497	4.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	36.5032	36.5032	8.8100e-003	0.0000	36.6882
Total	**9.2300e-003**	**0.1951**	**0.2497**	**4.0000e-004**	**0.0151**	**0.0110**	**0.0261**	**8.2800e-003**	**0.0110**	**0.0193**	**0.0000**	**36.5032**	**36.5032**	**8.8100e-003**	**0.0000**	**36.6882**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3200e-003	2.3500e-003	0.0226	5.0000e-005	4.1400e-003	3.0000e-005	4.1700e-003	1.1000e-003	3.0000e-005	1.1300e-003	0.0000	3.6662	3.6662	1.9000e-004	0.0000	3.6703
Total	**1.3200e-003**	**2.3500e-003**	**0.0226**	**5.0000e-005**	**4.1400e-003**	**3.0000e-005**	**4.1700e-003**	**1.1000e-003**	**3.0000e-005**	**1.1300e-003**	**0.0000**	**3.6662**	**3.6662**	**1.9000e-004**	**0.0000**	**3.6703**

3.13 Construction Weir Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0403	0.3832	0.2373	3.4000e-004		0.0265	0.0265		0.0247	0.0247	0.0000	31.3256	31.3256	8.5300e-003	0.0000	31.5047
Total	**0.0403**	**0.3832**	**0.2373**	**3.4000e-004**		**0.0265**	**0.0265**		**0.0247**	**0.0247**	**0.0000**	**31.3256**	**31.3256**	**8.5300e-003**	**0.0000**	**31.5047**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6600e-003	2.9400e-003	0.0282	6.0000e-005	5.1800e-003	4.0000e-005	5.2200e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.5828	4.5828	2.4000e-004	0.0000	4.5879
Total	**1.6600e-003**	**2.9400e-003**	**0.0282**	**6.0000e-005**	**5.1800e-003**	**4.0000e-005**	**5.2200e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.5828**	**4.5828**	**2.4000e-004**	**0.0000**	**4.5879**

3.13 Construction Weir Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.0100e-003	0.1769	0.2312	3.4000e-004		0.0113	0.0113		0.0113	0.0113	0.0000	31.3255	31.3255	8.5300e-003	0.0000	31.5047
Total	**8.0100e-003**	**0.1769**	**0.2312**	**3.4000e-004**		**0.0113**	**0.0113**		**0.0113**	**0.0113**	**0.0000**	**31.3255**	**31.3255**	**8.5300e-003**	**0.0000**	**31.5047**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6600e-003	2.9400e-003	0.0282	6.0000e-005	5.1800e-003	4.0000e-005	5.2200e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.5828	4.5828	2.4000e-004	0.0000	4.5879
Total	**1.6600e-003**	**2.9400e-003**	**0.0282**	**6.0000e-005**	**5.1800e-003**	**4.0000e-005**	**5.2200e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.5828**	**4.5828**	**2.4000e-004**	**0.0000**	**4.5879**

3.14 PumpStation Equipment Install - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1765	0.0585	1.3000e-004		7.4600e-003	7.4600e-003		6.8600e-003	6.8600e-003	0.0000	12.3072	12.3072	3.7100e-003	0.0000	12.3851
Total	**0.0145**	**0.1765**	**0.0585**	**1.3000e-004**		**7.4600e-003**	**7.4600e-003**		**6.8600e-003**	**6.8600e-003**	**0.0000**	**12.3072**	**12.3072**	**3.7100e-003**	**0.0000**	**12.3851**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**2.5500e-003**	**4.5400e-003**	**0.0435**	**1.0000e-004**	**7.9900e-003**	**6.0000e-005**	**8.0500e-003**	**2.1200e-003**	**5.0000e-005**	**2.1800e-003**	**0.0000**	**7.0706**	**7.0706**	**3.7000e-004**	**0.0000**	**7.0784**

3.14 PumpStation Equipment Install - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.2200e-003	0.0622	0.0697	1.3000e-004		2.3600e-003	2.3600e-003		2.3600e-003	2.3600e-003	0.0000	12.3072	12.3072	3.7100e-003	0.0000	12.3851
Total	**3.2200e-003**	**0.0622**	**0.0697**	**1.3000e-004**		**2.3600e-003**	**2.3600e-003**		**2.3600e-003**	**2.3600e-003**	**0.0000**	**12.3072**	**12.3072**	**3.7100e-003**	**0.0000**	**12.3851**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**2.5500e-003**	**4.5400e-003**	**0.0435**	**1.0000e-004**	**7.9900e-003**	**6.0000e-005**	**8.0500e-003**	**2.1200e-003**	**5.0000e-005**	**2.1800e-003**	**0.0000**	**7.0706**	**7.0706**	**3.7000e-004**	**0.0000**	**7.0784**

3.15 Construction Pipe Pipeline - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2548	2.8199	1.7335	2.3600e-003		0.1418	0.1418		0.1307	0.1307	0.0000	217.6375	217.6375	0.0635	0.0000	218.9715
Total	**0.2548**	**2.8199**	**1.7335**	**2.3600e-003**		**0.1418**	**0.1418**		**0.1307**	**0.1307**	**0.0000**	**217.6375**	**217.6375**	**0.0635**	**0.0000**	**218.9715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6300e-003	6.4500e-003	0.0619	1.4000e-004	0.0114	8.0000e-005	0.0115	3.0200e-003	8.0000e-005	3.1000e-003	0.0000	10.0559	10.0559	5.3000e-004	0.0000	10.0671
Total	**3.6300e-003**	**6.4500e-003**	**0.0619**	**1.4000e-004**	**0.0114**	**8.0000e-005**	**0.0115**	**3.0200e-003**	**8.0000e-005**	**3.1000e-003**	**0.0000**	**10.0559**	**10.0559**	**5.3000e-004**	**0.0000**	**10.0671**

3.15 Construction Pipe Pipeline - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0676	1.1663	1.4087	2.3600e-003		0.0541	0.0541		0.0541	0.0541	0.0000	217.6373	217.6373	0.0635	0.0000	218.9712
Total	**0.0676**	**1.1663**	**1.4087**	**2.3600e-003**		**0.0541**	**0.0541**		**0.0541**	**0.0541**	**0.0000**	**217.6373**	**217.6373**	**0.0635**	**0.0000**	**218.9712**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6300e-003	6.4500e-003	0.0619	1.4000e-004	0.0114	8.0000e-005	0.0115	3.0200e-003	8.0000e-005	3.1000e-003	0.0000	10.0559	10.0559	5.3000e-004	0.0000	10.0671
Total	**3.6300e-003**	**6.4500e-003**	**0.0619**	**1.4000e-004**	**0.0114**	**8.0000e-005**	**0.0115**	**3.0200e-003**	**8.0000e-005**	**3.1000e-003**	**0.0000**	**10.0559**	**10.0559**	**5.3000e-004**	**0.0000**	**10.0671**

3.16 Construction Weir Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.6000e-003	0.0531	0.0365	6.0000e-005		3.3000e-003	3.3000e-003		3.0600e-003	3.0600e-003	0.0000	4.9151	4.9151	1.3500e-003	0.0000	4.9433
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.6000e-003**	**0.0531**	**0.0365**	**6.0000e-005**		**3.3000e-003**	**3.3000e-003**		**3.0600e-003**	**3.0600e-003**	**0.0000**	**4.9151**	**4.9151**	**1.3500e-003**	**0.0000**	**4.9433**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	5.9000e-004	5.6400e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9166	0.9166	5.0000e-005	0.0000	0.9176
Total	**3.3000e-004**	**5.9000e-004**	**5.6400e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9166**	**0.9166**	**5.0000e-005**	**0.0000**	**0.9176**

3.16 Construction Weir Paving - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.9800e-003	0.0290	0.0385	6.0000e-005		1.6600e-003	1.6600e-003		1.6600e-003	1.6600e-003	0.0000	4.9151	4.9151	1.3500e-003	0.0000	4.9433
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.9800e-003**	**0.0290**	**0.0385**	**6.0000e-005**		**1.6600e-003**	**1.6600e-003**		**1.6600e-003**	**1.6600e-003**	**0.0000**	**4.9151**	**4.9151**	**1.3500e-003**	**0.0000**	**4.9433**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	5.9000e-004	5.6400e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9166	0.9166	5.0000e-005	0.0000	0.9176
Total	**3.3000e-004**	**5.9000e-004**	**5.6400e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9166**	**0.9166**	**5.0000e-005**	**0.0000**	**0.9176**

3.17 Construction Backfil and Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0833	0.8527	0.4943	1.0800e-003		0.0411	0.0411		0.0380	0.0380	0.0000	97.5351	97.5351	0.0286	0.0000	98.1360
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0833**	**0.8527**	**0.4943**	**1.0800e-003**		**0.0411**	**0.0411**		**0.0380**	**0.0380**	**0.0000**	**97.5351**	**97.5351**	**0.0286**	**0.0000**	**98.1360**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8200e-003	3.3300e-003	0.0316	8.0000e-005	6.6300e-003	5.0000e-005	6.6800e-003	1.7600e-003	4.0000e-005	1.8000e-003	0.0000	5.6320	5.6320	2.8000e-004	0.0000	5.6379
Total	**1.8200e-003**	**3.3300e-003**	**0.0316**	**8.0000e-005**	**6.6300e-003**	**5.0000e-005**	**6.6800e-003**	**1.7600e-003**	**4.0000e-005**	**1.8000e-003**	**0.0000**	**5.6320**	**5.6320**	**2.8000e-004**	**0.0000**	**5.6379**

3.17 Construction Backfil and Paving - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0321	0.5369	0.6192	1.0800e-003		0.0249	0.0249		0.0249	0.0249	0.0000	97.5350	97.5350	0.0286	0.0000	98.1359
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0321**	**0.5369**	**0.6192**	**1.0800e-003**		**0.0249**	**0.0249**		**0.0249**	**0.0249**	**0.0000**	**97.5350**	**97.5350**	**0.0286**	**0.0000**	**98.1359**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8200e-003	3.3300e-003	0.0316	8.0000e-005	6.6300e-003	5.0000e-005	6.6800e-003	1.7600e-003	4.0000e-005	1.8000e-003	0.0000	5.6320	5.6320	2.8000e-004	0.0000	5.6379
Total	**1.8200e-003**	**3.3300e-003**	**0.0316**	**8.0000e-005**	**6.6300e-003**	**5.0000e-005**	**6.6800e-003**	**1.7600e-003**	**4.0000e-005**	**1.8000e-003**	**0.0000**	**5.6320**	**5.6320**	**2.8000e-004**	**0.0000**	**5.6379**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.411222	0.062718	0.156221	0.175699	0.050886	0.007831	0.019556	0.102845	0.001787	0.001576	0.006435	0.000923	0.002302

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	5,837.8650	5,837.8650	0.2031	0.0420	5,855.1588
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	5,837.8650	5,837.8650	0.2031	0.0420	5,855.1588
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	1.5442e+007	5,837.8650	0.2031	0.0420	5,855.1588
Total		**5,837.8650**	**0.2031**	**0.0420**	**5,855.1588**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	1.5442e+007	5,837.8650	0.2031	0.0420	5,855.1588
Total		**5,837.8650**	**0.2031**	**0.0420**	**5,855.1588**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

NVRRWP Alternative 2 Unphased Material Hauling and Tier 3 Mitigation

San Joaquin Valley Unified APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.00	1.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2018
Utility Company	Modesto Irrigation District				
CO2 Intensity (lb/MWhr)	833.46	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Estimate of pump station size.

Construction Phase - Used site-specific construction schedule received from RMC by email July 2014 and Project Description. 5 simultaneous crews assumed to be working starting summer 2016.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

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Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Trips and VMT - Used site specific information provided by RMC in construction spreadsheet. Workers were assumed for all phases. Material hauling emissions allocated to the first phase of a construction project.

Grading - 'Used site specific information provided by RMC in construction spreadsheet. Workers were assumed for all phases. Material hauling emissions allocated to the first phase of a construction project.

Architectural Coating - no coatings since it is a pipeline underground. Phase used as a unique phase type.

Consumer Products - No consumer products since it is an infrastructure underground pipeline.

Area Coating - No coatings since it is a pipeline underground.

Landscape Equipment - no landscaping since infrastructure project.

Energy Use - Based on pump operation provided by RMC in construction spreadsheet.

Water And Wastewater - No emissions estimated as this is just a change in location of where water is discharged. Thus only energy associated with pumping to new discharge location considered.

Solid Waste - No change in solid waste since this is only a change in location of discharge.

Construction Off-road Equipment Mitigation - Assume Tier 3 mitigation on all equipment over 50 hp.

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2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	1.8186	20.7387	13.9494	0.0287	1.0519	0.8455	1.8974	0.4456	0.7796	1.2252	0.0000	2,623.7834	2,623.7834	0.4082	0.0000	2,632.3563
2017	0.5930	6.2527	3.9764	7.7600e-003	0.2726	0.2935	0.5661	0.1280	0.2710	0.3990	0.0000	694.2723	694.2723	0.1905	0.0000	698.2732
2018	0.0418	0.4274	0.2671	7.7000e-004	0.0179	0.0165	0.0344	4.7600e-003	0.0151	0.0199	0.0000	65.2653	65.2653	0.0165	0.0000	65.6108
Total	**2.4534**	**27.4188**	**18.1929**	**0.0372**	**1.3423**	**1.1555**	**2.4978**	**0.5784**	**1.0656**	**1.6440**	**0.0000**	**3,383.3210**	**3,383.3210**	**0.6152**	**0.0000**	**3,396.2402**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.7593	11.5968	12.7548	0.0287	1.0519	0.3848	1.4366	0.4456	0.3789	0.8246	0.0000	2,623.7818	2,623.7818	0.4082	0.0000	2,632.3547
2017	0.1990	3.3711	4.3968	7.7600e-003	0.2726	0.1505	0.4231	0.1280	0.1505	0.2785	0.0000	694.2715	694.2715	0.1905	0.0000	698.2724
2018	0.0178	0.2705	0.3698	7.7000e-004	0.0179	0.0101	0.0280	4.7600e-003	0.0101	0.0148	0.0000	65.2653	65.2653	0.0165	0.0000	65.6108
Total	**0.9761**	**15.2384**	**17.5215**	**0.0372**	**1.3423**	**0.5454**	**1.8877**	**0.5784**	**0.5395**	**1.1179**	**0.0000**	**3,383.3186**	**3,383.3186**	**0.6152**	**0.0000**	**3,396.2378**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**60.22**	**44.42**	**3.69**	**0.00**	**0.00**	**52.80**	**24.43**	**0.00**	**49.38**	**32.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6,766.3585	6,766.3585	0.2354	0.0487	6,786.4029
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**6,766.3586**	**6,766.3586**	**0.2354**	**0.0487**	**6,786.4029**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6,766.3585	6,766.3585	0.2354	0.0487	6,786.4029
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**6,766.3586**	**6,766.3586**	**0.2354**	**0.0487**	**6,786.4029**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Construction Weir Site Prep	Site Preparation	6/20/2016	7/15/2016	5	20	
2	Construction Pipe Site Prep	Site Preparation	6/20/2016	7/14/2016	5	19	
3	PumpStation Construction	Site Preparation	6/20/2016	9/9/2016	5	60	

4	River Crossing 15	Site Preparation	6/20/2016	7/8/2016	5	15	
5	T PumpStation Construction	Site Preparation	6/20/2016	10/21/2016	5	90	
6	Water Truck	Grading	6/20/2016	3/31/2018	5	450	
7	River Crossing 60	Grading	6/20/2016	9/9/2016	5	60	
8	T Water Truck	Grading	6/20/2016	3/31/2018	5	450	
9	River Crossing 45	Trenching	6/20/2016	8/19/2016	5	45	
10	River Crossing 120	Building Construction	6/20/2016	12/2/2016	5	120	
11	River Crossing 240	Architectural Coating	6/20/2016	6/2/2017	5	240	
12	Construction Pipe Trenching	Trenching	7/15/2016	11/11/2016	5	86	
13	Construction Weir Excavation	Grading	7/18/2016	9/9/2016	5	40	
14	Construction Weir Construction	Building Construction	9/12/2016	11/18/2016	5	50	
15	PumpStation Equipment Install	Building Construction	9/12/2016	12/2/2016	5	60	
16	T PumpStation Equipment Install	Building Construction	10/24/2016	1/13/2017	5	60	
17	Construction Pipe Pipeline	Building Construction	11/14/2016	1/31/2017	5	57	
18	Construction Weir Paving	Paving	11/21/2016	12/2/2016	5	10	
19	T Construction Weir Site Prep	Site Preparation	12/5/2016	12/23/2016	5	20	
20	T Construction Weir Excavation	Grading	12/26/2016	2/17/2017	5	40	
21	Construction Backfil and Paving	Paving	1/2/2017	2/8/2017	5	28	
22	T Construction Weir Construction	Building Construction	2/20/2017	4/28/2017	5	50	
23	T Construction Weir Paving	Paving	5/1/2017	5/12/2017	5	10	
24	T River Crossing 15	Site Preparation	6/5/2017	6/23/2017	5	15	
25	T River Crossing 60	Grading	6/5/2017	8/25/2017	5	60	
26	T River Crossing 45	Trenching	6/5/2017	8/4/2017	5	45	
27	T River Crossing 120	Building Construction	6/5/2017	11/17/2017	5	120	
28	T River Crossing 240	Architectural Coating	6/5/2017	5/4/2018	5	240	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Construction Weir Site Prep	Graders	1	8.00	174	0.41
Construction Weir Site Prep	Rubber Tired Dozers	0	7.00	255	0.40
Construction Weir Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Construction Pipe Site Prep	Graders	0	8.00	174	0.41
Construction Pipe Site Prep	Rubber Tired Dozers	2	8.00	255	0.40
Construction Pipe Site Prep	Scrapers	2	8.00	361	0.48
Construction Pipe Site Prep	Signal Boards	10	8.00	6	0.82
Construction Pipe Site Prep	Tractors/Loaders/Backhoes	0	8.00	97	0.37
PumpStation Construction	Cranes	1	4.00	226	0.29
PumpStation Construction	Excavators	1	8.00	162	0.38
PumpStation Construction	Graders	0	8.00	174	0.41
PumpStation Construction	Other Construction Equipment	1	8.00	104	0.42
PumpStation Construction	Rubber Tired Dozers	1	8.00	255	0.40
PumpStation Construction	Rubber Tired Loaders	1	8.00	199	0.36
PumpStation Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
River Crossing 15	Graders	0	8.00	174	0.41
River Crossing 15	Off-Highway Trucks	2	8.00	400	0.38
River Crossing 15	Rubber Tired Dozers	0	7.00	255	0.40
River Crossing 15	Tractors/Loaders/Backhoes	0	8.00	97	0.37
T PumpStation Construction	Cranes	1	4.00	226	0.29
T PumpStation Construction	Excavators	2	8.00	162	0.38
T PumpStation Construction	Graders	0	8.00	174	0.41
T PumpStation Construction	Off-Highway Trucks	4	2.70	400	0.38

T PumpStation Construction	Other Construction Equipment	1	8.00	104	0.42
T PumpStation Construction	Rubber Tired Dozers	1	2.70	255	0.40
T PumpStation Construction	Rubber Tired Loaders	1	8.00	199	0.36
T PumpStation Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Water Truck	Graders	0	6.00	174	0.41
Water Truck	Off-Highway Trucks	1	4.00	400	0.38
Water Truck	Rubber Tired Dozers	0	6.00	255	0.40
Water Truck	Tractors/Loaders/Backhoes	0	7.00	97	0.37
River Crossing 60	Graders	0	6.00	174	0.41
River Crossing 60	Other Construction Equipment	1	8.00	215	0.42
River Crossing 60	Other Construction Equipment	1	8.00	104	0.42
River Crossing 60	Rubber Tired Dozers	1	8.00	255	0.40
River Crossing 60	Rubber Tired Loaders	1	8.00	199	0.36
River Crossing 60	Tractors/Loaders/Backhoes	0	7.00	97	0.37
T Water Truck	Graders	0	6.00	174	0.41
T Water Truck	Off-Highway Trucks	1	4.00	400	0.38
T Water Truck	Rubber Tired Dozers	0	6.00	255	0.40
T Water Truck	Tractors/Loaders/Backhoes	0	7.00	97	0.37
River Crossing 45	Bore/Drill Rigs	1	8.00	60	0.50
River Crossing 120	Cranes	0	6.00	226	0.29
River Crossing 120	Excavators	2	8.00	162	0.38
River Crossing 120	Forklifts	0	6.00	89	0.20
River Crossing 120	Generator Sets	0	8.00	84	0.74
River Crossing 120	Off-Highway Trucks	1	4.00	400	0.38
River Crossing 120	Tractors/Loaders/Backhoes	0	6.00	97	0.37
River Crossing 120	Welders	0	8.00	46	0.45
River Crossing 240	Air Compressors	0	6.00	78	0.48
River Crossing 240	Cranes	1	4.00	226	0.29

Construction Pipe Trenching	Excavators	2	8.00	162	0.38
Construction Pipe Trenching	Graders	2	8.00	174	0.41
Construction Pipe Trenching	Rubber Tired Dozers	2	8.00	255	0.40
Construction Pipe Trenching	Scrapers	4	8.00	361	0.48
Construction Pipe Trenching	Signal Boards	10	8.00	6	0.82
Construction Pipe Trenching	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Construction Weir Excavation	Bore/Drill Rigs	1	6.00	205	0.50
Construction Weir Excavation	Concrete/Industrial Saws	1	8.00	81	0.73
Construction Weir Excavation	Excavators	1	2.00	162	0.38
Construction Weir Excavation	Graders	0	6.00	174	0.41
Construction Weir Excavation	Rubber Tired Dozers	1	1.00	255	0.40
Construction Weir Excavation	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Construction Weir Construction	Air Compressors	1	1.00	78	0.48
Construction Weir Construction	Cranes	1	4.00	226	0.29
Construction Weir Construction	Forklifts	2	6.00	89	0.20
Construction Weir Construction	Generator Sets	0	8.00	84	0.74
Construction Weir Construction	Pumps	1	2.00	84	0.74
Construction Weir Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Construction Weir Construction	Welders	0	8.00	46	0.45
PumpStation Equipment Install	Cranes	1	4.00	226	0.29
PumpStation Equipment Install	Forklifts	0	6.00	89	0.20
PumpStation Equipment Install	Generator Sets	0	8.00	84	0.74
PumpStation Equipment Install	Rubber Tired Loaders	1	2.00	199	0.36
PumpStation Equipment Install	Tractors/Loaders/Backhoes	0	6.00	97	0.37
PumpStation Equipment Install	Welders	0	8.00	46	0.45
T PumpStation Equipment Install	Cranes	1	4.00	226	0.29
T PumpStation Equipment Install	Forklifts	0	6.00	89	0.20
T PumpStation Equipment Install	Generator Sets	0	8.00	84	0.74

T PumpStation Equipment Install	Rubber Tired Loaders	1	2.00	199	0.36
T PumpStation Equipment Install	Tractors/Loaders/Backhoes	0	6.00	97	0.37
T PumpStation Equipment Install	Welders	0	8.00	46	0.45
Construction Pipe Pipeline	Cranes	0	6.00	226	0.29
Construction Pipe Pipeline	Forklifts	0	6.00	89	0.20
Construction Pipe Pipeline	Generator Sets	0	8.00	84	0.74
Construction Pipe Pipeline	Graders	2	8.00	174	0.41
Construction Pipe Pipeline	Scrapers	4	8.00	361	0.48
Construction Pipe Pipeline	Signal Boards	10	8.00	6	0.82
Construction Pipe Pipeline	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Construction Pipe Pipeline	Trenchers	2	8.00	80	0.50
Construction Pipe Pipeline	Welders	0	8.00	46	0.45
Construction Weir Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Construction Weir Paving	Pavers	1	7.00	125	0.42
Construction Weir Paving	Paving Equipment	0	8.00	130	0.36
Construction Weir Paving	Rollers	1	7.00	80	0.38
Construction Weir Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
T Construction Weir Site Prep	Graders	1	8.00	174	0.41
T Construction Weir Site Prep	Rubber Tired Dozers	0	7.00	255	0.40
T Construction Weir Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
T Construction Weir Excavation	Bore/Drill Rigs	1	6.00	205	0.50
T Construction Weir Excavation	Concrete/Industrial Saws	1	8.00	81	0.73
T Construction Weir Excavation	Excavators	1	2.00	162	0.38
T Construction Weir Excavation	Graders	0	6.00	174	0.41
T Construction Weir Excavation	Rubber Tired Dozers	1	1.00	255	0.40
T Construction Weir Excavation	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Construction Backfil and Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Construction Backfil and Paving	Off-Highway Trucks	4	8.00	400	0.38

Construction Backfil and Paving	Pavers	0	6.00	125	0.42
Construction Backfil and Paving	Paving Equipment	0	8.00	130	0.36
Construction Backfil and Paving	Rollers	2	8.00	80	0.38
Construction Backfil and Paving	Signal Boards	10	8.00	6	0.82
Construction Backfil and Paving	Tractors/Loaders/Backhoes	4	8.00	97	0.37
T Construction Weir Construction	Air Compressors	1	1.00	78	0.48
T Construction Weir Construction	Cranes	1	4.00	226	0.29
T Construction Weir Construction	Forklifts	2	6.00	89	0.20
T Construction Weir Construction	Generator Sets	0	8.00	84	0.74
T Construction Weir Construction	Pumps	1	2.00	84	0.74
T Construction Weir Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
T Construction Weir Construction	Welders	0	8.00	46	0.45
T Construction Weir Paving	Cement and Mortar Mixers	4	6.00	9	0.56
T Construction Weir Paving	Pavers	1	7.00	125	0.42
T Construction Weir Paving	Paving Equipment	0	8.00	130	0.36
T Construction Weir Paving	Rollers	1	7.00	80	0.38
T Construction Weir Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
T River Crossing 15	Graders	0	8.00	174	0.41
T River Crossing 15	Off-Highway Trucks	2	8.00	400	0.38
T River Crossing 15	Rubber Tired Dozers	0	7.00	255	0.40
T River Crossing 15	Tractors/Loaders/Backhoes	0	8.00	97	0.37
T River Crossing 60	Graders	0	6.00	174	0.41
T River Crossing 60	Other Construction Equipment	1	8.00	215	0.42
T River Crossing 60	Other Construction Equipment	1	8.00	104	0.42
T River Crossing 60	Rubber Tired Dozers	1	8.00	255	0.40
T River Crossing 60	Rubber Tired Loaders	1	8.00	199	0.36
T River Crossing 60	Tractors/Loaders/Backhoes	0	7.00	97	0.37
T River Crossing 45	Bore/Drill Rigs	1	8.00	60	0.50

T River Crossing 120	Cranes	0	6.00	226	0.29
T River Crossing 120	Excavators	2	8.00	162	0.38
T River Crossing 120	Forklifts	0	6.00	89	0.20
T River Crossing 120	Generator Sets	0	8.00	84	0.74
T River Crossing 120	Off-Highway Trucks	1	4.00	400	0.38
T River Crossing 120	Tractors/Loaders/Backhoes	0	6.00	97	0.37
T River Crossing 120	Welders	0	8.00	46	0.45
T River Crossing 240	Air Compressors	0	6.00	78	0.48
T River Crossing 240	Cranes	1	4.00	226	0.29

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Construction Weir Site Prep	2	14.00	0.00	128.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Pipe Site Prep	14	32.00	0.00	22,996.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
PumpStation Construction	5	18.00	0.00	60.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 15	2	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T PumpStation Construction	10	18.00	0.00	86.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Water Truck	1	2.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 60	4	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T Water Truck	1	2.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 45	1	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 120	3	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 240	1	24.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Pipe Trenching	24	32.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Weir Excavation	6	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Weir Construction	7	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
PumpStation Equipment Install	2	18.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT

T PumpStation Equipment Install	2	18.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Pipe Pipeline	22	32.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Weir Paving	7	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T Construction Weir Site Prep	2	14.00	0.00	128.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T Construction Weir Excavation	6	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Backfil and Paving	20	32.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T Construction Weir Construction	7	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T Construction Weir Paving	7	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T River Crossing 15	2	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T River Crossing 60	4	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T River Crossing 45	1	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T River Crossing 120	3	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T River Crossing 240	1	24.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Construction Weir Site Prep - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3800e-003	0.0000	5.3800e-003	5.8000e-004	0.0000	5.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0136	0.1364	0.0734	9.0000e-005		8.3400e-003	8.3400e-003		7.6700e-003	7.6700e-003	0.0000	8.8277	8.8277	2.6600e-003	0.0000	8.8836
Total	**0.0136**	**0.1364**	**0.0734**	**9.0000e-005**	**5.3800e-003**	**8.3400e-003**	**0.0137**	**5.8000e-004**	**7.6700e-003**	**8.2500e-003**	**0.0000**	**8.8277**	**8.8277**	**2.6600e-003**	**0.0000**	**8.8836**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.8800e-003	0.0249	0.0195	7.0000e-005	1.6400e-003	3.9000e-004	2.0400e-003	4.5000e-004	3.6000e-004	8.1000e-004	0.0000	6.4939	6.4939	5.0000e-005	0.0000	6.4949
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**2.5400e-003**	**0.0261**	**0.0308**	**9.0000e-005**	**3.7100e-003**	**4.1000e-004**	**4.1300e-003**	**1.0000e-003**	**3.7000e-004**	**1.3700e-003**	**0.0000**	**8.3270**	**8.3270**	**1.5000e-004**	**0.0000**	**8.3300**

3.2 Construction Weir Site Prep - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3800e-003	0.0000	5.3800e-003	5.8000e-004	0.0000	5.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.2700e-003	0.0465	0.0700	9.0000e-005		2.6200e-003	2.6200e-003		2.6200e-003	2.6200e-003	0.0000	8.8277	8.8277	2.6600e-003	0.0000	8.8836
Total	**2.2700e-003**	**0.0465**	**0.0700**	**9.0000e-005**	**5.3800e-003**	**2.6200e-003**	**8.0000e-003**	**5.8000e-004**	**2.6200e-003**	**3.2000e-003**	**0.0000**	**8.8277**	**8.8277**	**2.6600e-003**	**0.0000**	**8.8836**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.8800e-003	0.0249	0.0195	7.0000e-005	1.6400e-003	3.9000e-004	2.0400e-003	4.5000e-004	3.6000e-004	8.1000e-004	0.0000	6.4939	6.4939	5.0000e-005	0.0000	6.4949
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**2.5400e-003**	**0.0261**	**0.0308**	**9.0000e-005**	**3.7100e-003**	**4.1000e-004**	**4.1300e-003**	**1.0000e-003**	**3.7000e-004**	**1.3700e-003**	**0.0000**	**8.3270**	**8.3270**	**1.5000e-004**	**0.0000**	**8.3300**

3.3 Construction Pipe Site Prep - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1481	0.0000	0.1481	0.0671	0.0000	0.0671	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0552	0.6320	0.4372	5.2000e-004		0.0271	0.0271		0.0250	0.0250	0.0000	46.8398	46.8398	0.0133	0.0000	47.1188
Total	**0.0552**	**0.6320**	**0.4372**	**5.2000e-004**	**0.1481**	**0.0271**	**0.1752**	**0.0671**	**0.0250**	**0.0921**	**0.0000**	**46.8398**	**46.8398**	**0.0133**	**0.0000**	**47.1188**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.3375	4.4753	3.5017	0.0128	0.2950	0.0708	0.3658	0.0811	0.0652	0.1462	0.0000	1,166.6675	1,166.6675	8.4700e-003	0.0000	1,166.8454
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	2.5500e-003	0.0245	5.0000e-005	4.5000e-003	3.0000e-005	4.5300e-003	1.2000e-003	3.0000e-005	1.2300e-003	0.0000	3.9805	3.9805	2.1000e-004	0.0000	3.9849
Total	**0.3389**	**4.4778**	**3.5262**	**0.0128**	**0.2995**	**0.0709**	**0.3703**	**0.0823**	**0.0652**	**0.1475**	**0.0000**	**1,170.6480**	**1,170.6480**	**8.6800e-003**	**0.0000**	**1,170.8302**

3.3 Construction Pipe Site Prep - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1481	0.0000	0.1481	0.0671	0.0000	0.0671	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0165	0.2482	0.2684	5.2000e-004		9.4400e-003	9.4400e-003		9.4400e-003	9.4400e-003	0.0000	46.8397	46.8397	0.0133	0.0000	47.1188
Total	**0.0165**	**0.2482**	**0.2684**	**5.2000e-004**	**0.1481**	**9.4400e-003**	**0.1576**	**0.0671**	**9.4400e-003**	**0.0766**	**0.0000**	**46.8397**	**46.8397**	**0.0133**	**0.0000**	**47.1188**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.3375	4.4753	3.5017	0.0128	0.2950	0.0708	0.3658	0.0811	0.0652	0.1462	0.0000	1,166.6675	1,166.6675	8.4700e-003	0.0000	1,166.8454
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	2.5500e-003	0.0245	5.0000e-005	4.5000e-003	3.0000e-005	4.5300e-003	1.2000e-003	3.0000e-005	1.2300e-003	0.0000	3.9805	3.9805	2.1000e-004	0.0000	3.9849
Total	**0.3389**	**4.4778**	**3.5262**	**0.0128**	**0.2995**	**0.0709**	**0.3703**	**0.0823**	**0.0652**	**0.1475**	**0.0000**	**1,170.6480**	**1,170.6480**	**8.6800e-003**	**0.0000**	**1,170.8302**

3.4 PumpStation Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0908	1.0171	0.6076	8.1000e-004		0.0498	0.0498		0.0458	0.0458	0.0000	75.9900	75.9900	0.0229	0.0000	76.4713
Total	**0.0908**	**1.0171**	**0.6076**	**8.1000e-004**	**0.1807**	**0.0498**	**0.2305**	**0.0993**	**0.0458**	**0.1451**	**0.0000**	**75.9900**	**75.9900**	**0.0229**	**0.0000**	**76.4713**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.8000e-004	0.0117	9.1400e-003	3.0000e-005	7.7000e-004	1.8000e-004	9.5000e-004	2.1000e-004	1.7000e-004	3.8000e-004	0.0000	3.0440	3.0440	2.0000e-005	0.0000	3.0445
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**3.4300e-003**	**0.0162**	**0.0527**	**1.3000e-004**	**8.7600e-003**	**2.4000e-004**	**9.0000e-003**	**2.3300e-003**	**2.2000e-004**	**2.5600e-003**	**0.0000**	**10.1146**	**10.1146**	**3.9000e-004**	**0.0000**	**10.1229**

3.4 PumpStation Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0198	0.3923	0.4900	8.1000e-004		0.0177	0.0177		0.0177	0.0177	0.0000	75.9899	75.9899	0.0229	0.0000	76.4712
Total	**0.0198**	**0.3923**	**0.4900**	**8.1000e-004**	**0.1807**	**0.0177**	**0.1984**	**0.0993**	**0.0177**	**0.1170**	**0.0000**	**75.9899**	**75.9899**	**0.0229**	**0.0000**	**76.4712**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.8000e-004	0.0117	9.1400e-003	3.0000e-005	7.7000e-004	1.8000e-004	9.5000e-004	2.1000e-004	1.7000e-004	3.8000e-004	0.0000	3.0440	3.0440	2.0000e-005	0.0000	3.0445
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**3.4300e-003**	**0.0162**	**0.0527**	**1.3000e-004**	**8.7600e-003**	**2.4000e-004**	**9.0000e-003**	**2.3300e-003**	**2.2000e-004**	**2.5600e-003**	**0.0000**	**10.1146**	**10.1146**	**3.9000e-004**	**0.0000**	**10.1229**

3.5 River Crossing 15 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0141	0.1628	0.0758	2.0000e-004		6.1400e-003	6.1400e-003		5.6500e-003	5.6500e-003	0.0000	18.5997	18.5997	5.6100e-003	0.0000	18.7175
Total	**0.0141**	**0.1628**	**0.0758**	**2.0000e-004**	**0.0000**	**6.1400e-003**	**6.1400e-003**	**0.0000**	**5.6500e-003**	**5.6500e-003**	**0.0000**	**18.5997**	**18.5997**	**5.6100e-003**	**0.0000**	**18.7175**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 River Crossing 15 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8300e-003	0.0933	0.1046	2.0000e-004		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	18.5997	18.5997	5.6100e-003	0.0000	18.7175
Total	**4.8300e-003**	**0.0933**	**0.1046**	**2.0000e-004**	**0.0000**	**3.5400e-003**	**3.5400e-003**	**0.0000**	**3.5400e-003**	**3.5400e-003**	**0.0000**	**18.5997**	**18.5997**	**5.6100e-003**	**0.0000**	**18.7175**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 T PumpStation Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0915	0.0000	0.0915	0.0503	0.0000	0.0503	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1739	1.9708	1.0601	1.9800e-003		0.0901	0.0901		0.0829	0.0829	0.0000	186.7886	186.7886	0.0563	0.0000	187.9718
Total	**0.1739**	**1.9708**	**1.0601**	**1.9800e-003**	**0.0915**	**0.0901**	**0.1816**	**0.0503**	**0.0829**	**0.1332**	**0.0000**	**186.7886**	**186.7886**	**0.0563**	**0.0000**	**187.9718**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2600e-003	0.0167	0.0131	5.0000e-005	1.1000e-003	2.6000e-004	1.3700e-003	3.0000e-004	2.4000e-004	5.5000e-004	0.0000	4.3631	4.3631	3.0000e-005	0.0000	4.3638
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8300e-003	6.8000e-003	0.0653	1.4000e-004	0.0120	9.0000e-005	0.0121	3.1800e-003	8.0000e-005	3.2700e-003	0.0000	10.6059	10.6059	5.6000e-004	0.0000	10.6176
Total	**5.0900e-003**	**0.0235**	**0.0784**	**1.9000e-004**	**0.0131**	**3.5000e-004**	**0.0134**	**3.4800e-003**	**3.2000e-004**	**3.8200e-003**	**0.0000**	**14.9689**	**14.9689**	**5.9000e-004**	**0.0000**	**14.9814**

3.6 T PumpStation Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0915	0.0000	0.0915	0.0503	0.0000	0.0503	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0487	0.9552	1.1997	1.9800e-003		0.0416	0.0416		0.0416	0.0416	0.0000	186.7884	186.7884	0.0563	0.0000	187.9716
Total	**0.0487**	**0.9552**	**1.1997**	**1.9800e-003**	**0.0915**	**0.0416**	**0.1331**	**0.0503**	**0.0416**	**0.0919**	**0.0000**	**186.7884**	**186.7884**	**0.0563**	**0.0000**	**187.9716**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2600e-003	0.0167	0.0131	5.0000e-005	1.1000e-003	2.6000e-004	1.3700e-003	3.0000e-004	2.4000e-004	5.5000e-004	0.0000	4.3631	4.3631	3.0000e-005	0.0000	4.3638
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8300e-003	6.8000e-003	0.0653	1.4000e-004	0.0120	9.0000e-005	0.0121	3.1800e-003	8.0000e-005	3.2700e-003	0.0000	10.6059	10.6059	5.6000e-004	0.0000	10.6176
Total	**5.0900e-003**	**0.0235**	**0.0784**	**1.9000e-004**	**0.0131**	**3.5000e-004**	**0.0134**	**3.4800e-003**	**3.2000e-004**	**3.8200e-003**	**0.0000**	**14.9689**	**14.9689**	**5.9000e-004**	**0.0000**	**14.9814**

3.7 Water Truck - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0330	0.3798	0.1769	4.6000e-004		0.0143	0.0143		0.0132	0.0132	0.0000	43.3993	43.3993	0.0131	0.0000	43.6742
Total	**0.0330**	**0.3798**	**0.1769**	**4.6000e-004**	**0.0000**	**0.0143**	**0.0143**	**0.0000**	**0.0132**	**0.0132**	**0.0000**	**43.3993**	**43.3993**	**0.0131**	**0.0000**	**43.6742**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**6.6000e-004**	**1.1800e-003**	**0.0113**	**2.0000e-005**	**2.0700e-003**	**2.0000e-005**	**2.0900e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.8331**	**1.8331**	**1.0000e-004**	**0.0000**	**1.8351**

3.7 Water Truck - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0113	0.2177	0.2440	4.6000e-004		8.2600e-003	8.2600e-003		8.2600e-003	8.2600e-003	0.0000	43.3993	43.3993	0.0131	0.0000	43.6742
Total	**0.0113**	**0.2177**	**0.2440**	**4.6000e-004**	**0.0000**	**8.2600e-003**	**8.2600e-003**	**0.0000**	**8.2600e-003**	**8.2600e-003**	**0.0000**	**43.3993**	**43.3993**	**0.0131**	**0.0000**	**43.6742**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**6.6000e-004**	**1.1800e-003**	**0.0113**	**2.0000e-005**	**2.0700e-003**	**2.0000e-005**	**2.0900e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.8331**	**1.8331**	**1.0000e-004**	**0.0000**	**1.8351**

3.7 Water Truck - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0567	0.6392	0.3046	8.5000e-004		0.0237	0.0237		0.0218	0.0218	0.0000	79.2671	79.2671	0.0243	0.0000	79.7772
Total	**0.0567**	**0.6392**	**0.3046**	**8.5000e-004**	**0.0000**	**0.0237**	**0.0237**	**0.0000**	**0.0218**	**0.0218**	**0.0000**	**79.2671**	**79.2671**	**0.0243**	**0.0000**	**79.7772**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0600e-003	1.9300e-003	0.0183	5.0000e-005	3.8500e-003	3.0000e-005	3.8700e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.2686	3.2686	1.6000e-004	0.0000	3.2720
Total	**1.0600e-003**	**1.9300e-003**	**0.0183**	**5.0000e-005**	**3.8500e-003**	**3.0000e-005**	**3.8700e-003**	**1.0200e-003**	**2.0000e-005**	**1.0500e-003**	**0.0000**	**3.2686**	**3.2686**	**1.6000e-004**	**0.0000**	**3.2720**

3.7 Water Truck - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0209	0.4043	0.4531	8.5000e-004		0.0153	0.0153		0.0153	0.0153	0.0000	79.2670	79.2670	0.0243	0.0000	79.7771
Total	**0.0209**	**0.4043**	**0.4531**	**8.5000e-004**	**0.0000**	**0.0153**	**0.0153**	**0.0000**	**0.0153**	**0.0153**	**0.0000**	**79.2670**	**79.2670**	**0.0243**	**0.0000**	**79.7771**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0600e-003	1.9300e-003	0.0183	5.0000e-005	3.8500e-003	3.0000e-005	3.8700e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.2686	3.2686	1.6000e-004	0.0000	3.2720
Total	**1.0600e-003**	**1.9300e-003**	**0.0183**	**5.0000e-005**	**3.8500e-003**	**3.0000e-005**	**3.8700e-003**	**1.0200e-003**	**2.0000e-005**	**1.0500e-003**	**0.0000**	**3.2686**	**3.2686**	**1.6000e-004**	**0.0000**	**3.2720**

3.7 Water Truck - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0125	0.1346	0.0679	2.1000e-004		4.9100e-003	4.9100e-003		4.5200e-003	4.5200e-003	0.0000	19.5034	19.5034	6.0700e-003	0.0000	19.6309
Total	**0.0125**	**0.1346**	**0.0679**	**2.1000e-004**	**0.0000**	**4.9100e-003**	**4.9100e-003**	**0.0000**	**4.5200e-003**	**4.5200e-003**	**0.0000**	**19.5034**	**19.5034**	**6.0700e-003**	**0.0000**	**19.6309**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	4.3000e-004	4.0700e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.7877	0.7877	4.0000e-005	0.0000	0.7885
Total	**2.3000e-004**	**4.3000e-004**	**4.0700e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.7877**	**0.7877**	**4.0000e-005**	**0.0000**	**0.7885**

3.7 Water Truck - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2300e-003	0.1011	0.1133	2.1000e-004		3.8300e-003	3.8300e-003		3.8300e-003	3.8300e-003	0.0000	19.5033	19.5033	6.0700e-003	0.0000	19.6308
Total	**5.2300e-003**	**0.1011**	**0.1133**	**2.1000e-004**	**0.0000**	**3.8300e-003**	**3.8300e-003**	**0.0000**	**3.8300e-003**	**3.8300e-003**	**0.0000**	**19.5033**	**19.5033**	**6.0700e-003**	**0.0000**	**19.6308**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	4.3000e-004	4.0700e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.7877	0.7877	4.0000e-005	0.0000	0.7885
Total	**2.3000e-004**	**4.3000e-004**	**4.0700e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.7877**	**0.7877**	**4.0000e-005**	**0.0000**	**0.7885**

3.8 River Crossing 60 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0683	0.7562	0.4599	5.6000e-004		0.0374	0.0374		0.0344	0.0344	0.0000	53.0463	53.0463	0.0160	0.0000	53.3823
Total	**0.0683**	**0.7562**	**0.4599**	**5.6000e-004**	**0.1807**	**0.0374**	**0.2181**	**0.0993**	**0.0344**	**0.1338**	**0.0000**	**53.0463**	**53.0463**	**0.0160**	**0.0000**	**53.3823**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.8 River Crossing 60 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0138	0.2765	0.3244	5.6000e-004		0.0125	0.0125		0.0125	0.0125	0.0000	53.0463	53.0463	0.0160	0.0000	53.3823
Total	**0.0138**	**0.2765**	**0.3244**	**5.6000e-004**	**0.1807**	**0.0125**	**0.1932**	**0.0993**	**0.0125**	**0.1118**	**0.0000**	**53.0463**	**53.0463**	**0.0160**	**0.0000**	**53.3823**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.9 T Water Truck - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0330	0.3798	0.1769	4.6000e-004		0.0143	0.0143		0.0132	0.0132	0.0000	43.3993	43.3993	0.0131	0.0000	43.6742
Total	**0.0330**	**0.3798**	**0.1769**	**4.6000e-004**	**0.0000**	**0.0143**	**0.0143**	**0.0000**	**0.0132**	**0.0132**	**0.0000**	**43.3993**	**43.3993**	**0.0131**	**0.0000**	**43.6742**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**6.6000e-004**	**1.1800e-003**	**0.0113**	**2.0000e-005**	**2.0700e-003**	**2.0000e-005**	**2.0900e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.8331**	**1.8331**	**1.0000e-004**	**0.0000**	**1.8351**

3.9 T Water Truck - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0113	0.2177	0.2440	4.6000e-004		8.2600e-003	8.2600e-003		8.2600e-003	8.2600e-003	0.0000	43.3993	43.3993	0.0131	0.0000	43.6742
Total	**0.0113**	**0.2177**	**0.2440**	**4.6000e-004**	**0.0000**	**8.2600e-003**	**8.2600e-003**	**0.0000**	**8.2600e-003**	**8.2600e-003**	**0.0000**	**43.3993**	**43.3993**	**0.0131**	**0.0000**	**43.6742**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**6.6000e-004**	**1.1800e-003**	**0.0113**	**2.0000e-005**	**2.0700e-003**	**2.0000e-005**	**2.0900e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.8331**	**1.8331**	**1.0000e-004**	**0.0000**	**1.8351**

3.9 T Water Truck - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0567	0.6392	0.3046	8.5000e-004		0.0237	0.0237		0.0218	0.0218	0.0000	79.2671	79.2671	0.0243	0.0000	79.7772
Total	**0.0567**	**0.6392**	**0.3046**	**8.5000e-004**	**0.0000**	**0.0237**	**0.0237**	**0.0000**	**0.0218**	**0.0218**	**0.0000**	**79.2671**	**79.2671**	**0.0243**	**0.0000**	**79.7772**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0600e-003	1.9300e-003	0.0183	5.0000e-005	3.8500e-003	3.0000e-005	3.8700e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.2686	3.2686	1.6000e-004	0.0000	3.2720
Total	**1.0600e-003**	**1.9300e-003**	**0.0183**	**5.0000e-005**	**3.8500e-003**	**3.0000e-005**	**3.8700e-003**	**1.0200e-003**	**2.0000e-005**	**1.0500e-003**	**0.0000**	**3.2686**	**3.2686**	**1.6000e-004**	**0.0000**	**3.2720**

3.9 T Water Truck - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0209	0.4043	0.4531	8.5000e-004		0.0153	0.0153		0.0153	0.0153	0.0000	79.2670	79.2670	0.0243	0.0000	79.7771
Total	**0.0209**	**0.4043**	**0.4531**	**8.5000e-004**	**0.0000**	**0.0153**	**0.0153**	**0.0000**	**0.0153**	**0.0153**	**0.0000**	**79.2670**	**79.2670**	**0.0243**	**0.0000**	**79.7771**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0600e-003	1.9300e-003	0.0183	5.0000e-005	3.8500e-003	3.0000e-005	3.8700e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.2686	3.2686	1.6000e-004	0.0000	3.2720
Total	**1.0600e-003**	**1.9300e-003**	**0.0183**	**5.0000e-005**	**3.8500e-003**	**3.0000e-005**	**3.8700e-003**	**1.0200e-003**	**2.0000e-005**	**1.0500e-003**	**0.0000**	**3.2686**	**3.2686**	**1.6000e-004**	**0.0000**	**3.2720**

3.9 T Water Truck - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0125	0.1346	0.0679	2.1000e-004		4.9100e-003	4.9100e-003		4.5200e-003	4.5200e-003	0.0000	19.5034	19.5034	6.0700e-003	0.0000	19.6309
Total	**0.0125**	**0.1346**	**0.0679**	**2.1000e-004**	**0.0000**	**4.9100e-003**	**4.9100e-003**	**0.0000**	**4.5200e-003**	**4.5200e-003**	**0.0000**	**19.5034**	**19.5034**	**6.0700e-003**	**0.0000**	**19.6309**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	4.3000e-004	4.0700e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.7877	0.7877	4.0000e-005	0.0000	0.7885
Total	**2.3000e-004**	**4.3000e-004**	**4.0700e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.7877**	**0.7877**	**4.0000e-005**	**0.0000**	**0.7885**

3.9 T Water Truck - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2300e-003	0.1011	0.1133	2.1000e-004		3.8300e-003	3.8300e-003		3.8300e-003	3.8300e-003	0.0000	19.5033	19.5033	6.0700e-003	0.0000	19.6308
Total	**5.2300e-003**	**0.1011**	**0.1133**	**2.1000e-004**	**0.0000**	**3.8300e-003**	**3.8300e-003**	**0.0000**	**3.8300e-003**	**3.8300e-003**	**0.0000**	**19.5033**	**19.5033**	**6.0700e-003**	**0.0000**	**19.6308**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	4.3000e-004	4.0700e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.7877	0.7877	4.0000e-005	0.0000	0.7885
Total	**2.3000e-004**	**4.3000e-004**	**4.0700e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.7877**	**0.7877**	**4.0000e-005**	**0.0000**	**0.7885**

3.10 River Crossing 45 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6600e-003	0.0455	0.0396	6.0000e-005		2.6400e-003	2.6400e-003		2.4200e-003	2.4200e-003	0.0000	5.3099	5.3099	1.6000e-003	0.0000	5.3435
Total	**3.6600e-003**	**0.0455**	**0.0396**	**6.0000e-005**		**2.6400e-003**	**2.6400e-003**		**2.4200e-003**	**2.4200e-003**	**0.0000**	**5.3099**	**5.3099**	**1.6000e-003**	**0.0000**	**5.3435**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.10 River Crossing 45 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.4300e-003	0.0326	0.0441	6.0000e-005		2.2900e-003	2.2900e-003		2.2900e-003	2.2900e-003	0.0000	5.3099	5.3099	1.6000e-003	0.0000	5.3435
Total	**1.4300e-003**	**0.0326**	**0.0441**	**6.0000e-005**		**2.2900e-003**	**2.2900e-003**		**2.2900e-003**	**2.2900e-003**	**0.0000**	**5.3099**	**5.3099**	**1.6000e-003**	**0.0000**	**5.3435**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.11 River Crossing 120 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0748	0.8573	0.5630	1.0300e-003		0.0384	0.0384		0.0354	0.0354	0.0000	97.0647	97.0647	0.0293	0.0000	97.6795
Total	**0.0748**	**0.8573**	**0.5630**	**1.0300e-003**		**0.0384**	**0.0384**		**0.0354**	**0.0354**	**0.0000**	**97.0647**	**97.0647**	**0.0293**	**0.0000**	**97.6795**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.11 River Crossing 120 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0253	0.4889	0.6912	1.0300e-003		0.0217	0.0217		0.0217	0.0217	0.0000	97.0646	97.0646	0.0293	0.0000	97.6794
Total	**0.0253**	**0.4889**	**0.6912**	**1.0300e-003**		**0.0217**	**0.0217**		**0.0217**	**0.0217**	**0.0000**	**97.0646**	**97.0646**	**0.0293**	**0.0000**	**97.6794**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.12 River Crossing 240 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0252	0.2986	0.1045	2.0000e-004		0.0136	0.0136		0.0125	0.0125	0.0000	18.6138	18.6138	5.6100e-003	0.0000	18.7317
Total	**0.0252**	**0.2986**	**0.1045**	**2.0000e-004**		**0.0136**	**0.0136**		**0.0125**	**0.0125**	**0.0000**	**18.6138**	**18.6138**	**5.6100e-003**	**0.0000**	**18.7317**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9500e-003	0.0141	0.1354	3.0000e-004	0.0249	1.8000e-004	0.0250	6.6100e-003	1.7000e-004	6.7700e-003	0.0000	21.9973	21.9973	1.1600e-003	0.0000	22.0217
Total	**7.9500e-003**	**0.0141**	**0.1354**	**3.0000e-004**	**0.0249**	**1.8000e-004**	**0.0250**	**6.6100e-003**	**1.7000e-004**	**6.7700e-003**	**0.0000**	**21.9973**	**21.9973**	**1.1600e-003**	**0.0000**	**22.0217**

3.12 River Crossing 240 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8500e-003	0.0939	0.1052	2.0000e-004		3.5600e-003	3.5600e-003		3.5600e-003	3.5600e-003	0.0000	18.6138	18.6138	5.6100e-003	0.0000	18.7317
Total	**4.8500e-003**	**0.0939**	**0.1052**	**2.0000e-004**		**3.5600e-003**	**3.5600e-003**		**3.5600e-003**	**3.5600e-003**	**0.0000**	**18.6138**	**18.6138**	**5.6100e-003**	**0.0000**	**18.7317**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9500e-003	0.0141	0.1354	3.0000e-004	0.0249	1.8000e-004	0.0250	6.6100e-003	1.7000e-004	6.7700e-003	0.0000	21.9973	21.9973	1.1600e-003	0.0000	22.0217
Total	**7.9500e-003**	**0.0141**	**0.1354**	**3.0000e-004**	**0.0249**	**1.8000e-004**	**0.0250**	**6.6100e-003**	**1.7000e-004**	**6.7700e-003**	**0.0000**	**21.9973**	**21.9973**	**1.1600e-003**	**0.0000**	**22.0217**

3.12 River Crossing 240 - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0178	0.2116	0.0758	1.6000e-004		9.4300e-003	9.4300e-003		8.6800e-003	8.6800e-003	0.0000	14.4007	14.4007	4.4100e-003	0.0000	14.4934
Total	**0.0178**	**0.2116**	**0.0758**	**1.6000e-004**		**9.4300e-003**	**9.4300e-003**		**8.6800e-003**	**8.6800e-003**	**0.0000**	**14.4007**	**14.4007**	**4.4100e-003**	**0.0000**	**14.4934**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3600e-003	9.8000e-003	0.0931	2.3000e-004	0.0195	1.4000e-004	0.0197	5.1900e-003	1.3000e-004	5.3200e-003	0.0000	16.5943	16.5943	8.3000e-004	0.0000	16.6117
Total	**5.3600e-003**	**9.8000e-003**	**0.0931**	**2.3000e-004**	**0.0195**	**1.4000e-004**	**0.0197**	**5.1900e-003**	**1.3000e-004**	**5.3200e-003**	**0.0000**	**16.5943**	**16.5943**	**8.3000e-004**	**0.0000**	**16.6117**

3.12 River Crossing 240 - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8100e-003	0.0738	0.0827	1.6000e-004		2.8000e-003	2.8000e-003		2.8000e-003	2.8000e-003	0.0000	14.4007	14.4007	4.4100e-003	0.0000	14.4933
Total	**3.8100e-003**	**0.0738**	**0.0827**	**1.6000e-004**		**2.8000e-003**	**2.8000e-003**		**2.8000e-003**	**2.8000e-003**	**0.0000**	**14.4007**	**14.4007**	**4.4100e-003**	**0.0000**	**14.4933**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3600e-003	9.8000e-003	0.0931	2.3000e-004	0.0195	1.4000e-004	0.0197	5.1900e-003	1.3000e-004	5.3200e-003	0.0000	16.5943	16.5943	8.3000e-004	0.0000	16.6117
Total	**5.3600e-003**	**9.8000e-003**	**0.0931**	**2.3000e-004**	**0.0195**	**1.4000e-004**	**0.0197**	**5.1900e-003**	**1.3000e-004**	**5.3200e-003**	**0.0000**	**16.5943**	**16.5943**	**8.3000e-004**	**0.0000**	**16.6117**

3.13 Construction Pipe Trenching - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5485	6.2075	4.0604	5.1500e-003		0.2955	0.2955		0.2723	0.2723	0.0000	476.8165	476.8165	0.1400	0.0000	479.7569
Total	**0.5485**	**6.2075**	**4.0604**	**5.1500e-003**		**0.2955**	**0.2955**		**0.2723**	**0.2723**	**0.0000**	**476.8165**	**476.8165**	**0.1400**	**0.0000**	**479.7569**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5100e-003	0.0116	0.1109	2.4000e-004	0.0204	1.5000e-004	0.0205	5.4100e-003	1.4000e-004	5.5500e-003	0.0000	18.0169	18.0169	9.5000e-004	0.0000	18.0368
Total	**6.5100e-003**	**0.0116**	**0.1109**	**2.4000e-004**	**0.0204**	**1.5000e-004**	**0.0205**	**5.4100e-003**	**1.4000e-004**	**5.5500e-003**	**0.0000**	**18.0169**	**18.0169**	**9.5000e-004**	**0.0000**	**18.0368**

3.13 Construction Pipe Trenching - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1436	2.4990	3.0471	5.1500e-003		0.1094	0.1094		0.1094	0.1094	0.0000	476.8159	476.8159	0.1400	0.0000	479.7563
Total	**0.1436**	**2.4990**	**3.0471**	**5.1500e-003**		**0.1094**	**0.1094**		**0.1094**	**0.1094**	**0.0000**	**476.8159**	**476.8159**	**0.1400**	**0.0000**	**479.7563**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5100e-003	0.0116	0.1109	2.4000e-004	0.0204	1.5000e-004	0.0205	5.4100e-003	1.4000e-004	5.5500e-003	0.0000	18.0169	18.0169	9.5000e-004	0.0000	18.0368
Total	**6.5100e-003**	**0.0116**	**0.1109**	**2.4000e-004**	**0.0204**	**1.5000e-004**	**0.0205**	**5.4100e-003**	**1.4000e-004**	**5.5500e-003**	**0.0000**	**18.0169**	**18.0169**	**9.5000e-004**	**0.0000**	**18.0368**

3.14 Construction Weir Excavation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0334	0.3256	0.2220	4.0000e-004		0.0195	0.0195		0.0185	0.0185	0.0000	36.5032	36.5032	8.8100e-003	0.0000	36.6882
Total	**0.0334**	**0.3256**	**0.2220**	**4.0000e-004**	**0.0151**	**0.0195**	**0.0345**	**8.2800e-003**	**0.0185**	**0.0268**	**0.0000**	**36.5032**	**36.5032**	**8.8100e-003**	**0.0000**	**36.6882**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3200e-003	2.3500e-003	0.0226	5.0000e-005	4.1400e-003	3.0000e-005	4.1700e-003	1.1000e-003	3.0000e-005	1.1300e-003	0.0000	3.6662	3.6662	1.9000e-004	0.0000	3.6703
Total	**1.3200e-003**	**2.3500e-003**	**0.0226**	**5.0000e-005**	**4.1400e-003**	**3.0000e-005**	**4.1700e-003**	**1.1000e-003**	**3.0000e-005**	**1.1300e-003**	**0.0000**	**3.6662**	**3.6662**	**1.9000e-004**	**0.0000**	**3.6703**

3.14 Construction Weir Excavation - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2300e-003	0.1951	0.2497	4.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	36.5032	36.5032	8.8100e-003	0.0000	36.6882
Total	**9.2300e-003**	**0.1951**	**0.2497**	**4.0000e-004**	**0.0151**	**0.0110**	**0.0261**	**8.2800e-003**	**0.0110**	**0.0193**	**0.0000**	**36.5032**	**36.5032**	**8.8100e-003**	**0.0000**	**36.6882**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3200e-003	2.3500e-003	0.0226	5.0000e-005	4.1400e-003	3.0000e-005	4.1700e-003	1.1000e-003	3.0000e-005	1.1300e-003	0.0000	3.6662	3.6662	1.9000e-004	0.0000	3.6703
Total	**1.3200e-003**	**2.3500e-003**	**0.0226**	**5.0000e-005**	**4.1400e-003**	**3.0000e-005**	**4.1700e-003**	**1.1000e-003**	**3.0000e-005**	**1.1300e-003**	**0.0000**	**3.6662**	**3.6662**	**1.9000e-004**	**0.0000**	**3.6703**

3.15 Construction Weir Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0403	0.3832	0.2373	3.4000e-004		0.0265	0.0265		0.0247	0.0247	0.0000	31.3256	31.3256	8.5300e-003	0.0000	31.5047
Total	**0.0403**	**0.3832**	**0.2373**	**3.4000e-004**		**0.0265**	**0.0265**		**0.0247**	**0.0247**	**0.0000**	**31.3256**	**31.3256**	**8.5300e-003**	**0.0000**	**31.5047**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6600e-003	2.9400e-003	0.0282	6.0000e-005	5.1800e-003	4.0000e-005	5.2200e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.5828	4.5828	2.4000e-004	0.0000	4.5879
Total	**1.6600e-003**	**2.9400e-003**	**0.0282**	**6.0000e-005**	**5.1800e-003**	**4.0000e-005**	**5.2200e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.5828**	**4.5828**	**2.4000e-004**	**0.0000**	**4.5879**

3.15 Construction Weir Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.0100e-003	0.1769	0.2312	3.4000e-004		0.0113	0.0113		0.0113	0.0113	0.0000	31.3255	31.3255	8.5300e-003	0.0000	31.5047
Total	**8.0100e-003**	**0.1769**	**0.2312**	**3.4000e-004**		**0.0113**	**0.0113**		**0.0113**	**0.0113**	**0.0000**	**31.3255**	**31.3255**	**8.5300e-003**	**0.0000**	**31.5047**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6600e-003	2.9400e-003	0.0282	6.0000e-005	5.1800e-003	4.0000e-005	5.2200e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.5828	4.5828	2.4000e-004	0.0000	4.5879
Total	**1.6600e-003**	**2.9400e-003**	**0.0282**	**6.0000e-005**	**5.1800e-003**	**4.0000e-005**	**5.2200e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.5828**	**4.5828**	**2.4000e-004**	**0.0000**	**4.5879**

3.16 PumpStation Equipment Install - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1765	0.0585	1.3000e-004		7.4600e-003	7.4600e-003		6.8600e-003	6.8600e-003	0.0000	12.3072	12.3072	3.7100e-003	0.0000	12.3851
Total	**0.0145**	**0.1765**	**0.0585**	**1.3000e-004**		**7.4600e-003**	**7.4600e-003**		**6.8600e-003**	**6.8600e-003**	**0.0000**	**12.3072**	**12.3072**	**3.7100e-003**	**0.0000**	**12.3851**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**2.5500e-003**	**4.5400e-003**	**0.0435**	**1.0000e-004**	**7.9900e-003**	**6.0000e-005**	**8.0500e-003**	**2.1200e-003**	**5.0000e-005**	**2.1800e-003**	**0.0000**	**7.0706**	**7.0706**	**3.7000e-004**	**0.0000**	**7.0784**

3.16 PumpStation Equipment Install - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.2200e-003	0.0622	0.0697	1.3000e-004		2.3600e-003	2.3600e-003		2.3600e-003	2.3600e-003	0.0000	12.3072	12.3072	3.7100e-003	0.0000	12.3851
Total	**3.2200e-003**	**0.0622**	**0.0697**	**1.3000e-004**		**2.3600e-003**	**2.3600e-003**		**2.3600e-003**	**2.3600e-003**	**0.0000**	**12.3072**	**12.3072**	**3.7100e-003**	**0.0000**	**12.3851**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**2.5500e-003**	**4.5400e-003**	**0.0435**	**1.0000e-004**	**7.9900e-003**	**6.0000e-005**	**8.0500e-003**	**2.1200e-003**	**5.0000e-005**	**2.1800e-003**	**0.0000**	**7.0706**	**7.0706**	**3.7000e-004**	**0.0000**	**7.0784**

3.17 T PumpStation Equipment Install - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0121	0.1470	0.0488	1.1000e-004		6.2200e-003	6.2200e-003		5.7200e-003	5.7200e-003	0.0000	10.2560	10.2560	3.0900e-003	0.0000	10.3209
Total	**0.0121**	**0.1470**	**0.0488**	**1.1000e-004**		**6.2200e-003**	**6.2200e-003**		**5.7200e-003**	**5.7200e-003**	**0.0000**	**10.2560**	**10.2560**	**3.0900e-003**	**0.0000**	**10.3209**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1300e-003	3.7800e-003	0.0363	8.0000e-005	6.6600e-003	5.0000e-005	6.7100e-003	1.7700e-003	4.0000e-005	1.8100e-003	0.0000	5.8921	5.8921	3.1000e-004	0.0000	5.8987
Total	**2.1300e-003**	**3.7800e-003**	**0.0363**	**8.0000e-005**	**6.6600e-003**	**5.0000e-005**	**6.7100e-003**	**1.7700e-003**	**4.0000e-005**	**1.8100e-003**	**0.0000**	**5.8921**	**5.8921**	**3.1000e-004**	**0.0000**	**5.8987**

3.17 T PumpStation Equipment Install - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.6800e-003	0.0518	0.0581	1.1000e-004		1.9700e-003	1.9700e-003		1.9700e-003	1.9700e-003	0.0000	10.2560	10.2560	3.0900e-003	0.0000	10.3209
Total	**2.6800e-003**	**0.0518**	**0.0581**	**1.1000e-004**		**1.9700e-003**	**1.9700e-003**		**1.9700e-003**	**1.9700e-003**	**0.0000**	**10.2560**	**10.2560**	**3.0900e-003**	**0.0000**	**10.3209**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1300e-003	3.7800e-003	0.0363	8.0000e-005	6.6600e-003	5.0000e-005	6.7100e-003	1.7700e-003	4.0000e-005	1.8100e-003	0.0000	5.8921	5.8921	3.1000e-004	0.0000	5.8987
Total	**2.1300e-003**	**3.7800e-003**	**0.0363**	**8.0000e-005**	**6.6600e-003**	**5.0000e-005**	**6.7100e-003**	**1.7700e-003**	**4.0000e-005**	**1.8100e-003**	**0.0000**	**5.8921**	**5.8921**	**3.1000e-004**	**0.0000**	**5.8987**

3.17 T PumpStation Equipment Install - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.2100e-003	0.0267	9.1300e-003	2.0000e-005		1.1100e-003	1.1100e-003		1.0200e-003	1.0200e-003	0.0000	2.0198	2.0198	6.2000e-004	0.0000	2.0328
Total	**2.2100e-003**	**0.0267**	**9.1300e-003**	**2.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.0200e-003**	**1.0200e-003**	**0.0000**	**2.0198**	**2.0198**	**6.2000e-004**	**0.0000**	**2.0328**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	6.7000e-004	6.3500e-003	2.0000e-005	1.3300e-003	1.0000e-005	1.3400e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.1314	1.1314	6.0000e-005	0.0000	1.1326
Total	**3.7000e-004**	**6.7000e-004**	**6.3500e-003**	**2.0000e-005**	**1.3300e-003**	**1.0000e-005**	**1.3400e-003**	**3.5000e-004**	**1.0000e-005**	**3.6000e-004**	**0.0000**	**1.1314**	**1.1314**	**6.0000e-005**	**0.0000**	**1.1326**

3.17 T PumpStation Equipment Install - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.4000e-004	0.0104	0.0116	2.0000e-005		3.9000e-004	3.9000e-004		3.9000e-004	3.9000e-004	0.0000	2.0198	2.0198	6.2000e-004	0.0000	2.0327
Total	**5.4000e-004**	**0.0104**	**0.0116**	**2.0000e-005**		**3.9000e-004**	**3.9000e-004**		**3.9000e-004**	**3.9000e-004**	**0.0000**	**2.0198**	**2.0198**	**6.2000e-004**	**0.0000**	**2.0327**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	6.7000e-004	6.3500e-003	2.0000e-005	1.3300e-003	1.0000e-005	1.3400e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.1314	1.1314	6.0000e-005	0.0000	1.1326
Total	**3.7000e-004**	**6.7000e-004**	**6.3500e-003**	**2.0000e-005**	**1.3300e-003**	**1.0000e-005**	**1.3400e-003**	**3.5000e-004**	**1.0000e-005**	**3.6000e-004**	**0.0000**	**1.1314**	**1.1314**	**6.0000e-005**	**0.0000**	**1.1326**

3.18 Construction Pipe Pipeline - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1858	2.0562	1.2640	1.7200e-003		0.1034	0.1034		0.0953	0.0953	0.0000	158.6940	158.6940	0.0463	0.0000	159.6667
Total	**0.1858**	**2.0562**	**1.2640**	**1.7200e-003**		**0.1034**	**0.1034**		**0.0953**	**0.0953**	**0.0000**	**158.6940**	**158.6940**	**0.0463**	**0.0000**	**159.6667**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6500e-003	4.7000e-003	0.0452	1.0000e-004	8.2900e-003	6.0000e-005	8.3500e-003	2.2000e-003	6.0000e-005	2.2600e-003	0.0000	7.3324	7.3324	3.9000e-004	0.0000	7.3406
Total	**2.6500e-003**	**4.7000e-003**	**0.0452**	**1.0000e-004**	**8.2900e-003**	**6.0000e-005**	**8.3500e-003**	**2.2000e-003**	**6.0000e-005**	**2.2600e-003**	**0.0000**	**7.3324**	**7.3324**	**3.9000e-004**	**0.0000**	**7.3406**

3.18 Construction Pipe Pipeline - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0493	0.8504	1.0271	1.7200e-003		0.0395	0.0395		0.0395	0.0395	0.0000	158.6938	158.6938	0.0463	0.0000	159.6665
Total	**0.0493**	**0.8504**	**1.0271**	**1.7200e-003**		**0.0395**	**0.0395**		**0.0395**	**0.0395**	**0.0000**	**158.6938**	**158.6938**	**0.0463**	**0.0000**	**159.6665**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6500e-003	4.7000e-003	0.0452	1.0000e-004	8.2900e-003	6.0000e-005	8.3500e-003	2.2000e-003	6.0000e-005	2.2600e-003	0.0000	7.3324	7.3324	3.9000e-004	0.0000	7.3406
Total	**2.6500e-003**	**4.7000e-003**	**0.0452**	**1.0000e-004**	**8.2900e-003**	**6.0000e-005**	**8.3500e-003**	**2.2000e-003**	**6.0000e-005**	**2.2600e-003**	**0.0000**	**7.3324**	**7.3324**	**3.9000e-004**	**0.0000**	**7.3406**

3.18 Construction Pipe Pipeline - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1102	1.2072	0.7552	1.0800e-003		0.0605	0.0605		0.0557	0.0557	0.0000	98.2246	98.2246	0.0291	0.0000	98.8357
Total	**0.1102**	**1.2072**	**0.7552**	**1.0800e-003**		**0.0605**	**0.0605**		**0.0557**	**0.0557**	**0.0000**	**98.2246**	**98.2246**	**0.0291**	**0.0000**	**98.8357**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4300e-003	2.6100e-003	0.0248	6.0000e-005	5.2100e-003	4.0000e-005	5.2400e-003	1.3800e-003	3.0000e-005	1.4200e-003	0.0000	4.4252	4.4252	2.2000e-004	0.0000	4.4298
Total	**1.4300e-003**	**2.6100e-003**	**0.0248**	**6.0000e-005**	**5.2100e-003**	**4.0000e-005**	**5.2400e-003**	**1.3800e-003**	**3.0000e-005**	**1.4200e-003**	**0.0000**	**4.4252**	**4.4252**	**2.2000e-004**	**0.0000**	**4.4298**

3.18 Construction Pipe Pipeline - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0310	0.5346	0.6456	1.0800e-003		0.0248	0.0248		0.0248	0.0248	0.0000	98.2245	98.2245	0.0291	0.0000	98.8356
Total	**0.0310**	**0.5346**	**0.6456**	**1.0800e-003**		**0.0248**	**0.0248**		**0.0248**	**0.0248**	**0.0000**	**98.2245**	**98.2245**	**0.0291**	**0.0000**	**98.8356**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4300e-003	2.6100e-003	0.0248	6.0000e-005	5.2100e-003	4.0000e-005	5.2400e-003	1.3800e-003	3.0000e-005	1.4200e-003	0.0000	4.4252	4.4252	2.2000e-004	0.0000	4.4298
Total	**1.4300e-003**	**2.6100e-003**	**0.0248**	**6.0000e-005**	**5.2100e-003**	**4.0000e-005**	**5.2400e-003**	**1.3800e-003**	**3.0000e-005**	**1.4200e-003**	**0.0000**	**4.4252**	**4.4252**	**2.2000e-004**	**0.0000**	**4.4298**

3.19 Construction Weir Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.6000e-003	0.0531	0.0365	6.0000e-005		3.3000e-003	3.3000e-003		3.0600e-003	3.0600e-003	0.0000	4.9151	4.9151	1.3500e-003	0.0000	4.9433
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.6000e-003**	**0.0531**	**0.0365**	**6.0000e-005**		**3.3000e-003**	**3.3000e-003**		**3.0600e-003**	**3.0600e-003**	**0.0000**	**4.9151**	**4.9151**	**1.3500e-003**	**0.0000**	**4.9433**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	5.9000e-004	5.6400e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9166	0.9166	5.0000e-005	0.0000	0.9176
Total	**3.3000e-004**	**5.9000e-004**	**5.6400e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9166**	**0.9166**	**5.0000e-005**	**0.0000**	**0.9176**

3.19 Construction Weir Paving - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.9800e-003	0.0290	0.0385	6.0000e-005		1.6600e-003	1.6600e-003		1.6600e-003	1.6600e-003	0.0000	4.9151	4.9151	1.3500e-003	0.0000	4.9433
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.9800e-003**	**0.0290**	**0.0385**	**6.0000e-005**		**1.6600e-003**	**1.6600e-003**		**1.6600e-003**	**1.6600e-003**	**0.0000**	**4.9151**	**4.9151**	**1.3500e-003**	**0.0000**	**4.9433**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	5.9000e-004	5.6400e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9166	0.9166	5.0000e-005	0.0000	0.9176
Total	**3.3000e-004**	**5.9000e-004**	**5.6400e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9166**	**0.9166**	**5.0000e-005**	**0.0000**	**0.9176**

3.20 T Construction Weir Site Prep - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.0300e-003	0.0000	4.0300e-003	4.4000e-004	0.0000	4.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0102	0.1023	0.0551	7.0000e-005		6.2500e-003	6.2500e-003		5.7500e-003	5.7500e-003	0.0000	6.6208	6.6208	2.0000e-003	0.0000	6.6627
Total	**0.0102**	**0.1023**	**0.0551**	**7.0000e-005**	**4.0300e-003**	**6.2500e-003**	**0.0103**	**4.4000e-004**	**5.7500e-003**	**6.1900e-003**	**0.0000**	**6.6208**	**6.6208**	**2.0000e-003**	**0.0000**	**6.6627**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4100e-003	0.0187	0.0146	5.0000e-005	1.5400e-003	3.0000e-004	1.8300e-003	4.1000e-004	2.7000e-004	6.9000e-004	0.0000	4.8704	4.8704	4.0000e-005	0.0000	4.8712
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	8.8000e-004	8.4600e-003	2.0000e-005	1.5500e-003	1.0000e-005	1.5700e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.3748	1.3748	7.0000e-005	0.0000	1.3764
Total	**1.9100e-003**	**0.0196**	**0.0231**	**7.0000e-005**	**3.0900e-003**	**3.1000e-004**	**3.4000e-003**	**8.2000e-004**	**2.8000e-004**	**1.1100e-003**	**0.0000**	**6.2453**	**6.2453**	**1.1000e-004**	**0.0000**	**6.2475**

3.20 T Construction Weir Site Prep - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.0300e-003	0.0000	4.0300e-003	4.4000e-004	0.0000	4.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7000e-003	0.0349	0.0525	7.0000e-005		1.9700e-003	1.9700e-003		1.9700e-003	1.9700e-003	0.0000	6.6208	6.6208	2.0000e-003	0.0000	6.6627
Total	**1.7000e-003**	**0.0349**	**0.0525**	**7.0000e-005**	**4.0300e-003**	**1.9700e-003**	**6.0000e-003**	**4.4000e-004**	**1.9700e-003**	**2.4100e-003**	**0.0000**	**6.6208**	**6.6208**	**2.0000e-003**	**0.0000**	**6.6627**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4100e-003	0.0187	0.0146	5.0000e-005	1.5400e-003	3.0000e-004	1.8300e-003	4.1000e-004	2.7000e-004	6.9000e-004	0.0000	4.8704	4.8704	4.0000e-005	0.0000	4.8712
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	8.8000e-004	8.4600e-003	2.0000e-005	1.5500e-003	1.0000e-005	1.5700e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.3748	1.3748	7.0000e-005	0.0000	1.3764
Total	**1.9100e-003**	**0.0196**	**0.0231**	**7.0000e-005**	**3.0900e-003**	**3.1000e-004**	**3.4000e-003**	**8.2000e-004**	**2.8000e-004**	**1.1100e-003**	**0.0000**	**6.2453**	**6.2453**	**1.1000e-004**	**0.0000**	**6.2475**

3.21 T Construction Weir Excavation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1800e-003	0.0407	0.0278	5.0000e-005		2.4300e-003	2.4300e-003		2.3100e-003	2.3100e-003	0.0000	4.5629	4.5629	1.1000e-003	0.0000	4.5860
Total	**4.1800e-003**	**0.0407**	**0.0278**	**5.0000e-005**	**0.0151**	**2.4300e-003**	**0.0175**	**8.2800e-003**	**2.3100e-003**	**0.0106**	**0.0000**	**4.5629**	**4.5629**	**1.1000e-003**	**0.0000**	**4.5860**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	2.9000e-004	2.8200e-003	1.0000e-005	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4583	0.4583	2.0000e-005	0.0000	0.4588
Total	**1.7000e-004**	**2.9000e-004**	**2.8200e-003**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4583**	**0.4583**	**2.0000e-005**	**0.0000**	**0.4588**

3.21 T Construction Weir Excavation - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1500e-003	0.0244	0.0312	5.0000e-005		1.3800e-003	1.3800e-003		1.3800e-003	1.3800e-003	0.0000	4.5629	4.5629	1.1000e-003	0.0000	4.5860
Total	**1.1500e-003**	**0.0244**	**0.0312**	**5.0000e-005**	**0.0151**	**1.3800e-003**	**0.0164**	**8.2800e-003**	**1.3800e-003**	**9.6600e-003**	**0.0000**	**4.5629**	**4.5629**	**1.1000e-003**	**0.0000**	**4.5860**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	2.9000e-004	2.8200e-003	1.0000e-005	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4583	0.4583	2.0000e-005	0.0000	0.4588
Total	**1.7000e-004**	**2.9000e-004**	**2.8200e-003**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4583**	**0.4583**	**2.0000e-005**	**0.0000**	**0.4588**

3.21 T Construction Weir Excavation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0268	0.2607	0.1913	3.5000e-004		0.0153	0.0153		0.0145	0.0145	0.0000	31.5785	31.5785	7.6200e-003	0.0000	31.7385
Total	**0.0268**	**0.2607**	**0.1913**	**3.5000e-004**	**0.0151**	**0.0153**	**0.0304**	**8.2800e-003**	**0.0145**	**0.0228**	**0.0000**	**31.5785**	**31.5785**	**7.6200e-003**	**0.0000**	**31.7385**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.9000e-004	1.8200e-003	0.0173	4.0000e-005	3.6300e-003	3.0000e-005	3.6500e-003	9.6000e-004	2.0000e-005	9.9000e-004	0.0000	3.0800	3.0800	1.5000e-004	0.0000	3.0832
Total	**9.9000e-004**	**1.8200e-003**	**0.0173**	**4.0000e-005**	**3.6300e-003**	**3.0000e-005**	**3.6500e-003**	**9.6000e-004**	**2.0000e-005**	**9.9000e-004**	**0.0000**	**3.0800**	**3.0800**	**1.5000e-004**	**0.0000**	**3.0832**

3.21 T Construction Weir Excavation - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0700e-003	0.1707	0.2185	3.5000e-004		9.6600e-003	9.6600e-003		9.6600e-003	9.6600e-003	0.0000	31.5784	31.5784	7.6200e-003	0.0000	31.7385
Total	**8.0700e-003**	**0.1707**	**0.2185**	**3.5000e-004**	**0.0151**	**9.6600e-003**	**0.0247**	**8.2800e-003**	**9.6600e-003**	**0.0179**	**0.0000**	**31.5784**	**31.5784**	**7.6200e-003**	**0.0000**	**31.7385**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.9000e-004	1.8200e-003	0.0173	4.0000e-005	3.6300e-003	3.0000e-005	3.6500e-003	9.6000e-004	2.0000e-005	9.9000e-004	0.0000	3.0800	3.0800	1.5000e-004	0.0000	3.0832
Total	**9.9000e-004**	**1.8200e-003**	**0.0173**	**4.0000e-005**	**3.6300e-003**	**3.0000e-005**	**3.6500e-003**	**9.6000e-004**	**2.0000e-005**	**9.9000e-004**	**0.0000**	**3.0800**	**3.0800**	**1.5000e-004**	**0.0000**	**3.0832**

3.22 Construction Backfil and Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0833	0.8527	0.4943	1.0800e-003		0.0411	0.0411		0.0380	0.0380	0.0000	97.5351	97.5351	0.0286	0.0000	98.1360
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0833**	**0.8527**	**0.4943**	**1.0800e-003**		**0.0411**	**0.0411**		**0.0380**	**0.0380**	**0.0000**	**97.5351**	**97.5351**	**0.0286**	**0.0000**	**98.1360**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8200e-003	3.3300e-003	0.0316	8.0000e-005	6.6300e-003	5.0000e-005	6.6800e-003	1.7600e-003	4.0000e-005	1.8000e-003	0.0000	5.6320	5.6320	2.8000e-004	0.0000	5.6379
Total	**1.8200e-003**	**3.3300e-003**	**0.0316**	**8.0000e-005**	**6.6300e-003**	**5.0000e-005**	**6.6800e-003**	**1.7600e-003**	**4.0000e-005**	**1.8000e-003**	**0.0000**	**5.6320**	**5.6320**	**2.8000e-004**	**0.0000**	**5.6379**

3.22 Construction Backfil and Paving - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0321	0.5369	0.6192	1.0800e-003		0.0249	0.0249		0.0249	0.0249	0.0000	97.5350	97.5350	0.0286	0.0000	98.1359
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0321**	**0.5369**	**0.6192**	**1.0800e-003**		**0.0249**	**0.0249**		**0.0249**	**0.0249**	**0.0000**	**97.5350**	**97.5350**	**0.0286**	**0.0000**	**98.1359**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8200e-003	3.3300e-003	0.0316	8.0000e-005	6.6300e-003	5.0000e-005	6.6800e-003	1.7600e-003	4.0000e-005	1.8000e-003	0.0000	5.6320	5.6320	2.8000e-004	0.0000	5.6379
Total	**1.8200e-003**	**3.3300e-003**	**0.0316**	**8.0000e-005**	**6.6300e-003**	**5.0000e-005**	**6.6800e-003**	**1.7600e-003**	**4.0000e-005**	**1.8000e-003**	**0.0000**	**5.6320**	**5.6320**	**2.8000e-004**	**0.0000**	**5.6379**

3.23 T Construction Weir Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0370	0.3543	0.2327	3.4000e-004		0.0241	0.0241		0.0224	0.0224	0.0000	30.8941	30.8941	8.4700e-003	0.0000	31.0721
Total	**0.0370**	**0.3543**	**0.2327**	**3.4000e-004**		**0.0241**	**0.0241**		**0.0224**	**0.0224**	**0.0000**	**30.8941**	**30.8941**	**8.4700e-003**	**0.0000**	**31.0721**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4200e-003	2.6000e-003	0.0247	6.0000e-005	5.1800e-003	4.0000e-005	5.2100e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.4000	4.4000	2.2000e-004	0.0000	4.4046
Total	**1.4200e-003**	**2.6000e-003**	**0.0247**	**6.0000e-005**	**5.1800e-003**	**4.0000e-005**	**5.2100e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.4000**	**4.4000**	**2.2000e-004**	**0.0000**	**4.4046**

3.23 T Construction Weir Construction - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.0100e-003	0.1769	0.2312	3.4000e-004		0.0113	0.0113		0.0113	0.0113	0.0000	30.8941	30.8941	8.4700e-003	0.0000	31.0721
Total	**8.0100e-003**	**0.1769**	**0.2312**	**3.4000e-004**		**0.0113**	**0.0113**		**0.0113**	**0.0113**	**0.0000**	**30.8941**	**30.8941**	**8.4700e-003**	**0.0000**	**31.0721**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4200e-003	2.6000e-003	0.0247	6.0000e-005	5.1800e-003	4.0000e-005	5.2100e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.4000	4.4000	2.2000e-004	0.0000	4.4046
Total	**1.4200e-003**	**2.6000e-003**	**0.0247**	**6.0000e-005**	**5.1800e-003**	**4.0000e-005**	**5.2100e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.4000**	**4.4000**	**2.2000e-004**	**0.0000**	**4.4046**

3.24 T Construction Weir Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.2000e-003	0.0492	0.0362	6.0000e-005		3.0100e-003	3.0100e-003		2.7900e-003	2.7900e-003	0.0000	4.8486	4.8486	1.3500e-003	0.0000	4.8769
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.2000e-003**	**0.0492**	**0.0362**	**6.0000e-005**		**3.0100e-003**	**3.0100e-003**		**2.7900e-003**	**2.7900e-003**	**0.0000**	**4.8486**	**4.8486**	**1.3500e-003**	**0.0000**	**4.8769**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	5.2000e-004	4.9400e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.8800	0.8800	4.0000e-005	0.0000	0.8809
Total	**2.8000e-004**	**5.2000e-004**	**4.9400e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.8800**	**0.8800**	**4.0000e-005**	**0.0000**	**0.8809**

3.24 T Construction Weir Paving - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.9800e-003	0.0289	0.0385	6.0000e-005		1.6600e-003	1.6600e-003		1.6600e-003	1.6600e-003	0.0000	4.8486	4.8486	1.3500e-003	0.0000	4.8769
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.9800e-003**	**0.0289**	**0.0385**	**6.0000e-005**		**1.6600e-003**	**1.6600e-003**		**1.6600e-003**	**1.6600e-003**	**0.0000**	**4.8486**	**4.8486**	**1.3500e-003**	**0.0000**	**4.8769**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	5.2000e-004	4.9400e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.8800	0.8800	4.0000e-005	0.0000	0.8809
Total	**2.8000e-004**	**5.2000e-004**	**4.9400e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.8800**	**0.8800**	**4.0000e-005**	**0.0000**	**0.8809**

3.25 T River Crossing 15 - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0131	0.1475	0.0703	2.0000e-004		5.4800e-003	5.4800e-003		5.0400e-003	5.0400e-003	0.0000	18.2924	18.2924	5.6000e-003	0.0000	18.4101
Total	**0.0131**	**0.1475**	**0.0703**	**2.0000e-004**	**0.0000**	**5.4800e-003**	**5.4800e-003**	**0.0000**	**5.0400e-003**	**5.0400e-003**	**0.0000**	**18.2924**	**18.2924**	**5.6000e-003**	**0.0000**	**18.4101**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.25 T River Crossing 15 - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8300e-003	0.0933	0.1046	2.0000e-004		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	18.2924	18.2924	5.6000e-003	0.0000	18.4101
Total	**4.8300e-003**	**0.0933**	**0.1046**	**2.0000e-004**	**0.0000**	**3.5400e-003**	**3.5400e-003**	**0.0000**	**3.5400e-003**	**3.5400e-003**	**0.0000**	**18.2924**	**18.2924**	**5.6000e-003**	**0.0000**	**18.4101**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.26 T River Crossing 60 - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0655	0.7163	0.4417	5.6000e-004		0.0355	0.0355		0.0327	0.0327	0.0000	52.2490	52.2490	0.0160	0.0000	52.5852
Total	**0.0655**	**0.7163**	**0.4417**	**5.6000e-004**	**0.1807**	**0.0355**	**0.2162**	**0.0993**	**0.0327**	**0.1320**	**0.0000**	**52.2490**	**52.2490**	**0.0160**	**0.0000**	**52.5852**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.26 T River Crossing 60 - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0138	0.2765	0.3244	5.6000e-004		0.0125	0.0125		0.0125	0.0125	0.0000	52.2490	52.2490	0.0160	0.0000	52.5852
Total	**0.0138**	**0.2765**	**0.3244**	**5.6000e-004**	**0.1807**	**0.0125**	**0.1932**	**0.0993**	**0.0125**	**0.1118**	**0.0000**	**52.2490**	**52.2490**	**0.0160**	**0.0000**	**52.5852**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.27 T River Crossing 45 - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.5500e-003	0.0439	0.0397	6.0000e-005		2.5100e-003	2.5100e-003		2.3100e-003	2.3100e-003	0.0000	5.2415	5.2415	1.6100e-003	0.0000	5.2752
Total	**3.5500e-003**	**0.0439**	**0.0397**	**6.0000e-005**		**2.5100e-003**	**2.5100e-003**		**2.3100e-003**	**2.3100e-003**	**0.0000**	**5.2415**	**5.2415**	**1.6100e-003**	**0.0000**	**5.2752**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.27 T River Crossing 45 - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.4300e-003	0.0326	0.0441	6.0000e-005		2.2900e-003	2.2900e-003		2.2900e-003	2.2900e-003	0.0000	5.2415	5.2415	1.6100e-003	0.0000	5.2752
Total	**1.4300e-003**	**0.0326**	**0.0441**	**6.0000e-005**		**2.2900e-003**	**2.2900e-003**		**2.2900e-003**	**2.2900e-003**	**0.0000**	**5.2415**	**5.2415**	**1.6100e-003**	**0.0000**	**5.2752**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.28 T River Crossing 120 - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0696	0.7771	0.5511	1.0300e-003		0.0347	0.0347		0.0319	0.0319	0.0000	95.5078	95.5078	0.0293	0.0000	96.1223
Total	**0.0696**	**0.7771**	**0.5511**	**1.0300e-003**		**0.0347**	**0.0347**		**0.0319**	**0.0319**	**0.0000**	**95.5078**	**95.5078**	**0.0293**	**0.0000**	**96.1223**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.28 T River Crossing 120 - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0253	0.4889	0.6912	1.0300e-003		0.0217	0.0217		0.0217	0.0217	0.0000	95.5077	95.5077	0.0293	0.0000	96.1222
Total	**0.0253**	**0.4889**	**0.6912**	**1.0300e-003**		**0.0217**	**0.0217**		**0.0217**	**0.0217**	**0.0000**	**95.5077**	**95.5077**	**0.0293**	**0.0000**	**96.1222**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.29 T River Crossing 240 - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0243	0.2885	0.1034	2.1000e-004		0.0129	0.0129		0.0118	0.0118	0.0000	19.6373	19.6373	6.0200e-003	0.0000	19.7637
Total	**0.0243**	**0.2885**	**0.1034**	**2.1000e-004**		**0.0129**	**0.0129**		**0.0118**	**0.0118**	**0.0000**	**19.6373**	**19.6373**	**6.0200e-003**	**0.0000**	**19.7637**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.3100e-003	0.0134	0.1270	3.2000e-004	0.0266	1.9000e-004	0.0268	7.0800e-003	1.7000e-004	7.2500e-003	0.0000	22.6286	22.6286	1.1300e-003	0.0000	22.6523
Total	**7.3100e-003**	**0.0134**	**0.1270**	**3.2000e-004**	**0.0266**	**1.9000e-004**	**0.0268**	**7.0800e-003**	**1.7000e-004**	**7.2500e-003**	**0.0000**	**22.6286**	**22.6286**	**1.1300e-003**	**0.0000**	**22.6523**

3.29 T River Crossing 240 - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2000e-003	0.1006	0.1127	2.1000e-004		3.8100e-003	3.8100e-003		3.8100e-003	3.8100e-003	0.0000	19.6373	19.6373	6.0200e-003	0.0000	19.7636
Total	**5.2100e-003**	**0.1006**	**0.1127**	**2.1000e-004**		**3.8100e-003**	**3.8100e-003**		**3.8100e-003**	**3.8100e-003**	**0.0000**	**19.6373**	**19.6373**	**6.0200e-003**	**0.0000**	**19.7636**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.3100e-003	0.0134	0.1270	3.2000e-004	0.0266	1.9000e-004	0.0268	7.0800e-003	1.7000e-004	7.2500e-003	0.0000	22.6286	22.6286	1.1300e-003	0.0000	22.6523
Total	**7.3100e-003**	**0.0134**	**0.1270**	**3.2000e-004**	**0.0266**	**1.9000e-004**	**0.0268**	**7.0800e-003**	**1.7000e-004**	**7.2500e-003**	**0.0000**	**22.6286**	**22.6286**	**1.1300e-003**	**0.0000**	**22.6523**

3.29 T River Crossing 240 - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0126	0.1502	0.0555	1.3000e-004		6.5000e-003	6.5000e-003		5.9800e-003	5.9800e-003	0.0000	11.5945	11.5945	3.6100e-003	0.0000	11.6703
Total	**0.0126**	**0.1502**	**0.0555**	**1.3000e-004**		**6.5000e-003**	**6.5000e-003**		**5.9800e-003**	**5.9800e-003**	**0.0000**	**11.5945**	**11.5945**	**3.6100e-003**	**0.0000**	**11.6703**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8100e-003	7.1500e-003	0.0676	1.9000e-004	0.0160	1.1000e-004	0.0161	4.2500e-003	1.0000e-004	4.3500e-003	0.0000	13.0887	13.0887	6.2000e-004	0.0000	13.1018
Total	**3.8100e-003**	**7.1500e-003**	**0.0676**	**1.9000e-004**	**0.0160**	**1.1000e-004**	**0.0161**	**4.2500e-003**	**1.0000e-004**	**4.3500e-003**	**0.0000**	**13.0887**	**13.0887**	**6.2000e-004**	**0.0000**	**13.1018**

3.29 T River Crossing 240 - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1200e-003	0.0603	0.0676	1.3000e-004		2.2900e-003	2.2900e-003		2.2900e-003	2.2900e-003	0.0000	11.5944	11.5944	3.6100e-003	0.0000	11.6702
Total	**3.1200e-003**	**0.0603**	**0.0676**	**1.3000e-004**		**2.2900e-003**	**2.2900e-003**		**2.2900e-003**	**2.2900e-003**	**0.0000**	**11.5944**	**11.5944**	**3.6100e-003**	**0.0000**	**11.6702**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8100e-003	7.1500e-003	0.0676	1.9000e-004	0.0160	1.1000e-004	0.0161	4.2500e-003	1.0000e-004	4.3500e-003	0.0000	13.0887	13.0887	6.2000e-004	0.0000	13.1018
Total	**3.8100e-003**	**7.1500e-003**	**0.0676**	**1.9000e-004**	**0.0160**	**1.1000e-004**	**0.0161**	**4.2500e-003**	**1.0000e-004**	**4.3500e-003**	**0.0000**	**13.0887**	**13.0887**	**6.2000e-004**	**0.0000**	**13.1018**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.411222	0.062718	0.156221	0.175699	0.050886	0.007831	0.019556	0.102845	0.001787	0.001576	0.006435	0.000923	0.002302

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	6,766.3585	6,766.3585	0.2354	0.0487	6,786.4029
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	6,766.3585	6,766.3585	0.2354	0.0487	6,786.4029
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	1.7898e+007	6,766.3585	0.2354	0.0487	6,786.4029
Total		**6,766.3585**	**0.2354**	**0.0487**	**6,786.4029**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	1.7898e+007	6,766.3585	0.2354	0.0487	6,786.4029
Total		**6,766.3585**	**0.2354**	**0.0487**	**6,786.4029**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

10.0 Vegetation

NVRRWP Alternative 2 Phased Material Hauling and Tier 3 Mitigation

San Joaquin Valley Unified APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.00	1.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2018
Utility Company	Modesto Irrigation District				
CO2 Intensity (lb/MWhr)	833.46	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Estimate of pump station size.

Construction Phase - Used site-specific construction schedule received from RMC by email July 2014 and Project Description. 5 simultaneous crews assumed to be working starting summer 2016.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

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Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Off-road Equipment - Using site specific equipment assumptions provided by RMC.

Trips and VMT - Used site specific information provided by RMC in construction spreadsheet. Workers were assumed for all phases. Material hauling emissions allocated to the first phase of a construction project.

Grading - 'Used site specific information provided by RMC in construction spreadsheet. Workers were assumed for all phases. Material hauling emissions allocated to the first phase of a construction project.

Architectural Coating - no coatings since it is a pipeline underground. Phase used as a unique phase type.

Consumer Products - No consumer products since it is an infrastructure underground pipeline.

Area Coating - No coatings since it is a pipeline underground.

Landscape Equipment - no landscaping since infrastructure project.

Energy Use - Based on pump operation provided by RMC in construction spreadsheet.

Water And Wastewater - No emissions estimated as this is just a change in location of where water is discharged. Thus only energy associated with pumping to new discharge location considered.

Solid Waste - No change in solid waste since this is only a change in location of discharge.

Construction Off-road Equipment Mitigation - Assume Tier 3 mitigation on all equipment over 50 hp.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	1.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	2.00	0.00
tblAreaCoating	Area_Nonresidential_Interior	2	3750
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	16.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	40.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	24.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
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tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
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tblConstructionPhase	NumDays	5.00	240.00
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tblConstructionPhase	NumDays	100.00	60.00
tblConstructionPhase	NumDays	100.00	57.00
tblConstructionPhase	NumDays	100.00	50.00
tblConstructionPhase	NumDays	100.00	120.00
tblConstructionPhase	NumDays	2.00	40.00
tblConstructionPhase	NumDays	2.00	40.00
tblConstructionPhase	NumDays	2.00	60.00
tblConstructionPhase	NumDays	2.00	450.00
tblConstructionPhase	NumDays	2.00	60.00
tblConstructionPhase	NumDays	2.00	450.00
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	NumDays	5.00	28.00
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	NumDays	1.00	20.00

tblConstructionPhase	NumDays	1.00	20.00
tblConstructionPhase	NumDays	1.00	19.00
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tblConstructionPhase	NumDays	1.00	60.00
tblConstructionPhase	NumDays	1.00	15.00
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tblConstructionPhase	PhaseEndDate	2/10/2017	12/2/2016
tblConstructionPhase	PhaseEndDate	2/24/2017	1/13/2017
tblConstructionPhase	PhaseEndDate	4/4/2017	1/31/2017
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tblConstructionPhase	PhaseEndDate	1/19/2018	11/17/2017
tblConstructionPhase	PhaseEndDate	1/6/2017	9/9/2016
tblConstructionPhase	PhaseEndDate	9/15/2017	8/25/2017
tblConstructionPhase	PhaseEndDate	7/13/2018	3/31/2018
tblConstructionPhase	PhaseEndDate	6/22/2018	9/9/2016
tblConstructionPhase	PhaseEndDate	6/1/2018	3/31/2018
tblConstructionPhase	PhaseEndDate	2/14/2017	12/2/2016
tblConstructionPhase	PhaseEndDate	3/29/2017	2/8/2017
tblConstructionPhase	PhaseEndDate	12/30/2016	12/23/2016
tblConstructionPhase	PhaseEndDate	8/11/2016	7/14/2016
tblConstructionPhase	PhaseEndDate	6/2/2017	6/23/2017
tblConstructionPhase	PhaseEndDate	10/6/2016	9/9/2016
tblConstructionPhase	PhaseEndDate	9/30/2016	7/8/2016
tblConstructionPhase	PhaseEndDate	11/11/2016	10/21/2016
tblConstructionPhase	PhaseEndDate	10/2/2017	11/11/2016

tblConstructionPhase	PhaseEndDate	10/27/2017	8/4/2017
tblConstructionPhase	PhaseEndDate	6/1/2018	8/19/2016
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tblConstructionPhase	PhaseStartDate	8/20/2016	6/20/2016
tblConstructionPhase	PhaseStartDate	9/10/2016	9/12/2016
tblConstructionPhase	PhaseStartDate	11/19/2016	9/12/2016
tblConstructionPhase	PhaseStartDate	12/3/2016	10/24/2016
tblConstructionPhase	PhaseStartDate	1/14/2017	11/14/2016
tblConstructionPhase	PhaseStartDate	2/9/2017	2/20/2017
tblConstructionPhase	PhaseStartDate	8/5/2017	6/5/2017
tblConstructionPhase	PhaseStartDate	11/12/2016	7/18/2016
tblConstructionPhase	PhaseStartDate	12/24/2016	12/26/2016
tblConstructionPhase	PhaseStartDate	6/24/2017	6/5/2017
tblConstructionPhase	PhaseStartDate	10/22/2016	6/20/2016
tblConstructionPhase	PhaseStartDate	4/1/2018	6/20/2016
tblConstructionPhase	PhaseStartDate	9/10/2016	6/20/2016
tblConstructionPhase	PhaseStartDate	2/1/2017	11/21/2016
tblConstructionPhase	PhaseStartDate	2/18/2017	1/2/2017
tblConstructionPhase	PhaseStartDate	4/29/2017	5/1/2017
tblConstructionPhase	PhaseStartDate	12/3/2016	12/5/2016
tblConstructionPhase	PhaseStartDate	7/16/2016	6/20/2016
tblConstructionPhase	PhaseStartDate	5/13/2017	6/5/2017
tblConstructionPhase	PhaseStartDate	7/15/2016	6/20/2016
tblConstructionPhase	PhaseStartDate	9/10/2016	6/20/2016
tblConstructionPhase	PhaseStartDate	7/9/2016	6/20/2016
tblConstructionPhase	PhaseStartDate	6/3/2017	7/15/2016
tblConstructionPhase	PhaseStartDate	8/26/2017	6/5/2017

tblConstructionPhase	PhaseStartDate	4/1/2018	6/20/2016
tblEnergyUse	NT24E	0.00	17,898,000.00
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tblOffRoadEquipment	HorsePower	205.00	60.00
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tblOffRoadEquipment	HorsePower	171.00	104.00
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tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
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tblTripsAndVMT	WorkerTripNumber	13.00	18.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00

tblTripsAndVMT	WorkerTripNumber	25.00	18.00
tblTripsAndVMT	WorkerTripNumber	3.00	2.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	3.00	2.00
tblTripsAndVMT	WorkerTripNumber	3.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	1.6662	18.7179	12.3682	0.0229	0.9185	0.8136	1.7321	0.4090	0.7501	1.1591	0.0000	2,096.9667	2,096.9667	0.4044	0.0000	2,105.4593
2017	0.5930	6.2527	3.9764	7.7600e-003	0.2726	0.2935	0.5661	0.1280	0.2710	0.3990	0.0000	694.2723	694.2723	0.1905	0.0000	698.2732
2018	0.0418	0.4274	0.2671	7.7000e-004	0.0179	0.0165	0.0344	4.7600e-003	0.0151	0.0199	0.0000	65.2653	65.2653	0.0165	0.0000	65.6108
Total	**2.3010**	**25.3980**	**16.6117**	**0.0314**	**1.2090**	**1.1235**	**2.3325**	**0.5418**	**1.0362**	**1.5780**	**0.0000**	**2,856.5043**	**2,856.5043**	**0.6114**	**0.0000**	**2,869.3433**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.6069	9.5760	11.1736	0.0229	0.9185	0.3528	1.2713	0.4090	0.3495	0.7585	0.0000	2,096.9652	2,096.9652	0.4044	0.0000	2,105.4577
2017	0.1990	3.3711	4.3968	7.7600e-003	0.2726	0.1505	0.4231	0.1280	0.1505	0.2785	0.0000	694.2715	694.2715	0.1905	0.0000	698.2724
2018	0.0178	0.2705	0.3698	7.7000e-004	0.0179	0.0101	0.0280	4.7600e-003	0.0101	0.0148	0.0000	65.2653	65.2653	0.0165	0.0000	65.6108
Total	**0.8237**	**13.2175**	**15.9403**	**0.0314**	**1.2090**	**0.5134**	**1.7224**	**0.5418**	**0.5101**	**1.0518**	**0.0000**	**2,856.5019**	**2,856.5019**	**0.6114**	**0.0000**	**2,869.3409**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**64.20**	**47.96**	**4.04**	**0.00**	**0.00**	**54.30**	**26.16**	**0.00**	**50.78**	**33.34**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6,766.3585	6,766.3585	0.2354	0.0487	6,786.4029
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**6,766.3586**	**6,766.3586**	**0.2354**	**0.0487**	**6,786.4029**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6,766.3585	6,766.3585	0.2354	0.0487	6,786.4029
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**6,766.3586**	**6,766.3586**	**0.2354**	**0.0487**	**6,786.4029**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Construction Weir Site Prep	Site Preparation	6/20/2016	7/15/2016	5	20	
2	Construction Pipe Site Prep	Site Preparation	6/20/2016	7/14/2016	5	19	
3	PumpStation Construction	Site Preparation	6/20/2016	9/9/2016	5	60	

4	River Crossing 15	Site Preparation	6/20/2016	7/8/2016	5	15	
5	T PumpStation Construction	Site Preparation	6/20/2016	10/21/2016	5	90	
6	Water Truck	Grading	6/20/2016	3/31/2018	5	450	
7	River Crossing 60	Grading	6/20/2016	9/9/2016	5	60	
8	T Water Truck	Grading	6/20/2016	3/31/2018	5	450	
9	River Crossing 45	Trenching	6/20/2016	8/19/2016	5	45	
10	River Crossing 120	Building Construction	6/20/2016	12/2/2016	5	120	
11	River Crossing 240	Architectural Coating	6/20/2016	6/2/2017	5	240	
12	Construction Pipe Trenching	Trenching	7/15/2016	11/11/2016	5	86	
13	Construction Weir Excavation	Grading	7/18/2016	9/9/2016	5	40	
14	Construction Weir Construction	Building Construction	9/12/2016	11/18/2016	5	50	
15	PumpStation Equipment Install	Building Construction	9/12/2016	12/2/2016	5	60	
16	T PumpStation Equipment Install	Building Construction	10/24/2016	1/13/2017	5	60	
17	Construction Pipe Pipeline	Building Construction	11/14/2016	1/31/2017	5	57	
18	Construction Weir Paving	Paving	11/21/2016	12/2/2016	5	10	
19	T Construction Weir Site Prep	Site Preparation	12/5/2016	12/23/2016	5	20	
20	T Construction Weir Excavation	Grading	12/26/2016	2/17/2017	5	40	
21	Construction Backfil and Paving	Paving	1/2/2017	2/8/2017	5	28	
22	T Construction Weir Construction	Building Construction	2/20/2017	4/28/2017	5	50	
23	T Construction Weir Paving	Paving	5/1/2017	5/12/2017	5	10	
24	T River Crossing 15	Site Preparation	6/5/2017	6/23/2017	5	15	
25	T River Crossing 60	Grading	6/5/2017	8/25/2017	5	60	
26	T River Crossing 45	Trenching	6/5/2017	8/4/2017	5	45	
27	T River Crossing 120	Building Construction	6/5/2017	11/17/2017	5	120	
28	T River Crossing 240	Architectural Coating	6/5/2017	5/4/2018	5	240	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Construction Weir Site Prep	Graders	1	8.00	174	0.41
Construction Weir Site Prep	Rubber Tired Dozers	0	7.00	255	0.40
Construction Weir Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Construction Pipe Site Prep	Graders	0	8.00	174	0.41
Construction Pipe Site Prep	Rubber Tired Dozers	2	8.00	255	0.40
Construction Pipe Site Prep	Scrapers	2	8.00	361	0.48
Construction Pipe Site Prep	Signal Boards	10	8.00	6	0.82
Construction Pipe Site Prep	Tractors/Loaders/Backhoes	0	8.00	97	0.37
PumpStation Construction	Cranes	1	4.00	226	0.29
PumpStation Construction	Excavators	1	8.00	162	0.38
PumpStation Construction	Graders	0	8.00	174	0.41
PumpStation Construction	Other Construction Equipment	1	8.00	104	0.42
PumpStation Construction	Rubber Tired Dozers	1	8.00	255	0.40
PumpStation Construction	Rubber Tired Loaders	1	8.00	199	0.36
PumpStation Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
River Crossing 15	Graders	0	8.00	174	0.41
River Crossing 15	Off-Highway Trucks	2	8.00	400	0.38
River Crossing 15	Rubber Tired Dozers	0	7.00	255	0.40
River Crossing 15	Tractors/Loaders/Backhoes	0	8.00	97	0.37
T PumpStation Construction	Cranes	1	4.00	226	0.29
T PumpStation Construction	Excavators	2	8.00	162	0.38
T PumpStation Construction	Graders	0	8.00	174	0.41
T PumpStation Construction	Off-Highway Trucks	4	2.70	400	0.38

T PumpStation Construction	Other Construction Equipment	1	8.00	104	0.42
T PumpStation Construction	Rubber Tired Dozers	1	2.70	255	0.40
T PumpStation Construction	Rubber Tired Loaders	1	8.00	199	0.36
T PumpStation Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Water Truck	Graders	0	6.00	174	0.41
Water Truck	Off-Highway Trucks	1	4.00	400	0.38
Water Truck	Rubber Tired Dozers	0	6.00	255	0.40
Water Truck	Tractors/Loaders/Backhoes	0	7.00	97	0.37
River Crossing 60	Graders	0	6.00	174	0.41
River Crossing 60	Other Construction Equipment	1	8.00	215	0.42
River Crossing 60	Other Construction Equipment	1	8.00	104	0.42
River Crossing 60	Rubber Tired Dozers	1	8.00	255	0.40
River Crossing 60	Rubber Tired Loaders	1	8.00	199	0.36
River Crossing 60	Tractors/Loaders/Backhoes	0	7.00	97	0.37
T Water Truck	Graders	0	6.00	174	0.41
T Water Truck	Off-Highway Trucks	1	4.00	400	0.38
T Water Truck	Rubber Tired Dozers	0	6.00	255	0.40
T Water Truck	Tractors/Loaders/Backhoes	0	7.00	97	0.37
River Crossing 45	Bore/Drill Rigs	1	8.00	60	0.50
River Crossing 120	Cranes	0	6.00	226	0.29
River Crossing 120	Excavators	2	8.00	162	0.38
River Crossing 120	Forklifts	0	6.00	89	0.20
River Crossing 120	Generator Sets	0	8.00	84	0.74
River Crossing 120	Off-Highway Trucks	1	4.00	400	0.38
River Crossing 120	Tractors/Loaders/Backhoes	0	6.00	97	0.37
River Crossing 120	Welders	0	8.00	46	0.45
River Crossing 240	Air Compressors	0	6.00	78	0.48
River Crossing 240	Cranes	1	4.00	226	0.29

Construction Pipe Trenching	Excavators	2	8.00	162	0.38
Construction Pipe Trenching	Graders	2	8.00	174	0.41
Construction Pipe Trenching	Rubber Tired Dozers	2	8.00	255	0.40
Construction Pipe Trenching	Scrapers	4	8.00	361	0.48
Construction Pipe Trenching	Signal Boards	10	8.00	6	0.82
Construction Pipe Trenching	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Construction Weir Excavation	Bore/Drill Rigs	1	6.00	205	0.50
Construction Weir Excavation	Concrete/Industrial Saws	1	8.00	81	0.73
Construction Weir Excavation	Excavators	1	2.00	162	0.38
Construction Weir Excavation	Graders	0	6.00	174	0.41
Construction Weir Excavation	Rubber Tired Dozers	1	1.00	255	0.40
Construction Weir Excavation	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Construction Weir Construction	Air Compressors	1	1.00	78	0.48
Construction Weir Construction	Cranes	1	4.00	226	0.29
Construction Weir Construction	Forklifts	2	6.00	89	0.20
Construction Weir Construction	Generator Sets	0	8.00	84	0.74
Construction Weir Construction	Pumps	1	2.00	84	0.74
Construction Weir Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Construction Weir Construction	Welders	0	8.00	46	0.45
PumpStation Equipment Install	Cranes	1	4.00	226	0.29
PumpStation Equipment Install	Forklifts	0	6.00	89	0.20
PumpStation Equipment Install	Generator Sets	0	8.00	84	0.74
PumpStation Equipment Install	Rubber Tired Loaders	1	2.00	199	0.36
PumpStation Equipment Install	Tractors/Loaders/Backhoes	0	6.00	97	0.37
PumpStation Equipment Install	Welders	0	8.00	46	0.45
T PumpStation Equipment Install	Cranes	1	4.00	226	0.29
T PumpStation Equipment Install	Forklifts	0	6.00	89	0.20
T PumpStation Equipment Install	Generator Sets	0	8.00	84	0.74

T PumpStation Equipment Install	Rubber Tired Loaders	1	2.00	199	0.36
T PumpStation Equipment Install	Tractors/Loaders/Backhoes	0	6.00	97	0.37
T PumpStation Equipment Install	Welders	0	8.00	46	0.45
Construction Pipe Pipeline	Cranes	0	6.00	226	0.29
Construction Pipe Pipeline	Forklifts	0	6.00	89	0.20
Construction Pipe Pipeline	Generator Sets	0	8.00	84	0.74
Construction Pipe Pipeline	Graders	2	8.00	174	0.41
Construction Pipe Pipeline	Scrapers	4	8.00	361	0.48
Construction Pipe Pipeline	Signal Boards	10	8.00	6	0.82
Construction Pipe Pipeline	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Construction Pipe Pipeline	Trenchers	2	8.00	80	0.50
Construction Pipe Pipeline	Welders	0	8.00	46	0.45
Construction Weir Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Construction Weir Paving	Pavers	1	7.00	125	0.42
Construction Weir Paving	Paving Equipment	0	8.00	130	0.36
Construction Weir Paving	Rollers	1	7.00	80	0.38
Construction Weir Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
T Construction Weir Site Prep	Graders	1	8.00	174	0.41
T Construction Weir Site Prep	Rubber Tired Dozers	0	7.00	255	0.40
T Construction Weir Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
T Construction Weir Excavation	Bore/Drill Rigs	1	6.00	205	0.50
T Construction Weir Excavation	Concrete/Industrial Saws	1	8.00	81	0.73
T Construction Weir Excavation	Excavators	1	2.00	162	0.38
T Construction Weir Excavation	Graders	0	6.00	174	0.41
T Construction Weir Excavation	Rubber Tired Dozers	1	1.00	255	0.40
T Construction Weir Excavation	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Construction Backfil and Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Construction Backfil and Paving	Off-Highway Trucks	4	8.00	400	0.38

Construction Backfil and Paving	Pavers	0	6.00	125	0.42
Construction Backfil and Paving	Paving Equipment	0	8.00	130	0.36
Construction Backfil and Paving	Rollers	2	8.00	80	0.38
Construction Backfil and Paving	Signal Boards	10	8.00	6	0.82
Construction Backfil and Paving	Tractors/Loaders/Backhoes	4	8.00	97	0.37
T Construction Weir Construction	Air Compressors	1	1.00	78	0.48
T Construction Weir Construction	Cranes	1	4.00	226	0.29
T Construction Weir Construction	Forklifts	2	6.00	89	0.20
T Construction Weir Construction	Generator Sets	0	8.00	84	0.74
T Construction Weir Construction	Pumps	1	2.00	84	0.74
T Construction Weir Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
T Construction Weir Construction	Welders	0	8.00	46	0.45
T Construction Weir Paving	Cement and Mortar Mixers	4	6.00	9	0.56
T Construction Weir Paving	Pavers	1	7.00	125	0.42
T Construction Weir Paving	Paving Equipment	0	8.00	130	0.36
T Construction Weir Paving	Rollers	1	7.00	80	0.38
T Construction Weir Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
T River Crossing 15	Graders	0	8.00	174	0.41
T River Crossing 15	Off-Highway Trucks	2	8.00	400	0.38
T River Crossing 15	Rubber Tired Dozers	0	7.00	255	0.40
T River Crossing 15	Tractors/Loaders/Backhoes	0	8.00	97	0.37
T River Crossing 60	Graders	0	6.00	174	0.41
T River Crossing 60	Other Construction Equipment	1	8.00	215	0.42
T River Crossing 60	Other Construction Equipment	1	8.00	104	0.42
T River Crossing 60	Rubber Tired Dozers	1	8.00	255	0.40
T River Crossing 60	Rubber Tired Loaders	1	8.00	199	0.36
T River Crossing 60	Tractors/Loaders/Backhoes	0	7.00	97	0.37
T River Crossing 45	Bore/Drill Rigs	1	8.00	60	0.50

T River Crossing 120	Cranes	0	6.00	226	0.29
T River Crossing 120	Excavators	2	8.00	162	0.38
T River Crossing 120	Forklifts	0	6.00	89	0.20
T River Crossing 120	Generator Sets	0	8.00	84	0.74
T River Crossing 120	Off-Highway Trucks	1	4.00	400	0.38
T River Crossing 120	Tractors/Loaders/Backhoes	0	6.00	97	0.37
T River Crossing 120	Welders	0	8.00	46	0.45
T River Crossing 240	Air Compressors	0	6.00	78	0.48
T River Crossing 240	Cranes	1	4.00	226	0.29

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Construction Weir Site Prep	2	14.00	0.00	64.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Pipe Site Prep	14	32.00	0.00	12,778.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
PumpStation Construction	5	18.00	0.00	42.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 15	2	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T PumpStation Construction	10	18.00	0.00	50.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Water Truck	1	2.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 60	4	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T Water Truck	1	2.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 45	1	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 120	3	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
River Crossing 240	1	24.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Pipe Trenching	24	32.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Weir Excavation	6	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Weir Construction	7	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
PumpStation Equipment Install	2	18.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT

T PumpStation Equipment Install	2	18.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Pipe Pipeline	22	32.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Weir Paving	7	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T Construction Weir Site Prep	2	14.00	0.00	64.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T Construction Weir Excavation	6	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
Construction Backfil and Paving	20	32.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T Construction Weir Construction	7	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T Construction Weir Paving	7	14.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T River Crossing 15	2	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T River Crossing 60	4	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T River Crossing 45	1	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T River Crossing 120	3	0.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT
T River Crossing 240	1	24.00	0.00	0.00	20.00	6.60	30.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Construction Weir Site Prep - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3800e-003	0.0000	5.3800e-003	5.8000e-004	0.0000	5.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0136	0.1364	0.0734	9.0000e-005		8.3400e-003	8.3400e-003		7.6700e-003	7.6700e-003	0.0000	8.8277	8.8277	2.6600e-003	0.0000	8.8836
Total	**0.0136**	**0.1364**	**0.0734**	**9.0000e-005**	**5.3800e-003**	**8.3400e-003**	**0.0137**	**5.8000e-004**	**7.6700e-003**	**8.2500e-003**	**0.0000**	**8.8277**	**8.8277**	**2.6600e-003**	**0.0000**	**8.8836**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.4000e-004	0.0125	9.7500e-003	4.0000e-005	8.2000e-004	2.0000e-004	1.0200e-003	2.3000e-004	1.8000e-004	4.1000e-004	0.0000	3.2469	3.2469	2.0000e-005	0.0000	3.2474
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**1.6000e-003**	**0.0136**	**0.0210**	**6.0000e-005**	**2.8900e-003**	**2.2000e-004**	**3.1100e-003**	**7.8000e-004**	**1.9000e-004**	**9.7000e-004**	**0.0000**	**5.0801**	**5.0801**	**1.2000e-004**	**0.0000**	**5.0826**

3.2 Construction Weir Site Prep - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3800e-003	0.0000	5.3800e-003	5.8000e-004	0.0000	5.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.2700e-003	0.0465	0.0700	9.0000e-005		2.6200e-003	2.6200e-003		2.6200e-003	2.6200e-003	0.0000	8.8277	8.8277	2.6600e-003	0.0000	8.8836
Total	**2.2700e-003**	**0.0465**	**0.0700**	**9.0000e-005**	**5.3800e-003**	**2.6200e-003**	**8.0000e-003**	**5.8000e-004**	**2.6200e-003**	**3.2000e-003**	**0.0000**	**8.8277**	**8.8277**	**2.6600e-003**	**0.0000**	**8.8836**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.4000e-004	0.0125	9.7500e-003	4.0000e-005	8.2000e-004	2.0000e-004	1.0200e-003	2.3000e-004	1.8000e-004	4.1000e-004	0.0000	3.2469	3.2469	2.0000e-005	0.0000	3.2474
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**1.6000e-003**	**0.0136**	**0.0210**	**6.0000e-005**	**2.8900e-003**	**2.2000e-004**	**3.1100e-003**	**7.8000e-004**	**1.9000e-004**	**9.7000e-004**	**0.0000**	**5.0801**	**5.0801**	**1.2000e-004**	**0.0000**	**5.0826**

3.3 Construction Pipe Site Prep - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1481	0.0000	0.1481	0.0671	0.0000	0.0671	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0552	0.6320	0.4372	5.2000e-004		0.0271	0.0271		0.0250	0.0250	0.0000	46.8398	46.8398	0.0133	0.0000	47.1188
Total	**0.0552**	**0.6320**	**0.4372**	**5.2000e-004**	**0.1481**	**0.0271**	**0.1752**	**0.0671**	**0.0250**	**0.0921**	**0.0000**	**46.8398**	**46.8398**	**0.0133**	**0.0000**	**47.1188**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1875	2.4868	1.9457	7.0900e-003	0.1639	0.0394	0.2033	0.0451	0.0362	0.0813	0.0000	648.2727	648.2727	4.7100e-003	0.0000	648.3715
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	2.5500e-003	0.0245	5.0000e-005	4.5000e-003	3.0000e-005	4.5300e-003	1.2000e-003	3.0000e-005	1.2300e-003	0.0000	3.9805	3.9805	2.1000e-004	0.0000	3.9849
Total	**0.1890**	**2.4893**	**1.9702**	**7.1400e-003**	**0.1684**	**0.0394**	**0.2078**	**0.0463**	**0.0362**	**0.0825**	**0.0000**	**652.2531**	**652.2531**	**4.9200e-003**	**0.0000**	**652.3563**

3.3 Construction Pipe Site Prep - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1481	0.0000	0.1481	0.0671	0.0000	0.0671	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0165	0.2482	0.2684	5.2000e-004		9.4400e-003	9.4400e-003		9.4400e-003	9.4400e-003	0.0000	46.8397	46.8397	0.0133	0.0000	47.1188
Total	**0.0165**	**0.2482**	**0.2684**	**5.2000e-004**	**0.1481**	**9.4400e-003**	**0.1576**	**0.0671**	**9.4400e-003**	**0.0766**	**0.0000**	**46.8397**	**46.8397**	**0.0133**	**0.0000**	**47.1188**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1875	2.4868	1.9457	7.0900e-003	0.1639	0.0394	0.2033	0.0451	0.0362	0.0813	0.0000	648.2727	648.2727	4.7100e-003	0.0000	648.3715
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	2.5500e-003	0.0245	5.0000e-005	4.5000e-003	3.0000e-005	4.5300e-003	1.2000e-003	3.0000e-005	1.2300e-003	0.0000	3.9805	3.9805	2.1000e-004	0.0000	3.9849
Total	**0.1890**	**2.4893**	**1.9702**	**7.1400e-003**	**0.1684**	**0.0394**	**0.2078**	**0.0463**	**0.0362**	**0.0825**	**0.0000**	**652.2531**	**652.2531**	**4.9200e-003**	**0.0000**	**652.3563**

3.4 PumpStation Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0908	1.0171	0.6076	8.1000e-004		0.0498	0.0498		0.0458	0.0458	0.0000	75.9900	75.9900	0.0229	0.0000	76.4713
Total	**0.0908**	**1.0171**	**0.6076**	**8.1000e-004**	**0.1807**	**0.0498**	**0.2305**	**0.0993**	**0.0458**	**0.1451**	**0.0000**	**75.9900**	**75.9900**	**0.0229**	**0.0000**	**76.4713**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.2000e-004	8.1700e-003	6.4000e-003	2.0000e-005	5.4000e-004	1.3000e-004	6.7000e-004	1.5000e-004	1.2000e-004	2.7000e-004	0.0000	2.1308	2.1308	2.0000e-005	0.0000	2.1311
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**3.1700e-003**	**0.0127**	**0.0499**	**1.2000e-004**	**8.5300e-003**	**1.9000e-004**	**8.7200e-003**	**2.2700e-003**	**1.7000e-004**	**2.4500e-003**	**0.0000**	**9.2014**	**9.2014**	**3.9000e-004**	**0.0000**	**9.2095**

3.4 PumpStation Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0198	0.3923	0.4900	8.1000e-004		0.0177	0.0177		0.0177	0.0177	0.0000	75.9899	75.9899	0.0229	0.0000	76.4712
Total	**0.0198**	**0.3923**	**0.4900**	**8.1000e-004**	**0.1807**	**0.0177**	**0.1984**	**0.0993**	**0.0177**	**0.1170**	**0.0000**	**75.9899**	**75.9899**	**0.0229**	**0.0000**	**76.4712**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.2000e-004	8.1700e-003	6.4000e-003	2.0000e-005	5.4000e-004	1.3000e-004	6.7000e-004	1.5000e-004	1.2000e-004	2.7000e-004	0.0000	2.1308	2.1308	2.0000e-005	0.0000	2.1311
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**3.1700e-003**	**0.0127**	**0.0499**	**1.2000e-004**	**8.5300e-003**	**1.9000e-004**	**8.7200e-003**	**2.2700e-003**	**1.7000e-004**	**2.4500e-003**	**0.0000**	**9.2014**	**9.2014**	**3.9000e-004**	**0.0000**	**9.2095**

3.5 River Crossing 15 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0141	0.1628	0.0758	2.0000e-004		6.1400e-003	6.1400e-003		5.6500e-003	5.6500e-003	0.0000	18.5997	18.5997	5.6100e-003	0.0000	18.7175
Total	**0.0141**	**0.1628**	**0.0758**	**2.0000e-004**	**0.0000**	**6.1400e-003**	**6.1400e-003**	**0.0000**	**5.6500e-003**	**5.6500e-003**	**0.0000**	**18.5997**	**18.5997**	**5.6100e-003**	**0.0000**	**18.7175**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 River Crossing 15 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8300e-003	0.0933	0.1046	2.0000e-004		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	18.5997	18.5997	5.6100e-003	0.0000	18.7175
Total	**4.8300e-003**	**0.0933**	**0.1046**	**2.0000e-004**	**0.0000**	**3.5400e-003**	**3.5400e-003**	**0.0000**	**3.5400e-003**	**3.5400e-003**	**0.0000**	**18.5997**	**18.5997**	**5.6100e-003**	**0.0000**	**18.7175**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 T PumpStation Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0915	0.0000	0.0915	0.0503	0.0000	0.0503	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1739	1.9708	1.0601	1.9800e-003		0.0901	0.0901		0.0829	0.0829	0.0000	186.7886	186.7886	0.0563	0.0000	187.9718
Total	**0.1739**	**1.9708**	**1.0601**	**1.9800e-003**	**0.0915**	**0.0901**	**0.1816**	**0.0503**	**0.0829**	**0.1332**	**0.0000**	**186.7886**	**186.7886**	**0.0563**	**0.0000**	**187.9718**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.3000e-004	9.7300e-003	7.6100e-003	3.0000e-005	6.4000e-004	1.5000e-004	8.0000e-004	1.8000e-004	1.4000e-004	3.2000e-004	0.0000	2.5367	2.5367	2.0000e-005	0.0000	2.5371
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8300e-003	6.8000e-003	0.0653	1.4000e-004	0.0120	9.0000e-005	0.0121	3.1800e-003	8.0000e-005	3.2700e-003	0.0000	10.6059	10.6059	5.6000e-004	0.0000	10.6176
Total	**4.5600e-003**	**0.0165**	**0.0729**	**1.7000e-004**	**0.0126**	**2.4000e-004**	**0.0129**	**3.3600e-003**	**2.2000e-004**	**3.5900e-003**	**0.0000**	**13.1425**	**13.1425**	**5.8000e-004**	**0.0000**	**13.1547**

3.6 T PumpStation Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0915	0.0000	0.0915	0.0503	0.0000	0.0503	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0487	0.9552	1.1997	1.9800e-003		0.0416	0.0416		0.0416	0.0416	0.0000	186.7884	186.7884	0.0563	0.0000	187.9716
Total	**0.0487**	**0.9552**	**1.1997**	**1.9800e-003**	**0.0915**	**0.0416**	**0.1331**	**0.0503**	**0.0416**	**0.0919**	**0.0000**	**186.7884**	**186.7884**	**0.0563**	**0.0000**	**187.9716**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.3000e-004	9.7300e-003	7.6100e-003	3.0000e-005	6.4000e-004	1.5000e-004	8.0000e-004	1.8000e-004	1.4000e-004	3.2000e-004	0.0000	2.5367	2.5367	2.0000e-005	0.0000	2.5371
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8300e-003	6.8000e-003	0.0653	1.4000e-004	0.0120	9.0000e-005	0.0121	3.1800e-003	8.0000e-005	3.2700e-003	0.0000	10.6059	10.6059	5.6000e-004	0.0000	10.6176
Total	**4.5600e-003**	**0.0165**	**0.0729**	**1.7000e-004**	**0.0126**	**2.4000e-004**	**0.0129**	**3.3600e-003**	**2.2000e-004**	**3.5900e-003**	**0.0000**	**13.1425**	**13.1425**	**5.8000e-004**	**0.0000**	**13.1547**

3.7 Water Truck - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0330	0.3798	0.1769	4.6000e-004		0.0143	0.0143		0.0132	0.0132	0.0000	43.3993	43.3993	0.0131	0.0000	43.6742
Total	**0.0330**	**0.3798**	**0.1769**	**4.6000e-004**	**0.0000**	**0.0143**	**0.0143**	**0.0000**	**0.0132**	**0.0132**	**0.0000**	**43.3993**	**43.3993**	**0.0131**	**0.0000**	**43.6742**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**6.6000e-004**	**1.1800e-003**	**0.0113**	**2.0000e-005**	**2.0700e-003**	**2.0000e-005**	**2.0900e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.8331**	**1.8331**	**1.0000e-004**	**0.0000**	**1.8351**

3.7 Water Truck - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0113	0.2177	0.2440	4.6000e-004		8.2600e-003	8.2600e-003		8.2600e-003	8.2600e-003	0.0000	43.3993	43.3993	0.0131	0.0000	43.6742
Total	**0.0113**	**0.2177**	**0.2440**	**4.6000e-004**	**0.0000**	**8.2600e-003**	**8.2600e-003**	**0.0000**	**8.2600e-003**	**8.2600e-003**	**0.0000**	**43.3993**	**43.3993**	**0.0131**	**0.0000**	**43.6742**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**6.6000e-004**	**1.1800e-003**	**0.0113**	**2.0000e-005**	**2.0700e-003**	**2.0000e-005**	**2.0900e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.8331**	**1.8331**	**1.0000e-004**	**0.0000**	**1.8351**

3.7 Water Truck - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0567	0.6392	0.3046	8.5000e-004		0.0237	0.0237		0.0218	0.0218	0.0000	79.2671	79.2671	0.0243	0.0000	79.7772
Total	**0.0567**	**0.6392**	**0.3046**	**8.5000e-004**	**0.0000**	**0.0237**	**0.0237**	**0.0000**	**0.0218**	**0.0218**	**0.0000**	**79.2671**	**79.2671**	**0.0243**	**0.0000**	**79.7772**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0600e-003	1.9300e-003	0.0183	5.0000e-005	3.8500e-003	3.0000e-005	3.8700e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.2686	3.2686	1.6000e-004	0.0000	3.2720
Total	**1.0600e-003**	**1.9300e-003**	**0.0183**	**5.0000e-005**	**3.8500e-003**	**3.0000e-005**	**3.8700e-003**	**1.0200e-003**	**2.0000e-005**	**1.0500e-003**	**0.0000**	**3.2686**	**3.2686**	**1.6000e-004**	**0.0000**	**3.2720**

3.7 Water Truck - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0209	0.4043	0.4531	8.5000e-004		0.0153	0.0153		0.0153	0.0153	0.0000	79.2670	79.2670	0.0243	0.0000	79.7771
Total	**0.0209**	**0.4043**	**0.4531**	**8.5000e-004**	**0.0000**	**0.0153**	**0.0153**	**0.0000**	**0.0153**	**0.0153**	**0.0000**	**79.2670**	**79.2670**	**0.0243**	**0.0000**	**79.7771**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0600e-003	1.9300e-003	0.0183	5.0000e-005	3.8500e-003	3.0000e-005	3.8700e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.2686	3.2686	1.6000e-004	0.0000	3.2720
Total	**1.0600e-003**	**1.9300e-003**	**0.0183**	**5.0000e-005**	**3.8500e-003**	**3.0000e-005**	**3.8700e-003**	**1.0200e-003**	**2.0000e-005**	**1.0500e-003**	**0.0000**	**3.2686**	**3.2686**	**1.6000e-004**	**0.0000**	**3.2720**

3.7 Water Truck - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0125	0.1346	0.0679	2.1000e-004		4.9100e-003	4.9100e-003		4.5200e-003	4.5200e-003	0.0000	19.5034	19.5034	6.0700e-003	0.0000	19.6309
Total	**0.0125**	**0.1346**	**0.0679**	**2.1000e-004**	**0.0000**	**4.9100e-003**	**4.9100e-003**	**0.0000**	**4.5200e-003**	**4.5200e-003**	**0.0000**	**19.5034**	**19.5034**	**6.0700e-003**	**0.0000**	**19.6309**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	4.3000e-004	4.0700e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.7877	0.7877	4.0000e-005	0.0000	0.7885
Total	**2.3000e-004**	**4.3000e-004**	**4.0700e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.7877**	**0.7877**	**4.0000e-005**	**0.0000**	**0.7885**

3.7 Water Truck - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2300e-003	0.1011	0.1133	2.1000e-004		3.8300e-003	3.8300e-003		3.8300e-003	3.8300e-003	0.0000	19.5033	19.5033	6.0700e-003	0.0000	19.6308
Total	**5.2300e-003**	**0.1011**	**0.1133**	**2.1000e-004**	**0.0000**	**3.8300e-003**	**3.8300e-003**	**0.0000**	**3.8300e-003**	**3.8300e-003**	**0.0000**	**19.5033**	**19.5033**	**6.0700e-003**	**0.0000**	**19.6308**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	4.3000e-004	4.0700e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.7877	0.7877	4.0000e-005	0.0000	0.7885
Total	**2.3000e-004**	**4.3000e-004**	**4.0700e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.7877**	**0.7877**	**4.0000e-005**	**0.0000**	**0.7885**

3.8 River Crossing 60 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0683	0.7562	0.4599	5.6000e-004		0.0374	0.0374		0.0344	0.0344	0.0000	53.0463	53.0463	0.0160	0.0000	53.3823
Total	**0.0683**	**0.7562**	**0.4599**	**5.6000e-004**	**0.1807**	**0.0374**	**0.2181**	**0.0993**	**0.0344**	**0.1338**	**0.0000**	**53.0463**	**53.0463**	**0.0160**	**0.0000**	**53.3823**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.8 River Crossing 60 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0138	0.2765	0.3244	5.6000e-004		0.0125	0.0125		0.0125	0.0125	0.0000	53.0463	53.0463	0.0160	0.0000	53.3823
Total	**0.0138**	**0.2765**	**0.3244**	**5.6000e-004**	**0.1807**	**0.0125**	**0.1932**	**0.0993**	**0.0125**	**0.1118**	**0.0000**	**53.0463**	**53.0463**	**0.0160**	**0.0000**	**53.3823**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.9 T Water Truck - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0330	0.3798	0.1769	4.6000e-004		0.0143	0.0143		0.0132	0.0132	0.0000	43.3993	43.3993	0.0131	0.0000	43.6742
Total	**0.0330**	**0.3798**	**0.1769**	**4.6000e-004**	**0.0000**	**0.0143**	**0.0143**	**0.0000**	**0.0132**	**0.0132**	**0.0000**	**43.3993**	**43.3993**	**0.0131**	**0.0000**	**43.6742**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**6.6000e-004**	**1.1800e-003**	**0.0113**	**2.0000e-005**	**2.0700e-003**	**2.0000e-005**	**2.0900e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.8331**	**1.8331**	**1.0000e-004**	**0.0000**	**1.8351**

3.9 T Water Truck - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0113	0.2177	0.2440	4.6000e-004		8.2600e-003	8.2600e-003		8.2600e-003	8.2600e-003	0.0000	43.3993	43.3993	0.0131	0.0000	43.6742
Total	**0.0113**	**0.2177**	**0.2440**	**4.6000e-004**	**0.0000**	**8.2600e-003**	**8.2600e-003**	**0.0000**	**8.2600e-003**	**8.2600e-003**	**0.0000**	**43.3993**	**43.3993**	**0.0131**	**0.0000**	**43.6742**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.1800e-003	0.0113	2.0000e-005	2.0700e-003	2.0000e-005	2.0900e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.8331	1.8331	1.0000e-004	0.0000	1.8351
Total	**6.6000e-004**	**1.1800e-003**	**0.0113**	**2.0000e-005**	**2.0700e-003**	**2.0000e-005**	**2.0900e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.8331**	**1.8331**	**1.0000e-004**	**0.0000**	**1.8351**

3.9 T Water Truck - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0567	0.6392	0.3046	8.5000e-004		0.0237	0.0237		0.0218	0.0218	0.0000	79.2671	79.2671	0.0243	0.0000	79.7772
Total	**0.0567**	**0.6392**	**0.3046**	**8.5000e-004**	**0.0000**	**0.0237**	**0.0237**	**0.0000**	**0.0218**	**0.0218**	**0.0000**	**79.2671**	**79.2671**	**0.0243**	**0.0000**	**79.7772**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0600e-003	1.9300e-003	0.0183	5.0000e-005	3.8500e-003	3.0000e-005	3.8700e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.2686	3.2686	1.6000e-004	0.0000	3.2720
Total	**1.0600e-003**	**1.9300e-003**	**0.0183**	**5.0000e-005**	**3.8500e-003**	**3.0000e-005**	**3.8700e-003**	**1.0200e-003**	**2.0000e-005**	**1.0500e-003**	**0.0000**	**3.2686**	**3.2686**	**1.6000e-004**	**0.0000**	**3.2720**

3.9 T Water Truck - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0209	0.4043	0.4531	8.5000e-004		0.0153	0.0153		0.0153	0.0153	0.0000	79.2670	79.2670	0.0243	0.0000	79.7771
Total	**0.0209**	**0.4043**	**0.4531**	**8.5000e-004**	**0.0000**	**0.0153**	**0.0153**	**0.0000**	**0.0153**	**0.0153**	**0.0000**	**79.2670**	**79.2670**	**0.0243**	**0.0000**	**79.7771**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0600e-003	1.9300e-003	0.0183	5.0000e-005	3.8500e-003	3.0000e-005	3.8700e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.2686	3.2686	1.6000e-004	0.0000	3.2720
Total	**1.0600e-003**	**1.9300e-003**	**0.0183**	**5.0000e-005**	**3.8500e-003**	**3.0000e-005**	**3.8700e-003**	**1.0200e-003**	**2.0000e-005**	**1.0500e-003**	**0.0000**	**3.2686**	**3.2686**	**1.6000e-004**	**0.0000**	**3.2720**

3.9 T Water Truck - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0125	0.1346	0.0679	2.1000e-004		4.9100e-003	4.9100e-003		4.5200e-003	4.5200e-003	0.0000	19.5034	19.5034	6.0700e-003	0.0000	19.6309
Total	**0.0125**	**0.1346**	**0.0679**	**2.1000e-004**	**0.0000**	**4.9100e-003**	**4.9100e-003**	**0.0000**	**4.5200e-003**	**4.5200e-003**	**0.0000**	**19.5034**	**19.5034**	**6.0700e-003**	**0.0000**	**19.6309**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	4.3000e-004	4.0700e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.7877	0.7877	4.0000e-005	0.0000	0.7885
Total	**2.3000e-004**	**4.3000e-004**	**4.0700e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.7877**	**0.7877**	**4.0000e-005**	**0.0000**	**0.7885**

3.9 T Water Truck - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2300e-003	0.1011	0.1133	2.1000e-004		3.8300e-003	3.8300e-003		3.8300e-003	3.8300e-003	0.0000	19.5033	19.5033	6.0700e-003	0.0000	19.6308
Total	**5.2300e-003**	**0.1011**	**0.1133**	**2.1000e-004**	**0.0000**	**3.8300e-003**	**3.8300e-003**	**0.0000**	**3.8300e-003**	**3.8300e-003**	**0.0000**	**19.5033**	**19.5033**	**6.0700e-003**	**0.0000**	**19.6308**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	4.3000e-004	4.0700e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.7877	0.7877	4.0000e-005	0.0000	0.7885
Total	**2.3000e-004**	**4.3000e-004**	**4.0700e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.7877**	**0.7877**	**4.0000e-005**	**0.0000**	**0.7885**

3.10 River Crossing 45 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6600e-003	0.0455	0.0396	6.0000e-005		2.6400e-003	2.6400e-003		2.4200e-003	2.4200e-003	0.0000	5.3099	5.3099	1.6000e-003	0.0000	5.3435
Total	**3.6600e-003**	**0.0455**	**0.0396**	**6.0000e-005**		**2.6400e-003**	**2.6400e-003**		**2.4200e-003**	**2.4200e-003**	**0.0000**	**5.3099**	**5.3099**	**1.6000e-003**	**0.0000**	**5.3435**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.10 River Crossing 45 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.4300e-003	0.0326	0.0441	6.0000e-005		2.2900e-003	2.2900e-003		2.2900e-003	2.2900e-003	0.0000	5.3099	5.3099	1.6000e-003	0.0000	5.3435
Total	**1.4300e-003**	**0.0326**	**0.0441**	**6.0000e-005**		**2.2900e-003**	**2.2900e-003**		**2.2900e-003**	**2.2900e-003**	**0.0000**	**5.3099**	**5.3099**	**1.6000e-003**	**0.0000**	**5.3435**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.11 River Crossing 120 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0748	0.8573	0.5630	1.0300e-003		0.0384	0.0384		0.0354	0.0354	0.0000	97.0647	97.0647	0.0293	0.0000	97.6795
Total	**0.0748**	**0.8573**	**0.5630**	**1.0300e-003**		**0.0384**	**0.0384**		**0.0354**	**0.0354**	**0.0000**	**97.0647**	**97.0647**	**0.0293**	**0.0000**	**97.6795**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.11 River Crossing 120 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0253	0.4889	0.6912	1.0300e-003		0.0217	0.0217		0.0217	0.0217	0.0000	97.0646	97.0646	0.0293	0.0000	97.6794
Total	**0.0253**	**0.4889**	**0.6912**	**1.0300e-003**		**0.0217**	**0.0217**		**0.0217**	**0.0217**	**0.0000**	**97.0646**	**97.0646**	**0.0293**	**0.0000**	**97.6794**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.12 River Crossing 240 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0252	0.2986	0.1045	2.0000e-004		0.0136	0.0136		0.0125	0.0125	0.0000	18.6138	18.6138	5.6100e-003	0.0000	18.7317
Total	**0.0252**	**0.2986**	**0.1045**	**2.0000e-004**		**0.0136**	**0.0136**		**0.0125**	**0.0125**	**0.0000**	**18.6138**	**18.6138**	**5.6100e-003**	**0.0000**	**18.7317**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9500e-003	0.0141	0.1354	3.0000e-004	0.0249	1.8000e-004	0.0250	6.6100e-003	1.7000e-004	6.7700e-003	0.0000	21.9973	21.9973	1.1600e-003	0.0000	22.0217
Total	**7.9500e-003**	**0.0141**	**0.1354**	**3.0000e-004**	**0.0249**	**1.8000e-004**	**0.0250**	**6.6100e-003**	**1.7000e-004**	**6.7700e-003**	**0.0000**	**21.9973**	**21.9973**	**1.1600e-003**	**0.0000**	**22.0217**

3.12 River Crossing 240 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8500e-003	0.0939	0.1052	2.0000e-004		3.5600e-003	3.5600e-003		3.5600e-003	3.5600e-003	0.0000	18.6138	18.6138	5.6100e-003	0.0000	18.7317
Total	**4.8500e-003**	**0.0939**	**0.1052**	**2.0000e-004**		**3.5600e-003**	**3.5600e-003**		**3.5600e-003**	**3.5600e-003**	**0.0000**	**18.6138**	**18.6138**	**5.6100e-003**	**0.0000**	**18.7317**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9500e-003	0.0141	0.1354	3.0000e-004	0.0249	1.8000e-004	0.0250	6.6100e-003	1.7000e-004	6.7700e-003	0.0000	21.9973	21.9973	1.1600e-003	0.0000	22.0217
Total	**7.9500e-003**	**0.0141**	**0.1354**	**3.0000e-004**	**0.0249**	**1.8000e-004**	**0.0250**	**6.6100e-003**	**1.7000e-004**	**6.7700e-003**	**0.0000**	**21.9973**	**21.9973**	**1.1600e-003**	**0.0000**	**22.0217**

3.12 River Crossing 240 - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0178	0.2116	0.0758	1.6000e-004		9.4300e-003	9.4300e-003		8.6800e-003	8.6800e-003	0.0000	14.4007	14.4007	4.4100e-003	0.0000	14.4934
Total	**0.0178**	**0.2116**	**0.0758**	**1.6000e-004**		**9.4300e-003**	**9.4300e-003**		**8.6800e-003**	**8.6800e-003**	**0.0000**	**14.4007**	**14.4007**	**4.4100e-003**	**0.0000**	**14.4934**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3600e-003	9.8000e-003	0.0931	2.3000e-004	0.0195	1.4000e-004	0.0197	5.1900e-003	1.3000e-004	5.3200e-003	0.0000	16.5943	16.5943	8.3000e-004	0.0000	16.6117
Total	**5.3600e-003**	**9.8000e-003**	**0.0931**	**2.3000e-004**	**0.0195**	**1.4000e-004**	**0.0197**	**5.1900e-003**	**1.3000e-004**	**5.3200e-003**	**0.0000**	**16.5943**	**16.5943**	**8.3000e-004**	**0.0000**	**16.6117**

3.12 River Crossing 240 - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8100e-003	0.0738	0.0827	1.6000e-004		2.8000e-003	2.8000e-003		2.8000e-003	2.8000e-003	0.0000	14.4007	14.4007	4.4100e-003	0.0000	14.4933
Total	**3.8100e-003**	**0.0738**	**0.0827**	**1.6000e-004**		**2.8000e-003**	**2.8000e-003**		**2.8000e-003**	**2.8000e-003**	**0.0000**	**14.4007**	**14.4007**	**4.4100e-003**	**0.0000**	**14.4933**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3600e-003	9.8000e-003	0.0931	2.3000e-004	0.0195	1.4000e-004	0.0197	5.1900e-003	1.3000e-004	5.3200e-003	0.0000	16.5943	16.5943	8.3000e-004	0.0000	16.6117
Total	**5.3600e-003**	**9.8000e-003**	**0.0931**	**2.3000e-004**	**0.0195**	**1.4000e-004**	**0.0197**	**5.1900e-003**	**1.3000e-004**	**5.3200e-003**	**0.0000**	**16.5943**	**16.5943**	**8.3000e-004**	**0.0000**	**16.6117**

3.13 Construction Pipe Trenching - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5485	6.2075	4.0604	5.1500e-003		0.2955	0.2955		0.2723	0.2723	0.0000	476.8165	476.8165	0.1400	0.0000	479.7569
Total	**0.5485**	**6.2075**	**4.0604**	**5.1500e-003**		**0.2955**	**0.2955**		**0.2723**	**0.2723**	**0.0000**	**476.8165**	**476.8165**	**0.1400**	**0.0000**	**479.7569**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5100e-003	0.0116	0.1109	2.4000e-004	0.0204	1.5000e-004	0.0205	5.4100e-003	1.4000e-004	5.5500e-003	0.0000	18.0169	18.0169	9.5000e-004	0.0000	18.0368
Total	**6.5100e-003**	**0.0116**	**0.1109**	**2.4000e-004**	**0.0204**	**1.5000e-004**	**0.0205**	**5.4100e-003**	**1.4000e-004**	**5.5500e-003**	**0.0000**	**18.0169**	**18.0169**	**9.5000e-004**	**0.0000**	**18.0368**

3.13 Construction Pipe Trenching - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1436	2.4990	3.0471	5.1500e-003		0.1094	0.1094		0.1094	0.1094	0.0000	476.8159	476.8159	0.1400	0.0000	479.7563
Total	**0.1436**	**2.4990**	**3.0471**	**5.1500e-003**		**0.1094**	**0.1094**		**0.1094**	**0.1094**	**0.0000**	**476.8159**	**476.8159**	**0.1400**	**0.0000**	**479.7563**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5100e-003	0.0116	0.1109	2.4000e-004	0.0204	1.5000e-004	0.0205	5.4100e-003	1.4000e-004	5.5500e-003	0.0000	18.0169	18.0169	9.5000e-004	0.0000	18.0368
Total	**6.5100e-003**	**0.0116**	**0.1109**	**2.4000e-004**	**0.0204**	**1.5000e-004**	**0.0205**	**5.4100e-003**	**1.4000e-004**	**5.5500e-003**	**0.0000**	**18.0169**	**18.0169**	**9.5000e-004**	**0.0000**	**18.0368**

3.14 Construction Weir Excavation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0334	0.3256	0.2220	4.0000e-004		0.0195	0.0195		0.0185	0.0185	0.0000	36.5032	36.5032	8.8100e-003	0.0000	36.6882
Total	**0.0334**	**0.3256**	**0.2220**	**4.0000e-004**	**0.0151**	**0.0195**	**0.0345**	**8.2800e-003**	**0.0185**	**0.0268**	**0.0000**	**36.5032**	**36.5032**	**8.8100e-003**	**0.0000**	**36.6882**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3200e-003	2.3500e-003	0.0226	5.0000e-005	4.1400e-003	3.0000e-005	4.1700e-003	1.1000e-003	3.0000e-005	1.1300e-003	0.0000	3.6662	3.6662	1.9000e-004	0.0000	3.6703
Total	**1.3200e-003**	**2.3500e-003**	**0.0226**	**5.0000e-005**	**4.1400e-003**	**3.0000e-005**	**4.1700e-003**	**1.1000e-003**	**3.0000e-005**	**1.1300e-003**	**0.0000**	**3.6662**	**3.6662**	**1.9000e-004**	**0.0000**	**3.6703**

3.14 Construction Weir Excavation - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2300e-003	0.1951	0.2497	4.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	36.5032	36.5032	8.8100e-003	0.0000	36.6882
Total	**9.2300e-003**	**0.1951**	**0.2497**	**4.0000e-004**	**0.0151**	**0.0110**	**0.0261**	**8.2800e-003**	**0.0110**	**0.0193**	**0.0000**	**36.5032**	**36.5032**	**8.8100e-003**	**0.0000**	**36.6882**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3200e-003	2.3500e-003	0.0226	5.0000e-005	4.1400e-003	3.0000e-005	4.1700e-003	1.1000e-003	3.0000e-005	1.1300e-003	0.0000	3.6662	3.6662	1.9000e-004	0.0000	3.6703
Total	**1.3200e-003**	**2.3500e-003**	**0.0226**	**5.0000e-005**	**4.1400e-003**	**3.0000e-005**	**4.1700e-003**	**1.1000e-003**	**3.0000e-005**	**1.1300e-003**	**0.0000**	**3.6662**	**3.6662**	**1.9000e-004**	**0.0000**	**3.6703**

3.15 Construction Weir Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0403	0.3832	0.2373	3.4000e-004		0.0265	0.0265		0.0247	0.0247	0.0000	31.3256	31.3256	8.5300e-003	0.0000	31.5047
Total	**0.0403**	**0.3832**	**0.2373**	**3.4000e-004**		**0.0265**	**0.0265**		**0.0247**	**0.0247**	**0.0000**	**31.3256**	**31.3256**	**8.5300e-003**	**0.0000**	**31.5047**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6600e-003	2.9400e-003	0.0282	6.0000e-005	5.1800e-003	4.0000e-005	5.2200e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.5828	4.5828	2.4000e-004	0.0000	4.5879
Total	**1.6600e-003**	**2.9400e-003**	**0.0282**	**6.0000e-005**	**5.1800e-003**	**4.0000e-005**	**5.2200e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.5828**	**4.5828**	**2.4000e-004**	**0.0000**	**4.5879**

3.15 Construction Weir Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.0100e-003	0.1769	0.2312	3.4000e-004		0.0113	0.0113		0.0113	0.0113	0.0000	31.3255	31.3255	8.5300e-003	0.0000	31.5047
Total	**8.0100e-003**	**0.1769**	**0.2312**	**3.4000e-004**		**0.0113**	**0.0113**		**0.0113**	**0.0113**	**0.0000**	**31.3255**	**31.3255**	**8.5300e-003**	**0.0000**	**31.5047**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6600e-003	2.9400e-003	0.0282	6.0000e-005	5.1800e-003	4.0000e-005	5.2200e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.5828	4.5828	2.4000e-004	0.0000	4.5879
Total	**1.6600e-003**	**2.9400e-003**	**0.0282**	**6.0000e-005**	**5.1800e-003**	**4.0000e-005**	**5.2200e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.5828**	**4.5828**	**2.4000e-004**	**0.0000**	**4.5879**

3.16 PumpStation Equipment Install - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1765	0.0585	1.3000e-004		7.4600e-003	7.4600e-003		6.8600e-003	6.8600e-003	0.0000	12.3072	12.3072	3.7100e-003	0.0000	12.3851
Total	**0.0145**	**0.1765**	**0.0585**	**1.3000e-004**		**7.4600e-003**	**7.4600e-003**		**6.8600e-003**	**6.8600e-003**	**0.0000**	**12.3072**	**12.3072**	**3.7100e-003**	**0.0000**	**12.3851**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**2.5500e-003**	**4.5400e-003**	**0.0435**	**1.0000e-004**	**7.9900e-003**	**6.0000e-005**	**8.0500e-003**	**2.1200e-003**	**5.0000e-005**	**2.1800e-003**	**0.0000**	**7.0706**	**7.0706**	**3.7000e-004**	**0.0000**	**7.0784**

3.16 PumpStation Equipment Install - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.2200e-003	0.0622	0.0697	1.3000e-004		2.3600e-003	2.3600e-003		2.3600e-003	2.3600e-003	0.0000	12.3072	12.3072	3.7100e-003	0.0000	12.3851
Total	**3.2200e-003**	**0.0622**	**0.0697**	**1.3000e-004**		**2.3600e-003**	**2.3600e-003**		**2.3600e-003**	**2.3600e-003**	**0.0000**	**12.3072**	**12.3072**	**3.7100e-003**	**0.0000**	**12.3851**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5500e-003	4.5400e-003	0.0435	1.0000e-004	7.9900e-003	6.0000e-005	8.0500e-003	2.1200e-003	5.0000e-005	2.1800e-003	0.0000	7.0706	7.0706	3.7000e-004	0.0000	7.0784
Total	**2.5500e-003**	**4.5400e-003**	**0.0435**	**1.0000e-004**	**7.9900e-003**	**6.0000e-005**	**8.0500e-003**	**2.1200e-003**	**5.0000e-005**	**2.1800e-003**	**0.0000**	**7.0706**	**7.0706**	**3.7000e-004**	**0.0000**	**7.0784**

3.17 T PumpStation Equipment Install - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0121	0.1470	0.0488	1.1000e-004		6.2200e-003	6.2200e-003		5.7200e-003	5.7200e-003	0.0000	10.2560	10.2560	3.0900e-003	0.0000	10.3209
Total	**0.0121**	**0.1470**	**0.0488**	**1.1000e-004**		**6.2200e-003**	**6.2200e-003**		**5.7200e-003**	**5.7200e-003**	**0.0000**	**10.2560**	**10.2560**	**3.0900e-003**	**0.0000**	**10.3209**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1300e-003	3.7800e-003	0.0363	8.0000e-005	6.6600e-003	5.0000e-005	6.7100e-003	1.7700e-003	4.0000e-005	1.8100e-003	0.0000	5.8921	5.8921	3.1000e-004	0.0000	5.8987
Total	**2.1300e-003**	**3.7800e-003**	**0.0363**	**8.0000e-005**	**6.6600e-003**	**5.0000e-005**	**6.7100e-003**	**1.7700e-003**	**4.0000e-005**	**1.8100e-003**	**0.0000**	**5.8921**	**5.8921**	**3.1000e-004**	**0.0000**	**5.8987**

3.17 T PumpStation Equipment Install - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.6800e-003	0.0518	0.0581	1.1000e-004		1.9700e-003	1.9700e-003		1.9700e-003	1.9700e-003	0.0000	10.2560	10.2560	3.0900e-003	0.0000	10.3209
Total	**2.6800e-003**	**0.0518**	**0.0581**	**1.1000e-004**		**1.9700e-003**	**1.9700e-003**		**1.9700e-003**	**1.9700e-003**	**0.0000**	**10.2560**	**10.2560**	**3.0900e-003**	**0.0000**	**10.3209**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1300e-003	3.7800e-003	0.0363	8.0000e-005	6.6600e-003	5.0000e-005	6.7100e-003	1.7700e-003	4.0000e-005	1.8100e-003	0.0000	5.8921	5.8921	3.1000e-004	0.0000	5.8987
Total	**2.1300e-003**	**3.7800e-003**	**0.0363**	**8.0000e-005**	**6.6600e-003**	**5.0000e-005**	**6.7100e-003**	**1.7700e-003**	**4.0000e-005**	**1.8100e-003**	**0.0000**	**5.8921**	**5.8921**	**3.1000e-004**	**0.0000**	**5.8987**

3.17 T PumpStation Equipment Install - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.2100e-003	0.0267	9.1300e-003	2.0000e-005		1.1100e-003	1.1100e-003		1.0200e-003	1.0200e-003	0.0000	2.0198	2.0198	6.2000e-004	0.0000	2.0328
Total	**2.2100e-003**	**0.0267**	**9.1300e-003**	**2.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.0200e-003**	**1.0200e-003**	**0.0000**	**2.0198**	**2.0198**	**6.2000e-004**	**0.0000**	**2.0328**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	6.7000e-004	6.3500e-003	2.0000e-005	1.3300e-003	1.0000e-005	1.3400e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.1314	1.1314	6.0000e-005	0.0000	1.1326
Total	**3.7000e-004**	**6.7000e-004**	**6.3500e-003**	**2.0000e-005**	**1.3300e-003**	**1.0000e-005**	**1.3400e-003**	**3.5000e-004**	**1.0000e-005**	**3.6000e-004**	**0.0000**	**1.1314**	**1.1314**	**6.0000e-005**	**0.0000**	**1.1326**

3.17 T PumpStation Equipment Install - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.4000e-004	0.0104	0.0116	2.0000e-005		3.9000e-004	3.9000e-004		3.9000e-004	3.9000e-004	0.0000	2.0198	2.0198	6.2000e-004	0.0000	2.0327
Total	**5.4000e-004**	**0.0104**	**0.0116**	**2.0000e-005**		**3.9000e-004**	**3.9000e-004**		**3.9000e-004**	**3.9000e-004**	**0.0000**	**2.0198**	**2.0198**	**6.2000e-004**	**0.0000**	**2.0327**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	6.7000e-004	6.3500e-003	2.0000e-005	1.3300e-003	1.0000e-005	1.3400e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.1314	1.1314	6.0000e-005	0.0000	1.1326
Total	**3.7000e-004**	**6.7000e-004**	**6.3500e-003**	**2.0000e-005**	**1.3300e-003**	**1.0000e-005**	**1.3400e-003**	**3.5000e-004**	**1.0000e-005**	**3.6000e-004**	**0.0000**	**1.1314**	**1.1314**	**6.0000e-005**	**0.0000**	**1.1326**

3.18 Construction Pipe Pipeline - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1858	2.0562	1.2640	1.7200e-003		0.1034	0.1034		0.0953	0.0953	0.0000	158.6940	158.6940	0.0463	0.0000	159.6667
Total	**0.1858**	**2.0562**	**1.2640**	**1.7200e-003**		**0.1034**	**0.1034**		**0.0953**	**0.0953**	**0.0000**	**158.6940**	**158.6940**	**0.0463**	**0.0000**	**159.6667**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6500e-003	4.7000e-003	0.0452	1.0000e-004	8.2900e-003	6.0000e-005	8.3500e-003	2.2000e-003	6.0000e-005	2.2600e-003	0.0000	7.3324	7.3324	3.9000e-004	0.0000	7.3406
Total	**2.6500e-003**	**4.7000e-003**	**0.0452**	**1.0000e-004**	**8.2900e-003**	**6.0000e-005**	**8.3500e-003**	**2.2000e-003**	**6.0000e-005**	**2.2600e-003**	**0.0000**	**7.3324**	**7.3324**	**3.9000e-004**	**0.0000**	**7.3406**

3.18 Construction Pipe Pipeline - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0493	0.8504	1.0271	1.7200e-003		0.0395	0.0395		0.0395	0.0395	0.0000	158.6938	158.6938	0.0463	0.0000	159.6665
Total	**0.0493**	**0.8504**	**1.0271**	**1.7200e-003**		**0.0395**	**0.0395**		**0.0395**	**0.0395**	**0.0000**	**158.6938**	**158.6938**	**0.0463**	**0.0000**	**159.6665**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6500e-003	4.7000e-003	0.0452	1.0000e-004	8.2900e-003	6.0000e-005	8.3500e-003	2.2000e-003	6.0000e-005	2.2600e-003	0.0000	7.3324	7.3324	3.9000e-004	0.0000	7.3406
Total	**2.6500e-003**	**4.7000e-003**	**0.0452**	**1.0000e-004**	**8.2900e-003**	**6.0000e-005**	**8.3500e-003**	**2.2000e-003**	**6.0000e-005**	**2.2600e-003**	**0.0000**	**7.3324**	**7.3324**	**3.9000e-004**	**0.0000**	**7.3406**

3.18 Construction Pipe Pipeline - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1102	1.2072	0.7552	1.0800e-003		0.0605	0.0605		0.0557	0.0557	0.0000	98.2246	98.2246	0.0291	0.0000	98.8357
Total	**0.1102**	**1.2072**	**0.7552**	**1.0800e-003**		**0.0605**	**0.0605**		**0.0557**	**0.0557**	**0.0000**	**98.2246**	**98.2246**	**0.0291**	**0.0000**	**98.8357**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4300e-003	2.6100e-003	0.0248	6.0000e-005	5.2100e-003	4.0000e-005	5.2400e-003	1.3800e-003	3.0000e-005	1.4200e-003	0.0000	4.4252	4.4252	2.2000e-004	0.0000	4.4298
Total	**1.4300e-003**	**2.6100e-003**	**0.0248**	**6.0000e-005**	**5.2100e-003**	**4.0000e-005**	**5.2400e-003**	**1.3800e-003**	**3.0000e-005**	**1.4200e-003**	**0.0000**	**4.4252**	**4.4252**	**2.2000e-004**	**0.0000**	**4.4298**

3.18 Construction Pipe Pipeline - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0310	0.5346	0.6456	1.0800e-003		0.0248	0.0248		0.0248	0.0248	0.0000	98.2245	98.2245	0.0291	0.0000	98.8356
Total	**0.0310**	**0.5346**	**0.6456**	**1.0800e-003**		**0.0248**	**0.0248**		**0.0248**	**0.0248**	**0.0000**	**98.2245**	**98.2245**	**0.0291**	**0.0000**	**98.8356**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4300e-003	2.6100e-003	0.0248	6.0000e-005	5.2100e-003	4.0000e-005	5.2400e-003	1.3800e-003	3.0000e-005	1.4200e-003	0.0000	4.4252	4.4252	2.2000e-004	0.0000	4.4298
Total	**1.4300e-003**	**2.6100e-003**	**0.0248**	**6.0000e-005**	**5.2100e-003**	**4.0000e-005**	**5.2400e-003**	**1.3800e-003**	**3.0000e-005**	**1.4200e-003**	**0.0000**	**4.4252**	**4.4252**	**2.2000e-004**	**0.0000**	**4.4298**

3.19 Construction Weir Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.6000e-003	0.0531	0.0365	6.0000e-005		3.3000e-003	3.3000e-003		3.0600e-003	3.0600e-003	0.0000	4.9151	4.9151	1.3500e-003	0.0000	4.9433
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.6000e-003**	**0.0531**	**0.0365**	**6.0000e-005**		**3.3000e-003**	**3.3000e-003**		**3.0600e-003**	**3.0600e-003**	**0.0000**	**4.9151**	**4.9151**	**1.3500e-003**	**0.0000**	**4.9433**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	5.9000e-004	5.6400e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9166	0.9166	5.0000e-005	0.0000	0.9176
Total	**3.3000e-004**	**5.9000e-004**	**5.6400e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9166**	**0.9166**	**5.0000e-005**	**0.0000**	**0.9176**

3.19 Construction Weir Paving - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.9800e-003	0.0290	0.0385	6.0000e-005		1.6600e-003	1.6600e-003		1.6600e-003	1.6600e-003	0.0000	4.9151	4.9151	1.3500e-003	0.0000	4.9433
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.9800e-003**	**0.0290**	**0.0385**	**6.0000e-005**		**1.6600e-003**	**1.6600e-003**		**1.6600e-003**	**1.6600e-003**	**0.0000**	**4.9151**	**4.9151**	**1.3500e-003**	**0.0000**	**4.9433**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	5.9000e-004	5.6400e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9166	0.9166	5.0000e-005	0.0000	0.9176
Total	**3.3000e-004**	**5.9000e-004**	**5.6400e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9166**	**0.9166**	**5.0000e-005**	**0.0000**	**0.9176**

3.20 T Construction Weir Site Prep - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.0300e-003	0.0000	4.0300e-003	4.4000e-004	0.0000	4.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0102	0.1023	0.0551	7.0000e-005		6.2500e-003	6.2500e-003		5.7500e-003	5.7500e-003	0.0000	6.6208	6.6208	2.0000e-003	0.0000	6.6627
Total	**0.0102**	**0.1023**	**0.0551**	**7.0000e-005**	**4.0300e-003**	**6.2500e-003**	**0.0103**	**4.4000e-004**	**5.7500e-003**	**6.1900e-003**	**0.0000**	**6.6208**	**6.6208**	**2.0000e-003**	**0.0000**	**6.6627**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.0000e-004	9.3400e-003	7.3100e-003	3.0000e-005	7.7000e-004	1.5000e-004	9.2000e-004	2.1000e-004	1.4000e-004	3.4000e-004	0.0000	2.4352	2.4352	2.0000e-005	0.0000	2.4356
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	8.8000e-004	8.4600e-003	2.0000e-005	1.5500e-003	1.0000e-005	1.5700e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.3748	1.3748	7.0000e-005	0.0000	1.3764
Total	**1.2000e-003**	**0.0102**	**0.0158**	**5.0000e-005**	**2.3200e-003**	**1.6000e-004**	**2.4900e-003**	**6.2000e-004**	**1.5000e-004**	**7.6000e-004**	**0.0000**	**3.8100**	**3.8100**	**9.0000e-005**	**0.0000**	**3.8119**

3.20 T Construction Weir Site Prep - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.0300e-003	0.0000	4.0300e-003	4.4000e-004	0.0000	4.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7000e-003	0.0349	0.0525	7.0000e-005		1.9700e-003	1.9700e-003		1.9700e-003	1.9700e-003	0.0000	6.6208	6.6208	2.0000e-003	0.0000	6.6627
Total	**1.7000e-003**	**0.0349**	**0.0525**	**7.0000e-005**	**4.0300e-003**	**1.9700e-003**	**6.0000e-003**	**4.4000e-004**	**1.9700e-003**	**2.4100e-003**	**0.0000**	**6.6208**	**6.6208**	**2.0000e-003**	**0.0000**	**6.6627**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.0000e-004	9.3400e-003	7.3100e-003	3.0000e-005	7.7000e-004	1.5000e-004	9.2000e-004	2.1000e-004	1.4000e-004	3.4000e-004	0.0000	2.4352	2.4352	2.0000e-005	0.0000	2.4356
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	8.8000e-004	8.4600e-003	2.0000e-005	1.5500e-003	1.0000e-005	1.5700e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.3748	1.3748	7.0000e-005	0.0000	1.3764
Total	**1.2000e-003**	**0.0102**	**0.0158**	**5.0000e-005**	**2.3200e-003**	**1.6000e-004**	**2.4900e-003**	**6.2000e-004**	**1.5000e-004**	**7.6000e-004**	**0.0000**	**3.8100**	**3.8100**	**9.0000e-005**	**0.0000**	**3.8119**

3.21 T Construction Weir Excavation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1800e-003	0.0407	0.0278	5.0000e-005		2.4300e-003	2.4300e-003		2.3100e-003	2.3100e-003	0.0000	4.5629	4.5629	1.1000e-003	0.0000	4.5860
Total	**4.1800e-003**	**0.0407**	**0.0278**	**5.0000e-005**	**0.0151**	**2.4300e-003**	**0.0175**	**8.2800e-003**	**2.3100e-003**	**0.0106**	**0.0000**	**4.5629**	**4.5629**	**1.1000e-003**	**0.0000**	**4.5860**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	2.9000e-004	2.8200e-003	1.0000e-005	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4583	0.4583	2.0000e-005	0.0000	0.4588
Total	**1.7000e-004**	**2.9000e-004**	**2.8200e-003**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4583**	**0.4583**	**2.0000e-005**	**0.0000**	**0.4588**

3.21 T Construction Weir Excavation - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1500e-003	0.0244	0.0312	5.0000e-005		1.3800e-003	1.3800e-003		1.3800e-003	1.3800e-003	0.0000	4.5629	4.5629	1.1000e-003	0.0000	4.5860
Total	**1.1500e-003**	**0.0244**	**0.0312**	**5.0000e-005**	**0.0151**	**1.3800e-003**	**0.0164**	**8.2800e-003**	**1.3800e-003**	**9.6600e-003**	**0.0000**	**4.5629**	**4.5629**	**1.1000e-003**	**0.0000**	**4.5860**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	2.9000e-004	2.8200e-003	1.0000e-005	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4583	0.4583	2.0000e-005	0.0000	0.4588
Total	**1.7000e-004**	**2.9000e-004**	**2.8200e-003**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4583**	**0.4583**	**2.0000e-005**	**0.0000**	**0.4588**

3.21 T Construction Weir Excavation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0268	0.2607	0.1913	3.5000e-004		0.0153	0.0153		0.0145	0.0145	0.0000	31.5785	31.5785	7.6200e-003	0.0000	31.7385
Total	**0.0268**	**0.2607**	**0.1913**	**3.5000e-004**	**0.0151**	**0.0153**	**0.0304**	**8.2800e-003**	**0.0145**	**0.0228**	**0.0000**	**31.5785**	**31.5785**	**7.6200e-003**	**0.0000**	**31.7385**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.9000e-004	1.8200e-003	0.0173	4.0000e-005	3.6300e-003	3.0000e-005	3.6500e-003	9.6000e-004	2.0000e-005	9.9000e-004	0.0000	3.0800	3.0800	1.5000e-004	0.0000	3.0832
Total	**9.9000e-004**	**1.8200e-003**	**0.0173**	**4.0000e-005**	**3.6300e-003**	**3.0000e-005**	**3.6500e-003**	**9.6000e-004**	**2.0000e-005**	**9.9000e-004**	**0.0000**	**3.0800**	**3.0800**	**1.5000e-004**	**0.0000**	**3.0832**

3.21 T Construction Weir Excavation - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0700e-003	0.1707	0.2185	3.5000e-004		9.6600e-003	9.6600e-003		9.6600e-003	9.6600e-003	0.0000	31.5784	31.5784	7.6200e-003	0.0000	31.7385
Total	**8.0700e-003**	**0.1707**	**0.2185**	**3.5000e-004**	**0.0151**	**9.6600e-003**	**0.0247**	**8.2800e-003**	**9.6600e-003**	**0.0179**	**0.0000**	**31.5784**	**31.5784**	**7.6200e-003**	**0.0000**	**31.7385**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.9000e-004	1.8200e-003	0.0173	4.0000e-005	3.6300e-003	3.0000e-005	3.6500e-003	9.6000e-004	2.0000e-005	9.9000e-004	0.0000	3.0800	3.0800	1.5000e-004	0.0000	3.0832
Total	**9.9000e-004**	**1.8200e-003**	**0.0173**	**4.0000e-005**	**3.6300e-003**	**3.0000e-005**	**3.6500e-003**	**9.6000e-004**	**2.0000e-005**	**9.9000e-004**	**0.0000**	**3.0800**	**3.0800**	**1.5000e-004**	**0.0000**	**3.0832**

3.22 Construction Backfil and Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0833	0.8527	0.4943	1.0800e-003		0.0411	0.0411		0.0380	0.0380	0.0000	97.5351	97.5351	0.0286	0.0000	98.1360
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0833**	**0.8527**	**0.4943**	**1.0800e-003**		**0.0411**	**0.0411**		**0.0380**	**0.0380**	**0.0000**	**97.5351**	**97.5351**	**0.0286**	**0.0000**	**98.1360**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8200e-003	3.3300e-003	0.0316	8.0000e-005	6.6300e-003	5.0000e-005	6.6800e-003	1.7600e-003	4.0000e-005	1.8000e-003	0.0000	5.6320	5.6320	2.8000e-004	0.0000	5.6379
Total	**1.8200e-003**	**3.3300e-003**	**0.0316**	**8.0000e-005**	**6.6300e-003**	**5.0000e-005**	**6.6800e-003**	**1.7600e-003**	**4.0000e-005**	**1.8000e-003**	**0.0000**	**5.6320**	**5.6320**	**2.8000e-004**	**0.0000**	**5.6379**

3.22 Construction Backfil and Paving - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0321	0.5369	0.6192	1.0800e-003		0.0249	0.0249		0.0249	0.0249	0.0000	97.5350	97.5350	0.0286	0.0000	98.1359
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0321**	**0.5369**	**0.6192**	**1.0800e-003**		**0.0249**	**0.0249**		**0.0249**	**0.0249**	**0.0000**	**97.5350**	**97.5350**	**0.0286**	**0.0000**	**98.1359**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8200e-003	3.3300e-003	0.0316	8.0000e-005	6.6300e-003	5.0000e-005	6.6800e-003	1.7600e-003	4.0000e-005	1.8000e-003	0.0000	5.6320	5.6320	2.8000e-004	0.0000	5.6379
Total	**1.8200e-003**	**3.3300e-003**	**0.0316**	**8.0000e-005**	**6.6300e-003**	**5.0000e-005**	**6.6800e-003**	**1.7600e-003**	**4.0000e-005**	**1.8000e-003**	**0.0000**	**5.6320**	**5.6320**	**2.8000e-004**	**0.0000**	**5.6379**

3.23 T Construction Weir Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0370	0.3543	0.2327	3.4000e-004		0.0241	0.0241		0.0224	0.0224	0.0000	30.8941	30.8941	8.4700e-003	0.0000	31.0721
Total	**0.0370**	**0.3543**	**0.2327**	**3.4000e-004**		**0.0241**	**0.0241**		**0.0224**	**0.0224**	**0.0000**	**30.8941**	**30.8941**	**8.4700e-003**	**0.0000**	**31.0721**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4200e-003	2.6000e-003	0.0247	6.0000e-005	5.1800e-003	4.0000e-005	5.2100e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.4000	4.4000	2.2000e-004	0.0000	4.4046
Total	**1.4200e-003**	**2.6000e-003**	**0.0247**	**6.0000e-005**	**5.1800e-003**	**4.0000e-005**	**5.2100e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.4000**	**4.4000**	**2.2000e-004**	**0.0000**	**4.4046**

3.23 T Construction Weir Construction - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.0100e-003	0.1769	0.2312	3.4000e-004		0.0113	0.0113		0.0113	0.0113	0.0000	30.8941	30.8941	8.4700e-003	0.0000	31.0721
Total	**8.0100e-003**	**0.1769**	**0.2312**	**3.4000e-004**		**0.0113**	**0.0113**		**0.0113**	**0.0113**	**0.0000**	**30.8941**	**30.8941**	**8.4700e-003**	**0.0000**	**31.0721**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4200e-003	2.6000e-003	0.0247	6.0000e-005	5.1800e-003	4.0000e-005	5.2100e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.4000	4.4000	2.2000e-004	0.0000	4.4046
Total	**1.4200e-003**	**2.6000e-003**	**0.0247**	**6.0000e-005**	**5.1800e-003**	**4.0000e-005**	**5.2100e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.4000**	**4.4000**	**2.2000e-004**	**0.0000**	**4.4046**

3.24 T Construction Weir Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.2000e-003	0.0492	0.0362	6.0000e-005		3.0100e-003	3.0100e-003		2.7900e-003	2.7900e-003	0.0000	4.8486	4.8486	1.3500e-003	0.0000	4.8769
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.2000e-003**	**0.0492**	**0.0362**	**6.0000e-005**		**3.0100e-003**	**3.0100e-003**		**2.7900e-003**	**2.7900e-003**	**0.0000**	**4.8486**	**4.8486**	**1.3500e-003**	**0.0000**	**4.8769**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	5.2000e-004	4.9400e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.8800	0.8800	4.0000e-005	0.0000	0.8809
Total	**2.8000e-004**	**5.2000e-004**	**4.9400e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.8800**	**0.8800**	**4.0000e-005**	**0.0000**	**0.8809**

3.24 T Construction Weir Paving - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.9800e-003	0.0289	0.0385	6.0000e-005		1.6600e-003	1.6600e-003		1.6600e-003	1.6600e-003	0.0000	4.8486	4.8486	1.3500e-003	0.0000	4.8769
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.9800e-003**	**0.0289**	**0.0385**	**6.0000e-005**		**1.6600e-003**	**1.6600e-003**		**1.6600e-003**	**1.6600e-003**	**0.0000**	**4.8486**	**4.8486**	**1.3500e-003**	**0.0000**	**4.8769**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	5.2000e-004	4.9400e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0400e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.8800	0.8800	4.0000e-005	0.0000	0.8809
Total	**2.8000e-004**	**5.2000e-004**	**4.9400e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0400e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.8800**	**0.8800**	**4.0000e-005**	**0.0000**	**0.8809**

3.25 T River Crossing 15 - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0131	0.1475	0.0703	2.0000e-004		5.4800e-003	5.4800e-003		5.0400e-003	5.0400e-003	0.0000	18.2924	18.2924	5.6000e-003	0.0000	18.4101
Total	**0.0131**	**0.1475**	**0.0703**	**2.0000e-004**	**0.0000**	**5.4800e-003**	**5.4800e-003**	**0.0000**	**5.0400e-003**	**5.0400e-003**	**0.0000**	**18.2924**	**18.2924**	**5.6000e-003**	**0.0000**	**18.4101**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.25 T River Crossing 15 - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8300e-003	0.0933	0.1046	2.0000e-004		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	18.2924	18.2924	5.6000e-003	0.0000	18.4101
Total	**4.8300e-003**	**0.0933**	**0.1046**	**2.0000e-004**	**0.0000**	**3.5400e-003**	**3.5400e-003**	**0.0000**	**3.5400e-003**	**3.5400e-003**	**0.0000**	**18.2924**	**18.2924**	**5.6000e-003**	**0.0000**	**18.4101**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.26 T River Crossing 60 - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0655	0.7163	0.4417	5.6000e-004		0.0355	0.0355		0.0327	0.0327	0.0000	52.2490	52.2490	0.0160	0.0000	52.5852
Total	**0.0655**	**0.7163**	**0.4417**	**5.6000e-004**	**0.1807**	**0.0355**	**0.2162**	**0.0993**	**0.0327**	**0.1320**	**0.0000**	**52.2490**	**52.2490**	**0.0160**	**0.0000**	**52.5852**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.26 T River Crossing 60 - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0138	0.2765	0.3244	5.6000e-004		0.0125	0.0125		0.0125	0.0125	0.0000	52.2490	52.2490	0.0160	0.0000	52.5852
Total	**0.0138**	**0.2765**	**0.3244**	**5.6000e-004**	**0.1807**	**0.0125**	**0.1932**	**0.0993**	**0.0125**	**0.1118**	**0.0000**	**52.2490**	**52.2490**	**0.0160**	**0.0000**	**52.5852**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.27 T River Crossing 45 - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.5500e-003	0.0439	0.0397	6.0000e-005		2.5100e-003	2.5100e-003		2.3100e-003	2.3100e-003	0.0000	5.2415	5.2415	1.6100e-003	0.0000	5.2752
Total	**3.5500e-003**	**0.0439**	**0.0397**	**6.0000e-005**		**2.5100e-003**	**2.5100e-003**		**2.3100e-003**	**2.3100e-003**	**0.0000**	**5.2415**	**5.2415**	**1.6100e-003**	**0.0000**	**5.2752**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.27 T River Crossing 45 - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.4300e-003	0.0326	0.0441	6.0000e-005		2.2900e-003	2.2900e-003		2.2900e-003	2.2900e-003	0.0000	5.2415	5.2415	1.6100e-003	0.0000	5.2752
Total	**1.4300e-003**	**0.0326**	**0.0441**	**6.0000e-005**		**2.2900e-003**	**2.2900e-003**		**2.2900e-003**	**2.2900e-003**	**0.0000**	**5.2415**	**5.2415**	**1.6100e-003**	**0.0000**	**5.2752**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.28 T River Crossing 120 - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0696	0.7771	0.5511	1.0300e-003		0.0347	0.0347		0.0319	0.0319	0.0000	95.5078	95.5078	0.0293	0.0000	96.1223
Total	**0.0696**	**0.7771**	**0.5511**	**1.0300e-003**		**0.0347**	**0.0347**		**0.0319**	**0.0319**	**0.0000**	**95.5078**	**95.5078**	**0.0293**	**0.0000**	**96.1223**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.28 T River Crossing 120 - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0253	0.4889	0.6912	1.0300e-003		0.0217	0.0217		0.0217	0.0217	0.0000	95.5077	95.5077	0.0293	0.0000	96.1222
Total	**0.0253**	**0.4889**	**0.6912**	**1.0300e-003**		**0.0217**	**0.0217**		**0.0217**	**0.0217**	**0.0000**	**95.5077**	**95.5077**	**0.0293**	**0.0000**	**96.1222**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.29 T River Crossing 240 - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0243	0.2885	0.1034	2.1000e-004		0.0129	0.0129		0.0118	0.0118	0.0000	19.6373	19.6373	6.0200e-003	0.0000	19.7637
Total	**0.0243**	**0.2885**	**0.1034**	**2.1000e-004**		**0.0129**	**0.0129**		**0.0118**	**0.0118**	**0.0000**	**19.6373**	**19.6373**	**6.0200e-003**	**0.0000**	**19.7637**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.3100e-003	0.0134	0.1270	3.2000e-004	0.0266	1.9000e-004	0.0268	7.0800e-003	1.7000e-004	7.2500e-003	0.0000	22.6286	22.6286	1.1300e-003	0.0000	22.6523
Total	**7.3100e-003**	**0.0134**	**0.1270**	**3.2000e-004**	**0.0266**	**1.9000e-004**	**0.0268**	**7.0800e-003**	**1.7000e-004**	**7.2500e-003**	**0.0000**	**22.6286**	**22.6286**	**1.1300e-003**	**0.0000**	**22.6523**

3.29 T River Crossing 240 - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2000e-003	0.1006	0.1127	2.1000e-004		3.8100e-003	3.8100e-003		3.8100e-003	3.8100e-003	0.0000	19.6373	19.6373	6.0200e-003	0.0000	19.7636
Total	**5.2100e-003**	**0.1006**	**0.1127**	**2.1000e-004**		**3.8100e-003**	**3.8100e-003**		**3.8100e-003**	**3.8100e-003**	**0.0000**	**19.6373**	**19.6373**	**6.0200e-003**	**0.0000**	**19.7636**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.3100e-003	0.0134	0.1270	3.2000e-004	0.0266	1.9000e-004	0.0268	7.0800e-003	1.7000e-004	7.2500e-003	0.0000	22.6286	22.6286	1.1300e-003	0.0000	22.6523
Total	**7.3100e-003**	**0.0134**	**0.1270**	**3.2000e-004**	**0.0266**	**1.9000e-004**	**0.0268**	**7.0800e-003**	**1.7000e-004**	**7.2500e-003**	**0.0000**	**22.6286**	**22.6286**	**1.1300e-003**	**0.0000**	**22.6523**

3.29 T River Crossing 240 - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0126	0.1502	0.0555	1.3000e-004		6.5000e-003	6.5000e-003		5.9800e-003	5.9800e-003	0.0000	11.5945	11.5945	3.6100e-003	0.0000	11.6703
Total	**0.0126**	**0.1502**	**0.0555**	**1.3000e-004**		**6.5000e-003**	**6.5000e-003**		**5.9800e-003**	**5.9800e-003**	**0.0000**	**11.5945**	**11.5945**	**3.6100e-003**	**0.0000**	**11.6703**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8100e-003	7.1500e-003	0.0676	1.9000e-004	0.0160	1.1000e-004	0.0161	4.2500e-003	1.0000e-004	4.3500e-003	0.0000	13.0887	13.0887	6.2000e-004	0.0000	13.1018
Total	**3.8100e-003**	**7.1500e-003**	**0.0676**	**1.9000e-004**	**0.0160**	**1.1000e-004**	**0.0161**	**4.2500e-003**	**1.0000e-004**	**4.3500e-003**	**0.0000**	**13.0887**	**13.0887**	**6.2000e-004**	**0.0000**	**13.1018**

3.29 T River Crossing 240 - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1200e-003	0.0603	0.0676	1.3000e-004		2.2900e-003	2.2900e-003		2.2900e-003	2.2900e-003	0.0000	11.5944	11.5944	3.6100e-003	0.0000	11.6702
Total	**3.1200e-003**	**0.0603**	**0.0676**	**1.3000e-004**		**2.2900e-003**	**2.2900e-003**		**2.2900e-003**	**2.2900e-003**	**0.0000**	**11.5944**	**11.5944**	**3.6100e-003**	**0.0000**	**11.6702**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8100e-003	7.1500e-003	0.0676	1.9000e-004	0.0160	1.1000e-004	0.0161	4.2500e-003	1.0000e-004	4.3500e-003	0.0000	13.0887	13.0887	6.2000e-004	0.0000	13.1018
Total	**3.8100e-003**	**7.1500e-003**	**0.0676**	**1.9000e-004**	**0.0160**	**1.1000e-004**	**0.0161**	**4.2500e-003**	**1.0000e-004**	**4.3500e-003**	**0.0000**	**13.0887**	**13.0887**	**6.2000e-004**	**0.0000**	**13.1018**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.411222	0.062718	0.156221	0.175699	0.050886	0.007831	0.019556	0.102845	0.001787	0.001576	0.006435	0.000923	0.002302

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	6,766.3585	6,766.3585	0.2354	0.0487	6,786.4029
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	6,766.3585	6,766.3585	0.2354	0.0487	6,786.4029

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	1.7898e+007	6,766.3585	0.2354	0.0487	6,786.4029
Total		**6,766.3585**	**0.2354**	**0.0487**	**6,786.4029**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	1.7898e+007	6,766.3585	0.2354	0.0487	6,786.4029
Total		**6,766.3585**	**0.2354**	**0.0487**	**6,786.4029**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Appendix C – Construction Equipment List

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NVRRWP Construction Phasing and Equipment List for Air Quality Modeling

Alternative 1 (Combined) - Preliminary - Facilities Planning

July 7, 2014

Construction of Weir Structure

Phase	Working Days[1]	Equipment Type	Quantity of Equipment	Hours per Day
Site Prep	20	Graders	1	8
		Tractors/Loaders/Backhoes	1	8
Excavation	40	Concrete/Industrial Saws	1	8
		Rubber Tired Dozers	1	1
		Tractors/Loaders/Backhoes	2	6
		Excavators	1	2
		Bore/Drill Rigs	1	6
Construction	50	Cranes	1	4
		Forklifts	2	6
		Tractors/Loaders/Backhoes	2	8
		Air Compressor	1	1
		Pumps	1	2
Paving	10	Cement and Mortar Mixers	4	6
		Pavers	1	7
		Rollers	1	7
		Tractors/Loaders/Backhoes	1	7
	Daily Mileage	**Trips per Day[2]**		
Hauling Trips (see Material Movement-Weir Tab)	30	1		
Daily Worker Trips (1 crew trucks for PM, 1 inspection/testing trucks, 2 crew trucks for construction)	20	8		

1. Assumes the structure takes 6 months to finish
2. Hauling trips assumes phased soil import and export. If not phased, see soil movement tab for total round trips.

Construction of Pipeline - Trenched East and West of River

Phase	Working Days[1]	Equipment Type	Quantity of Equipment	Hours per Day
Site Prep	19	Rubber Tired Dozers	1	8
		Scrapers	1	8
		Signal Boards	5	8
Trenching	73	Excavators	1	8
		Graders	1	8
		Rubber Tired Dozers	1	8
		Scapers	2	8
		Signal Boards	5	8
		Tractors/Loaders/Backhoes	2	8
Pipeline	48	Graders	1	8
		Scrapers	2	8
		Signal Boards	5	8
		Trenchers	1	8
		Tractors/Loaders/Backhoes	2	8
Backfill and Paving	28	Rollers	1	8
		Signal Boards	5	8
		Cement Truck	1	8
		Asphalt Truck	1	8
		Tractors/Loaders/Backhoes	2	8
	Daily Mileage	**Round Trips per day[2]**		
Hauling Trips (See Soil Movement-Pipeline Tab)	30	83		
Worker Trips (2 crew trucks for PM, 4 inspection/testing trucks, 8 crew trucks for construction)	20	28		

1. Working days are counted as 20 days within a calendar month. The trenched pipeline takes 168 days to finish assuming maximum rate of construction at 400 LF/day
The average construction speed according to the proposed schedule is actually 200 LF/day per construction team. This estimates a more conservative approach using two construction teams, totaling 400LF/day.
2. Hauling trips assumes phased soil import and export. If not phased, see soil movement tab for total round trips.

Construction of Pump Station – Modesto

Phase	Working Days[1]	Equipment Type	Quantity of Equipment	Hours per Day
Construction	60	Excavator	1	8
	60	Bulldozer	1	8
	60	Cranes	1	4
	60	Front end Loader	1	8
	60	Sheepfoot Compactor	1	8
	30	Semi-Truck – Delivery (One delivery per day)	1	NA
	270	Water Truck	1	4
Equipment Installation	60	Cranes	1	4
	30	Front end Loader	1	4
	180	Water Truck	1	4
	Daily Mileage	**Trips per Day[2]**		
Hauling Trips (Retrofitting existing pump station; no major soil movement)	30	0		
Daily Worker Trips (2 crew trucks for PM, 2 crew trucks for construction, 2 crew trucks for equipment install)	20	12		

1. Assumes the structure takes 10 months to finish (Project schedule proposed 12 months and we're more conservative in case the schedule will be updated)
2. Hauling Trips only apply to Excavation and construction phase, assuming minimum grading required (above ground PS)

San Joaquin River Crossing @ Modesto

Phase	Working Days[1]	Equipment Type	Quantity of Equipment	Hours per Day
Construction	120	Excavators	2	8
	45	Tunneling Machine	1	8
	60	Pile Driver (The pile driver will likely only operate the first 2 months of the construction duration.)	1	8
	240	Crane	1	4
	60	Front End Loader	1	8
	120	Water Truck	1	4
	15	Semi-truck – delivery (Two deliveries per day)	2	NA
	15	Concrete Delivery Truck	2	8
	60	Bulldozer	1	8
	60	Sheep Foot Compactor	1	8
	Daily Mileage	**Trips per Day[2]**		
Hauling Trips (See Soil Movement-Pipeline Tab)	30	2		
Daily Worker Trips (3 crew trucks for PM, 4 crew trucks for construction, 1 inspection/testing truck)	20	16		

1. Assumes the crossing takes 300 days to finish
2. Hauling trips assumes phased soil import and export. If not phased, see soil movement tab for total round trips.

NVRRWP Construction Phasing and Equipment List for Air Quality Modeling

Alternative 2 (Separate) - Preliminary - Facilities Planning

July 7, 2014

Construction of Weir Structure – Modesto

Phase	Working Days[1]	Equipment Type	Quantity of Equipment	Hours per Day
Site Prep	20	Graders	1	8
		Tractors/Loaders/Backhoes	1	8
Excavation	40	Concrete/Industrial Saws	1	8
		Rubber Tired Dozers	1	1
		Tractors/Loaders/Backhoes	2	6
		Excavators	1	2
		Bore/Drill Rigs	1	6
Construction	50	Cranes	1	4
		Forklifts	2	6
		Tractors/Loaders/Backhoes	2	8
		Air Compressor	1	1
		Pumps	1	2
Paving	10	Cement and Mortar Mixers	4	6
		Pavers	1	7
		Rollers	1	7
		Tractors/Loaders/Backhoes	1	7
	Daily Mileage	**Trips per Day[2]**		
Hauling Trips (See Material Movement-Weir Tab)	30	1		
Daily Worker Trips (1 crew trucks for PM, 1 inspection/testing trucks, 2 crew trucks for construction)	20	8		

1. Assumes the structure takes 6 months to finish
2. Hauling Trips only apply to excavation and construction phase, assumes phased soil import and export. If soil movement is not phased then round trips per day should be 2.

Construction of Weir Structure – Turlock

Phase	Working Days[1]	Equipment Type	Quantity of Equipment	Hours per Day
Site Prep	20	Graders	1	8
		Tractors/Loaders/Backhoes	1	8
Excavation	40	Concrete/Industrial Saws	1	8
		Rubber Tired Dozers	1	1
		Tractors/Loaders/Backhoes	2	6
		Excavators	1	2
		Bore/Drill Rigs	1	6
Construction	50	Cranes	1	4
		Forklifts	2	6
		Tractors/Loaders/Backhoes	2	8
		Air Compressor	1	1
		Pumps	1	2
Paving	10	Cement and Mortar Mixers	4	6
		Pavers	1	7
		Rollers	1	7
		Tractors/Loaders/Backhoes	1	7
	Daily Mileage	**Trips per Day[2]**		
Hauling Trips 9See Material Movement-Weir Tab)	30	1		
Daily Worker Trips (1 crew trucks for PM, 1 inspection/testing trucks, 2 crew trucks for construction)	20	8		

1. Assumes the structure takes 6 months to finish
2. Hauling Trips only apply to excavation and construction phase, assumes phased soil import and export. If soil movement is not phased then round trips per day should be 2.

Construction of Pipeline - Trenched East and West of River

Phase	Working Days[1]	Equipment Type	Quantity of Equipment	Hours per Day
Site Prep	19	Rubber Tired Dozers	2	8
		Scrapers	2	8
		Signal Boards	10	8
Trenching	86	Excavators	2	8
		Graders	2	8
		Rubber Tired Dozers	2	8
		Scapers	4	8
		Signal Boards	10	8
		Tractors/Loaders/Backhoes	4	8
Pipeline	57	Graders	2	8
		Scrapers	4	8
		Signal Boards	10	8
		Trenchers	2	8
		Tractors/Loaders/Backhoes	4	8
Backfill and Paving	28	Rollers	2	8
		Signal Boards	10	8
		Cement Truck	2	8
		Asphalt Truck	2	8
		Tractors/Loaders/Backhoes	4	8
	Daily Mileage	**Round Trips per day[2]**		
Hauling Trips (See Soil Movment-Pipeline Tab)	30	71		
Worker Trips (2 crew trucks for PM, 4 inspection/testing trucks, 8 crew trucks for construction)	20	28		

1. Working days are counted as 20 days within a calendar month. The trenched pipeline takes 144 days to finish assuming maximum rate of construction at 400 LF/day
The average construction speed according to the proposed schedule is actually 200 LF/day per construction team. This estimates a more conservative approach using two construction teams, totaling 400LF/day.
2. Hauling trips assumes phased soil import and export. If not phased, see soil movement tab for total round trips.

Construction of Pump Station – Modesto

Phase	Working Days[1]	Equipment Type	Quantity of Equipment	Hours per Day
Construction	60	Excavator	1	8
	60	Bulldozer	1	8
	60	Cranes	1	4
	60	Front end Loader	1	8
	60	Sheepfoot Compactor	1	8
	30	Semi-Truck – Delivery (one delivery day)	1	NA
	270	Water Truck	1	4
Equipment Installation	60	Cranes	1	4
	30	Front end Loader	1	4
	180	Water Truck	1	4
	Daily Mileage	**Trips per Day[2]**		
Hauling Trips (Retrofitting existing pump station; no major soil movement)	30	0		
Daily Worker Trips (2 crew trucks for PM, 2 crew trucks for construction, 2 crew trucks for equipment install)	20	12		

1. Assumes the structure takes 10 months to finish (Project schedule proposed 12 months and we're more conservative in case the schedule will be updated)
2. Hauling Trips only apply to Excavation and construction phase, assuming minimum grading required (above ground PS)

Construction of Pump Station – Turlock

Phase	Working Days[1]	Equipment Type	Quantity of Equipment	Hours per Day
Construction	90	Excavator	2	8
	30	Bulldozer	1	8
	90	Cranes	1	4
	90	Front end Loader	1	8
	90	Sheepfoot Compactor	1	8
	30	Concrete Delivery	4	8
	30	Semi-Truck – Delivery (2 deliveries per day)	2	NA
	270	Water Truck	1	4
Equipment Installation	60	Cranes	1	4
	30	Front end Loader (See Material Movement-Weir Tab)	1	4
	180	Water Truck	1	4
	Daily Mileage	**Trips per Day[2]**		
Hauling Trips (See Material Movement-Pump Station Tab)	30	1		
Daily Worker Trips (2 crew trucks for PM, 3 crew trucks for construction, 2 crew trucks for equipment install)	20	14		

1. Assumes the structure takes 10 months to finish (Project schedule proposed 12 months and we're more conservative in case the schedule will be updated)
2. Hauling Trips only apply to Excavation and construction phase, assuming minimum grading required (above ground PS)

San Joaquin River Crossing @ Modesto

Phase	Working Days[1]	Equipment Type	Quantity of Equipment	Hours per Day
Construction	120	Excavators	2	8
	45	Tunneling Machine	1	8
	60	Pile Driver (The pile driver will likely only operate the first 2 months of the construction duration.)	1	8
	240	Crane	1	4
	60	Front End Loader	1	8
	120	Water Truck	1	4
	15	Semi-truck – delivery (two deliveries per day)	2	NA
	15	Concrete Delivery Truck	2	8
	60	Bulldozer	1	8
	60	Sheep Foot Compactor	1	8
	Daily Mileage	**Trips per Day[2]**		
Hauling Trips (See Soil Movement - Pipeline Tab)	30	2		
Daily Worker Trips (3 crew trucks for PM, 4 crew trucks for construction, 1 inspection/testing truck)	20	16		

1. Assumes the crossing takes 300 days to finish
2. Hauling Trips only apply to Excavation and construction phase, assuming minimum grading required (above ground PS)

San Joaquin River Crossing @ Turlock

Phase	Working Days[1]	Equipment Type	Quantity of Equipment	Hours per Day
Construction	120	Excavators	2	8
	45	Tunneling Machine	1	8
	60	Pile Driver (The pile driver will likely only operate the first 2 months of the construction duration.)	1	8
	240	Crane	1	4
	60	Front End Loader	1	8
	120	Water Truck	1	4
	15	Semi-truck – delivery (two deliveries per day)	2	NA
	15	Concrete Delivery Truck	2	8
	60	Bulldozer	1	8
	60	Sheep Foot Compactor	1	8
	Daily Mileage	**Trips per Day[2]**		
Hauling Trips (See Soil Movement - Pipeline Tab)	30	2		
Daily Worker Trips (3 crew trucks for PM, 4 crew trucks for construction, 1 inspection/testing truck)	20	16		

1. Assumes the crossing takes 300 days to finish
2. Hauling Trips only apply to Excavation and construction phase, assuming minimum grading required (above ground PS)

Pipeline Component Assumptions – Alternative 1

Project Working Day Schedule	Days	Month
Assuming 5 days/week	168	8.4

Average Speed	200	LF/day	
Max Speed for Pipe Construction	400	LF/day	Assumes 2 crews
Max Speed for Material Import/Export	400	LF/day	
Disturbed Area	45	ft	

Truck Capacity

Assuming project alignment is constructed linearly with no overlapping component

	Pipeline Description					Disturbed Acreage			Import/Export Soil			
Parameters	**RW Pipe Length**		**Trench Width**	**Bedding and Filling Depth**	**Pipe Diameter**	**Disturb Total**	**Disturb Max. Daily**		**Import Max. Daily**	**Export Max. Daily**	**Total Import**	**Total Export**
Unites	**miles**	**feet**	**feet**	**feet**	**in**	**acres**	**acres**		**CY**	**CY**	**CY**	**CY**
East	7.2	**37,800**	6	8	**42**	39.0	0.41	38.38	568.6	711.1	53,730.4	67,200.0
West	5.6	**29,500**	8	8	**54**	30.5	0.41	48.10	712.5	948.1	52,549.0	69,925.9
Total	12.7	67,300	-	-	-	39.0	0.41		**1,281.1**	**1,659.3**	53,730.4	67,200.0
Daily Average	-	**400.00**	-	-	-	**0.23**	-		-	-	**319.3**	**399.4**
Hauling Truck trips									64	83		
Hauling Truck Mileage									30	30		
									If Phased	83		
									If Not Pha	147		

River Crossing at Modesto

Length	3000	ft
Diameter	54	inch
With Casing	66	inch
Soil from Crossing	2639.81	yards
Entry and Pullback Pit		
Width	50	ft
Length	100	ft
Depth	5	ft
Soil Excavation	1851.85	yards
Total Soil Excavation from River Crossing	4491.66	yards
	224.583	# of trucks total
	1.87153	# of trucks/day

Pump Station – Modesto

Construction Schedule

Phases	Week
Site Preparation	4
Grading	4
Building Construction	12
Architectural Coating	0
Paving	2
Total	22

Construction Details

General Description		
Pump Station Size	500	hp
Disturbed Acreage	0.10	Acre
Pump Station Building Width	80	ft
Pump Station Building Length	50	ft
Height	16	ft
Footprint	0.09	Acre
Footprint from DPR map	-	Acre

Material Export		
Grading Excavation (Export)	0	Cubic Yard
Foundation Width	4	ft
Foundation Depth	2	ft
Foundation Excavation (Export)	72	Cubic Yard
Total Export Volume	72	Cubic Yard

Material Import		
Foundation Material (Import)	72	Cubic Yard
Building Wall Thickness	0.7	ft
Building Floor Thickness	1.0	ft
Building Material (Import)	250	Cubic Yard
Total Import Volume	322	Cubic Yard

Operation Details

Operation		
Power	500	hp
Annual Energy Consumption	3440423.725	kWh/Yr
Backup Generator	0	kW

Weir

Total Soil Import Export

500	CY import (estimated based on existing drawing)
500	CY export
25	# of 20 Yard Trucks
30	# of days of import/export
0.833333	# of truck trips per day

Pipeline Component Assumptions – Alternative 2

Project Working Day Schedule	Days	Month
Assuming 5 days/week	144	7.2

Average Speed	200	LF/day
Max Speed for Pipe Construction	400	LF/day
Max Speed for Material Import/Export	400	LF/day
Disturbed Area	40	ft

Truck Capacity

Assuming project alignment is constructed linearly with no overlapping component

	Pipeline Description					Disturbed Acreage			Import/Export Soil			
Parameters	RW Pipe Length		Trench Width	Bedding and Filling Depth	Pipe Diameter	Disturb Total	Disturb Max. Daily		Import Max. Daily	Export Max. Daily	Total Import	Total Export
Unites	miles	feet	feet	feet	in	acres	acres		CY	CY	CY	CY
Phase1 - Modesto	5.6	**29,500**	6	8	**42**	27.1	0.37	38.38	568.6	711.1	41,932.5	52,444.4
Phase 2 - Turlock	5.3	28,000	6	8	**42**	25.7	0.37	38.38	**568.6**	**711.1**	39,800.3	49,777.8
Total	10.9	57,500	-	-	-	27.1	0.37		**1,137.2**	**1,422.2**	81,732.8	102,222.2
Daily Average	-	**400.00**	-	-	-	**0.19**	-		-	-	**568.6**	**711.1**

Hauling Truck trips	57	71
Hauling Truck Mileage	30	30

If Phased	71
If Not Phased	128

River Crossing at Modesto

Length	3000	ft
Diameter	42	inch
With Casing	54	inch
Soil from Crossing	1767.1459	yards
Entry and Pullback Pit		
Width	50	ft
Length	100	ft
Depth	5	ft
Soil Excavation	1851.8519	yards
Total Soil Excavation from River Crossing	3618.9977	yards
	180.94989	# of trucks total
	1.5079157	# of trucks/day

River Crossing at Turlock

Length	3000	ft
Diameter	42	inch
With Casing	54	inch

Soil from Crossing	1767.1459	yards
Entry and Pullback Pit		
Width	50	ft
Length	100	ft
Depth	5	ft
Soil Excavation	1851.8519	yards
Total Soil Excavation from River Crossing	3618.9977	yards
	180.94989	# of trucks total
	1.5079157	# of trucks/day

Conversion Factors:
1 mile = 5,280 feet
1 acre = 43,560 sq. feet
1 CY = 27 CF

Pump Station – PS @ Harding Drain Bypass

Construction Schedule

Phases	Week
Site Preparation	4
Grading	4
Building Construction	12
Architectural Coating	0
Paving	2
Total	22

Construction Details

General Description		
Pump Station Size	250	hp
Disturbed Acreage	**0.10**	Acre
Pump Station Building Width (size of the PS structure is estimated based on number of pumps)	40	ft
Pump Station Building Length	50	ft
Height	15	ft
Footprint	0.05	Acre
	-	Acre

Material Export		
Grading Excavation (Export) (15'x30'x15' wet well below grade, 40'x50' building above grade but not centered over wet well)	250	Cubic Yard
Foundation Depth	2	ft
Foundation Excavation (Export)	148	Cubic Yard
Total Export Volume	398	Cubic Yard

Material Import		
Foundation Material (Import)	148	Cubic Yard
Building Wall Thickness	0.7	ft
Building Floor Thickness	1.0	ft
Building Material (Import)	140	Cubic Yard
Total Import Volume	288	Cubic Yard

Operation Details

Operation		
Power	250	hp
Annual Energy Consumption	1720211.863	kWh/Yr
Backup Generator	0	kW

	Total	Per Day
If phased	19.90741	0.66358
If not phased	34.30247	1.143416

Weir (per weir installation)

Total soil import export	
500	CY import
500	CY export
25	# of 20 Yard Trucks
30	# of days of import/export
0.833333	# of truck trips per day

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Appendix D – Supporting Documentation Related to Biological Resources

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Appendix D – Supporting Documentation Related to Biological Resources

This appendix provides supporting documentation for biological resources. Background information on special-status plant and wildlife species with potential to occur in the Study Area was compiled from numerous sources including, but not limited to, the following:

- U.S. Fish and Wildlife Service (USFWS) List of Federal Endangered and Threatened Species that Occur in or May Be Affected by Projects in Stanislaus County as well as in the USGS 7.5 minute quadrangles for the Study Area, including Patterson, Westley, Brush Lake, Crow's Landing (USFWS 2014);
- California Natural Diversity Database (CNDDB and CNPS Inventory of Rare and Endangered Plants of California queries for the USGS 7.5 minute quadrangles within the Project Area and the quadrangles immediately adjacent to them, which are: Patterson, Westley, Brush Lake, Crow's Landing, Copper Mountain, Solyo, Vernalis, Ripon, Salida, Riverbank, Ceres, Hatch, Gustine, Newman, Orestimba Peak and Wilcox Ridge;
- eBird.org records for the Modesto Wastewater Treatment Plant and spray fields; and
- Horizon's field notes and reports from pre-construction surveys and construction monitoring for the Harding Drain Bypass Project (Horizon 2014a).

Chapter 1 Plants

1.1 Alkali milkvetch (*Astragalus tener* var. *tener*) – Rare Plant Rank 1B.2

This plant is an annual herb that is part of the pea family (Fabaceae). It occurs in a range of habitat conditions including vernal pools and playas, edges of salt marshes, alkali meadows, and moist grassy flats (USFWS 2014). Currently, it is most frequently found in the Solano-Colusa vernal pool region. Extant occurrences in the Central Valley include populations in Yolo and Merced counties (LSA 2012). A population of Alkali milkvetch was reported 5 miles east of the Project Area along West Main Avenue, however this population has not been relocated and is thought to be extirpated (CCH 2014a). No *Astragalus* species were observed within the potential suitable habitat within the Project Area (Horizon 2014a).

1.2 Heartscale (*Atriplex cordulata*) – Rare Plant Rank 1B.2

Heartscale is a small, herbaceous, annual species in the goosefoot family (Chenopodiaceae). It occurs on alkaline soils in the southern Sacramento and San Joaquin Valleys. It typically occurs in chenopod scrub and is known to occur in "trampled soils" (BLM 2014), which are present within the alkali scrub adjacent to the Project Area along West Main Avenue.

1.3 Brittlescale (*Atriplex depressa*) – Rare Plant Rank 1B.2

Brittlescale is a small, herbaceous, annual species in the goosefoot family (Chenopodiaceae). It typically occurs on alkaline clay soils in chenopod scrub, grasslands, and meadows. Potentially suitable habitat occurs in alkali flat/scrub habitat adjacent to the Project Area along West Main Avenue.

1.4 Lesser saltscale (*Atriplex minuscula*) – Rare Plant Rank 1B.1

This species is associated with many of the same halophytes as heartscale and San Joaquin spearscale. The life history of lesser saltscale is poorly known, except that it is an annual and flowers from May to October (Skinner and Pavlik 1994; USFWS 1998a). Potentially suitable habitat occurs in alkali flat/scrub habitat adjacent to the Project Area along West Main Avenue. A population of lesser saltscale was recorded approximately 5 miles west of the Project Area just north of West Main Avenue. This record is from 1936 and it has not been relocated suggesting the site has been extirpated (CCH 2014b).

1.5 Vernal pool smallscale (*Atriplex persistens*) – Rare Plant Rank 1B.2

This small, herbaceous plant is endemic to California and was first recognized as a unique species in 1993 (Stutz and Chu 1993). In the San Joaquin Valley, it is known to occur in only a few locations. There is a record for vernal pool smallscale along Carpenter Road from 1965. The location of the occurrence was mapped as a "best guess" in the California Natural Diversity Database (CNDDB) (CDFW 2014a). This occurrence is considered "possibly extirpated." Potentially suitable habitat for this species occurs within the alkali pool adjacent to the Project Area along West Main Avenue.

1.6 Hispid bird's beak (*Chloropyron molle* ssp. *hispidum*) – Rare Plant Rank 1B.2

Hispid bird's beak often occurs with inland saltgrass and alkali sea heath, both of which are present adjacent to the Project Area along West Main Avenue. The nearest known location of this species is 20 miles to the south of the Project area within the Kesterson National Wildlife Refuge. Potentially suitable habitat for this species occurs within the alkali flats adjacent to the Project Area along West Main Avenue.

1.7 San Joaquin spearscale (*Extriplex joaquiniana*) – Rare Plant Rank 1B.2

San Joaquin spearscale occurs in chenopod scrub and seasonally wet areas including meadows and seeps. The Project Area is within the known range of San Joaquin spearscale. Potentially suitable habitat occurs in alkali scrub habitat adjacent to the Project Area along West Main Avenue. The nearest known populations of these species are approximately 20 miles to the south of the Project Area (Jepson Flora Project 2014).

1.8 Slough thistle (*Cirsium crassicaule*) – Rare Plant Rank 1B.1

Slough thistle annual to biennial herbaceous member of the sunflower family (Asteraceae) that may occur within chenopod scrub, riparian scrub and freshwater marshes primarily along sloughs, riverbanks and other marshy areas (CNPS 2014). Habitat for this species might be present within the San Joaquin River crossings, along the river bank and backwater areas. The nearest reported location of this species is over 35 miles to the north of the Project Area near Manteca (Calflora 2014).

1.9 Delta button celery (*Eryngium racemosum*) – Rare Plant Rank 1B.1

Potential habitat for this species might be present within the San Joaquin River crossings, however the hard clay soils and open alkali habitat required for these species was not observed during the preliminary survey conducted in May 2014. The nearest location of Delta button celery is 5 miles to the south of the Project Area within the floodplain of the San Joaquin River (Jepson Flora Project 2014).

1.10 Prostrate vernal pool navarretia (*Navarretia prostrata*) – Rare Plant Rank 1B.1

This is a small annual plant that occurs in vernal pools and alkali flats. This species is more commonly found in vernal pools of southern California. The nearest reported occurrence of prostrate vernal pool navarretia is approximately 20 miles to the south of the Project Area in the Great Valley Grasslands State Park. Potentially suitable habitat for this species occurs within the alkali habitats adjacent to the Project Area along West Main Avenue.

1.11 Sanford's arrowhead (*Sagittaria sanfordii*) – Rare Plant Rank 1B.2

This species occurs in standing or slow-moving freshwater ponds, marshes, and ditches. It flowers May to October. Freshwater marshes within the San Joaquin River crossings provide potentially suitable habitat.

Chapter 2 Invertebrates

2.1 Conservancy Fairy Shrimp (*Branchinecta conservatio*) - Federally Endangered, State Endangered

Conservancy fairy shrimp have delicate elongate bodies, large stalked compound eyes, no carapaces (hard shell), and 11 pairs of swimming legs. Males range from 0.6 to 1.1 inches long, with females measuring slightly smaller, between 0.6 and 0.9 inches (USFWS 2012a), making them the largest of the endemic Central Valley fairy shrimp. They glide gracefully upside down, swimming by beating their legs in a complex, wavelike movement that passes from front to back. Conservancy fairy shrimp, like many other branchiopods, feed on algae, bacteria, protozoa, rotifers, and bits of detritus.

Conservancy fairy shrimp occur in vernal pools found on several different landforms, geologic formations, and soil types. The majority of sites inhabited by this species of fairy shrimp are relatively large and turbid pools (USFWS 2012a), with a mean size of 6.89 acres (Eriksen and Belk 1999). Populations within the Central Valley have been located in northern hardpan pools in swales of old braided alluvium (Eriksen and Belk 1999). This species has a relatively long maturation and reproductive period, and is typically found with other branchiopod species with long maturation and reproductive periods, such as the vernal pool tadpole shrimp and vernal pool fairy shrimp (Helm and Vollmar 2002).

The historical distribution of Conservancy fairy shrimp is not known, but it is likely Conservancy fairy shrimp once occupied suitable vernal pool habitats throughout a large portion of the Central Valley and southern coastal regions of California (USFWS 2012a). The alkaline pool adjacent to the Project Area provides marginally suitable habitat for Conservancy fairy shrimp, although this

alkaline pool is considerably smaller (0.30 acres) than the pools in which this species is typically found (mean 6.89 acres) (Helm 1998).

2.2 Longhorn Fairy Shrimp (*Branchinecta longiantenna*) - Federally Endangered

The longhorn fairy shrimp ranges in size from 0.5 to 0.8 inch long. Its morphology is similar to the Conservancy fairy shrimp. Longhorn fairy shrimp are distinguished from other fairy shrimp by the male's extremely long second antennae (USFWS 2012b).

Longhorn fairy shrimp are found in sandstone or basalt-flow depression basins to small swale and earth slump, with a grassy or, occasionally, muddy bottoms in grassland habitats (Eriksen and Belk 1999). Despite occurring in clear, neutral pools with low total dissolved solids in portions of their range, longhorn fairy shrimp have also been observed in turbid, alkaline pools in the Carrizo Plain vernal pool region and at the proposed Alkali Sink Conservation Bank east of Mendota in Fresno County.

Known populations of longhorn fairy shrimp include: (1) areas within and adjacent to the Carrizo Plain National Monument, San Luis Obispo County; (2) areas within the San Luis National Wildlife Refuge Complex, Merced County; (3) areas within the Brushy Peak Preserve, Alameda County; (4) areas within the Vasco Caves Preserve, near the town of Byron in Contra Costa County; and, (5) areas within the proposed Alkali Sink Conservation Bank east of Mendota in Fresno County (USFWS 2012b). Potentially suitable habitat for this species occurs in the alkaline pool and swale adjacent to the Project Area.

2.3 Vernal Pool Tadpole Shrimp (*Lepidurus packardi*) – Federally Endangered

Vernal pool tadpole shrimp are small crustaceans (0.6 to 3.3 inches long) found primarily in vernal pools of California's Central Valley. Vernal pool tadpole shrimp reach sexual maturity in as little as 3 and 4 weeks. Consequently females can deposit as many as 6 clutches in a single wet season (USFWS 2007a).

Populations of vernal pool tadpole shrimp occur in a variety of ephemeral wetland habitats including vernal pools, vernal swales, ponded clay flats, alkaline pools, ephemeral stock ponds, and roadside ditches. This species inhabits clear to highly turbid water, with water temperatures ranging from 50 to 84°F (USFWS 2007a). The species is adaptable to soil and water conditions, but over 50% of known occurrences have been associated with High Terrace landforms and Redding and Corning soils (USFWS 2007a).

The vernal pool tadpole shrimp has a patchy distribution across the Central Valley of California, from Shasta County southward to northwestern Tulare County, with isolated occurrences in Alameda and Contra Costa Counties (USFWS 2007b). Potential habitat for this species occurs in alkaline pools/swales adjacent to the Project Area.

2.4 Vernal Pool Fairy Shrimp (*Branchinecta lynchi*) – Federally Threatened

The vernal pool fairy shrimp was listed as threatened on September 19, 1994 (59 FR 48136). Critical habitat was originally designated on August 6, 2003 (68 FR 46683), then revised on August 11, 2005 (70 FR 46923). A 5-year review was completed in September 2007; no change in status was recommended (USFWS 2007c).

The vernal pool fairy shrimp is a small crustaceans ranging in size from approximately 0.12 to 1.5 inches in length. The vernal pool fairy shrimp can be distinguished from other *Branchinecta* species by the morphology of the male's second antenna and the female's third thoracic segment (on the middle part of its body) (USFWS 2007c). This species is endemic to California and southern Oregon.

Vernal pool fairy shrimp may occur in various seasonally ponded habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools. It tends to occur in smaller pools measuring less than 0.05 acre. These are most commonly in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands (USFWS 2007c). The species has the ability to inhabit disturbed/constructed sites (e.g., road-side ditches) that are often not suitable for branchiopod species. Potential habitat for this species occurs in alkaline pools/swales adjacent to the Project Area along West Main Avenue.

2.5 Valley Elderberry Longhorn Beetle (VELB) (*Desmocerus californicus dimorphus*) – Federally Threatened

The VELB is a medium-sized, stout-bodied beetle with long antennae. Body lengths of males range from about 0.5 to nearly 1 inch, with antennae about as long as their bodies. Females are slightly more robust than males with somewhat shorter antennae. Adult males have red-orange elytra (wing covers) with four elongate spots. Adult females have dark colored elytra (USFWS 2006a).

VELB are strictly associated with elderberry plants (*Sambucus* spp.) in the Central Valley during its entire life cycle. Adults emerge in the spring from pupation inside the wood of elderberry plants as they begin to bloom. The exit holes used by the emerging adults are small oval openings. The adults eat the elderberry foliage until about June when they mate. Females lay their eggs on crevices on the bark. Upon hatching, the larvae tunnel into the tree where they spend 1-2 years eating the interior wood, their sole source of food (Barr 1991).

A blue elderberry shrub was observed in near the outlet of the Harding Drain at the San Joaquin River during a reconnaissance survey in 2014 (Horizon 2014a). Blue elderberry plants are potentially present in riparian habitat along the San Joaquin River and along other drainage features. Therefore, VELB may occur in the Project Area.

Chapter 3 Fish

3.1 North American green sturgeon [Southern DPS] (*Acipenser mediostris*) – Federally Threatened, State Species of Concern

The southern distinct population segment (DPS) of the Green Sturgeon includes the spawning populations of green sturgeon south of the Eel River (exclusive), principally the Sacramento River green sturgeon spawning population. Green sturgeon use both freshwater and saltwater habitat. As adults, green sturgeon live most of their lives in nearshore oceanic waters, bays, and estuaries. Juveniles and adults are benthic feeders, and juveniles have been reported to eat mysid shrimp and amphipods in the Sacramento–San Joaquin River Delta (Delta) (Radtke 1966 in Moyle 2002); adults may eat small fish and macroinvertebrates (Moyle 2002).

Mature adult green sturgeon move into large, turbulent freshwater rivers to spawn (Moyle et al. 1992a in Moyle, 2002). Spawning occurs once the fish are more than 15 years old and is then believed to occur every 2 to 5 years (Moyle 2002). Green sturgeon migrate to fresh water in late

February and spawn from March to July, with peak spawning occurring from April to June (Moyle et al. 1995). Each female produces 60,000 to 140,000 eggs (Moyle 2002). Specific spawning habitat preferences are unclear, but eggs likely are broadcast over bedrock or sand to cobble substrates (Moyle et al. 1995). Juvenile green sturgeon live in fresh and estuarine waters for 1 to 3 years before out-migrating to saltwater (Nakamoto et al. 1995; Moyle 2002). It is currently believed that green sturgeon spawn in the Klamath River and Sacramento River basins in California and in the Rogue River in Oregon (NMFS 2009a).

The main factor believed to be responsible for the decline of the southern DPS green sturgeon is the reduction in spawning habitat in the Sacramento River. There are numerous other threats, including insufficient freshwater flow rates at spawning areas, contaminants, entrainment, impassable barriers, influence of exotic species, small population size, elevated water temperatures, and by-catch of green sturgeon in fisheries, that could potentially affect the status of the southern DPS green sturgeon (71 FR 17757).

There have been anecdotal accounts of green sturgeon in the vicinity of the Project Area (Jackson and Van Eenennaam 2013), but this species is not expected to be present (Pers. Comm. Gutierrez, 2014).

3.2 Steelhead, California Central Valley DPS (*Oncorhynchus mykiss*) – Federally Threatened

The Central Valley Distinct Population Segment (DPS) of steelhead includes all naturally spawned anadromous steelhead below natural and manmade impassable barriers in the Sacramento River and SJR and their tributaries, excluding steelhead from San Francisco and San Pablo Bays and their tributaries, but including two artificial propagation programs: the Coleman National Fish Hatchery, and the Feather River Fish Hatchery.

Steelhead are the anadromous form of rainbow trout. Steelhead can reach up to 55 pounds in weight and 45 inches in length, though average size is much smaller. They are usually dark-olive in color, shading to silvery-white on the underside with a heavily speckled body and a pink to red stripe running along their sides.

For steelhead, water quality is a critical factor during the freshwater residence time with cool, clear, and well oxygenated water needed for maximum survival (Moyle 2002). Juvenile steelhead (ages 1+ and 2+) occupy deeper water than fry and show a stronger preference for pool habitats with ample cover, as well as for rapids and cascade habitats (Dambacher 1991). Juveniles generally occupy habitat with large structures such as boulders, undercut banks, and large woody debris that provide feeding opportunities, segregation of territories, refuge from high water velocities, and cover from fish and bird predators (Moyle et al. 2008).

Central Valley steelhead are opportunistic predators of aquatic and terrestrial insects, small fish, frogs, and mice, but their primary diet consists of benthic aquatic insect larvae, particularly caddisflies (*Trichoptera*), midges (*Chironomidae*), and mayflies (*Ephemeroptera*) (Merz, 2002). Depending on season and steelhead size, they also may eat salmon eggs, juvenile salmon, sculpins, and suckers (Merz 2002).

Central Valley steelhead exhibit flexible reproductive strategies that allow for persistence in spite of variable flow conditions (McEwan 2001). Adult Central Valley steelhead typically migrate upstream in October through February, though earlier or later migration may occur. Spawning occurs in December through March; incubation and fry emergence occurs between January and May (NMFS 2009a). Juveniles typically rear in freshwater for a longer period (1 to 3 years) than other salmonids, with both juveniles and adults spending varying amounts of time in fresh and salt water (McEwan 2001). Most sub-adults/adults reside in the ocean for 1 to 3 years before

returning to their natal streams in the Central Valley to spawn (Moyle 2002). Steelhead require cool fresh waters with sufficient dissolved oxygen and minimal turbidity for successful incubation and rearing. Juvenile steelhead require habitat with consistently cool temperatures as emigration is unlikely for juveniles prior to spending at least one full summer within their natal stream.

Estimates of historical and recent mean run abundance are 1–2 million and approximately 3,600, respectively (NMFS 2009a). The primary limiting factor for Central Valley steelhead is the inaccessibility of more than 95% of its historic spawning and rearing habitat due to major dams (NMFS 2009a). Other limiting factors include small passage barriers, water development and land use activities, levees and bank protection, dredging and sediment disposal, mining, contaminants, fisheries management practices, hatcheries, inadequately screened water diversions, and predation by nonnative species (McEwan 2001; Moyle et al. 2008; NMFS 2009a).

The Merced River, which is upstream of the Project Area, supports a small run of steelhead. The SJR in the Project Area functions as migration habitat for steelhead. Juvenile rearing habitat is not present.

3.3 Chinook Salmon, Central Valley Spring-Run ESU (*Oncorhynchus tshawytscha*) – Federally Threatened or Nonessential Experimental Population, State Threatened

The Central Valley Evolutionarily Significant Unit (ESU) of spring-run Chinook salmon includes all naturally spawned populations in the Sacramento River and its tributaries in California, including the Feather River, and one artificial propagation program: the Feather River Fish Hatchery spring-run Chinook salmon program. There are only three remaining “stable” populations: Mill, Deer, and Butte Creeks, which are in close geographic proximity to each other (CDFW 2004). Naturally spawning populations have been extirpated from the SJR basin (Lindley et al. 2004).

Returning Central Valley spring-run Chinook migrate upstream as sexually immature fish in spring, hold through the summer in deep pools, spawn in early fall, and migrate downstream as juveniles after either a few months or a year in fresh water (Moyle et al. 2008). Spawning migration extends from February to early July with peaks in mid-April in Butte Creek and in mid-May in Deer and Mill Creeks (Williams 2006). Central Valley spring-run Chinook attain maturity at ages of 2 to 4 years. They generally migrate higher into watersheds than other runs in order to find deep pools where cooler temperatures allow over-summering (Moyle et al. 2008). Spawning often occurs in the tail waters of their final holding pool (Moyle 2002). Incubation lasts 40–60 days and is extremely sensitive to temperature, with high egg mortality at temperatures above 57 to 61°F. Fry emerge in another 4-6 weeks (Williams 2006).

Migration can begin within hours of emergence, after a few months of natal rearing, or after over-summering in the natal stream (Hill and Webber 1999; Moyle et al. 2008; Stillwater Sciences 2006). As Central Valley spring-run Chinook travel downstream, they may rear in the lower reaches of non-natal tributaries and along mainstem margin habitats, particularly for smaller fish that need to grow larger before ocean entry (Moyle et al. 2008). Juveniles feed mainly on zooplankton, benthic invertebrates, terrestrial drift, and larvae of other fishes, especially suckers (Moyle 2002; Moyle et al. 2008).

Estimates of historic abundance indicate about 700,000 spawners, which has declined to a current level of and 500 to 4,500 spawners (NMFS 2009b). Three primary limiting factors to Central

Valley spring-run Chinook have been identified: loss of most historic spawning habitat due to impassable dams; degradation of remaining habitat; and, genetic threats from the Feather River Dish Hatchery spring-run Chinook salmon program (NMFS 2009b). Other limiting factors include water diversions, unscreened or inadequately screened water diversions, excessively high water temperatures, predation by nonnative species, urbanization and rural development, logging, grazing, agriculture, mining, estuarine alteration, fisheries management, and "natural" factors (Moyle et al. 2008; NMFS 2009b).

Central Valley spring-run Chinook salmon ESU have recently been reintroduced to this portion of the SJR (SJRRP 2014). Spring-run Chinook salmon are the focus of salmonid restoration efforts under the San Joaquin River Restoration Program. Effective August 11, 2014, spring-run Chinook salmon including those that have been released or propagated, naturally or artificially, within the experimental population area [defined as the San Joaquin River from Friant Dam downstream to its confluence with the Merced River (exclusive)] are designated a non-essential experimental population (78 CFR 79622).

3.4 Hardhead (*Mylopharodon conocephalus*) – State Species of Concern

Hardhead are distributed widely in low- to mid-elevation streams in the main Sacramento–San Joaquin River drainage, as well as in the Russian River drainage. Their range extends from the Kern River to the Pit River. In the SJR drainage, populations are scattered in the tributary streams. In the Sacramento River drainage, hardhead are present in most of the larger tributary streams, as well as in the Sacramento River.

Hardhead range in size from 11.5 to 23.5 inches. Adults have a brown or dusky bronze back with silvery sides and underside, although juveniles may lack the brown coloration altogether. Breeding males may develop white tubercles laterally along the body and snout. Hardhead typically are found with Sacramento pike minnow (*Ptychocheilus grandis*) and Sacramento suckers (*Catostomus occidentalis*).

Hardhead become sexually mature in their third year (Moyle 2002). Spawning may begin as early as April and extend as late as August, depending on location (Moyle et al. 1995; Moyle 2002; Wang 1986 in Moyle et al. 1995). Spawning is presumed to occur in gravel riffles (Moyle 2002). The incubation period is unknown. Hardhead are bottom feeders, and their diets are size-dependent. Small fish (less than 7.8 inches) feed on mayfly larvae, caddisfly larvae, and small snails (Reeves 1964 in Moyle et al. 1995), and larger fish feed on aquatic plants, crayfish and other large invertebrates (Moyle et al. 1995).

A primary factor affecting hardhead populations is the introduction of predator fish—in particular, the smallmouth bass (Brown and Moyle 1993 in Moyle et al. 1995; Gard 1994 in Moyle et al. 1995; Moyle et al. 1995). Another factor is habitat loss due to dams and diversions, which create unsuitable temperatures and flow regimes.

Hardhead have recently been observed in SJR near the confluence with the Stanislaus River (Merz 2014). Therefore, this species may possibly be within the Project Area.

3.5 Sacramento Splittail (*Pogonichthys macrolepidotus*) – State Species of Concern

Sacramento splittail are confined mostly to the Delta, Suisun Bay, and the lower Petaluma and Napa rivers. They are typically found in slow moving sections of rivers and sloughs (Moyle 2002). Sacramento splittail reach maturity in approximately 2 years. Onset of spawning is

believed to be correlated to rising water levels, increased temperatures and increased day length (Moyle 2002). Spawning usually peaks in March or April, when water levels are typically high, providing access to flooded vegetation. Eggs hatch in roughly a week and the larvae's swim bladder usually inflates a week after that (Moyle 2002). Larvae start feeding on small invertebrates, switching to benthic invertebrates such as clams as they grow larger. Sacramento splittail can live up to 8 years (Moyle 2002).

Threats to Sacramento splittail are many. Sacramento splittail's historical range has been lessened through damming and levees along the rivers, which prevent inundation of the floodplain needed for spawning as well as larval development. Since larval development typically takes place in the Delta, splittail are subjected to a multitude of pesticides and pollutants, and while their effect is not known, it's not likely to be positive. Splittail are also competing heavily with invasive species.

Sacramento splittail distribution within the SJR fluctuates. During wet years, Sacramento splittail have been observed upstream of the Project Area. During dry years, the species is not common upstream of the Tuolumne River confluence (Moyle 2002). Due to the variability of the species distribution based upon flow volumes, Sacramento splittail is considered potentially present in the Project Area.

3.6 Pacific Lamprey (*Lampetra tridentata*) – Federal Species of Concern

Pacific lamprey are found in stream along the Pacific coast. In California they occur in rivers and streams north of Malibu Creek in Los Angeles County (Moyle 2002). Pacific Lamprey can still be found in nearly all of their original spawning grounds, though it is thought that runs are smaller now than they were historically.

Like all lampreys, the Pacific lamprey is eel-like in form, have sucker-like, jawless mouths (oral disk), no scales, and breathing holes instead of gills. Adult Pacific lampreys can be distinguished by three large, sharp teeth and posterior teeth on the oral disc (Moyle 2002). The two dorsal fins are slightly separated, while the second dorsal fin is continuous with the caudal fin.

Juvenile lamprey (ammocoetes) prefer soft sand or mud substrate in rivers, where they can filter feed on the surface of the substrate. They do not remain in any given area long. The ammocoete stage is thought to last 5-7 years, or until the ammocoete reaches 5.5-6.3 inches (Moyle 2002). At this point they metamorphose, gaining the ability to tolerate salt water and developing a sucking disc. They also change color from brown to blue with silver sides. Once the metamorphosis is complete they outmigrate in winter and spring during the high flows. Once in saltwater they are predatory, feeding on fish such as salmon, as well as flatfish (Moyle 2002).

Adults reach sexual maturity when they are between 11.5 and 30 inches, and make their way back into spawning streams. Both sexes assist in constructing the nest, which consists of gravel with stones on the downstream end (Moyle 2002). Adults mate several times, covering the eggs with silt and sediment after each time. After mating both sexes usually die, however some adults have been found to repeat spawn (Moyle 2002).

Threats to Pacific lamprey include damming and diverting rivers and streams, and pollution (Moyle 2002). Pacific lamprey has been observed in the SJR upstream and downstream of the Project Area (Hanni et al. 2006). Various lifestages may be present year-round, although spawning habitat is not present. Therefore, this species may possibly be in the Project Area.

3.7 Kern Brook Lamprey (*Entospherus hubbsi*) – State Species of Concern

Kern Brook lamprey are endemic to the east side of the San Joaquin Valley; Friant-Kern Canal, east of Delano, in Kern County, California, which provides ammocoete habitat but not spawning habitat; and the lower reaches of the Merced River, Kaweah River, Kings River, and SJR (Moyle et al. 1989; Moyle 2002). Kern brook lampreys may also occur in the upper SJR between Millerton Reservoir and Kerckhoff Dam, as well as in the Kings River above Oine Flat Dam (Fresno County) (Moyle et al. 1989; Moyle 2002). The abundance of Kern Brook Lamprey is hard to determine because of the similarity between the lamprey species.

Adult Kern Brook lamprey are typically 7 inches or less in total length (Moyle 2002). Adults have small, poorly developed oral disc with two rounded, nonfunctional teeth. Adults are dark on the back and sides and yellow to white on the underside. Ammocoetes can occasionally be distinguished by a dark tail and pigmentation of the head above the breathing holes (Moyle 2002).

Kern Brook lamprey prefer silty backwaters of large rivers in the foothills region. They require slight flow; therefore, reservoirs probably are poor habitats. Ammocoetes are usually found in shallow pools and along the edges of runs where flow is slight, at depths of 11.5–43 inches, and summer water temperatures rarely exceed 77°F (Moyle et al. 1989). Commonly associated with sand, gravel, and rubble substrates, ammocoetes bury themselves in sand/mud substrate (Moyle et al. 1989). They probably require gravel-rubble substrate for spawning (Moyle et al. 1989).

Threats to Kern Brook lamprey include dams and other flow alterations that reduce silt-laden backwaters required by ammocoetes (Moyle et al. 1989). Diversions have fragmented the population. The Kern Brook lamprey has been observed in SJR in the vicinity of the Project Area (Moyle et al. 2009). Various lifestages may be present in the Project Area year-round, although spawning habitat is not present.

3.8 River Lamprey (*Lampetra ayresii*) – State Species of Concern

River lamprey is thought to occur throughout Pacific coast streams, but its occurrence in California includes tributaries of San Francisco Bay, such as the Napa River, Sonoma Creek, and Alameda Creek, as well as the Sacramento, San Joaquin, and Russian Rivers (Moyle et al. 1995; Moyle 2002). Although river lamprey are believed to be in decline, the exact status of this species is uncertain. Currently, very little information describing the abundance and distribution of river lamprey is available, perhaps largely in part because the species is often overlooked and seldom studied (Moyle 2002).

Adult river lamprey have two teeth and no posterior teeth on the oral disc (Wydoski and Whitney 2003), and grow to an average total length between 7 and 12 inches. Adults are dark on the back and sides with silvery yellow on the belly and dark pigmentation on the tail (Moyle 2002). Except for the last six to twelve months of life, Kern Brook lamprey and river lamprey are indistinguishable from each other (Kostow 2002).

Limited information is available regarding the life history of this species in California. Current accounts are based largely on information from Canadian populations (Moyle 2002). River lamprey is a semelparous (i.e., individuals spawn once and then die) anadromous fish with long freshwater rearing periods. Adults return to fresh water to spawn in fall and winter, but spawning usually occurs from February through March in gravely riffles in small tributary streams (Moyle 2002). Ammocoetes remain in silty backwater habitats, where they filter feed on various microorganisms for approximately 3–5 years before migrating to the ocean during late spring

periods (Moyle et al. 1995; Moyle 2002). Adult lamprey prey on other fish and may reach 6.7 inches in total length (Moyle et al. 1995).

Potential threats to river lamprey include habitat alteration and degradation due to dams, diversions, pollution, channelization/dredging, urbanization, and other factors (Moyle et al. 1995). The river lamprey has been observed in SJR in the vicinity of the Project Area (Moyle et al. 2009). Various lifestages may be present year-round, although spawning habitat is not present.

3.9 San Joaquin Roach (*Lavinia symmetricus*) – State Species of Concern

San Joaquin roach are generally found in small, warm intermittent streams, and isolated pools (Moyle 1976; Moyle et al.1982), although are most abundant in the Sierra foothills (Moyle 1976). San Joaquin roach are a robust species that have been found in relatively high temperatures (86-95° F) and low oxygen levels (1-2 ppm) (Taylor et al. 1982), in cold, well aerated clear streams (Taylor et al. 1982), in human-modified habitats (Moyle 1976; Moyle and Daniels 1982), and in the main channels of rivers. Stream width and depth seem to have little effect on population abundance.

San Joaquin roach are a small, bulky fish with a large head and small, downturned mouth. Adults grow to a total length of 3.9 to 4.7 inches. Adult San Joaquin roach are grey to blue on top with a silvery underside. Spawning adults may develop orange and red colorations on the chin and paired fins. San Joaquin roach are bottom feeders that primarily consume filamentous algae, but may also feed on crustaceans and aquatic insects (Moyle 1976).

San Joaquin roach are threatened mainly due to restricted habitat from dams, diversions, and artificial barriers. Introduced predators, such as largemouth bass and green sunfish, are further decreasing isolated populations. The SJR provides potentially suitable habitat for the San Joaquin roach. Therefore, the species may occur in the Project Area.

Chapter 4 Amphibians and Reptiles

4.1 Western Pond Turtle (*Actinemys marmorata*) – State Species of Concern

The western pond turtle occurs along the Pacific Coast of North America from Baja California and into Washington and British Columbia. In California, western pond turtles inhabit up to 90% of its historic range but in the Central Valley and west of the Sierra Nevada, but in dramatically reduced numbers (Jennings and Hayes 1994).

Western pond turtles are small to medium in size, with adults averaging 4.5-8.25 inches in shell length. From a distance, this species looks uniformly dark green or brown from head to tail. Upon closer inspection, the head and neck are flecked with khaki and brown markings.

Slow moving or slack water habitats, including ponds, lakes, rivers, streams, creeks, and marshes, are typical habitat for this species. Large amounts of vegetation, partially submerged logs, rocks, or open mud banks for basking are also a necessity. The diet of the western pond turtle is omnivorous ranging from aquatic plants, invertebrates, worms, amphibian eggs, crayfish, and fish.

Nests are located upland, generally within 500 feet of the water. Western pond turtle nesting season spans from late May to early July.

Suitable habitat for western pond turtle in the Project Area includes the SJR, natural drainages, and some drainage ditches. Therefore, this species may occur in the Project Area.

4.2 San Joaquin Whipsnake (*Masticophis flagellum ruddocki*) – State Species of Concern

Although whipsnakes can be found throughout most of the southern United States and most of Mexico, the San Joaquin subspecies is endemic to California, ranging from Arbuckle in the Sacramento Valley, southward to Kern County in the San Joaquin Valley, and westward into the inner South Coast Ranges. The San Joaquin whipsnake has been designated a species of concern by the state of California due to agriculture and urban land use changes resulting in habitat loss.

The San Joaquin whipsnake is slender with smooth scales, a think neck, and a large head and large eyes protected by supraocular scales. Adults range in color from tan, olive, brown, or yellowish brown, but lack the very dark head and neckband of other subspecies.

The San Joaquin whipsnake prefers habitats consisting of dry, open or nearly treeless areas, such as grassland or saltbush scrub, often taking refuge in rodent burrows, under shaded vegetation, or under debris. The species diet consists of large insects, bats, birds, bird eggs, amphibians, lizards, carrion, and other snakes.

Saltbush scrub on the inboard side of SJR levee near Station 1335 is potentially suitable habitat. This species was not observed in this location during surveys conducted for the Harding Drain Bypass Project (Horizon 2014b).

4.3 Giant Garter Snake (*Thamnophis gigas*) – Federally Threatened, State Threatened

The giant garter snake is endemic to the valley floor wetlands of the Sacramento and San Joaquin Valleys, occurring in a variety of emergent and agricultural wetlands. San Joaquin Valley subpopulations have suffered severe declines and possible extirpation in many areas, but populations are still supported in the northern and central San Joaquin Basin, and within the northern and southern Grassland National Wildlife Refuge (Miller and Hornaday 1999). The primary threats to the giant garter snake are habitat fragmentation, loss, and degradation.

The giant garter snake is one of the larger species of garter snakes reaching a total length up to 65 inches. The adults are dull brown with a dull yellow, mid-dorsal stripe. Giant garter snakes within the San Joaquin Valley tend to have indistinctive or no lateral stripes resulting in a checkered pattern. The underside is light brown or grayish. Giant garter snakes are highly aquatic and feed on small fish, tadpoles, and frogs (Miller and Hornaday 1999).

Giant garter snakes reach sexual maturity on average in 3 years for males and 5 years for females (58 FR 54053). The species breed in March and April, giving birth to live young in late July through early September (Hansen and Hansen 1990).

Habitat consists of (1) adequate water during the snake's active season, (2) emergent herbaceous wetland vegetation for escape and foraging habitat, (3) grassy banks and openings in waterside vegetation for basking, and (4) higher elevation upland habitat for cover and refuge from flooding. Giant garter snakes feed on small fishes, tadpoles, and frogs (Hansen and Hansen 1990).

The natural drainage on the east side of the SJR and freshwater wetlands within SJR provide marginal to potentially suitable habitat. The Harding Drain and other large ditches with emergent vegetation provide marginal habitat. This species was not observed during surveys conducted for the Harding Drain Bypass Project (Horizon 2014b).

Chapter 5 Birds

5.1 Tricolored Blackbird (*Agelaius tricolor*) – State Species of Concern

Although isolated colonies of tricolored blackbirds can be found in Oregon, Washington, Nevada, and coastal Baja California, greater than 99% of the total population of the species live in California, with 90% residing in the Central Valley most years (Shuford and Gardali 2008). Four years of censuses of all known California colony sites pointed to alarming declines in species numbers, from 369,359 in 1994 down to 162,508 in 2000 (Shuford and Gardali 2008). Habitat loss and degradation appear to be the greatest threat to tricolored blackbird numbers (Beedy and Hamilton 1999).

Tricolored blackbirds form the largest breeding colonies of any North American landbird (Cook and Toft 2005), historically selecting freshwater marshes dominated by cattails. Habitat loss and land use changes encouraged colony development within nettles, thistles, willows, Himalayan blackberry, and grain fields. The preferred breeding habitat is cattails and brushes near open water. Prior to breeding, tricolored blackbirds eat primarily grains. During the breeding season this species feeds on grasshoppers, beetles, weevils and many other insects.

There are several documented occurrences of tricolored blackbird in the vicinity of the Project Area; most these occurrences are concentrated in the lower Tuolumne River near its confluence with the SJR. In 2014, breeding was documented in a natural channel in the Modesto Regional Water Treatment Plant spray fields (UC Davis 2014). Therefore, this species may be present in the Project Area.

5.2 Burrowing Owl (*Athene cunicularia*) – State Species of Concern

Burrowing owls historic range stretched throughout most of California, with the exception of the coastal counties north of Marin and mountainous regions (Grinnell and Miller 1944). The present day range remains largely unchanged but local declines and extirpations have dramatically impacted species population.

The preferred breeding habitat for the burrowing owl is dry open rolling hills, grasslands, fallow fields, as well as disturbed lands such as golf courses, airports, road embankments, and agricultural areas (Trulio 1997; Gervais et al. 2003; Rosenberg and Haley 2004). Nests are composed of sandy soil with minimal vegetation around, and are dug out by other small animals. This species feeds on arthropods, small rodents, amphibians, reptile species, birds and carrion.

Suitable habitat is present within the Project Area. Evidence of burrowing owls was not observed during reconnaissance surveys (Horizon 2014a). The most recent sighting in the vicinity of the Project Area is from 2003 (CDFW 2014a; ebird.org 2014).

5.3 Golden Eagle (*Aquila chrysaetos*) – State Fully Protected

Golden eagles are one of the largest birds of North America, with adults weighing up to 15 pounds, reaching a length of about 3 feet, and a wingspan of up to 7 feet. Adults are brown with tawny on the back of the head and neck.

Golden eagles occur in a variety of habitats including forests, canyons, scrub lands, desert, grasslands, and oak woodlands. Large platform nests, often 10 feet across and 3 feet high, are

constructed on steep cliffs or in large trees. Golden eagles feed primarily on rabbits, hares, rodents, birds, and reptiles, but will consume carrion as well.

Golden eagles are commonly observed in the canyons and foothills to the west of the Project Area (ebird.org 2014). Foraging and nesting habitat in the Project Area is marginal, however, flyover is possible.

5.4 Swainson's Hawk (*Buteo swainsoni*) – State Threatened

The Swainson's hawk is a large raptor that breeds throughout much of the western U.S., Canada, and northern Mexico. Swainson's hawk typically winter in South America (Woodbridge 1998), but there are reports of the species wintering in the Delta (Herzog 1998). In California, 95 percent of Swainson's hawks are in the Central Valley (CDFW 2007) and about 85% of Swainson's hawks nests in the Central Valley are within riparian forest or remnant riparian trees (Woodbridge 1998).

The Swainson's hawk was listed as a threatened species in the state of California following a statewide survey conducted in 1979, estimating a 90% reduction in historic numbers (Bloom 1980). The dramatic decline in population was attributed to loss of nesting habitat, pesticide use in wintering areas, and loss or adverse modifications of foraging habitat.

This species feeds on ground squirrels, voles, and other small mammal prey during the breeding season. At other times of the year insects such as grasshopper and crickets are the primary prey. Swainson's hawks prefer riparian habitats due to the availability and distribution of large nesting trees near foraging areas of open grasslands or croplands.

Swainson's hawks nesting habitat is present in the SJR corridor and the natural drainage to the west of the river. Adjacent fields provide high quality foraging habitat. This species has been observed nesting and foraging in the Project Area (Horizon 2014b).

5.5 Northern Harrier (*Circus cyaneus*) – State Species of Concern

The northern harrier is a raptor reaching a total length of 16-24 inches, with 42 inch wingspan. Northern harriers have a long tail and white underside. Adult males differ slightly in appearance with a gray back, head, and breast and black wingtips while females are brown above and streaked below.

Historic ranges in California stretched from Oregon south to the Mexican border, occupying most wetland habitats under 8,000 feet. By the 1940s, "relatively small numbers" remained in the state through the summer to breed, mainly due to substantial loss of wetland habitats (Grinnell and Miller 1944). The present day range is similar, although overall numbers have been reduced and some local populations have been extirpated (Shuford and Gardali 2008).

Northern Harriers prefer open habitats with adequate vegetative cover, such as grasslands, a wide variety of freshwater wetlands, pastures, and croplands. Northern harriers nest on the ground within dense vegetative cover (MacWhirter and Bildstein 1996). Rodents and small birds are the main source of food.

Northern harriers have been observed in the Modesto WTP spray fields (ebird.org 2014). Additionally, flood irrigated pastures provide potential nesting habitat in the Project Area.

5.6 White-Tailed Kite (*Elanus leucurus*) – State Fully Protected

The White-tailed kite is a raptor reaching a total length of 15-17 inches and a wingspan of 42 inches. Adults are a pale gray with white head, underside, and tail. The species feeds mostly on small rodents, but will occasionally consume birds, large insects, reptiles, and amphibians.

White-tailed kites prefer habitat near agricultural areas, shrubland, grasslands, meadows, or emergent wetlands. Nests are placed 20-100 feet above the ground near the top of dense oak, willow, or other tree stand (Thompson 1975). Habitat loss is the leading cause for decreasing white-tailed kite numbers.

White-tailed kites have been observed in the Modesto WTP spray fields (ebird.org 2014). Additionally, riparian areas in the SJR provide potential nesting habitat.

5.7 Bald Eagle (*Haliaeetus luecocephalus*) – Federally Delisted, State Endangered, State Fully Protected

Adult Bald eagles grow to a total length of 30-37 inches with a wingspan of 72-90 inches and a bodyweight of 10-14 pounds. Bald eagles build platform nests in large trees 50-200 feet above ground, usually near a permanent water source (Ziener 1990). Females are slightly larger than males. Bald eagles are opportunistic foragers and consume a variety of prey including fish, waterfowl, small animals, and carrion.

Although no historical population data exists, bald eagles were widespread and abundant in California. Following World War II, the use of DDT resulted in shell thinning of bald eagle eggs and devastated populations nationwide to near extinction levels. Habitat loss also negatively impacted numbers. By the 1970s, less than 30 resident, breeding pairs remained within California, all within the northern portion of the state (CDFW 2014b). Conservation efforts have helped the species rebound nationwide. In 2010, there were 323 known resident, breeding pairs in California (CDFW 2014b). In addition to the resident population, hundreds of migratory bald eagles winter at lakes, reservoirs, riparian corridors and some rangelands and coastal wetlands throughout California.

Bald eagles have been observed in the canyons and foothills to the west of the Project Area and at the Modesto WTP (ebird.org 2014). The SJR provides suitable foraging and winter roosting habitat; nesting is unlikely.

5.8 Loggerhead Shrike (*Lanius ludovicianus*) – State Species of Concern

The loggerhead shrike is widely found in lower elevations throughout the U.S. except in portions of the Northwest and Northeast. Historically, loggerhead shrikes were classified as “common” to “abundant” throughout most of California (Grinnell and Miller 1944; Grinnell and Wythe 1927; Willett 1933). Although recent and historic breeding ranges remain similar, habitat loss and degradation has led to a downward trend in population and resulted in local extirpation throughout California (Sauer et al. 1996; Sauer et al. 2005). California loggerhead shrike populations are highest in areas of the Central Valley, Coast Ranges, and the southern deserts (Saucer et al. 2005), and in winter throughout the San Joaquin Valley, the south central coast, and the south-eastern deserts (Saucer et al. 1996).

Adult loggerhead shrikes can be identified by their grey head and back, black eye mask, and black wings and tail over a white body. Adults grow to a total length of 8-10 inches. In California, loggerhead shrikes prefer shrublands or open woodlands, requiring tall shrubs or trees for perching with a mix or grass cover and bare ground for hunting. The species feeds primarily on large insects, reptiles, amphibians, small rodents, and small birds (Craig 1978; Yosef 1996). Loggerhead shrikes lack talons associated with many other birds of prey, instead impaling its prey on sharp, thorny, multistemmed plants and barbed-wire fences (Yousef 1996; Pruitt 2000).

Suitable nesting habitat for loggerhead shrikes is present in SJR riparian areas (Horizon 2014a). Therefore, this species may occur in the Project Area.

5.9 Least Bell's vireo (*Vireo bellii pusillus*) – Federally Endangered, State Endangered

The least Bell's vireo (LBV) is one of four subspecies of Bell's vireo. All subspecies are similar in appearance (Kus 2002). LBV are small birds, measuring only about 4.5 to 5.0 inches long. They have short rounded wings and short, straight bills. They are recognized in breeding areas by their distinctive call (USFWS 2006b).

The LBV is an obligate riparian species in the breeding season. The species winters in southern Baja California, Mexico (USFWS 1998b). The species typically arrives in California breeding territories in mid-March to early April. Early to mid-successional riparian habitat is typically used for nesting (Kus 2002).

Historically, the Central Valley was considered the center of LBV's breeding range (USFWS 2006b), but prior to 2005 no LBV nests had been confirmed in the Central Valley for over 50 years. There is an historic record of LBV from the late 1920s in Del Puerto Canyon, which is west of the Project Area. In June 2005, a LBV nest was founded in a riparian restoration site at the San Joaquin River National Wildlife Refuge, which is approximately 10 mile north of the Project Area. Riparian scrub in the vicinity of Stations 320+00 to 333+00 (Figure 3.4-1, Sheet 6) provides potentially suitable breeding habitat for LBV, though vegetation cover may not be quite as dense the species' preferred breeding habitat.

Chapter 6 Mammals

6.1 Western Red Bat (*Lasiurus blossevillii*) – State Species of Concern

The western red bat is a medium-sized bat with adults weighing 0.2-0.5 ounces. Adults are reddish in color and have short, broad, and rounded ears with a short, plain nose. While in flight, a relatively long tail extends straight out giving the western red bat a distinctive silhouette against the sky as compared to other species (Barbour and Davis 1969).

In California, the western red bat occurs from Shasta County to the Mexican border, west of the Sierra Nevada. Western red bats prefer to roost in forests and woodlands from sea level up through mixed conifer forests (Zeiner et al. 1990), roosting anywhere from 2-40 feet in trees near riparian corridors fields, or urban areas. Adults feed on a variety of insects, specifically moths, crickets, beetles, and cicadas, foraging over a variety of habitats, including grasslands, shrublands, open woodlands and forests, and croplands

Western red bats make a relatively short migration from the summer ranges to the coastal lowlands south of San Francisco Bay during the winter months. Potential western red bat roosting habitat is present in the SJR corridor.

6.2 American Badger (*Taxidea taxus*) – State Species of Concern

The American badger a large member of the mustelid family, with a shaggy silver, gray coat and darker colored, white striped head. Characterized by stocky, powerful legs and 1.0-1.5 inch claws, the American badger is adept at digging. Adults can weigh between 12 and 24 pounds, with males larger than females.

Found throughout most of California except in the northern North Coast area, American badgers are most abundant in drier open stages of shrub, forest, and herbaceous habitats (Zeiner et al. 1990). American badgers burrow into loose soils, frequently reusing old burrows, but may also dig a new den each night (Zeiner et al. 1990).

American badgers main food source is fossorial rodents, but will also consume reptiles, insects, eggs, birds, and carrion, depending on the season and availability of food. Drier portions of the SJR floodplain provide foraging and dispersal habitat for American badgers. Therefore, this species may possibly be in the Project Area.

6.3 San Joaquin kit fox (*Vulpes macrotis mutica*) – Federally Endangered, State Threatened

The San Joaquin kit fox (SJKF) has a small, slim body with an average weight of 5 lbs. and stands about 12 inches tall. It has long legs, large ears, and a long bushy tail that tapers at the tip. The ears are conspicuously large and densely covered on the inside with stiff, white hairs. The summer coat is light buff to buff-gray on the back and white on the belly; its winter coat is grizzled gray on the back, rust to buff on the sides, and white beneath. The tail is distinguished by a prominent black tip (USFWS 2010).

The SJKF inhabits arid valley and foothill grasslands, sparsely vegetated scrub/shrub habitats (USFWS 1998a), and some agricultural and urban areas (Jensen 1972). San Joaquin kit fox use complex dens for shelter, protection, and rearing of young (USFWS 1998a). Dens may be used year round. Most dens are located in flat terrain or the lower slopes of hills, and are commonly found in washes, drainages, and roadside berms. San Joaquin kit fox are reputed to be poor diggers and are usually found in areas with loose-textured, friable soils (USFWS 1998a).

Minimal habitat for SJKF is present in the Project Area. Lands to the west of the Project Area provide linkages for populations to the south and north (USFWS 2010). Kit fox presence in the northern range may be dependent on occasional dispersing animals from populations to the south of Santa Nella (Constable et al. 2009).

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Appendix E – Assessment of Potential Effects on Fishery Habitat

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Assessment of Potential Effects of the North Valley Regional Recycled Water Program (NVRRWP) Reductions in Freshwater Discharges into the

San Joaquin River on Fishery Habitat and Juvenile Salmon Survival

Hanson Environmental, Inc.
446 green view court
walnut creek, ca
August 2013

Chapter 1 Introduction

The San Joaquin River provides habitat for a diverse assemblage of fish and aquatic macroinvertebrates. The river also serves as a migration corridor and juvenile rearing habitat for Chinook salmon. Results of previous studies have shown positive relationships between the flow in the San Joaquin River during the spring (e.g., March-May) and the survival of juvenile salmon as well as adult salmon escapement 2.5 years later. Currently the Modesto and Turlock waste water treatment plants (WWTP) discharge treated waste water into the San Joaquin River where it augments existing flows and therefore provides potential biological benefits to improved habitat conditions for salmon and other fishery resources. As shown in Table 1, the Modesto and Turlock WWTPs release an average of 25 cfs into the San Joaquin River with a range of average monthly flows of 12.9 – 51.4 cfs. The North Valley Regional Recycled Water Program (NVRRWP) is proposing that rather than discharging the treated and processed waste water into the San Joaquin River as is currently being done, the Modesto and Turlock treatment plants would recycle the waste water for other inland uses such as irrigation of farmland. The curtailment in WWTP discharges from these two plants into the river would result in an incremental reduction in river flows as shown in Table 1. For comparison, the average flow in the San Joaquin River during the spring months (March – May) of dry water years typically ranges from approximately 1,500 to 2,000 cfs while average flows in a normal water year typically range from approximately 3,000 to 4,000 cfs. Spring flows in a wet year typically range from approximately 8,000 to 14,000 cfs. The actual flow in the San Joaquin River varies substantially within and among years.

Table 1: Average monthly WWTP discharges to San Joaquin River in cfs from 2000-2012

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Modesto	31.4	38.2	35.2	10.1	7.0	0.0	0.0	0.0	0.0	0.1	5.1	17.7
Turlock	13.1	13.2	12.9	13.0	12.7	12.9	12.9	13.4	13.3	13.8	13.3	13.4
Total	**44.5**	**51.4**	**48.1**	**23.1**	**19.7**	**12.9**	**12.9**	**13.4**	**13.3**	**13.9**	**18.4**	**31.1**

Although the amount of spring discharges is relatively small compared to total river flows (e.g., for example the April average WWTP discharge is 23.2 cfs and the San Joaquin River mean April flow at Vernalis is 3,095 cfs), the removal of these discharges into the San Joaquin River would contribute to an incremental reduction in the water levels and flows in the river downstream of the discharge location. This reduction in river flow could potentially adversely affect habitat conditions in the river for fish and

the survival of juvenile salmon during their spring migration from the river to coastal marine waters. The objective of this analysis is to evaluate the potential for adverse effects of a reduction in freshwater discharges to the San Joaquin River as a result of the proposed NVRRWP water recycling project on instream flows, fishery habitat and juvenile Chinook salmon survival and abundance.

Chapter 2 Approach/Methods

To assess the potential effects of reducing San Joaquin River flows as a result of implementing the water recycle program and curtailing the discharge of treated waste water to the river, Chinook salmon were selected as the indicator species for use in these analyses. Quantitative data on the relationships between San Joaquin River flows and habitat quality and availability, survival, and abundance are not available for other fish species inhabiting the river and therefore the potential effects of the proposed recycle project could not be quantified for these other fish species. Fall-run Chinook salmon are a species sensitive to changes in instream flows and other environmental factors such as exposure to seasonally elevated water temperature when compared to the greater tolerance of many of the resident and other migratory fish and therefore are considered to be a good indicator species for use in this assessment.

Fall-run Chinook salmon use the San Joaquin River tributaries for spawning and juvenile rearing. The juvenile salmon then migrate downstream through the lower river during the late winter and spring months. The greatest migration by juvenile salmon smolts occurs during March-May. The survival of juvenile salmon has also been shown to vary in response to changes in river flow during the spring migration period (SJRGA 2007). To assess the potential effects of changes in river flow four independent analyses were considered including (1) the predicted change in juvenile salmon survival as a function of river flow, (2) the predicted change in adult salmon escapement as a function of river flow during the spring outmigration period 2.5 years earlier, (3) changes in river habitat based on stage-discharge relationships developed for the river by the U.S. Geological Survey (USGS) and the location of the estuarine low salinity zone during biologically sensitive spring months, and (4) predicted changes in salmon abundance based on use of the California Department of Fish and Wildlife (CDFW) San Joaquin River fall-run salmon lifecycle simulation model (SalSim). By comparing historic flows to those flows without the addition of WWTP discharges we are able to simulate the potential effect that the removal of WWTP discharges will have on salmon from a variety of metrics.

2.1 Base Vs Adjusted Flow Conditions

To simulate the potential effects that the removal of WWTP discharge from the San Joaquin river system would have on potential salmon survival and abundance, it was first necessary to establish baseflow conditions in the river with the existing WWTP discharges and simulated river flow conditions without the contribution of the WWTP discharges. For purposes of these biological analyses, river flow at the USGS Vernalis gage was selected to represent baseflow conditions. Although the WWTP discharge occurs further upstream on the San Joaquin River, the flows at Vernalis were selected since the existing biological relationships between river flow and juvenile salmon survival, river flow and subsequent adult escapement, and Vernalis flows are a key driver in the SalSim lifecycle model. Average daily flows were compiled for the Vernalis gage from the USGS website for March, April and May, 1923-2012. In order to account for yearly variation, 5, 25, 50(mean) and 75 percentile flow data was used to represent “critical”, “dry”, “normal” and “wet” flow conditions. The daily average flow was used to create a monthly average. These average months are used to represent the “base” flow conditions in the lower San Joaquin River under existing conditions with the WWTP discharges in operation.

WWTP discharge levels were calculated using the average monthly discharge from the Modesto and Turlock plants for March, April and May for 2000-2012 (Table 1). These average monthly discharge rates were then subtracted from the corresponding average monthly river flow at the Vernalis gage to create the “adjusted” flow. The values for the base and adjusted flows were then entered into various

survival models described below in order to predict how these changes in flow conditions may effect salmon survival and abundance.

Percent differences were calculated as:

$$\% = (1 - (\text{Adjusted flow}/\text{Base flow}))*100$$

2.2 Juvenile salmon survival-flow relationships

The San Joaquin River Agreement (SJRA) and Vernalis Adaptive Management Plan (VAMP) conducted a long-term scientific experiment to determine how juvenile salmon survival rates change in response to alterations in San Joaquin River flows and State Water Project (SWP)/Central Valley Project (CVP) exports with the installation of the Head of Old River Barrier (HORB). The survival studies were based on a mark-recapture experimental design in which juvenile fall-run Chinook salmon produced in the Merced River fish hatchery were coded wire tagged (CWT) and released into the San Joaquin River at Mossdale and Durham Ferry and subsequently recaptured downstream at Antioch and Chipps Island (SJRGA 2007). Additional CWT salmon were released at Jersey Point to act as a control. The ratio of CWT salmon recaptured from the upstream and downstream release sites was then used to calculate an estimate of juvenile salmon survival. The resulting survival estimates were then correlated with river flows measured at the Vernalis gage during the period of juvenile migration when the HORB was installed and when it was not installed. The relationship between survival estimates for juvenile salmon based on recaptures at Antioch and Chipps Island were significantly related to corresponding estimates of survival based on adult salmon from the ocean fishery (SJRGA 2007), which improves the confidence in the use of the juvenile survival-flow relationship as the basis for this analysis. Regression analysis from these data was used as a predictive model to assess the potential change in juvenile salmon survival as a function of reducing river flow in response to the curtailment of the WWTP discharges. The flow-survival relationships with and without the HORB are shown in Figure 1. The regression equations used to predict the change in juvenile survival as a function of river flow during the spring migration period are:

With HORB

Survival estimate = 0.0001(cfs)-0.2851

$R^2 = 0.73$

Without HORB

Survival estimate = 5e-6(cfs) + 0.1403

$R^2 = 0.04$

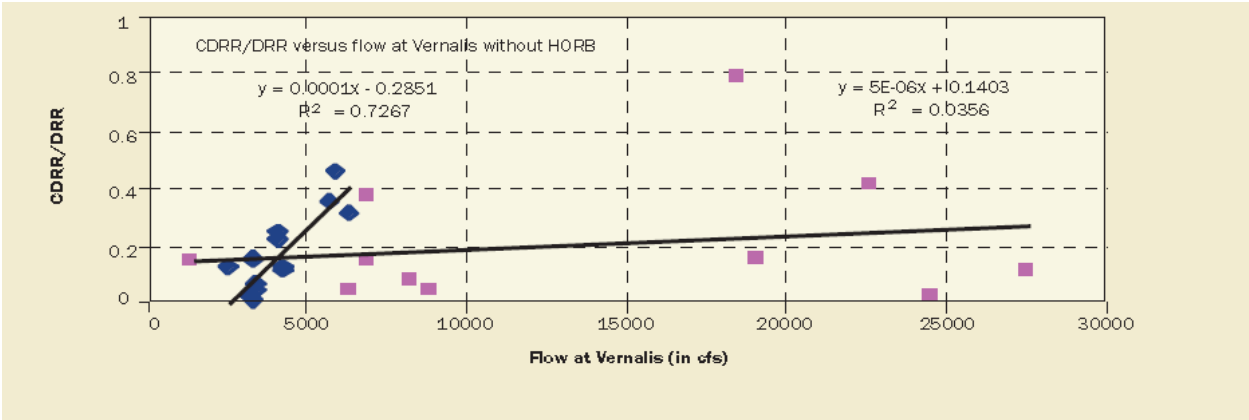

Figure 1: Relationships between juvenile salmon survival and flow in the San Joaquin River at Vernalis with and without the Head of Old River Barrier (HORB). The blue dots reflect flow-survival estimates when the HORB was installed and the red dots reflect flow-survival estimates when the HORB was not installed based on juvenile fall-run Chinook salmon mark-recapture experiments with tagged salmon released at Mossdale and Durham Ferry and recaptured at Chipps Island. Source: SJRGA 2007.

2.2.1 Escapement

Adult fall-run Chinook salmon return (escape) from the ocean and migrate through the San Joaquin River to spawn in upstream tributaries. Surveys have routinely been conducted by CDFW within the tributaries during the fall spawning period to quantify the number of spawning adults each year. Salmon escapement estimates are available for the period from 1952 through 2010 from the CDFW GranTab Chinook salmon escapement summaries. For these analyses, annual adult escapement to the Stanislaus, Tuolumne, and Merced rivers were combined to generate an annual estimate of fall-run Chinook salmon escapement to the San Joaquin River basin. No salmon currently spawn in the San Joaquin River between the confluence with the Merced River and Friant Dam, although restoration of salmon populations in this reach of the river is underway. Although there are many factors effecting adult escapement and survival rates, studies have correlated San Joaquin River flows when juvenile salmon are migrating downstream in the spring with subsequent adult escapement in the fall 2.5 years later. For the analysis of changes in river flow presented in this assessment the average March-May flow in the San Joaquin River at the Vernalis gage from the USGS and DWR DAYFLOW data summaries were compiled each year. Regression analyses were used to establish a relationship between average spring river flow and subsequent adult salmon escapement 2.5 years later.

Regression analysis was used to predict escapement under the baseflow and adjusted flow conditions based on the following equation:

$$\text{Escapement} = 1.5879\ (\text{cfs}) + 11{,}458$$
$$R^2 = 0.32$$

2.2.2 River and Delta habitat

As flow through a channel increases the channel depth and/or wetted width increases, which may affect the area of usable habitat for juvenile salmon and other migrant and resident fish. As part of maintaining streamflow gages USGS periodically measures the stage-discharge relationship for each monitoring location. The shape of the stage-discharge curve is determined by the shape of the channel at the gage location. As the geomorphology of riverbeds change over time, regular stage-discharge surveys are necessary to insure accurate flow measurements at each gage. The most current stage-discharge relationship from the USGS gage at Vernalis (Figure 2) was used to simulate channel depths as an indicator of habitat conditions within the river with and without the WWTP discharges. Percent changes

in the base versus adjusted flow conditions indicate predicted percent changes in salmon habitat with the removal of the WWTP discharge.

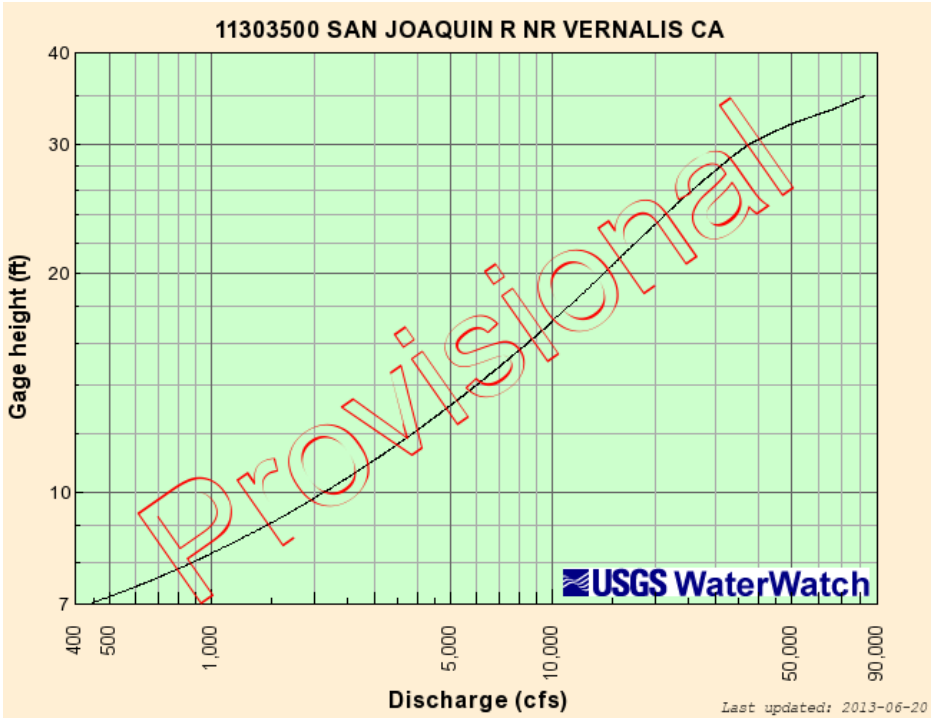

Figure 2: USGS stage-discharge relationship for the San Joaquin gage at Vernalis.

Habitat conditions for fish and other aquatic resources inhabiting the Delta and estuarine regions of the system have frequently been linked to the location of the low salinity zone. One indicator of the low salinity zone is the location, in kilometers upstream from the Golden Gate Bridge, where bottom salinity is 2 psu (referred to as X2 location). The location of the low salinity zone in the estuary is a function of the tides moving saltwater upstream from the ocean and bays and the magnitude of freshwater moving downstream from the Sacramento, San Joaquin, and other Central Valley rivers (referred to as Delta outflow). The relationship between Delta outflow and X2 location was used to assess the potential magnitude in changes of X2 location with and without the WWTP discharges. The analysis focused on X2 location during the biologically sensitive spring months of March-May. The change in X2 location was based on the following equation:

$$X2(t) = 10.16+0.945*X2(t-1)-1.487\log(Qout)(t)$$

where t=current day Delta outflow and t-1 is the X2 location on the previous day.

The analysis was run over Delta outflows ranging from approximately 3,500 to 23,000 cfs and assuming the total monthly WWTP discharge during March-May shown in Table 1.

2.2.3 SalSim

The CDFW has developed a lifecycle simulation model for fall-run Chinook salmon produced in San Joaquin River tributaries. The SalSim model (http://www.salsim.com/) is based on a series of relationships between river flows, reservoir storage, water temperature, and a combination of other factors affecting survival and abundance in the upstream tributaries, within the lower San Joaquin River and Delta, and within the ocean. The SalSim model uses a variety of historic hydrological and biological data to simulate hypothetical flow conditions and the response of the Chinook salmon population. Although SalSim was not designed to be used as a “forecast model”, altering the historic flows by known amounts

generates alternative scenarios in which "what if" models can be used to simulate alternative salmon production through changes in historic water operations.

For this study, we simulated eight different flow conditions: critical, dry, normal and wet hydrologic conditions assuming baseline flows and adjusted flows at Vernalis without the WWTP discharges. The baseline conditions were generated by running the simulation without any changes to the flow conditions. The WWTP discharge reduction scenario (Adjusted) was simulated in the SalSim model by reflecting the percent change in river flow based on the WWTP discharge rates presented in Table 1. Because the simulation was run year round, rather than just during the spring, the WWTP discharge reduction calculations were calculated for an entire year. Total monthly WWTP discharges (Table 1) were subtracted from the monthly river flow at the USGS Vernalis gage under "Critical" (5 percentile), "Dry" (25 percentile), "Normal" (50 percentile or mean) and "Wet" (75 percentile) hydrologic conditions in the model. From these values, a percent change from the baseline flow was calculated.

SalSim was then used to simulate the changes in hydrologic conditions that would occur in the river with and without the WWTP discharges. SalSim produces a number of salmon population metrics for use in the analysis including ocean escapement, total spawners for all tributary spawning destinations, total spawning and egg production within the tributaries, total egg mortality, total juvenile salmon mortality and an estimate of the total number of juvenile salmon produced in the San Joaquin River tributaries entering the ocean assuming river flows with and without the WWTP discharges. The potential effect of changes in river flow on fall-run Chinook salmon population dynamics was assessed based on consideration of both the change in the abundance of various lifestages as well as the percentage change to account for variation in salmon abundance among years.

Results of the SalSim modeling produced a number of biological metrics for various lifestages of fall-run Chinook salmon under the baseline and proposed project hydrologic conditions. The model, however, does not allow changes to be made to instream flows in the San Joaquin River, but rather only allows flow changes in the model to occur in the upstream tributaries. By reducing flow in one of the tributaries to try to simulate the predicted flow reduction associated with the proposed project the model also changed upstream reservoir storage and associated seasonal water temperature conditions within the tributary that also affected the survival estimates for Chinook salmon (e.g., incubating eggs and juvenile rearing) within the tributary. Under these simulated conditions, results of the model became unstable and in some cases inconsistent with the general population dynamics of fall-run Chinook salmon. The initial results of the simulation model comparisons were not realistic or reliable. To help try to resolve these initial simulation model inconsistencies we met with Dale Stanton, an engineer with CDFW who is actively involved in development and evaluation of the SalSim model, to discuss how the model could be configured to simulate changes in San Joaquin River flows associated with the proposed project, while not altering upstream reservoir operations and other aspects of the model. Mr. Stanton reported that the SalSim model was not developed to address changes in San Joaquin River flows such as those that would occur under the proposed project operations, and therefore, the model could not be used to reliably predict changes in San Joaquin River fall-run Chinook salmon abundance or population dynamics as an assessment tool for the proposed project evaluation. Based on these initial model results and consultation with CDFW the SalSim model was not subsequently used in these analyses.

Chapter 3 Results

3.1 Flow differences with and without WWTP discharges

Predicted changes to San Joaquin River flow when the WWTP discharge is removed (Adjusted flow) is on average less than 1% (ranges from 0.16 – 2.46%) of the total San Joaquin River flow (base flow) between March and May. Throughout the spring juvenile salmon migration season, the rate of WWTP discharges is reduced from an average 48.2 cfs in March to an average 19.8 cfs in May (Table 1). Dry, normal and wet years, as modeled by analyzing the 25th, 50th (mean) and 75th flow percentages from the

Vernalis gage, showed that in dry and normal years, the net flow did not widely vary. Wet years, however show a steep increase in river flow during the March-May period. As a result, the net change in river flow at Vernalis is reduced in proportion to the change in baseflows within the river (Table 2). Results of these flow analyses were used in the comparative assessment of predicted changes to salmon survival and abundance with and without the WWTP discharges.

Table 2: Spring flow rates (cfs) for dry, normal and wet years, the average WWTP discharge rate (cfs) for their associated months and the percentage difference with and without the WWTP discharges.

	March			April			May		
	25th %	Mean	75th %	25th %	Mean	75th %	25th %	Mean	75th %
Base Flow (cfs)	1,957	3,481	9,178	1,600	3,095	10,392	1,739	3,470	12,126
WWTP Discharges (cfs)	48.2	48.2	48.2	23.2	23.2	23.2	19.8	19.8	19.8
Adjusted Flow (cfs)	1,909	3,433	9,130	1,577	3,072	10,369	1,719	3,450	12,106
% Change	**2.46%**	**1.38%**	**0.53%**	**1.45%**	**0.75%**	**0.22%**	**1.14%**	**0.57%**	**0.16%**

3.2 Juvenile Chinook salmon survival

Previous studies of juvenile salmon survival in the San Joaquin River clearly show that the presence of the HORB, used to keep juvenile salmon from migrating into Old River, greatly increases the likelihood of survival (Figure 1). As expected based on the regressions shown in Figure 1, the survival of juvenile salmon was extremely sensitive to increasing or decreasing river flows when the HORB was installed and survival rates were not sensitive to river flow when the HORB was not installed. When the base and adjusted flow conditions were compared based on the juvenile salmon survival-flow regression models (Figure 1), the decrease in predicted survival with and without the WWTP discharges ranged from 0.000 to 0.005 for conditions with the HORB in place and were all 0.000 without the HORB (Table 3). Although changes in survival between the baseflow and adjusted flow conditions can be calculated using the regression models, the magnitude of these differences is so small that it could not be measured in field studies. The model predicts a moderately strong correlation between increased flow and increased survival ($R^2 = 0.73$) when the HORB is in place. Although there is still a positive relationship between survival and flow for conditions without the HORB, the statistical correlation is weak ($R^2 = 0.04$) and not statistically significant. The relatively high variability in the relationship between salmon survival and river flow, especially when the HORB is not installed, suggests that the predicted small change in survival shown in Table 3 is well within the observed variability in survival rates and would not be detectable in the river.

Table 3: Estimated change in juvenile Chinook salmon survival as a function of San Joaquin River flow with and without the Head of River Barrier (HORB).

	March			April			May		
	25th %	Mean	75th %	25th %	Mean	75th %	25th %	Mean	75th %
With HORB									
Baseflow survival	0.000	0.063	0.633	0.000	0.024	0.754	0.000	0.062	0.928
Adjusted flow survival	0.000	0.0.58	0.628	0.000	0.022	0.752	0.000	0.060	0.926
Net change	0.000	0.005	0.005	0.000	0.002	0.002	0.000	0.002	0.002
Without HORB									
Baseflow survival	0.150	0.158	0.186	0.148	0.156	0.192	0.149	0.158	0.201
Adjusted flow survival	0.150	0.157	0.186	0.148	0.156	0.192	0.149	0.158	0.201
Net change	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

3.3 Adult Chinook salmon escapement

The correlation between the springtime flow measured at the USGS Vernalis gage and returning adult Chinook escapement 2.5 years later show a positive trend and predict that a reduction in river flow will contribute to a reduction in the number of adult salmon returning into the San Joaquin River tributaries to spawn. The predicted change in adult salmon escapement, as calculated by the regression for river flow conditions during the March-May juvenile outmigration period, was a reduction in average escapement of 0.52% assuming the WWTP discharge to the river is no longer occurring (Table 4). The regression model predicts a reduction in salmon returns of 77, 37 and 31 individuals for March, April and May respectively, assuming no WWTP discharges. The total predicted reduction in escapement from a reduction in river flow over the March-May juvenile migration period is 145 fish out of predicted escapement estimates ranging from approximately 14,000 to 31,000 adults (less than 1%). The actual adult salmon escapement to the San Joaquin River basin varies substantially among years. The high variation in the escapement-flow relationship ($R^2 = 0.32$) suggests that the predicted small change in escapement is well within the observed variability in the relationship and would not be detectable in the river.

Table 4: Predicted change in adult salmon escapement with and without the WWTP discharges.

		March			April			May	
	25th %	Mean	75th %	25th %	Mean	75th %	25th %	Mean	75th %
Base Flow Escapement	14,566	16,986	26,032	13,999	16,373	27,959	14,219	16,968	30,713
Adjusted Escapement	14,489	16,909	25,955	13,962	16,336	27,923	14,188	16,936	30,681
Difference	77	77	77	37	37	37	31	31	31
% Change	**0.53%**	**0.45%**	**0.29%**	**0.26%**	**0.22%**	**0.13%**	**0.22%**	**0.19%**	**0.10%**

3.4 Habitat in the river and Delta

Changes in water depth as a function of river flow were used as an indicator of potential changes in habitat conditions and availability for juvenile salmon and other resident and migratory fish species. As flow increased through the San Joaquin River the stage height, and associated useable habitat, increased as well. The ranges of changes in stage height for base and adjusted flow remained fairly consistent for each seasonal condition. The reduction in river stage height (a reflection of water depth in the river) associated with curtailment of the WWTP discharges was estimated to range from 0.02 to 0.08 feet (Table 5). Differences between base and adjusted flow river stages varied consistently by less than 0.8% (Table 5) which is consistent with results of previous analyses. Much of the San Joaquin River channel has been incised or contained by levees. Under these conditions the predicted change in river stage would not be expected to result in biologically meaningful reductions in the quantity or quality (e.g., wetted channel width) of habitat for fish within the river.

Table 5: Changes in stage height (feet) as a function of river flow.

		March			April			May	
	25th %	Mean	75th %	25th %	Mean	75th %	25th %	Mean	75th %
Base Stage Height (ft)	9.75	11.60	16.56	9.23	11.17	17.44	9.44	11.59	18.59
Adjusted Stage Height (ft)	9.67	11.55	16.53	9.20	11.14	17.40	9.41	11.57	18.57
Change in Stage (ft)	0.08	0.05	0.02	0.03	0.03	0.04	0.03	0.02	0.02
% Change	**0.82%**	**0.43%**	**0.18%**	**0.33%**	**0.27%**	**0.23%**	**0.32%**	**0.17%**	**0.11%**

The predicted change in X2 location, a reflection of the low salinity zone habitat for estuarine fish and other organisms, moved upstream on average 0.06 km in March, an average of 0.03 km in April, and an average of 0.02 km in May. The magnitude of these changes would not be detectable in the field given the natural variation in X2 location based on variation in tidal conditions. In other environmental analyses an upstream movement of X2 location by less than 0.25 km (and in some cases less than 0.5 km) has been found to be less than significant. The magnitude of upstream movement of X2 in this assessment is

expected to have no effect on habitat quality or availability in the estuarine low salinity zone or on the aquatic species that inhabit the low salinity zone.

Chapter 4 Summary and Conclusions

The two primary conclusions from this assessment are:

- Curtailment of treated waste water discharges from the Modesto and Turlock WWTPs into the San Joaquin River will result in an incremental reduction in river flow from the point of the existing discharge downstream. The reduction in San Joaquin River flow would contribute, based on the best scientific information available, to an incremental reduction in juvenile Chinook salmon survival during spring outmigration, a reduction in adult salmon escapement to the San Joaquin River tributaries, and an incremental reduction in habitat quality and availability in the lower river and estuary.
- The magnitude of predicted changes in juvenile salmon survival, adult escapement, and habitat conditions in the lower river and estuary was small (typically less than 1% when compared to current baseline conditions) and is well within the natural observed variation in the regression relationships used in these analyses. The magnitude of predicted changes in juvenile salmon survival and adult escapement, habitat quality and availability in the lower San Joaquin River, and the location of the estuarine low salinity zone (X2 location) would not be detectable in field studies and is considered to be less than significant.

Based on results of this study, curtailment of the discharge of treated waste water from the WWTPs at Modesto and Turlock into the San Joaquin River would not be expected to result in a measureable effect on the population dynamics of Chinook salmon. Since Chinook salmon are among the most sensitive fish species to changes in instream flows and other associated environmental factors (e.g., exposure to seasonally elevated water temperatures) the potential effects of the proposed curtailment of WWTP discharges to the river would be expected to be less for other resident and migratory fish inhabiting the San Joaquin River.

Chapter 5 Literature Cited

San Joaquin River Group Authority (SJRGA) 2007. San Joaquin River Agreement 2006 annual technical report. Prepared by San Joaquin River Group Authority. Prepared for State Water Resources Control Board. January 2007.

Appendix F – Draft Frac-Out Contingency Plan for Horizontal Directional Drilling

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Appendix F – Sample Frac-Out Prevention Plan for Horizontal Directional Drilling

Introduction

Horizontal Directional Drilling (HDD) methods are often employed to avoid direct effects to sensitive resources such as stream crossings and archeological sites. However, indirect effects to sensitive resources may occur as a result of the inadvertent release of drilling fluids. This document provides a brief summary of HDD procedures, including an explanation of the role of drilling fluids. (Forkert Engineering & Surveying, Inc., and Chambers Group, Inc. 2008)

The NVRRWP EIR/EIS evaluates two alternatives that may use HDD. The Combined Alignment Alternative has one crossing of the San Joaquin River near the existing discharge location for Modesto's Jennings Wastewater Treatment Plant, hereafter referred to as the "Modesto Crossing". The Separate Alignment Alternative has two crossings of the river, the Modesto Crossing, and a second crossing further south near the end of Turlock's Harding Drain Bypass Pipeline, hereafter referred to as the "Turlock Crossing". Both crossings would be constructed using some form of trenchless technology, which could either be HDD or microtunneling. Because HDD uses a pressurized slurry for the drilling process this technique presents the risk of an uncontrolled release of drilling fluid to the ground surface, known as "frac-out. Microtunneling uses a boring machine, and thus does not have the potential for frac-out. Because of the potential use of HDD for construction of a crossing of the San Joaquin River, this example frac-out plan is presented to describe potential measures to prevent frac-out or other environmental impacts associated with HDD procedures. If HDD is selected as the preferred trenchless construction method, this draft plan would be modified as appropriate for the crossing, as designed, and finalized by the selected contractor.

HDD Procedures

Conventional HDD operations have three main steps: the pilot bore, reaming and the pulling of conduit and/or casing. The pilot bore involves drilling the length of the bore with a small-diameter drill head to establish an accurate bore path. Once the entire bore path has been pilot-bored, a reamer is placed on the drill head. The reamer is then pulled back through the borehole to widen the hole (back-reaming). The final step entails attaching the conduit or casing to the drill head and pulling it back through the entire length of the borehole.

HDD operations for the Proposed Project are expected to range from 2,500 to 3,500 feet in length for the Modesto and Turlock crossings, respectively. The depth of the bore shall be at least 30 feet below the lower extent of the San Joaquin River. This depth shall increase as determined by site-specific conditions. The bores are required to maintain a minimum depth below the ground. Cobbles or rocky strata may cause the bore to go deeper to find an easier path.

General commitments to be enforced:

- Depth of bore below the riverbed shall be at least 30 feet;
- Drilling fluid materials and their respective Material Safety Data Sheets (MSDS) shall be disclosed; and
- Drilling fluids shall be monitored to assure pH values remain near neutral (between 6.5 and 8.0).

The contractor shall study the site-specific conditions for the river crossing. Based on this information, the contractor shall highlight potential problem areas, prepare an appropriate site specific plan and commit to employing all measures necessary to maximize the success of the HDD operation. For example, these measures may include substituting drill bits or reamers, altering the

viscosity of the drilling fluid, and introduce drilling fluid additives as indicated by soil types and varying substrates found throughout the bore profile. The contractor is required to evaluate the following information:

- Geotechnical report;
- Design plans showing the location of the river crossing;
- Summary of sensitive resources present or potentially present;
- Existing conditions of bed and bank (from field visit);
- Photos showing the existing setting; and
- Survey of bore site, including equipment staging areas, approximate location of drilling entry and exit (subject to minor change at time of construction due to soil conditions encountered during bore process), approximate location of access roads in relation to surrounding area.

Drilling Fluids

Typically, the drilling fluid is composed of two basic elements: water and clay particulates. The clay particulate component typically consists of bentonite. Bentonite is composed essentially of montmorillonite clay, which has a relatively high shrink-swell capacity. The structure of bentonite resembles a sandwiched deck of cards. When mixed in water, these cards or clay platelets rearrange for increased surface area exposure. Bentonite attracts water to its negative face and magnetically bonds to water molecules. Because of this unique characteristic, bentonite is capable of absorbing seven to ten times its own weight in water, and swelling up to eighteen times its dry volume. Together, the bentonite and water mixture acts to lubricate and cool the drill head, seal and fill the pore spaces surrounding the drill hole, prevent the bore hole walls from collapsing inward, and suspend cuttings (native soil removed during the boring process) within the drill hole.

In some cases, inert and non-toxic Loss Circulation Materials (LCMs) are added to the mixture. These materials include, but are not limited to, cotton dust, cotton seed hulls, wood fiber, M-1 mica and cedar fiber.

During typical HDD operations, some drilling fluids are absorbed by the lateral and subterranean fractures within the formation. This is a fairly normal occurrence during HDD operations that does not necessarily mean the drilling fluid is rising to the surface or migrating great distances from the borehole. However, it is possible that drilling fluids may reach the surface by following a vertical fracture in the formation. This event is commonly referred to as a hydro-geologic fracture (frac-out). The released drilling fluids may contain a lower concentration of bentonite when they surface because they can be filtered as they pass through certain types of ground material such as sandy soils. Materials used to control a frac-out may include straw bale, straw waddle, silt fence, and gravel bag. These materials would be kept at the boring site in quantities sufficient to contain a 40-foot perimeter around a frac-out.

Potential Impacts to Aquatic Biological Resources

The release of drilling fluid from fractures in the earth's surface may be terrestrial or aquatic in nature and varies in quantity. Terrestrial frac-outs occurring in upland areas are typically easy to contain and therefore result in relatively minor effects to the surrounding environment. Frac-outs occurring in aquatic environments are more difficult to contain primarily because bentonite readily disperses in flowing water and quickly settles in standing water. Bentonite is non-toxic, but there are two specific indirect effects of bentonite on aquatic life. Initially, the suspended bentonite may inhibit respiration of fishes, although this is typically short-lived. Once the bentonite settles, secondary long-term effects can result. For example, egg masses of fish could be covered by a layer of bentonite inhibiting the flow of dissolved oxygen to the egg masses. Secondly, benthonic invertebrates and/or the larval stages of pelagic organisms may be covered and suffocate due to

fouled gills and/or lack of oxygen (Forkert Engineering & Surveying, Inc., and Chambers Group, Inc. 2008). Because of the potential for impacts to aquatic species, this appendix provides a sample contingency plan to prevent frac-out and minimize effects if one should occur.

On-Site Monitoring

During pilot bore drilling operations, visual inspection along the bore path of the alignment shall take place at all times. Additionally, monitors shall be stationed approximately 50 feet upstream and downstream of the crossing point. On-site training shall be provided for all monitors, and names and phone numbers of the monitors shall be provided to the on-site agency representatives.

The contractor shall supply the following information to the monitoring team throughout the duration of the HDD operation at specific time intervals (e.g. upon completion of each drill rod):

- Position of the drilling head relative to the drilling point of entry;
- Estimated total volume of drilling fluid that has been pumped during the drilling operation;
- Comparison of the current total volume of drilling fluid used and the estimated current total volume of returns;
- Equipment breakdowns and repairs;
- Any abnormal drilling fluid pressure at the time of occurrence; and
- Any change of drilling fluid contents (e.g. new bentonite mixture or introduction of LCMs).

Field Response Plan

During the drilling process, the contractor shall adjust the thickness of the bentonite mixture to match the substrate conditions and ensure continuous flow. Subsequently, the contractor shall closely monitor drilling pressures and penetration rates so use of fluid pressure shall be optimal to penetrate the formation.

Some loss of returns may be inevitable as drilling fluids are absorbed by the lateral and subterranean fractures within the formation. In case of a gradual loss of approximately fifty- percent of expected returns, not including surface frac-outs, the contractor shall act to restore returns, including:

- Modifying drilling fluid properties (viscosity and gel strength);
- Modifying pressure and volume;
- Advance or retreat pilot stem and/or wash over pipe (i.e. swab the borehole); and
- Introduce LCMs according to manufacturer's instructions.

A complete and sudden loss of returns serves as a signal to both the contractor and the monitor that something more significant may be occurring and to watch closely for a possible surface release. This draft plan uses the loss of returns or pressure, the use of a tracing dye and visual indications, to trigger response and mitigation actions.

In the event of a sudden loss of approximately 75 percent of expected returns, or in the event that a surface release of drilling fluid or dye are detected, the contractor shall temporarily cease operations to determine what actions need to be taken. In areas containing sensitive resources, agency notifications shall be made and the decision to resume operations shall be determined in consultation with the appropriate agencies' representatives (see Item 7 of this plan). Any release to the surface shall be addressed in accordance with the release response plan (see below).

All equipment required to contain and clean up a frac-out release would be available at the work site. Equipment includes the following:

- Heavy weight plastic clean gravel filled sand bags (at least 20 bags);
- Geotek filter bags 10-by-12-foot size or equivalent (at least 3 bags);

- Several hard plastic (5-gallon) buckets;
- One wide heavy-duty push broom;
- Three flat blade shovels;
- Silt fence (appropriate coverage up to 40-foot perimeter);
- Certified weed-free hay bales (appropriate coverage up to 40-foot perimeter);
- Two bundles of absorbent pads to use with plastic sheeting for placement beneath motorized equipment while in operation in the vicinity of the riparian/stream zone;
- Straw logs (wattles or fiber rolls)(at least two 10-foot rolls);
- Portable pumps;
- A minimum of 100 feet of hose; and
- Vacuum truck (minimum 800-gallon).

All containment equipment would be kept on site at each bore location. General responses to frac-out releases are as follows:

- Directional boring would stop immediately;
- The bore stem would be pulled back to relieve pressure on frac-out;
- The Environmental Inspector would be notified to ensure adequate response actions are taken and notifications are made;
- Terrestrial releases would be cleaned up using on-site equipment;
- A dike/berm may be constructed around the frac-out (terrestrial only) to entrap released drilling fluid;
- Response equipment (e.g., portable pumps and fully equipped 800-gallon vacuum trucks) would be mobilized to recover larger releases of drilling fluid;
- Access to the frac-out release area would be via existing roads and temporary work easements. Additional access needed to perform cleanup activities would be coordinated with and require the approval of all regulating entities;
- All equipment or vehicles driven or operated adjacent to a water body or wetland would be checked and maintained daily to prevent leaks of hazardous materials.

The directional bore activities would be designed to avoid and otherwise minimize the potential for affects to sensitive biological and cultural resources. Additionally, the crew, with the guidance of on-site monitors and the Environmental Inspector (where the Environmental Inspector may also act as an on-site monitor), would construct barriers (i.e. straw bales or silt fences) around the perimeter of all sensitive resources (e.g. stream bank, riparian vegetation) prior to the commencement of work. This technique is aimed to prevent released material from reaching the sensitive resources.

In addition to the aforementioned procedures, the following containment procedures and commitments shall be implemented for all frac-out releases located within a water body:

- Measures to avoid in-stream disturbance (e.g., pulling the drill stem back and going deeper) and to prevent further frac-out would be implemented first.
- A standing pipe (such as a 55-gallon drum with the top and bottom removed, heavy PVC pipe or CMP or culvert type material) shall be placed around the frac-out to contain the drilling mud;
- Sand bags would be used (if necessary) to seal the base of the standing pipe;
- Any existing berms, barriers, or silt fence established to protect sensitive resources would be strengthened, as necessary, to contain drilling fluids and prevent their encroachment on

sensitive biological and cultural resources and divert drilling fluid from entering jurisdictional waters;

- Secondary containment (plastic sheeting) for the pump unit would be used;
- A trailer mounted vacuum or vacuum truck shall be deployed to vacuum out contained drilling fluids;
- Vacuumed drilling fluids shall be disposed in accordance with local, state and federal regulations;
- No refueling would occur within 100 feet of the stream zone, wetlands, and other sensitive habitats;
- All other response activities would take place within the authorized ROW unless otherwise approved in writing.
- The Environmental Inspector would notify the appropriate agencies.

Pre-construction surveys shall be conducted in accordance with Mitigation Measures defined in this EIR/EIS by qualified biologists to identify all species potentially affected by drilling operations;

Notification and Documentation

If a frac-out occurs or any degree of dye were detected within the water column of the stream, the Environmental Inspector shall immediately notify the appropriate resource agencies, and additional follow-up response actions would be developed in coordination with agency representatives. The following entities shall be contacted by phone with a written report to follow:

- California Department of Fish and Wildlife (CDFW)
- Regional Water Quality Control Board (RWQCB)
- California State Lands Commission
- United States Fish and Wildlife Service (USFWS)
- National Marine Fisheries Service (NMFS)
- United States Army Corps of Engineers

Documentation of environmental compliance would include written reports of observations, documentation of events and follow-up, and project tracking. The following forms of documentation shall be submitted to the noted agencies on a timely manner:

- Pre-construction geotechnical evaluations at major bore sites would be provided to CDFW and RWQCB prior to construction.
- Monthly Monitoring Reports would summarize construction activity and daily monitoring logs for the previous month of construction, and would be provided to the resource agencies as required by applicable permits.
- Post-Construction Summary Report would summarize the construction activity and monitoring results for the Project, and would be submitted to the resource agencies.

Training of Project Personnel

Prior to the commencement of construction, the contractor's personnel shall attend a training session on-site. The training session shall cover the following topics:

- Details of the information found within the contractor's project-specific frac-out plan;
- Specific permitting conditions and requirements;
- Requirement to retain copies of all appropriate permits on the site during all operations;
- Sensitive resources located at or near the site;

- Requirement to monitoring during all operations;
- Situations that invoke a halt of operation;
- Proper lines of communication;
- Proper lines of authority and responsibility;
- Information the contractor shall provide to the monitoring personnel and project owner's site representative;
- Contact names and phone numbers of the appropriate individuals and agencies; and,
- Types of events that the contractor is required to report and to whom.

The contractor shall provide an overview of the drilling operation in their work plan. The training session shall ensure that contractor personnel recognize the authority of the on-site monitors to stop drilling.

The focus on environmental orientation would be to both educate and motivate all project personnel to minimize disturbance to the surrounding environment and to take actions to protect sensitive resources. Knowledgeable environmental compliance team members would be available to answer questions and provide relevant information as requested. The worker orientation program would inform project workers of their responsibilities in regards to sensitive biological resources. The Environmental Inspector would serve as a contact for issues that may arise concerning implementation of protection measures, and to document and report on adherence to these measures.

References

Forkert Engineering & Surveying, Inc., and Chambers Group, Inc. July 2008. Horizontal directional drilling: contingency and resource protection plan for construction of the AT&T Fiber Optic Cable Installation Project, Clark County, Nevada and San Bernardino County, California. Prepared for AT&T

DRAFT

Appendix G – Evaluation of NVRRWP Impact on Groundwater

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Technical Memorandum (TM)

NVRRWP - Groundwater Impact

Subject:	**Evaluation of NVRRWP Impact on Groundwater**
Prepared For:	Del Puerto Water District, City of Modesto and City of Turlock
Prepared by:	Reza Namvar
Reviewed by:	Ali Taghavi
Date:	July 23, 2014
Reference:	0453-003 NVRRWP Phase 3

1 Introduction

The proposed North Valley Regional Recycled Water Program (NVRRWP) is being developed as a regional solution to address water supply shortages and reliability concerns by utilizing recycled water for beneficial use[1]. The proposed NVRRWP would deliver recycled water produced by the Cities of Modesto and Turlock to the Del Puerto Water District (DPWD).

Currently, wastewater generated by the City of Turlock is being treated and discharged to the San Joaquin River. The City of Modesto treats and discharges to the San Joaquin River during winter months, with no discharge during the summer months. With the proposed NVRRWP, this recycled water will be discharged to the Delta-Mendota Canal (DMC) and delivered to DPWD via the DMC.

1.1 Objective

This Technical Memorandum presents the approach and results of analysis of NVRRWP impacts on groundwater in the vicinity of the San Joaquin River from the project area to the Vernalis station, located approximately 25 miles downstream from the Turlock recycled water discharge location.

1.2 Approach

The NVRRWP would result in reduction of stream flows in the San Joaquin River as no more recycled water from Cities of Modesto and Turlock would be discharged to the San Joaquin River under the project conditions. The impact of reductions in the San Joaquin River streamflows on groundwater under the NVRRWP conditions was analyzed using the California Department of Water Resources (DWR) California Central Valley Groundwater-Surface Water Simulation Model (C2VSim). The existing conditions baseline (EC Baseline) version of C2VSim was used for this analysis. The EC Baseline model was configured to run with and without discharges of recycled water by the Cities of Modesto and Turlock to the San Joaquin River. The changes in groundwater elevations and storage under the two EC Baseline model runs reflects the impact of the NVRRWP on groundwater.

2 C2VSim Model

DWR has developed the C2VSim model as a tool to aid in water resources management planning. C2VSim simulates water movement through the interconnected land surface, surface water and groundwater flow systems in the 20,000 mi^2 of the alluvial Central Valley aquifer. C2VSim dynamically calculates groundwater conditions based on urban and crop water demands; long-term hydrologic and meteorlogic records, land use, cropping patterns, and other inputs.

[1] http://www.nvr-recycledwater.org/

C2VSim has two versions based on resolution of the model grid. C2VSim coarse grid (C2VSim-CG) has a coarser grid with an average element area of approximately 14 mi^2 (9,200 acres) (Brush et al., 2013). C2VSim fine grid (C2VSim-FG) has a significantly finer grid with an average element area of approximately 410 acres (0.64 mi^2) (RMC, 2011). C2VSim-FG is refined around the streams as well as San Joaquin River with an average of 0.5 mile node spacing. The node spacing increases gradually away from the streams to an average of 1.5 miles. C2VSIM-FG has been used for analysis of many Central Valley wide or regional projects, including interaction of surface water and groundwater resources (RMC, 2014) C2VSim-FG was used for the analysis of NVRRWP groundwater impact. Figure 1 illustrates the C2VSim-FG grid in the vicinity of the NVRRWP. C2VSIM-FG model area is divided into 21 subregions to facilitate data entry and reporting of model results. The model output can be summarized to produce water budgets for each of 21 model subregions or the entire model area. Figure 2 illustrate the C2VSIM-FG subregions and DWR's Bulletin 118 groundwater basins in the project area.

2.1 Historical Simulation

C2VSim-FG uses a detailed database of monthly precipitation, land use, crop acreage, river inflow and surface water diversion information from October 1921 through September 2009 to calculate historical water use, groundwater pumping and changes in aquifer storage. This long hydrologic period incorporates the significant historical variations (dry, multiple dry, wet, and multiple wet years) in the Central Valley.

2.2 Existing Conditions Simulation

The EC Baseline version of C2VSim-FG was used for the analysis of NVRRWP groundwater impact. The simulation period for this version of C2VSim-FG is 88 years incorporating historical hydrology from 1922 to 2009. It applies current level of land use and water use to this hydrology. The EC Baseline model was configured for the following runs:

- EC Baseline with recycled water discharge to San Joaquin River
- EC Baseline without recycled water discharge to San Joaquin River

The changes in groundwater elevations and storage under the two model runs reflect the impact of the NVRRWP on groundwater.

3 Recycled Water Discharges

The City of Turlock discharges approximately an average of 8.5 million gallons per day (MGD) of recycled water to the San Joaquin River. This rate remains the same through the year. However, the City of Modesto only discharges recycled water to San Joaquin River from November to May with an average of 7.8 MGD with discharges ranging from zero MGD during June to October to a maximum of approximately 25 MGD in February. Figure 3 illustrates the monthly combined recycled water discharge rates from Cities of Modesto and Turlock.

4 Results

The two model runs based on EC Baseline version of C2VSim-FG were compared to evaluate the impact of NVRRWP on streamflows at Vernalis and groundwater storage and elevations.

4.1 Streamflows at Vernalis

The removal of recycled water discharges to the San Joaquin River by the Cities of Modesto and Turlock would result in reduced streamflows downstream from the discharge points. Comparison of the two model runs showed that the average monthly streamflows at Vernalis station would reduce by approximately 2,900 acre-feet (AF)/month in March to approximately 750 AF/month from June to October (Figure 4). The average annual streamflows at Vernalis station would be reduced by

approximately 18,000 AF/year. The average discharge of the San Joaquin River between 1924 and 2011 was 3.3 million AF/year. The reduction is San Joaquin River streamflows at Vernalis due to NVRRWP is approximately 0.5% of the average annual flows.

4.2 Groundwater Storage and Elevations

The reduction in San Joaquin River streamflows would result in changes in stream-aquifer interaction. Reduction of streamflows would increase stream gains from the aquifer when the stream is a gaining stream (i.e. groundwater levels are higher than stream levels). In contrast, reduction of streamflows would reduce stream losses to the aquifer when the stream is a losing stream (i.e. groundwater levels are lower than stream levels). The average monthly change in groundwater storage for C2VSim subregions 8 to 12 in the vicinity of the NVRRWP is presented in Figure 5. Groundwater storage is reduced from September to March; however, groundwater storage is increased from April to August. The average annual reduction in groundwater storage is approximately 27 AF/year (Table 1).

The annual changes in groundwater storage for C2VSim subregions 8 to 12 through the 88 years of simulation and under various hydrologic conditions are presented in Figure 6. The change in groundwater storage varies from approximately -280 AF/year to approximately 150 AF/year. The cumulative change in groundwater storage is also shown in Figure 6. Over the 88-year simulation period, NVRRWP would result in approximately 2,420 AF of less groundwater in storage in the project area (Figure 6 and Table 1). This is equivalent to 27 AF/year average loss of contribution to groundwater storage. This change in groundwater storage is less than significant and is considered negligible and well within the potential range of accuracy of C2VSim.

5 Conclusions

Based on the analysis performed using the C2VSim, the groundwater storage loss is approximately 28 AF/year which is not significant in the context of hydrology of the basin. The results indicate that the groundwater impact of NVRRWP in the area from the recycled water discharge points to the Vernalis station is minimal and not significant.

6 References

Brush, C.F., E.C. Dogrul, and T.N. Kadir, 2013. Development and Calibration of the California Central Valley Groundwater-Surface Water Simulation Model (C2VSim), Version 3.02-CG. DWR Technical Memorandum.

RMC, 2011. Refinement of spatial resolution of the C2VSIM. Technical Memorandum submitted to DWR.

RMC, 2014. Assessment of surface water and groundwater conditions and interaction in California's Central Valley – Insights to inform sustainable water management. Report prepared for The Nature Conservancy.

Table 1: Change in Groundwater Storage for C2VSim-FG Subregions in the NVRRWP Area

C2VSim	B118 Groundwater Basin	Change in Groundwater Storage	
		Average Annual (AF/yr)	Cumulative (AF)
8	Eastern San Joaquin, Cosumnes, South American	-7	-630
9	Tracy, Solano, Eastern San Joaquin, South American	-10	-900
10	Delta-Mendota	-5	-450
11	Modesto, Eastern San Joaquin	-3	-230
12	Turlock	-2	-210
13	Merced, Chowchilla, Madera	0	0
Total		-27	-2,420

Figure 2: C2VSim Grid in the NVRRWP Area

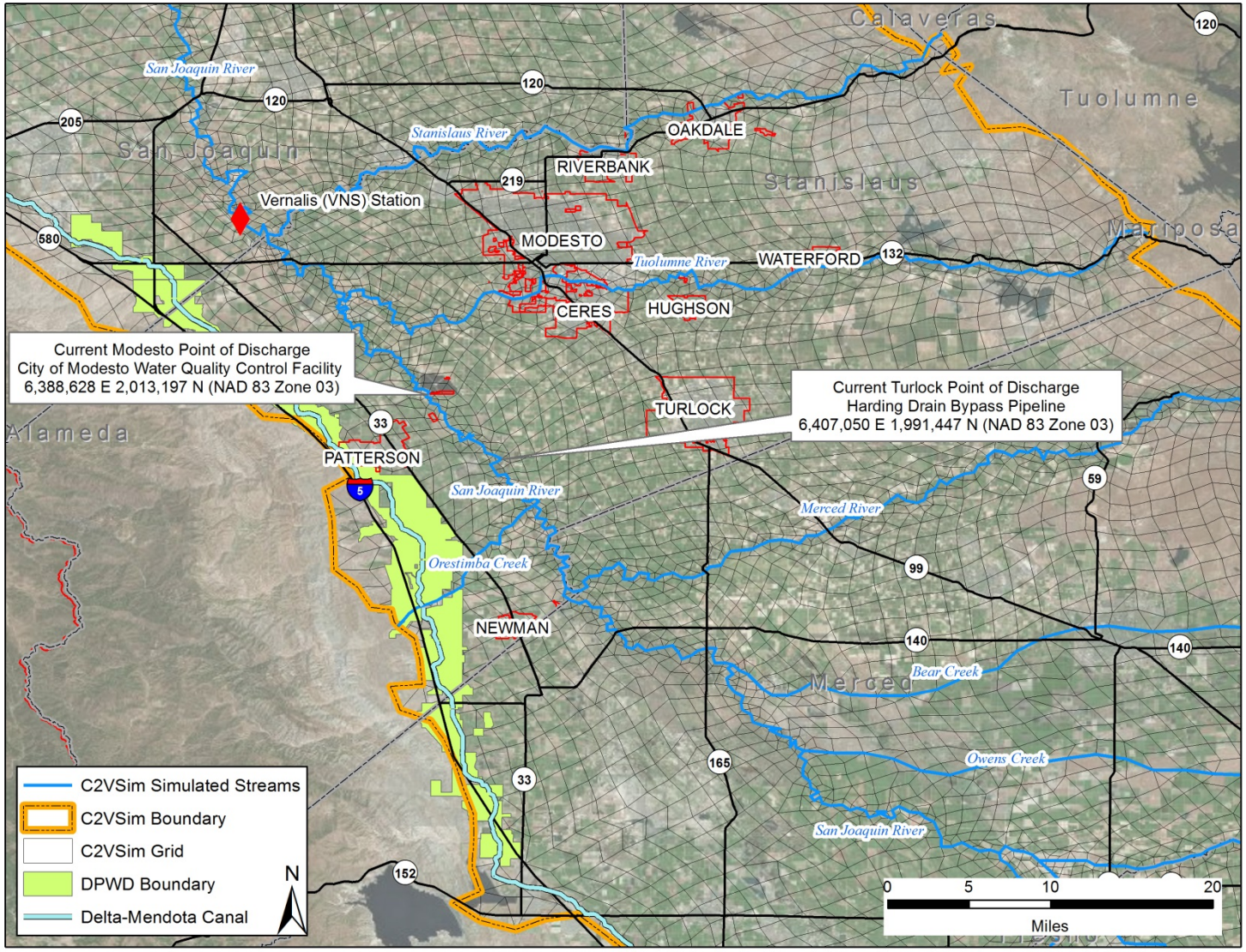


Figure 2: C2VSim Subregions and DWR Bulletin 118 Groundwater Basins in the NVRRWP Area

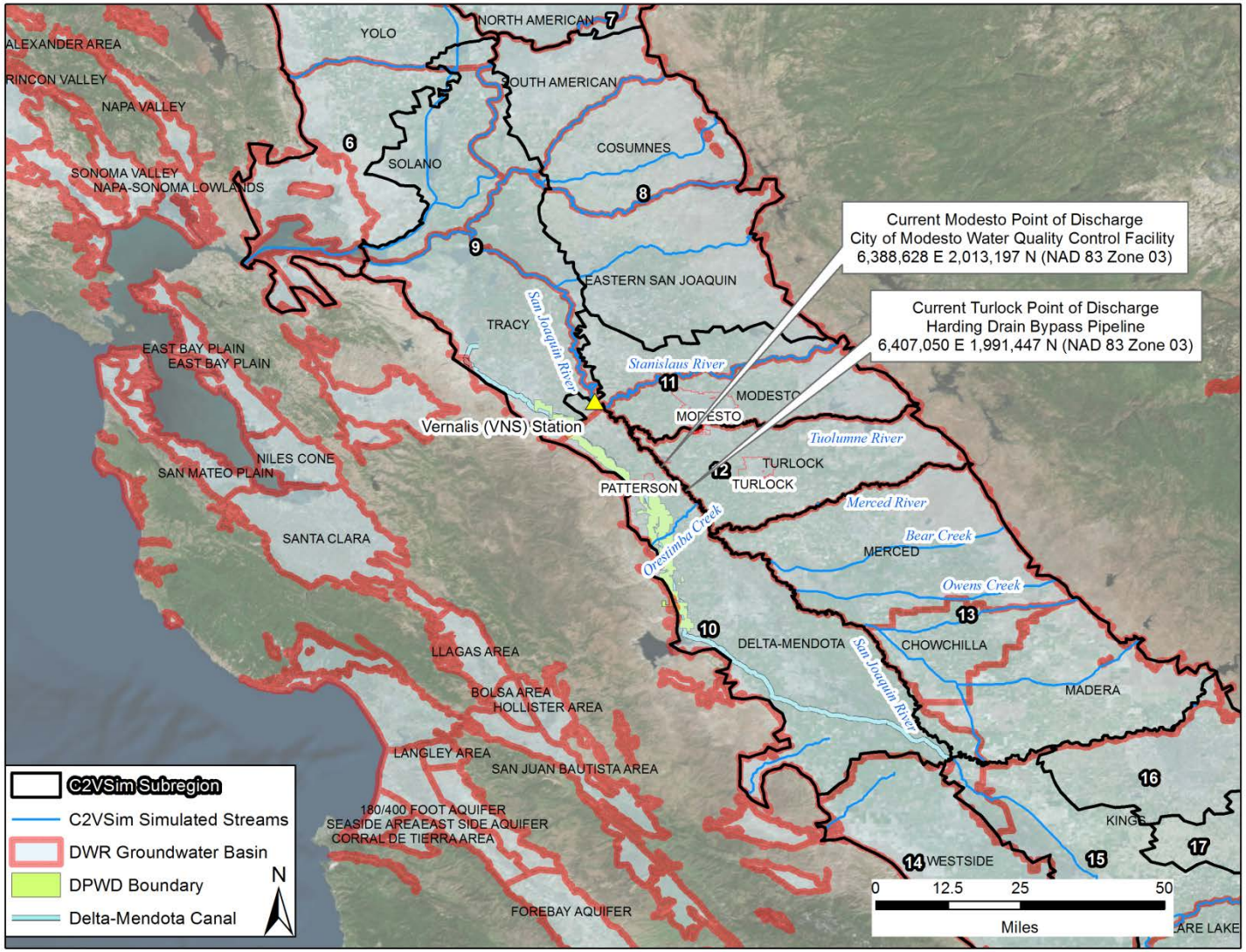


Figure 3: Cities of Modesto and Turlock average monthly recycled water discharges to San Joaquin River

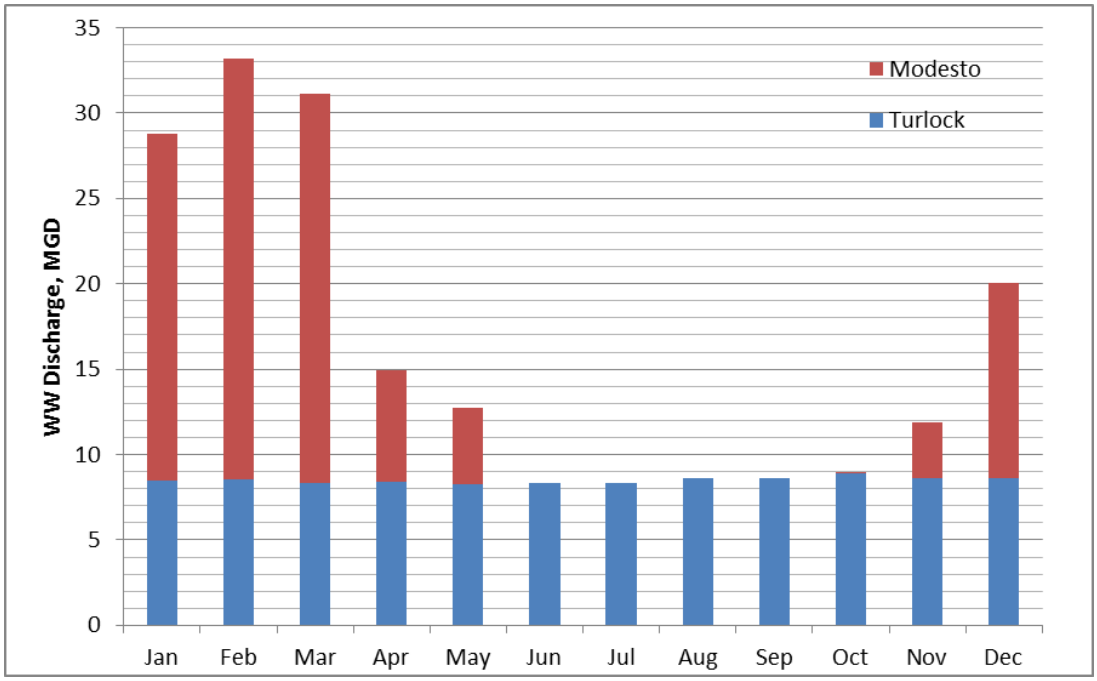


Figure 4: Average monthly reduction of San Joaquin River streamflows at Vernalis

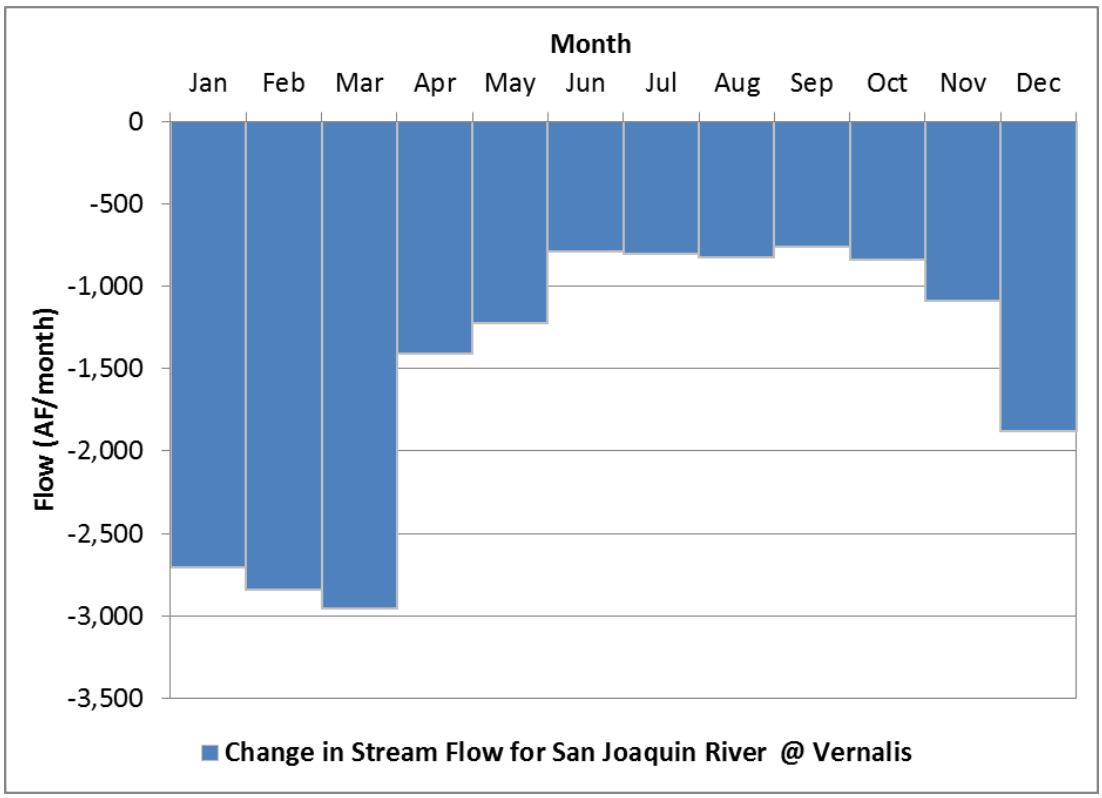


Figure 5: Average monthly change in groundwater storage for C2VSim subregions 8 to 12

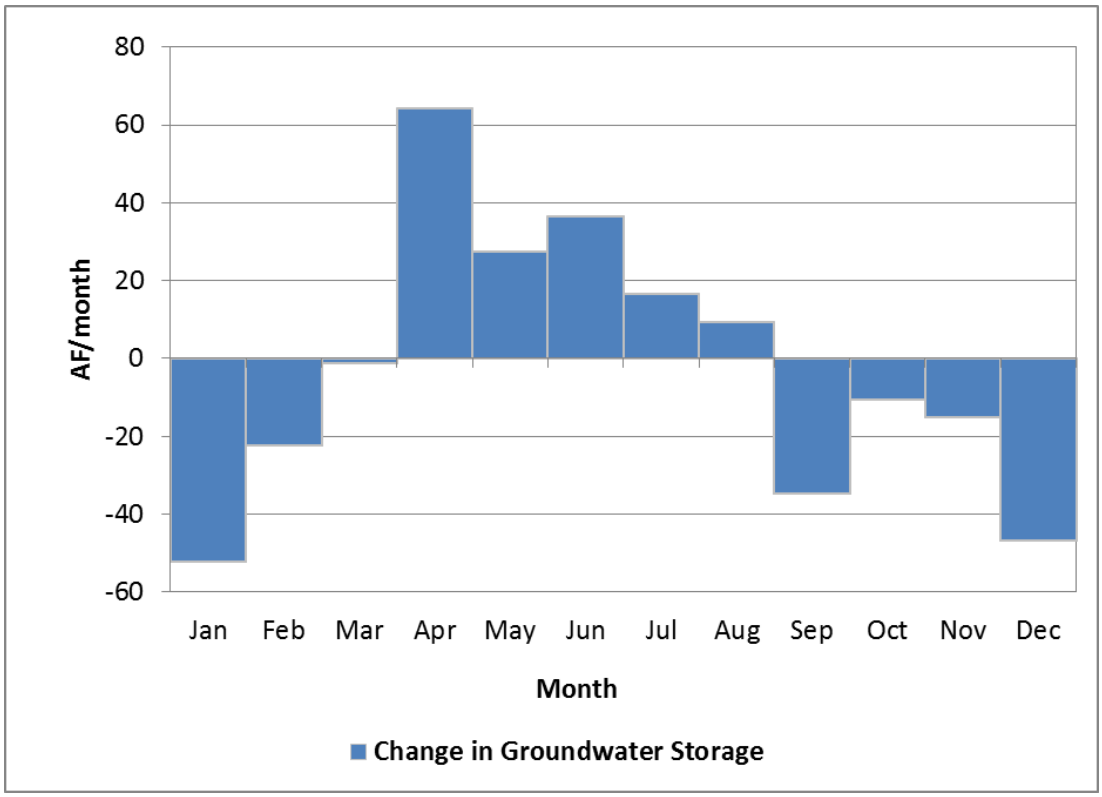
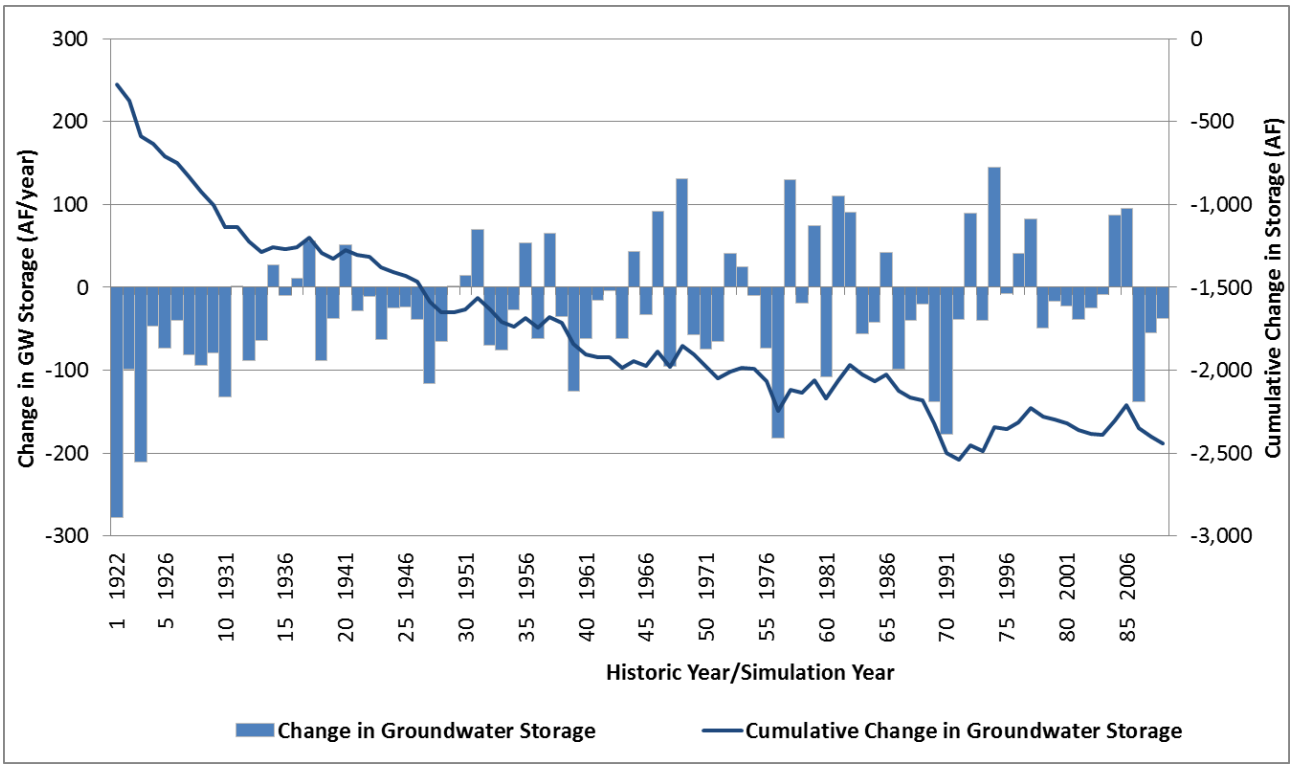


Figure 6: Cumulative change in groundwater storage for C2VSim subregions 8 to 12



Appendix H – Distribution List

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Appendix H EIR/EIS Distribution List

Public circulation of the NVRRWP Draft EIR/EIS made use of electronic media to ensure cost-effective access to the public and interest parties. The Draft EIR/EIS was available online at the NVRRWP project website and on the Reclamation website.

http://www.nvr-recycledwater.org/documents.asp
http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=17241

The Draft EIR/EIS was also available for review at the locations listed below.

Persons, agencies and organizations listed in this chapter were informed of the availability of the Draft EIR/EIS and locations where the document was available for review, as well as the timing of the 60-day public review period.

Document Availability

The Draft EIR/EIS was available for review at the Partner Agencies' main offices and at the Reclamation office in Fresno.

City of Modesto, Utilities Department
1010 Tenth Street, 4th Floor
Modesto, CA 95354

City of Turlock
156 S. Broadway
Turlock, CA 95380

Del Puerto Water District
17840 Ward Ave
Patterson, CA 95363

Bureau of Reclamation
1243 "N" Street
Fresno, CA 93721

Agencies, organizations, individuals and interested parties that received the NOA for the Draft EIR/EIS are listed below.

Federal and State Agencies

California Department of Fish and Wildlife, Region 3
California Department of Fish and Wildlife, Region 4
California Department of Planning and Research
California Department of Transportation (Caltrans) District 10
California Regional Water Quality Control Board, Central Valley
California Office of Historic Preservation
California State Lands Commission
California State Water Resources Control Board, Division of Financial Assistance
California State Water Resources Control Board, Division of Water Rights

NOAA National Marine Fisheries Service
U.S. Army Corp of Engineers, Sacramento District
U.S. Environmental Protection Agency, Region 9
U.S. Fish and Wildlife Service

Regional/Local Agencies

Central California Irrigation District
Central Valley Flood Protection Board
City of Ceres
City of Modesto
City of Modesto (East Stanislaus IRWM)
City of Patterson
City of Turlock
Kern County Water Agency
Merced County
Metropolitan Water District of Southern California
Modesto Irrigation District
Patterson Irrigation District
San Joaquin County
San Joaquin Valley Air Pollution Control District
San Luis & Delta-Mendota Water Authority
San Luis Water District
Santa Clara Valley Water District
Stanislaus County
Turlock Irrigation District
West Stanislaus Irrigation District
Westlands Water District

Other Interested Parties

Organizations

Ducks Unlimited
Griffith & Masuda
Stanislaus Farm Bureau
Stewart and Jasper
The Nature Conservancy
Robert Gioletti & Sons Dairy
West Yost Associates

Individuals

Ryon Sellmon
Mark Serpa
Amber Madden
Michael George

Appendix I – Antidegradation Analysis

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JUNE 10, 2015

NORTH VALLEY REGIONAL RECYCLED WATER PROGRAM

Antidegradation Analysis for Proposed Recycled Water Discharge to the Delta-Mendota Canal

prepared by

LARRY WALKER ASSOCIATES

Acknowledgements

The contributions of the following Larry Walker Associates staff members, who participated in the preparation of this document, are gratefully acknowledged:

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Acronyms and Abbreviations

°C	Degrees Celsius
°F	Degrees Fahrenheit
µg/L	Micrograms per liter
µmhos/cm	Micromhos per centimeter (equivalent to µS/cm)
µS/cm	Microsiemens per centimeter (equivalent to µmhos/cm)
AF	Acre-feet
AFY	Acre-feet per year
CCC	Criterion Continuous Concentration
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CTR	California Toxics Rule
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
D/S	Downstream
DMC	Delta-Mendota Canal
DPWD	Del Puerto Water District
DWR	Department of Water Resources
EC	Electrical conductivity
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	(United States) Environmental Protection Agency
GWD	Grassland Water District
lbs	Pounds
MCL	Maximum contaminant level
mg/L	Milligrams per liter

mgd	Millions of gallons per day
MOU	Memorandum of Understanding
MPN	Most probable number
NPDES	National Pollutant Discharge Elimination System
NTR	National Toxics Rule
NTU	Nephelometric turbidity unit
NWR	National Wildlife Refuge
NVRRWP	North Valley Regional Recycled Water Program
PS	Pump station
RWQCF	(Turlock) Regional Water Quality Control Facility
SOD	South of Delta
SWA	State Wildlife Area
SWRCB	State Water Resources Control Board
SWP	State Water Project
TDS	Total dissolved solids
TMDL	Total Maximum Daily Load
TRC	Total Residual Chlorine
USBR	United States Bureau of Reclamation
WQCF	(Modesto) Water Quality Control Facility

Executive Summary

BACKGROUND AND PROJECT DESCRIPTION

The North Valley Regional Recycled Water Program (NVRRWP) began in 2010 as a collaborative partnership that includes the Cities of Modesto, Turlock, Ceres, Del Puerto Water District (DPWD or District), and Stanislaus County. The Partner Agencies for the NVRRWP – those agencies that have signed a memorandum of understanding (MOU) to share costs for the program's implementation – include the Cities of Modesto and Turlock and DPWD. The proposed NVRRWP is being developed as a regional solution to address the growth of Delta water supply shortages and reliability concerns by utilizing recycled water for beneficial uses. The Partner Agencies for the NVRRWP are proposing to provide recycled water from the Cities of Modesto and Turlock to the DPWD to address water supply shortages within the District's service area on the west side of the San Joaquin River in San Joaquin, Stanislaus and Merced Counties, south of the Sacramento-San Joaquin River Delta (Delta), and south of Delta (SOD) Central Valley Project Improvement Act (CVPIA)-designated Refuges.

Specifically, the project proposes to introduce and convey, on a space available basis, up to 59,000 AFY (52.7 mgd) of blended, recycled water produced by the Cities of Modesto and Turlock directly into the Delta-Mendota Canal (DMC), which is owned by the U.S. Department of Interior, Bureau of Reclamation (USBR or Reclamation). The recycled water will be blended with Central Valley Project (CVP) water conveyed by the DMC. The blended, recycled water would then be conveyed directly to DPWD customers or stored within Reclamation's SOD CVP system for storage during low water demand periods. In addition to uses within DPWD's service area, the project also proposes to provide water to CVPIA-designated National Wildlife Refuges and wildlife areas (collectively referred to as "refuges") located south of the Delta to maintain and improve habitat areas. These particular federal and state wildlife refuges support a variety of fish and wildlife species and are an important part of the Pacific Flyway, a major migration route for migratory birds. As a result of the project, blended, recycled water from the Cities of Modesto and Turlock will be available to DPWD to provide an additional source of water south of the Delta, which can be used to meet both agricultural and wildlife needs. The overall objective of the proposed project is to maximize beneficial use of a sustainable, alternative water supply within the region, which would address reductions in water supplies from CVP and reduce the reliance on groundwater use.

DPWD and the Cities of Modesto and Turlock are proposing to discharge high quality, Title 22 recycled water produced by each city's wastewater reclamation facility to the DMC at a location northwest of the City of Patterson (see **Figure ES-1**). The recycled water proposed for discharge to the DMC will be diverted as blended water by DPWD at various turnouts along the canal for use by farmers in its service area and for the refuges. To accommodate the proposed, new discharge to the DMC, the City of Modesto would cease its current discharge of disinfected, secondary treated wastewater to the San Joaquin River and both cities would instead pump disinfected, tertiary treated effluent to a new side bank outfall that would be constructed on the DMC for the purpose of the NVRRWP discharge. Pipelines and pump stations will also need to be constructed to convey the recycled water from the treatment facilities to the DMC.

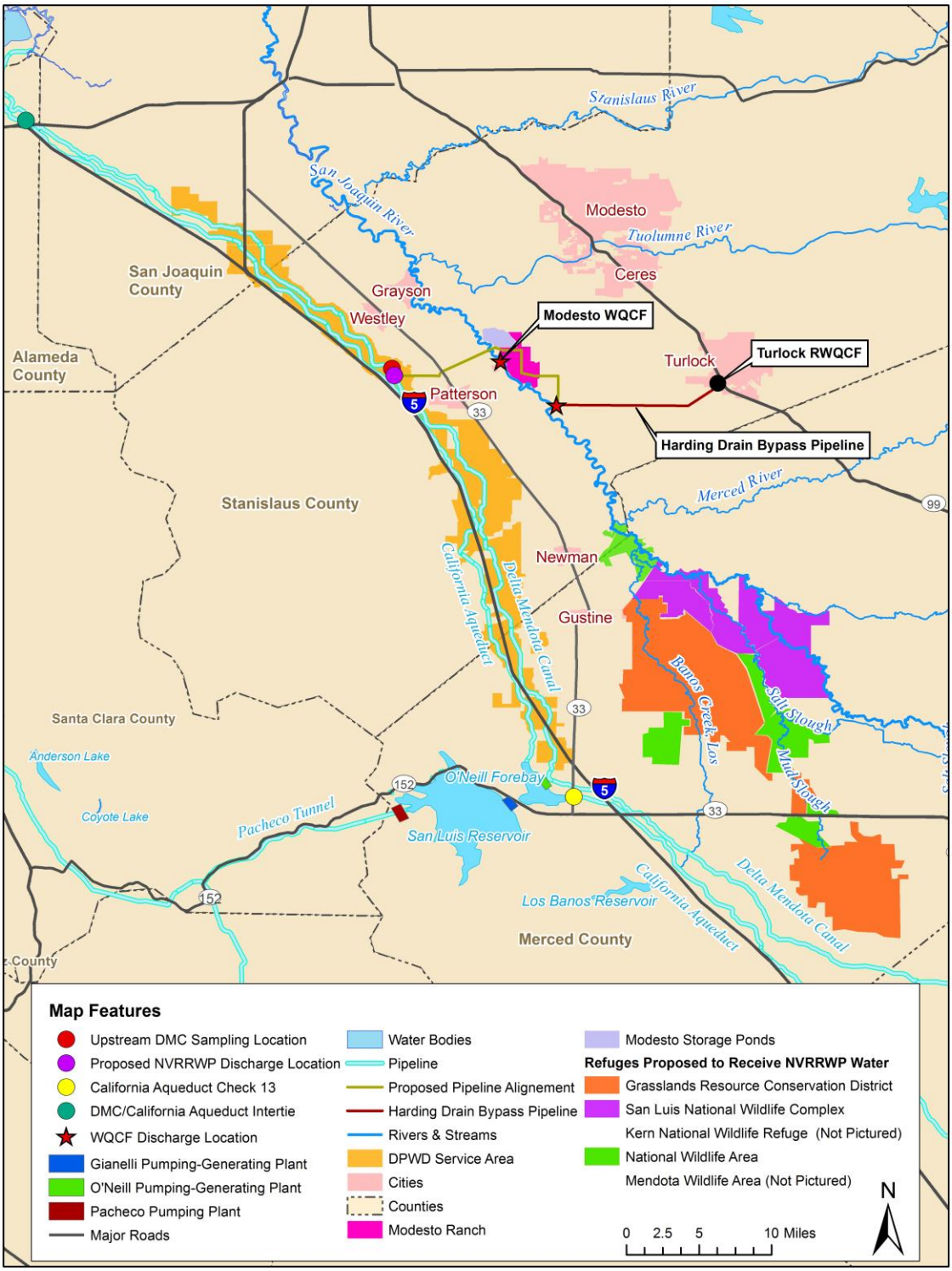

Figure ES-1: Proposed NVRRWP Project Area Showing Del Puerto Water District Service Area and Wildlife Refuges Proposed to Receive Project Water.

As required by the Clean Water Act, the discharge of any pollutant or combination of pollutants to surface waters that are deemed waters of the United States, as is the DMC, must be regulated by a National Pollutant Discharge Elimination System (NPDES) permit. Because the commingled discharges of the Cities of Modesto and Turlock constitute a new discharge to a surface water of the U.S., a NPDES permit governing the proposed discharge must be requested from the Central Valley Regional Water Quality Control Board (CVRWQCB or Central Valley Water Board). Under state and federal antidegradation policies, the Central Valley Water Board is required to make a finding regarding the satisfaction of the policies as they pertain to a surface water discharge for which the Board issues a NPDES permit.

State antidegradation policy, which incorporates federal antidegradation policy, seeks to maintain the existing high quality of water to the maximum extent possible, and only allows a lowering of water quality if:

- Changes in water quality are consistent with maximum benefit to the people of the state, will not unreasonably affect present and potential beneficial uses, and will not result in water quality lower than applicable standards, and
- Waste discharge requirements for a proposed discharge will result in the best practicable treatment or control of the discharge necessary to assure:
    - No pollution or nuisance
    - Highest water quality consistent with maximum benefit to the people of the state

This antidegradation analysis for the proposed NVRRWP discharge is prepared for the Central Valley Water Board to provide the information needed to determine whether the proposed discharge to the DMC is consistent with state and federal antidegradation policies.

WATER QUALITY IMPACTS OF PROPOSED NVRRWP DISCHARGE

The near-field and far-field water quality impacts assessments performed as part of this antidegradation analysis reveal that the discharge of Title 22 recycled water to the DMC at a discharge rate of 52.7 mgd is estimated to produce very minor changes in downstream water quality. The near-field water quality impacts assessment shows that incremental concentration changes to DMC water quality downstream of the proposed NVRRWP discharge are projected to be very minor for most constituents evaluated, ranging from <0.0002 µg/L (chlorpyrifos) to 12 mg/L (total dissolved solids), along with an estimated 17 µmhos/cm average increase for electrical conductivity. Moreover, the proposed project is estimated to produce no changes in water quality for total mercury and total selenium downstream of the discharge, and result in a slight decrease in downstream receiving water concentrations for total iron, total manganese, and diazinon. Furthermore, the estimated, average, downstream receiving water concentration resulting from the proposed discharge is lower than the corresponding most stringent water quality objective or criterion for each constituent evaluated.

Under DPWD's operations plan for the proposed project, the District will typically divert water from the DMC at rates that match the proposed project's discharge rates, thus removing a significant amount of mass from the canal when it provides agricultural supply water to farmers and wetlands supply water to refuges. Under the scenario where DPWD diverts all water that the proposed project discharges to the DMC, incremental concentration changes in water quality

downstream of any District diversions would be the same as those described above. It would be only during times of no water demand that the District would not divert any water from the DMC to its customers, thus resulting in the full estimated incremental mass loading increases to the DMC reaching the state and federal water projects.

During periods when the District might elect to not divert any water from the DMC due to low water demand in its service area, the far-field water quality impacts assessment in this report estimate the proposed NVRRWP discharge to constitute no more than 2.0% of the water available for export from the O'Neill Forebay to the California Aqueduct and no more than 2.3% of the water available for export from the San Luis Reservoir to the Pacheco Tunnel, on an average annual basis at the proposed buildout discharge rate of 52.7 mgd. The maximum percentage of the NVRRWP discharge available for export at these two location decreases to 1.8% when considering average monthly contributions. The results of this far-field assessment reveal that the proposed project will have minimal water quality impacts on water resources used for drinking water uses downstream of the San Luis Joint-Use Complex, the location where the proposed project's recycled water would come into contact with State Water Project (SWP) water supplies.

Overall, the very minor changes in water quality identified with implementation of the proposed project are expected to result in the following outcomes:

- Project would not be expected to cause, or increase the frequency of, exceedances of applicable criteria/objectives in the DMC or downstream receiving waters, would not cause nuisance conditions;
- Project would not adversely affect beneficial uses in the DMC or downstream waters; and
- Project would not result in water quality less than that prescribed in state or federal policies.

CONSISTENCY WITH ANTIDEGRADATION POLICIES

The proposed project, the discharge of up to 52.7 mgd of Title 22 recycled water to the DMC by the year 2045, is determined to comprise best practicable treatment or control and is consistent with federal and state antidegradation policies for the follow reasons:

- The proposed NVRRWP discharge to the DMC will not adversely affect existing or probable beneficial uses of the DMC or downstream receiving waters, nor will it cause water quality to not meet applicable water quality objectives.
- Overall, the proposed NVRRWP discharge is estimated to have a very minor impact on DMC water quality downstream of the discharge point, both in the near-field and the far-field. The proposed project is estimated to cause very minor increases in downstream water quality concentrations for some constituents (EC, TDS, total aluminum, total copper, ammonia, nitrate, nitrite, bis(2-ethylhexyl)phthalate, carbon tetrachloride, dibromochloromethane, dichlorobromomethane, and chlorpyrifos), produce very minor decreases in downstream concentrations for others (total iron, total manganese, and diazinon), and result in no change in downstream concentrations for two parameters (total mercury and total selenium), as compared to existing receiving water conditions.

- Based on the above, the request to permit a new discharge to the DMC is consistent with federal and state antidegradation policies in that the minor lowering of water quality for several pollutants is necessary to accommodate important economic or social development, will not unreasonably affect beneficial uses, will not cause further exceedances of applicable water quality objectives, and is consistent with the maximum benefit to the people of the State.
- Based on the above, the request to permit a new discharge to the DMC is consistent with the Porter-Cologne Act in that the resulting water quality will constitute the highest water quality that is reasonable, considering all demands placed on the waters, economic and social considerations, and other public interest factors.

The proposed discharge of Title 22 recycled water to the DMC also fully supports California's *Recycled Water Policy* (SWRCB, 2013) in that it would result in an increased use of recycled water from municipal wastewater sources, would incrementally reduce reliance on the vagaries of annual precipitation, and would assist in the sustainable management of surface and groundwater resources.

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Introduction

BACKGROUND

The Del Puerto Water District (DPWD or District) and the Cities of Modesto and Turlock are proposing to discharge high quality, Title 22 recycled water produced by each city's wastewater reclamation facility to the Delta-Mendota Canal (DMC) at a location northwest of the City of Patterson. The recycled water will be blended with Central Valley Project (CVP) water conveyed by the DMC. The recycled water proposed for discharge to the DMC will be diverted as blended water by DPWD at various turnouts along the canal for use by farmers in its service area. While most of the diverted water will be used to supplement agricultural irrigation supplies that are no longer regularly met through deliveries from the Central Valley Project, water diverted by DPWD will also be sent to state and federal wildlife refuges. To accommodate the proposed new discharge to the DMC, the City of Modesto would cease its current discharge of disinfected, secondary treated wastewater to the San Joaquin River and both cities would instead pump disinfected, tertiary treated effluent to a new side bank outfall that would be constructed on the DMC for the purpose of the NVRRWP discharge.

As required by the Clean Water Act, the discharge of any pollutant or combination of pollutants to surface waters that are deemed waters of the United States, as is the DMC, must be regulated by a National Pollutant Discharge Elimination System (NPDES) permit. Because the commingled discharges of the Cities of Modesto and Turlock constitute a new discharge to a surface water of the U.S., a NPDES permit governing the proposed discharge must be requested from the Central Valley Regional Water Quality Control Board (CVRWQCB or Central Valley Water Board). Under state and federal antidegradation policies, the Central Valley Water Board is required to make a finding regarding the satisfaction of the policies as they pertain to a surface water discharge for which the Board issues a NPDES permit.

State antidegradation policy, which incorporates federal antidegradation policy, seeks to maintain the existing high quality of water to the maximum extent possible, and only allows a lowering of water quality if:

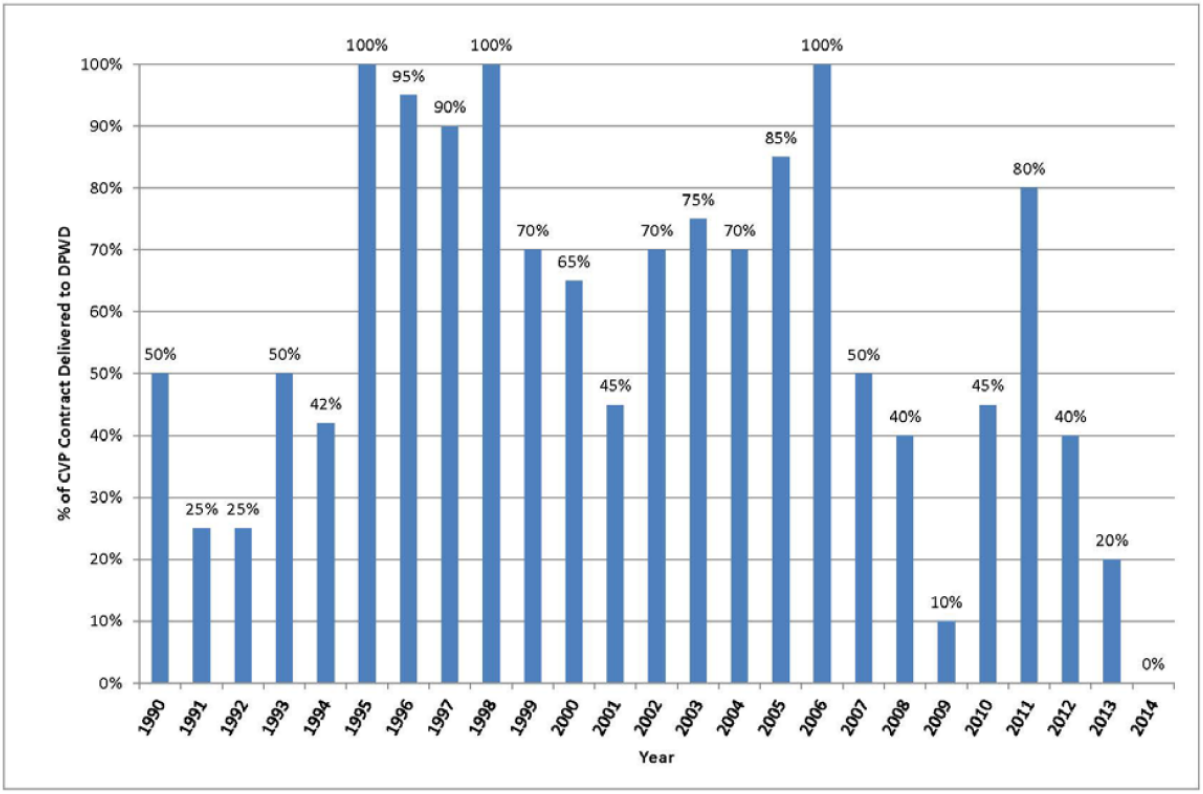
- Changes in water quality are consistent with maximum benefit to the people of the state, will not unreasonably affect present and potential beneficial uses, and will not result in water quality lower than applicable standards, and
- Waste discharge requirements for a proposed discharge will result in the best practicable treatment or control of the discharge necessary to assure:
    - No pollution or nuisance
    - Highest water quality consistent with maximum benefit to the people of the state

This antidegradation analysis for the proposed NVRRWP discharge is prepared for the Central Valley Water Board to provide the information needed to determine whether the proposed discharge to the DMC is consistent with state and federal antidegradation policies. This antidegradation analysis includes assessments of near-field and far-field water quality impacts estimated to result from the proposed project; an evaluation of how these estimated changes in water quality compare to applicable water quality objectives and relevant water quality criteria,

and how they may affect existing or probable beneficial uses; and a finding of consistency with antidegradation policies.

Del Puerto Water District

The District provides agricultural irrigation water to approximately 45,000 acres of productive farmland in Stanislaus, San Joaquin, and Merced Counties, which generates $130 million of gross revenue annually. Currently, DPWD primarily receives water from the United States Bureau of Reclamation (Reclamation or USBR) through a contract for the annual delivery of up to 140,210 acre-feet (AF) of CVP water. In recent years, DPWD's CVP water allocations have been significantly reduced from historical amounts due to multiple factors, including Sacramento-San Joaquin River Delta (Delta) pumping restrictions, drought conditions, and climate change. For instance, in 2009, DPWD received only 10 percent (i.e., 14,000 acre-feet per year (AFY)) of its contract allocation. Furthermore, DPWD's contract supply for 2013 was 20 percent of its contracted allocation (28,000 AFY), while the 2014 allocation is 0 percent. **Figure 1** shows the historical CVP allocations delivered to DPWD since 1990.



Source: DPWD 2014, Del Puerto Water District Historical Water Service Allocations and Rates

Figure 1: Historical CVP Allocations Delivered to DPWD since 1990.

While future contract water deliveries to DPWD are uncertain, it is anticipated that restrictions on CVP operations will result in the District receiving an average of 35 percent of its contract allocation (i.e., 49,000 AFY) on an annual basis under normal hydrologic conditions (i.e. non-drought conditions) (USBR, 2015).

Shortages in water deliveries from Reclamation and the lack of water supply reliability that DPWD has experienced have resulted in economic hardships on DPWD and its customers, especially on growers and irrigators within DPWD's service area. As a result, DPWD must secure alternate water supplies to supplement its CVP deliveries. While water transfers from other agencies and the use of groundwater have been effective temporary methods to meet DPWD's water demands, these activities do not provide a reliable, sustainable, or affordable long-term solution. For instance, groundwater is typically blended with CVP water to improve water quality prior to irrigation. Therefore, the quality and quantity of groundwater available is adequate only as a supplemental source and cannot be relied upon as a primary source of water. As such, an alternative water supply is needed to offset anticipated effects (e.g., overdraft, subsidence, water quality issues) that have occurred and will likely continue to occur with the absence of a different alternative water supply.

South of Delta Refuges

In addition to provision of water to the DPWD service area, the NVRRWP would make recycled water available to certain SOD CVPIA-designated federal National Wildlife Refuges (NWRs), State Wildlife Areas (SWAs), and the privately-managed wetlands of the Grassland Resource Conservation District, collectively referred to herein as "refuges". Reclamation has a legislative obligation under the CVPIA, in cooperation with the USFWS, the California Department of Fish and Wildlife (CDFW), the Grassland Water District (GWD), and the Central Valley Joint Venture (CVJV) to provide firm, average annual historical water deliveries of suitable quality to maintain the refuges' habitat areas. Provision of adequate and reliable water for the refuges to meet the CVPIA-mandated water levels has not been achieved. Based on information provided by Reclamation, an annual allocation of 376,514 AF is required for delivery to the SOD refuges. In the 2012 – 2013 time period, Reclamation delivered 333,527 AF of supplemental water. The NVRRWP could not serve the full demand for supplemental water, but could help reduce the shortfall.

Recycled Water Sources

DPWD is located in close proximity to the City of Modesto's (Modesto) and the City of Turlock's (Turlock) wastewater treatment facilities. Specifically, DPWD's service area is located a little over five miles from Modesto's Water Quality Control Facility (WQCF) and less than five miles from the end of Turlock's Harding Drain Bypass Pipeline, which currently conveys flows from the Turlock Regional Water Quality Control Facility (RWQCF) to an outfall located on the San Joaquin River. As a result of upgrades to the treatment facilities and increases in flows due to projected population growth, it is estimated that Modesto and Turlock will produce up to 59,000 AFY of recycled water by 2045 (USBR, 2015) that meets the California Code of Regulations (CCR), Title 22, Division 4 (Title 22) requirements for unrestricted reuse. The supply of recycled water from Modesto and Turlock could provide a long-term, reliable water supply for the District and its customers that would serve to augment DPWD's CVP supply. Concurrent with DPWD's ongoing CVP shortages, the Cities of Turlock and Modesto are facing more restrictive regulatory requirements for wastewater discharges to the San Joaquin River (NVRRWP, 2013).

PROJECT DESCRIPTION

The North Valley Regional Recycled Water Program (NVRRWP) began in 2010 as a collaborative partnership that includes the Cities of Modesto, Turlock, Ceres, DPWD, and Stanislaus County. The Partner Agencies for the NVRRWP – those agencies that have signed a memorandum of understanding (MOU) to share costs for the program's implementation – include the Cities of Modesto and Turlock and DPWD. The proposed NVRRWP is being developed as a regional solution to address the growth of Delta water supply shortages and reliability concerns by utilizing recycled water for beneficial uses. The Partner Agencies for the NVRRWP are proposing to provide recycled water from the Cities of Modesto and Turlock to the DPWD as blended water to address water supply shortages within the District's service area on the west side of the San Joaquin River in San Joaquin, Stanislaus and Merced Counties, south of the Sacramento-San Joaquin River Delta (Delta), and south of Delta (SOD) Central Valley Project Improvement Act (CVPIA)-designated Refuges.

Specifically, the project proposes to introduce and convey, on a space available basis, up to 59,000 AFY of recycled water produced by the Cities of Modesto and Turlock directly into the DMC, which is owned by Reclamation. The recycled water will be blended with CVP water conveyed by the DMC. The blended water would then be conveyed directly to DPWD customers or stored within Reclamation's SOD CVP system for storage during low water demand periods. In addition to uses within DPWD's service area, the project also proposes to provide water to CVPIA-designated National Wildlife Refuges and wildlife areas (collectively referred to as "refuges") located south of the Delta to maintain and improve habitat areas. These particular federal and state wildlife refuges support a variety of fish and wildlife species and are an important part of the Pacific Flyway, a major migration route for migratory birds. As a result of the project, recycled water from the Cities of Modesto and Turlock will be available to DPWD as blended water to provide an additional source of water south of the Delta, which can be used to meet both agricultural and wildlife needs. The overall objective of the proposed project is to maximize beneficial use of a sustainable, alternative water supply within the region, which would address reductions in water supplies from CVP and reduce the reliance on groundwater use.

PROJECT LOCATION

The proposed project is located within San Joaquin, Stanislaus and Merced Counties in the San Joaquin Valley of Central California, as shown in **Figure 2** and **Figure 3**. The proposed project facilities, mainly consisting of pipelines and pump stations, would be located west of the Cities of Modesto and Turlock, in Stanislaus County. Recycled water produced by the two cities would be blended with CVP water conveyed in the DMC prior to being delivered directly to DPWD customers via the DMC or stored within Reclamation's SOD CVP system for storage during low water demand periods. Water will also be conveyed to federal and state wildlife refuges located south of the Delta. With regard to potential water quality changes that may occur with the discharge of Title 22 recycled water to the DMC, the focus of the current antidegradation analysis is in the near-field impacts area and the far-field impacts area of the proposed NVRRWP discharge.

The near-field impacts area of the proposed NVRRWP discharge is the length of the DMC from the point of discharge to some distance downstream where effluent and ambient water are reasonably well-mixed. The distance downstream to where the proposed discharge and receiving

water are reasonably well-mixed depends on the flow rate of both the discharge and the receiving water. The far-field impacts area of the proposed NVRRWP discharge is considered to be in the general location of the San Luis Joint-Use Complex, approximately 32.7 miles downstream of the proposed NVRRWP discharge. This is the location where the proposed project's recycled water would come into contact with SWP water supplies. The San Luis Joint-Use Complex serves the SWP and the federal CVP. The complex is operated and maintained by DWR. The Joint-Use Complex includes the O'Neill Dam and Forebay, Sisk Dam, San Luis Reservoir, Gianelli Pumping-Generating Plant, Dos Amigos Pumping Plant, and a 103-mile portion of the California Aqueduct. The Mendota Pool, a small reservoir located at the terminus of the 117-mile long DMC, would also be considered to reside in the far-field impacts area of the proposed project.

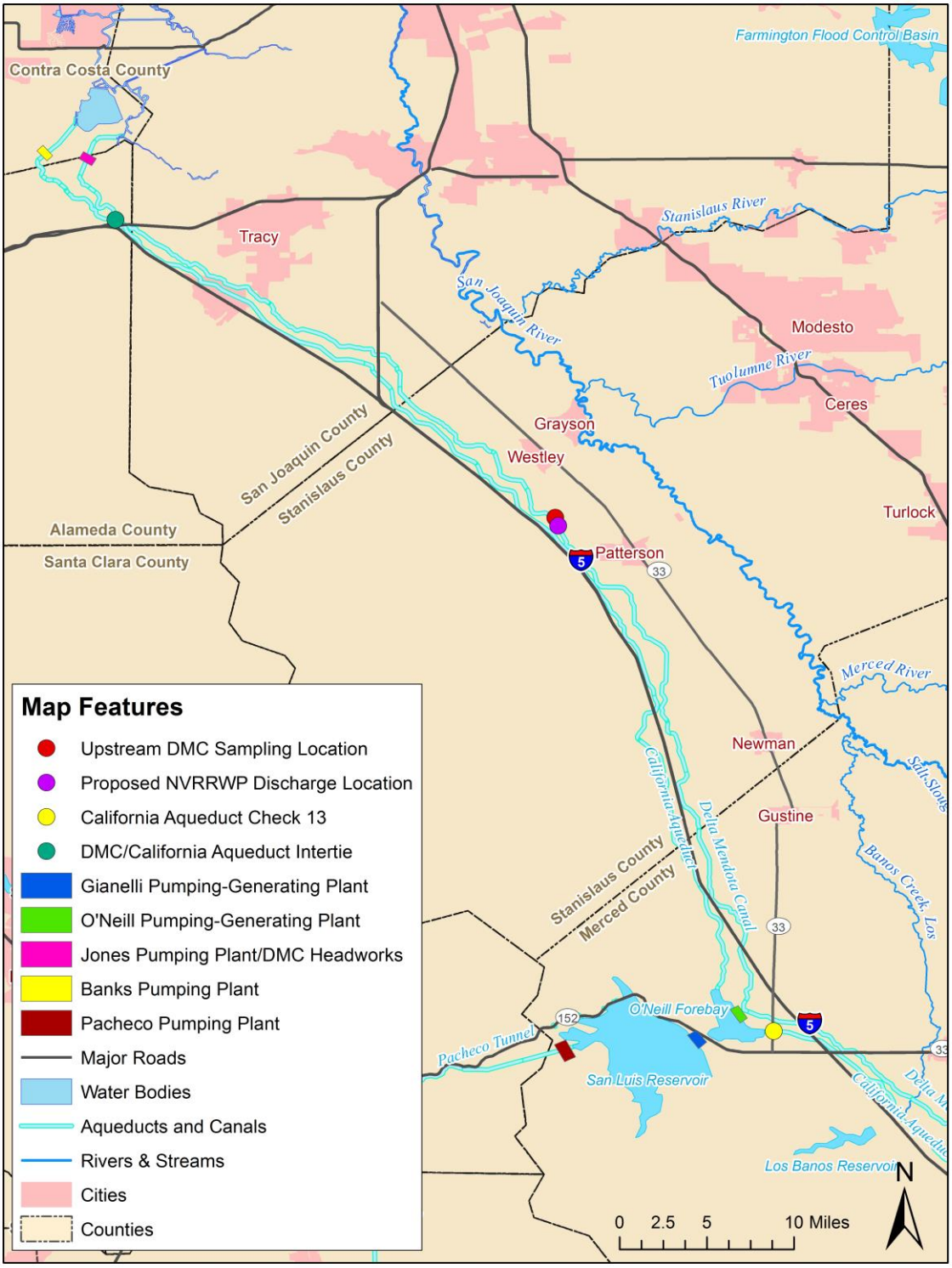


Figure 2: Overview of Proposed Project Area from the State (Banks) and Federal (Jones) Pumping Plants to the San Luis Joint-Use Complex (San Luis Reservoir and O'Neill Forebay).

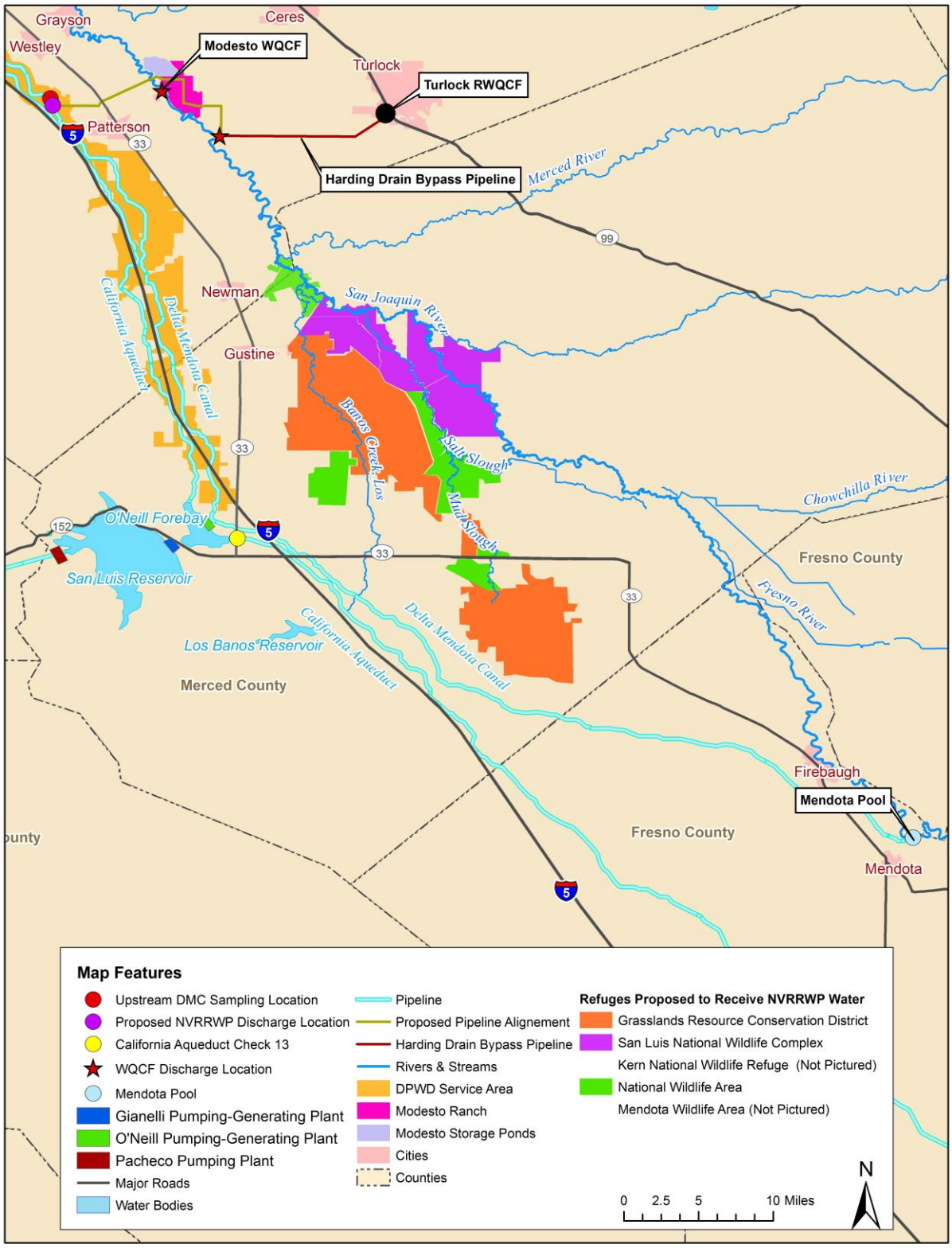


Figure 3: Overview of Proposed Project Area from the San Luis Joint-Use Complex (San Luis Reservoir and O'Neill Forebay) to the Mendota Pool.

SCOPE OF EVALUATION OF PROJECT IMPACTS

This antidegradation analysis evaluates the near- and far-field water quality impacts of the proposed project to the DMC and downstream receiving waters, respectively. This analysis does not specifically evaluate the removal of discharges to the San Joaquin River from the Cities of Modesto and Turlock. Other analyses performed in support of the Draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS) prepared for the project by the Partner Agencies have demonstrated that the impact of the removal of the flows currently discharged to the San Joaquin River by the two cities is negligible. The existing discharges from the two water quality control facilities represent a small portion of the total flow in the San Joaquin River, and recent modeling efforts show that redirection of the recycled water flows to the DMC would reduce average annual flows observed in the San Joaquin River at Vernalis by approximately 0.5% (USBR, 2015). Additionally, the CalSim II model developed by the California Department of Water Resources (DWR) to model State Water Project (SWP) operations was used to simulate potential impacts to Delta exports at the Banks Pumping Plant (part of the SWP) and Jones Pumping Plant (part of the CVP) with and without discharges of recycled water to the San Joaquin River by the Cities of Modesto and Turlock. Modeling results showed that the very small reduction in San Joaquin River flows at Vernalis due to the delivery of recycled water to the DMC would have a negligible effect on the availability of Delta water for export at the SWP and CVP pumps near Tracy (USBR, 2015).

The Cities of Modesto and Turlock may transition discharge from the San Joaquin River to the DMC over multiple NPDES permit terms; however, the total discharge for the proposed project would not exceed the currently permitted amounts in both city's NPDES permits. Any impacts of this project on the DMC and far-field areas are conservative in that they do not consider the removal of the San Joaquin discharge; that is, San Joaquin River contributions from the Cities of Modesto and Turlock that are observed at Jones Pumping Plant conservatively were not subtracted from ambient concentrations upstream of the proposed NVRRWP discharge in the current analysis as a means to reduce the overall project impacts to the DMC (i.e., incrementally increase assimilative capacity in the DMC upstream of the proposed discharge). This antidegradation analysis then addresses the water quality impacts of both the buildout project whereby all discharge is to the DMC, and the transition period before buildout when some discharge to the San Joaquin River is maintained.

PURPOSE OF REPORT

The purpose of this report is to document the Partner Agencies' antidegradation analysis for the proposed discharge of Title 22 recycled water to the DMC and the potential minimization and/or elimination of recycled water discharges to the San Joaquin River.[1] The information contained in this analysis provides the Central Valley Water Board with the information needed to determine whether the proposed discharge to the DMC is consistent with state and federal antidegradation policies.

[1] The Cities of Modesto and Turlock are pursuing revised NPDES permits to allow relocation of their respective discharges from the San Joaquin River to the DMC. Both cities would retain their authorizations to discharge treated and disinfected effluent to the San Joaquin River at their existing outfalls. However, under the proposed project, tertiary treated effluent would not be discharged to the river under normal circumstances.

APPROACH TO ANALYSIS

The antidegradation analysis described in this report follows the guidance provided by the State Water Resources Control Board (SWRCB or State Water Board) regarding the implementation of the antidegradation policy in NPDES permits (Administrative Procedures Update (APU) 90-004). Pursuant to the guidelines, this analysis follows the provisions for a "simple analysis" and evaluates whether changes in water quality resulting from the proposed discharge of Title 22 recycled water to the DMC are "consistent with maximum benefit to the people of the state, will not unreasonably affect uses and will not cause water quality to be less than water quality objectives and that the discharge provides protection for existing in-stream beneficial uses and water quality necessary to protect those uses."

The simple analysis includes a comparison of the projected receiving water quality to the water quality objectives and/or criteria used to protect designated beneficial uses.

The following items are addressed in the simple antidegradation analysis:

1. Determine if there are measurable water quality impacts and, if so, whether beneficial uses are impacted. This is accomplished, in part, by comparing estimated resulting receiving water quality to the water quality objectives and/or criteria used to protect designated beneficial uses.
2. Evaluate incremental loading increases and their impacts.
3. Balance the proposed project against the public interest.

These items are addressed in the following sections of this report:

- Regulatory requirements
- Applicable water quality objectives and commonly used water quality criteria
- Environmental setting
- Assessment of water quality impacts
- Consistency with antidegradation policies

Regulatory Requirements

APPLICATION OF LAWS AND POLICIES

The federal Clean Water Act (CWA) requires states to adopt water quality standards applicable to all intrastate waters (33 U.S.C. § 1313) with approval from the United States Environmental Protection Agency (U.S. EPA). U.S. EPA regulations also require state water quality standard submittals to include an antidegradation policy to protect beneficial uses and prevent further degradation of high quality waters (33 U.S.C. § 1313(d)(4)(B); 40 C.F.R. § 131.12). Antidegradation policies have been adopted at both the federal and state level. The State's antidegradation policy is embodied in SWRCB Resolution No. 68-16. The proposed discharge of Title 22 recycled water to the DMC requires the application of water quality objectives contained in the Water Quality Control Plan for the Sacramento-San Joaquin River Basins (Basin Plan), as well as criteria promulgated by the U.S. EPA for California waters. Both the federal and state antidegradation policies apply to the proposed discharge of Title 22 recycled water to the DMC.

FEDERAL ANTIDEGRADATION POLICY AND GUIDANCE

The federal policy, originally adopted in 1975, is expressed as a regulation in Title 40 of the Code of Federal Regulations (CFR) §131.12. The federal regulation is designed to protect existing uses and the level of water quality necessary to protect existing uses, and provide protection for higher quality and outstanding national water resources. More specifically, the federal regulation requires the states to develop and adopt a statewide antidegradation policy and identify the methods for implementing such policy. The antidegradation policy and implementation methods shall, at a minimum, be consistent with ensuring that existing water uses and the level of water quality necessary to protect these uses shall be maintained and protected. Where the quality of water is better than that necessary to support beneficial uses, measures shall be taken to ensure that water quality is maintained and protected unless the state finds that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the water body is located. The federal policy directs states to adopt a statewide policy that includes the following primary provisions (40 C.F.R. § 131.12).

(1) *Existing in-stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.*

(2) *Where the quality of waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after the full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.*

(3) *Where high quality waters constitute an outstanding National resource, such as water of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.*

(4) *In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with Section 316 of the Act.*

Based on guidance developed by the U.S. EPA, Region 9 (*Guidance on Implementing the Antidegradation Provisions of 40 C.F.R. § 131.12* (U.S. EPA, 1987)) and guidance issued by the State Water Resources Control Board (SWRCB) with regard to application of the Federal Antidegradation Policy (Memorandum from William R. Attwater to Regional Board Executive Officers *Federal Antidegradation Policy* (Oct. 1987)), application of the federal antidegradation policy is triggered by a lowering, or potential lowering, of surface water quality.

For a water body where water quality is not significantly better than needed to meet designated uses, either because it does not meet or it just meets applicable water quality objectives or criteria to protect beneficial uses, the proposed discharge cannot cause further impairment.

For waters with water quality that is better than necessary to support beneficial uses, the proposed permitted discharge may not lower water quality unless such lowering is necessary to accommodate important economic or social development. In August 2005, the U.S. EPA issued a memorandum discussing antidegradation reviews and significance thresholds (Memorandum from Ephraim S. King, Director, Office of Science and Technology, U.S. EPA, Office of Water to Water Management Division Directors, Regions 1-10 (August 2005)). As discussed in the memorandum, an intent of the policy "is to maintain and protect high quality waters and not to allow for any degradation beyond a *de minimis* level without having made a demonstration, with opportunity for public input, that such lowering is necessary and important." (Memorandum at p. 1). U.S. EPA has determined that the significance threshold of a 10% reduction in available assimilative capacity is "workable and protective in identifying those significant lowerings of water quality that should receive a full … antidegradation review, including public participation." (U.S. EPA, 2005). This determination by U.S. EPA is helpful in determining the magnitude of water quality change that is determined to be of significant interest in the antidegradation analysis.

STATE ANTIDEGRADATION POLICY AND GUIDANCE

Resolution 68-16

The state policy to protect and maintain existing water quality in California was adopted in 1968 as a resolution of the State Water Board (Resolution No. 68-16). The state policy is interpreted to incorporate the federal antidegradation policy and satisfies the federal regulation requiring states to adopt their own antidegradation policies. Furthermore, the state policy requires that changes in water quality not unreasonably affect beneficial uses. Resolution No. 68-16 states, in part:

(1) Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high

quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses of such water and will not result in water quality less than that prescribed in the policies.

(2) Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality water will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

1987 Policy Memorandum

In 1987, SWRCB issued a policy memorandum to the Regional Water Quality Control Boards (Regional Water Boards) to provide guidance on the application of the federal antidegradation policy for State and Regional Water Board actions, including establishing water quality objectives, issuing NPDES permits, and adopting waivers and exceptions to water quality objectives or control measures (Attwater, 1987). In conducting these actions, the Regional Water Boards must assure protection of existing in-stream beneficial uses, that significant lowering of water quality is necessary to accommodate important economic or social development, and that outstanding national resource waters be maintained and protected. The 2005 U.S. EPA guidance referenced above is useful in determining whether changes in water quality that may result from a proposed action are significant.

Administrative Procedures Update 90-004

In 1990, the SWRCB issued guidance (APU 90-004) to all Regional Water Boards regarding the implementation of state and federal antidegradation policies in NPDES permits. By using this guidance, Regional Water Boards are to determine if a proposed discharge is consistent with the intent and purpose of the state and federal antidegradation policies. APU 90-004 provides Regional Water Boards with guidance on the appropriate level of analysis that may be necessary, distinguishing between the need for a simple antidegradation analysis and a complete antidegradation analysis. If it is determined that a simple analysis is not appropriate based on the estimated level of impact of the new discharge, then a more rigorous analysis – a complete analysis – is appropriate. A primary focus of the complete analysis is the determination of whether, and the degree to which, water quality is lowered. This determination greatly influences the level of analysis required and the level of scrutiny applied to the "balancing test" – that is, whether the discharge is necessary to accommodate important economic and social development, and whether a water quality change is consistent with the maximum benefit to the people of the State.

A simple antidegradation analysis addresses the following questions stated in SWRCB APU 90-004 to maintain consistency with state and federal antidegradation policies:

- Whether a reduction in water quality will be spatially localized or limited with respect to the water body; e.g., confined to the mixing zone;

- Whether the proposed discharge of treated effluent will produce minor effects which will not result in a significant reduction of water quality;
- Whether the proposed discharge of treated effluent has been approved in a General Plan, or similar growth and development policy document, and has been adequately subjected to the environmental analysis required in an environmental impact report (EIR) required under the California Environmental Quality Act (CEQA); and
- Whether the proposed project is consistent with maximum benefit to the people of the state.

In addition, the following items are to be addressed in a complete antidegradation analysis:

- A comparison of the projected receiving water quality to the water quality objectives and/or criteria used to protect designated beneficial uses, and
- A socioeconomic analysis to establish the balance between the proposed action and the public interest.

Factors to be considered in determining whether a proposed discharge is necessary to accommodate important economic and social development and is consistent with maximum benefit to the people of the state include:

- Past, present, and probable future beneficial uses.
- Economic costs to maintain water quality compared to the benefits.
- Environmental aspects of the proposed discharge.
- Consideration of feasible alternative control measures which might reduce, eliminate, or compensate for negative impacts of the proposed discharge.

The Partner Agencies have followed the procedures outlined in the guidance for conducting a simple antidegradation analysis to provide the Central Valley Water Board with the maximum amount of information available.

The antidegradation analysis described in this report follows the guidance provided by the SWRCB regarding the implementation of the antidegradation policy in NPDES permits (APU 90-004; SWRCB, 1990). This analysis evaluates whether changes in water quality resulting from the proposed discharge are consistent with maximum benefit to the people of the state, will not unreasonably affect actual or potential beneficial uses, and will not cause water quality to be less than water quality objectives and makes sure that the discharge provides protection of existing in-stream beneficial uses and water quality necessary to protect those uses.

The following items are addressed in the antidegradation analysis described in this report:

1. Determination of whether there are measurable water quality impacts and, if so, whether beneficial uses are impacted. This is accomplished by comparing receiving water quality to the water quality objectives and/or criteria established to protect designated beneficial uses.
2. Evaluation of incremental loading increases and their impacts.

3. A balancing of the proposed project against the public interest.

Applicable Water Quality Standards

BENEFICIAL USES

The *Water Quality Control Plan for the Sacramento-San Joaquin River Basins* (Basin Plan), originally adopted by the Central Valley Water Board in 1975 and amended regularly, contains descriptions of the legal, technical, and programmatic bases for water quality regulation in the region. The Basin Plan (CVRWQCB, 2011) describes the beneficial uses of major surface waters and their tributaries and the corresponding water quality objectives put into effect to protect these beneficial uses. **Table 1** presents the existing beneficial uses designated for the Delta-Mendota Canal.

Table 1: Beneficial Uses Designated for the Delta-Mendota Canal.

Beneficial Uses for Surface Water as defined in the Basin Plan	Delta-Mendota Canal
Municipal and Domestic Supply (MUN)	**Yes**
Agricultural Supply: Irrigation (AGR)	**Yes**
Agricultural Supply: Stock Watering (AGR)	**Yes**
Industrial Process Supply (PROC)	No
Industrial Service Supply (IND)	No
Industrial Power Supply (POW)	No
Water Contact Recreation: Contact Recreation (REC 1)	**Yes**
Water Contact Recreation: Canoeing and Rafting (REC 1)	No
Non-Contact Water Recreation (REC 2)	**Yes**
Warm Freshwater Habitat (WARM)	**Yes**
Cold Freshwater Habitat (COLD)	No
Migration of Aquatic Organisms: Warm Water (MIGR)	No
Migration of Aquatic Organisms: Cold Water (MIGR)	No
Fish Spawning, Warm Water (SPWN)	No
Fish Spawning, Cold Water (SPWN)	No
Wildlife Habitat (WILD)	**Yes**
Navigation (NAV)	No

Source: Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin, Fourth Edition, Revised October 2011 (CVRWQCB, 2011).

WATER QUALITY OBJECTIVES/WATER QUALITY CRITERIA

To protect the designated beneficial uses, the Central Valley Water Board applies water quality objectives contained in the Basin Plan (CVRWQCB, 2011) and criteria adopted in the California Toxics Rule (CTR) and the National Toxics Rule (NTR) to the receiving water, the DMC, and

downstream receiving waters. The Central Valley Water Board uses these standards to determine if the proposed project will cause or contribute to impairments of beneficial uses. **Table 2** presents the most conservative water quality criteria used to protect the most sensitive beneficial uses that apply to the DMC for select constituents. Parameters included in **Table 2** are those for which Modesto's WQCF discharge and Turlock's RWQCF have adopted tertiary effluent limits, those identified by the Central Valley Water Board as pollutants of particular concern, and parameters for which a Total Maximum Daily Load (TMDL) exists. Water quality criteria for toxic constituents are based on criteria specified in the CTR, as promulgated by the United States Environmental Protection Agency (U.S. EPA) in 40 CFR §131.38.

Table 2: Applicable Water Quality Objectives and/or Criteria for the Delta-Mendota Canal.

Classification	Constituent	Most Stringent Water Quality Objective or Criterion		Reference for Most Stringent Water Quality Objective or Criterion
		Value	Unit	
Bacteriological	Fecal Coliform	200/100 mL	MPN	Basin Plan
	Total Coliform	N/A	N/A	N/A
Conventional	BOD	N/A	N/A	N/A
	Chloride	230	mg/L	U.S. EPA Recommended Ambient Water Quality Criteria (freshwater aquatic life, 4-day average)
	Chlorine Residual	0.011	mg/L	Draft TRC Policy of CA(1)
	Dissolved Oxygen	5.0	mg/L	Basin Plan
	EC	1000	µmhos/cm	Basin Plan
	pH	6.5 ≤ pH ≤ 8.5	std. units	Basin Plan
	Sulfate	250	mg/L	Title 22 MCL (Secondary)/ Basin Plan(2)
	Temperature	Narrative	°F	Basin Plan
	Total Dissolved Solids	500(3)	mg/L	Title 22 MCL (Secondary)/ Basin Plan(2)
	Total Suspended Solids	Narrative	---	Basin Plan
	Turbidity	20% increase	NTU	Basin Plan
Metal	Aluminum, Total	200	µg/L	Title 22 MCL (Secondary)/ Basin Plan(2),(4)
	Boron, Total (Mar. 15 – Sep. 15)	800	µg/L	Basin Plan, Table III-1 monthly mean
	Boron, Total (Sep. 16 – Mar. 14)	1000, 1300*	µg/L	Basin Plan, Table III-1 monthly mean *critical water year type
	Copper, Dissolved	9.7(5)	µg/L	California Toxics Rule, Freshwater Aquatic Life, (Chronic 4-day average)

Table 2: Applicable Water Quality Objectives and/or Criteria for the Delta-Mendota Canal (continued).

Classification	Constituent	Most Stringent Water Quality Objective or Criterion		Reference for Most Stringent Water Quality Objective or Criterion
		Value	Unit	
Metal	Iron, Dissolved	300	µg/L	Title 22 MCL (Secondary)/ Basin Plan(2)
	Manganese, Dissolved	50	µg/L	Title 22 MCL (Secondary)/ Basin Plan(2)
	Mercury, Total	0.050	µg/L	California Toxics Rule, Human Health, Water & Organisms
	Molybdenum, Total	10	µg/L	Basin Plan, Table III-1 monthly mean
	Selenium, Total	5	µg/L	Basin Plan, Table III-1 4-day average
Nutrient	Ammonia	0.73(6)	mg/L (as N)	Basin Plan, U.S. EPA 2013 Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater, (Chronic 30-day average)
	Nitrate	10	mg/L (as N)	Title 22 MCL (Primary)/ Basin Plan(2)
	Nitrite	1	mg/L (as N)	Title 22 MCL (Primary)/ Basin Plan(2)
	Nitrate + Nitrite	10	mg/L (as N)	Title 22 MCL (Primary)/ Basin Plan(2)
Organic	Bis(2-ethylhexyl)phthalate	1.8	µg/L	California Toxics Rule, Human Health, Water & Organisms
	Carbon Tetrachloride	0.25	µg/L	California Toxics Rule, Human Health, Water & Organisms
	Dibromochloromethane	0.41	µg/L	California Toxics Rule, Human Health, Water & Organisms
	Dichlorobromomethane	0.56	µg/L	California Toxics Rule, Human Health, Water & Organisms
Pesticide	Chlorpyrifos	0.014	µg/L	CDFW, CCC, 4-day average
	Diazinon	0.05	µg/L	CDFW, CCC, 4-day average

References:

(1) Draft Total Residual Chlorine and Chlorine-Produced Oxidants Policy of California, June 2006.

(2) Maximum contaminant levels (MCLs) incorporated into the Basin Plan by reference (CVRWQCB, 2011).

(3) 500 mg/L is the low end of the acceptable Title 22 Secondary MCL range for total dissolved solids.

(4) The Secondary MCL for aluminum has been determined to be the controlling water quality objective for the discharge to the Delta-Mendota Canal. This determination is made through the evaluation of aluminum toxicity bioassay results performed in the Central Valley (e.g., City of Manteca, City of Yuba City, and City of Modesto) which resulted in adjusted chronic criteria more than an order of magnitude greater than the 1988 U.S. EPA ambient water quality chronic criterion of 87 μg/L (U.S. EPA, 1988), and greatly exceeding the Secondary MCL concentration of 200 μg/L.

(5) The average ambient Delta-Mendota Canal hardness of 110 mg/L was used to adjust the hardness-based CTR criterion for the ambient comparison.

(6) The numeric criterion used to interpret the Basin Plan narrative toxicity objective is based on an average pH of 8.0 standard units and an average temperature of 21.5 °C as measured in the Delta-Mendota Canal.

303(D) LISTINGS

Section 303(d) of the Clear Water Act requires states to develop lists of water bodies (or segments of water bodies) that will not attain water quality standards after implementation of minimum required levels of treatment by point-source dischargers (i.e., municipalities and industries). Section 303(d) requires states to develop a TMDL for each of the listed pollutant and water body combinations for which there is impairment. A TMDL is the amount of loading that the water body can receive and still meet water quality standards for that pollutant. The TMDL must include an allocation of allowable loadings for both point and non-point sources, with consideration of background loadings and a margin of safety. NPDES permit limitations for listed pollutants must be consistent with allocations identified in adopted TMDLs.

The U.S. EPA finalized approval of California's 2010 Section 303(d) List on October 11, 2011. This list represents the most current listing of impaired water bodies in the project area and downstream areas. The DMC is not included in California's 2010 Section 303(d) List of impaired water bodies. However, San Luis Reservoir, a 2 million-acre-feet joint use facility used for storage of SWP and CVP water, is listed for mercury and indirectly receives flows from the DMC. Additionally, the Mendota Pool, a small reservoir located at the terminus of the 117-mile long DMC, is listed as impaired for mercury and selenium. Both San Luis Reservoir and Mendota Pool would receive a minor fraction of the NVRRWP discharge over the course of any given water year depending on flow conditions and hydraulic operations of the state and federal water projects. San Luis Reservoir and Mendota Pool exist in the far-field impact area of the proposed project. Potential far-field water quality impacts of the proposed project are addressed in the Far-Field Water Quality Impacts Methodology section of this report. **Table 3** lists the constituents identified in the 2010 303(d) list for San Luis Reservoir and Mendota Pool, and their potential sources and proposed TMDL completion dates.

Table 3: 2010 Clean Water Act Section 303(d) Listed Constituents, Potential Sources, and TMDL Adoption Dates as They Pertain to Listed Water Bodies in the Far-Field Impact Area of the NVRRWP Project.

Water Body	Pollutant/Stressor	Potential Sources	TMDL Adoption(1)
San Luis Reservoir	Mercury	Source Unknown	2021
Mendota Pool	Mercury	Resource Extraction	2021
	Selenium	Agriculture, Agricultural Return Flows, Groundwater Withdrawal, Other	2019

(1) Proposed year of TMDL adoption.

ADDITIONAL WATER QUALITY CONSIDERATIONS

Reclamation maintains its own standards for "non-project water" that is conveyed in the DMC. Non-project water is groundwater and surface water that has not been appropriated by USBR for purposes of the CVP, but is used to supplement the supply of CVP water to assist farmers in delivering enough water to irrigate and sustain valuable permanent crops like grapes, citrus, and deciduous fruit, and to sustain the local multibillion dollar farming economy (USBR, 2014). Due to drought and restrictions on pumping from the Delta at the Jones Pumping Plant, Reclamation has entered into temporary contracts with water districts to convey groundwater that is pumped into the DMC for delivery to farmers and refuges. USBR is authorized under the Warren Act of 1911 to enter into such temporary contracts. With respect to groundwater that is pumped into the DMC, Reclamation operates a water quality monitoring program ("Groundwater Pump-in Program") to ensure that local groundwater discharged to the canal won't significantly degrade the ambient water quality and impact downstream beneficial uses.

Reclamation has developed a set of standards for the acceptance of non-project water in the DMC based on the requirements of downstream water users. USBR's water quality standards for acceptance of groundwater discharged to the upper DMC – that section of the canal from Jones Pumping Plant to DMC Check 13 (O'Neill Forebay) – are provided in **Appendix A**. Before local groundwater can be pumped into the DMC, it must be analyzed to determine if it meets these water quality standards. USBR requires that these standards be met at the point of discharge before approval will be granted to pump water into the canal. Additionally, Reclamation implements a real-time monitoring program that measures water quality at various locations along the DMC to determine if CVP water is impacted as a result of groundwater discharges to the canal. Reclamation directs water districts to stop pumping groundwater into the upper DMC if the ambient concentration of any one of seven target constituents exceeds a maximum concentration (see **Table 4**) (USBR, 2014). The maximum allowable concentrations determined by Reclamation can change from year to year as ambient water quality conditions change in CVP facilities.

A review of the quality of the Title 22 recycled water proposed for discharge to the DMC by the Partner Agencies shows that all detected constituent concentrations of arsenic, boron[2], and sulfates are below those 2014 Groundwater Pump-in Program maximum concentrations shown in **Table 4**. Estimated average NVRRWP effluent concentrations of nitrates (nitrate plus nitrite), selenium, EC, and TDS are also below the maximum concentrations provided in **Table 4**. However, maximum effluent concentrations could at times exceed maximum allowable pump-in concentrations. Additionally, based on both cities' tertiary effluent quality data used for this analysis, the concentrations of other constituents[3] in the proposed NVRRWP discharge for which USBR has established water quality standards for the acceptance of groundwater pumped into

[2] The City of Modesto is not required to monitor for boron in its tertiary effluent. However, boron concentrations in the City's secondary effluent (Feb. 2010 – Mar. 2015; average = 0.247 mg/L) all exist below the Primary MCL for boron of 0.7 mg/L. Tertiary effluent concentrations of boron are expected to be the same or lower than secondary effluent concentrations.

[3] The following constituents were not compared to the MCLs presented in Appendix A due to absence of data: sodium (City of Modesto); gross alpha radioactivity (cities of Modesto and Turlock); and dibromochloropropane, ethylene dibromide, atrazine, simazine, bentazon, 2,4,5-TP (Silvex), 2,4-D, molinate, thiobencarb, carbofuran, and glyphosate (City of Turlock).

the upper DMC are below the MCLs presented in **Appendix A** with the exception of sodium concentrations measured in Turlock's tertiary effluent.

Table 4: USBR's Maximum Allowable Concentration of Seven Constituents in the Upper Delta-Mendota Canal through its Delta-Mendota Canal Pump-in Program.

Constituent (Units)	Monitoring Location	Maximum Concentration in the Upper DMC
Arsenic (μg/L)	DMC at McCabe Road	10
Boron (mg/L)	DMC at McCabe Road	0.7
Nitrates (mg/L a N)	DMC at McCabe Road	10
Selenium (μg/L)	DMC Check 13	1
Specific Conductance (EC) (μS/cm)	DMC Check 13	800
Sulfates (mg/L)	DMC at McCabe Road	250
Total Dissolved Solids(1) (mg/L)	DMC Check 13	510

(1) Calculation: TDS (mg/L) = EC (μS/cm) x 0.618 + 16

Environmental Setting

SAN JOAQUIN RIVER BASIN

The San Joaquin River Basin covers 15,880 square miles and includes the entire San Joaquin River drainage area, extending south from the southern boundaries of the Delta to include the headwaters of the San Joaquin River in Madera County and its southern drainage in Fresno County. Agriculture is the major economic and land use activity in the basin, and the San Joaquin Valley is recognized as one of the most important agricultural regions in California. The San Joaquin River Basin is bounded on the west by the coastal mountains of the Diablo Range and on the east by the Sierra Nevada mountain range. The Tulare Lake Basin to the south is normally considered a separate drainage basin, but has contributed occasional flood flows and subsurface flows to the San Joaquin River during wet years. The principal streams in the basin are the San Joaquin River and its larger tributaries: the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno rivers. Major reservoirs and lakes include Pardee, New Hogan, Millerton, McClure, Don Pedro, and New Melones. The San Joaquin River flows through portions of Fresno, Madera, Merced, Stanislaus, San Joaquin, Contra Costa, and Sacramento counties. At roughly 300 miles long, the San Joaquin River is one of the state's longest rivers. The headwaters of the San Joaquin River begin near the 14,000-foot crest of the Sierra Nevada. The river flows from the western slope of the Sierra Nevada and turns northwestward on the San Joaquin Valley floor toward the Delta where it meets the Sacramento River. The two rivers converge in the Delta, which encompasses an area of more than 1,300 square miles. The Delta is a series of islands formed by a maze of channels receiving freshwater inflow from its major tributaries, smaller streams, and the Cosumnes, Mokelumne, and Calaveras Rivers. Historically, more than 40 percent of the state's annual runoff flowed to the Delta via the Sacramento, San Joaquin, and Mokelumne rivers (DWR, 2013a).

SAN JOAQUIN RIVER BASIN HYDROLOGY

San Joaquin River Basin hydrology is predominantly influenced by tributary inflows, agricultural diversions and return flows, and tidal flows. The Lower San Joaquin River can be divided into two main sections based on the presence or absence of tidal flows. The Lower San Joaquin River from Mendota Pool to Vernalis receives inflow from a variety of sources including east-side tributaries, dominated by reservoir releases; west-side tributaries, dominated by agricultural return flows; groundwater recharge; and discharges from wetlands and publicly owned wastewater treatment facilities. Diversions can remove a significant amount of San Joaquin River flow, especially during periods of below normal rainfall. The Lower San Joaquin River is not typically affected by tidal flows due to its location sufficiently upstream of the Pacific Ocean's tidal influence.

The second main section of the Lower San Joaquin River is the tidally influenced reach from Vernalis to its confluence with the Sacramento River near Collinsville. Major tributary inputs to this section are provided by the Cosumnes and Mokelumne rivers where their commingled flows enter the central Delta near Webb Tract. Significant non-tributary inflows are provided from irrigation return flows that are pumped from adjacent agricultural lands into the San Joaquin River. The major diversion of San Joaquin River water occurs at the junction of Old River, where, depending on Delta hydraulics, up to 50% of San Joaquin River flows may be diverted to the south Delta (Quinn and Tulloch, 2002).

STATE WATER PROJECT

The California State Water Project (SWP), operated and maintained by the California Department of Water Resources (DWR), is the nation's largest state-built water and power development and conveyance system (DWR, 2013b). The SWP is a water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants. Specifically, the SWP includes 34 storage facilities, reservoirs and lakes; 20 pumping plants; 4 pumping-generating plants; 5 hydroelectric power plants; and approximately 700 miles of open canals, tunnels, and pipelines (DWR, 2010). The main purpose of the system is to store water and distribute it to 29 urban and agricultural water suppliers in Northern California, the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California. Of the contracted water supply, approximately 70 percent is provided to urban users and 30 percent to agricultural users. Other SWP purposes include flood control, power generation, recreation, fish and wildlife enhancement, and water quality improvement in the Delta (DWR, 2015).

CENTRAL VALLEY PROJECT

The U.S. Department of the Interior, Bureau of Reclamation manages the Central Valley Project (CVP), a complex network of reservoirs and canals across northern and central California that serve the Central Valley and portions of the San Francisco Bay Area and Central Coast of California (USBR, 2014). More specifically, the CVP operates 18 dams and reservoirs, 11 power plants, and 500 miles of canals and other facilities between the Cascade Range near Redding and the Tehachapi Mountains near Bakersfield. Rain and melting snow in the Sierra Nevada mountain range primarily supply the CVP and releases from reservoirs flow through rivers and canals to the Central Valley and enter the Delta. At the Delta's southern end, the C.W. Bill Jones Pumping Plant (formerly named the Tracy Pumping Plant) moves CVP water supplies to SOD contractors and wildlife refuges. CVP water supply is allocated for agricultural, municipal, industrial, and environmental needs. For instance, in an average year, the CVP delivers approximately seven million acre-feet of water for agriculture, urban, and wildlife use, irrigating about one-third (3 million acres) of California's agricultural lands and supplying water for nearly 1 million households (USBR, 2009; DWR, 2013a). The total water year 2012 deliveries for the CVP are estimated at 5.7 million acre-feet (DWR, 2013a).

CALIFORNIA AQUEDUCT/SAN LUIS CANAL

In the southern Delta, near Byron, the SWP diverts water into Clifton Court Forebay for delivery south of the Delta. Harvey O. Banks Pumping Plant lifts water from Clifton Court Forebay into the California Aqueduct, which flows to Bethany reservoir. From Bethany Reservoir, the South Bay Pumping Plant lifts water into the South Bay Aqueduct to supply Alameda and Santa Clara counties. Most of the water delivered to Bethany Reservoir from Banks Pumping Plant flows into the California Aqueduct, a 444-mile long main aqueduct that conveys water to the agricultural lands of the San Joaquin Valley and to the urban regions of Southern California. The California Aqueduct/San Luis Canal, a joint federal-state project, is operated and maintained by the DWR. Water in the mainstem of the California Aqueduct flows south by gravity into the San Luis Joint-Use Complex. The San Luis Joint-Use Complex includes the O'Neill Dam and Forebay, Sisk Dam, San Luis Reservoir, Gianelli Pumping-Generating Plant, Dos Amigos Pumping Plant, and the San Luis Canal. This section of the California Aqueduct serves both the SWP and the federal CVP. The O'Neill Forebay is the location where the proposed project's

recycled water would come into contact with SWP water supplies. Water not stored in San Luis Reservoir in the Joint-Use Complex flows south through the San Luis Canal, a portion of the California Aqueduct jointly owned by DWR and Reclamation. As water flows through the central San Joaquin Valley, numerous turnouts convey water to farmlands within the service areas of the SWP and CVP before it splits south of Kettleman City into the Coastal Branch Aqueduct, completed in 1997, to serve San Luis Obispo and Santa Barbara counties. Pumping plants, including Buena Vista, Teerink, and Chrisman, lift the remaining water in the mainstem more than 1,000 feet before reaching the foot of the Tehachapi Mountains. Motor-pump units at Edmonston Pumping Plant move water nearly 2,000 feet up and over the Tehachapi Mountains. As the water reaches the bottom of the mountain, it bifurcates (splits) into two branches: the West Branch and the East Branch. Water in the West Branch flows through Oso Pumping Plant, Quail Lake, and then from the Peace Valley Pipeline through Warne Power Plant into Pyramid Lake in Los Angeles County. From there, water moves through the Angeles Tunnel, Castaic Powerplant, Elderberry Forebay, and into Castaic Lake, terminus of the West Branch. Water flowing down the East Branch is carried through Alamo Powerplant, Pearblossom Pumping Plant, and the Mojave Siphon Powerplant, which discharges the water into Lake Silverwood in the San Bernardino Mountains. From Silverwood Lake, water flows through the San Bernardino Tunnel to Devil Canyon Powerplant. The 28-mile-long Santa Ana Pipeline then takes the water underground to Lake Perris, the southernmost SWP reservoir (DWR, 2013b).

DELTA-MENDOTA CANAL

The Delta-Mendota Canal (DMC) is a CVP facility operated and maintained by the San Luis and Delta-Mendota Water Authority under contract with the U.S. Department of the Interior, Bureau of Reclamation. The water body is also considered a waters of the State and is listed in the Basin Plan as having those beneficial uses listed in **Table 1** (CVRWQCB, 2011). The DMC, completed in 1951, is a 117-mile concrete-lined aqueduct that serves as the main conveyance facility for SOD deliveries. The canal extends approximately 70 miles from the Delta to the O'Neill Forebay and then 46 miles to the Mendota Pool on the San Joaquin River, about 30 miles west of Fresno. The DMC carries CVP water southeasterly from the C.W. "Bill" Jones Pumping Plant along the west side of the San Joaquin Valley and provides water for irrigation supply and wildlife refuges en route. The canal runs south along the western edge of the San Joaquin Valley, parallel to the California Aqueduct for much of its length, but diverges to the east after passing San Luis Reservoir, which receives a portion of its water from the DMC (the remaining portion of water flowing into San Luis Reservoir is brought by the California Aqueduct). Midway along the length of the canal, water is pumped from the canal into O'Neill Forebay and then into the San Luis Reservoir by the Gianelli Pumping-Generating Plant. Occasionally, water from O'Neill Forebay is released into the canal. The DMC concludes at the Mendota Pool, a small reservoir created by the Mendota Dam on the San Joaquin River near the town of Mendota. In addition, the DMC is hydraulically connected with the SWP California Aqueduct via an intertie with a pumping station and two 108-inch diameter pipes west of the City of Tracy (DWR 2013).

SAN LUIS RESERVOIR

Midway along the length of the canal, the DMC is connected to the San Luis Reservoir via the O'Neill Forebay. The San Luis Reservoir, a 2 million-acre-feet artificial lake on San Luis Creek in the eastern slopes of the Diablo Mountain Range of Merced County, is jointly owned and

operated by Reclamation and DWR. It is one of California's largest reservoirs (SCVWD, 2013) and one of the nation's largest off-stream reservoirs, meaning a reservoir filled with water pumped from a source other than its natural watershed. As part of the San Luis Joint-Use Complex, the reservoir holds water diverted from the Delta for subsequent delivery to the Silicon Valley, San Joaquin Valley, Central Coast, and Southern California[4]. Generally, water is pumped into San Luis Reservoir from late fall through early spring, where it is temporarily stored for release back to the California Aqueduct to meet summertime peaking demands of SWP and CVP water contractors. When Delta flows are insufficient to supply state and federal water project needs, water is released back into the O'Neill Forebay for delivery by the two projects.

[4] California Department of Water Resources (DWR). "San Luis Joint-Use Complex." [Brochure]. http://www.water.ca.gov/pubs/swp/san_luis_joint-use_complex_brochure/sanluis_joint_use_brochure.pdf

Assessment of Water Quality Impacts

PROJECT BACKGROUND

Shortages in water deliveries and the lack of water supply reliability that DPWD has experienced from Reclamation have resulted in economic hardships on DPWD and its customers. As a result, DPWD must secure alternate water supplies to supplement its CVP deliveries. While water transfers from other agencies and the use of groundwater have been effective temporary methods to meet DPWD's water demands, these alternatives do not provide a reliable, sustainable, or affordable long-term solution. In addition, Reclamation has not been able to provide secure firm, reliable water supplies to SOD refuges. CVPIA Section 3406(d)(2) directs Reclamation to acquire and provide supplemental water to all CVPIA-designated wildlife refuges in the Central Valley.

DPWD is located in close proximity to Modesto's and Turlock's wastewater treatment facilities, which discharge directly to the San Joaquin River.[5] Specifically, DPWD's service area is located a little over five miles from Modesto's WQCF and less than five miles from the end of Turlock's Harding Drain Bypass Pipeline, which currently conveys flows from Turlock's RWQCF to a surface outfall located on the San Joaquin River. CVPIA refuges are located both west and southwest of DPWD, and are able to obtain water from the DMC. Concurrent with DPWD's ongoing CVP shortages, the Cities of Turlock and Modesto are facing more restrictive regulatory requirements for wastewater discharges to the San Joaquin River, and both cities have constructed tertiary treatment facilities to comply with more stringent NPDES permits (NVRRWP, 2013).

As a result of upgrades to the treatment facilities and increases in flows due to projected population growth, it is estimated that Modesto and Turlock will produce up to 59,000 AFY of recycled water by 2045 (USBR, 2015). The rates of recycled water production for each city at buildout of their respective wastewater treatment facilities are shown in **Table 5**. It is important to note that recycled water would be provided incrementally over a period of years for discharge to the DMC as the cities' treatment facilities are expanded and flows increase from projected population growth (USBR, 2015). The commingled Modesto and Turlock disinfected, tertiary treated effluents will comprise the NVRRWP discharge proposed for discharge to the DMC. Tertiary treated recycled water from the NVRRWP is required to meet the stringent requirements established in Title 22 of the California Code of Regulations, and is suitable for a wide variety of

[5] The City of Modesto is permitted to discharge up to 70.0 mgd of disinfected, secondary treated effluent to the San Joaquin River from October 1 to May 31 when flows provide a minimum 20:1 river:effluent dilution. Modesto's discharge of disinfected, secondary treated effluent varies from year to year depending upon San Joaquin River hydrology and available capacity in Modesto's 7,800 AF of effluent storage ponds. Since completion of Phase 1 tertiary treatment facilities in July 2010, Modesto has been permitted to discharge up to 2.3 mgd of disinfected, tertiary treated effluent to the river on a year-round basis, but has yet to discharge tertiary treated effluent to the river. Additionally, the City has been permitted to discharge up to 12.6 mgd of disinfected, tertiary treated effluent to the river on a year-round basis once its Phase 2 facilities are completed (expected in 2016).

Prior to November 2014, the City of Turlock discharged an average annual flow of 10 mgd to the San Joaquin River via the Harding Drain. Turlock completed construction of the Harding Drain Bypass Pump Station and Pipeline Project in July 2014 to bypass the Harding Drain and discharge directly to the San Joaquin River. Discharge via the Harding Drain Bypass Pipeline began in November 2014, consistent with the city's NPDES permit requirements.

non-potable uses. The supply of recycled water from Modesto and Turlock could provide a long-term, reliable water supply for the District and its customers that would serve to augment DPWD's CVP supply.

The NVRRWP will utilize available recycled water to augment existing supplies and provide a more reliable supply of irrigation water to the region. The Partner Agencies propose to provide recycled water from the Cities of Modesto and Turlock to DPWD to address water supply shortages within DPWD's service area on the west side of the San Joaquin River in San Joaquin, Stanislaus and Merced counties, south of the Delta, and to south of Delta CVPIA-designated Refuges. A number of alternatives for conveying the recycled water to DPWD and CVPIA refuges were evaluated, and the use of the DMC as a means of conveyance and delivery was determined to be the most cost-effective option while providing the greatest number of benefits (RMC, 2013). Utilizing the DMC not only provides for the delivery of much-needed irrigation water for local agriculture, but during the non-irrigation season, also provides for the temporary storage of the water for later delivery. In addition to reducing DPWD's reliance on Delta conveyance for its water supplies, the NVRRWP will reduce DPWD growers' dependence on the local groundwater resource. With the development of conveyance capability, the project proposes to introduce and convey, on a space available basis, up to 59,000 AFY of Title 22 recycled water produced by the Cities of Ceres, Modesto, and Turlock directly into the DMC, which is owned by Reclamation. The recycled water will be blended with CVP water conveyed by the DMC. The blended water would then be conveyed directly to DPWD customers and CVPIA refuges or stored within Reclamation's SOD CVP system for storage during low water demand periods. Additionally, the project also allows for the possibility of providing some water supply benefits to others, including neighboring water districts and state and federal wildlife refuges.

Table 5: Recycled Water Availability at Buildout of Modesto and Turlock Wastewater Treatment Facilities.

Agency	Recycled Water (AFY)	Recycled Water (mgd)	Buildout Year
City of Modesto	30,600	27.3	2040
City of Turlock	28,400	25.4	2045
Total	**59,000**	**52.7**	

PROJECT DESCRIPTION

The DEIR/EIS prepared by the Partner Agencies evaluated three alternatives for delivering recycled water to DPWD's service area and CVPIA wildlife refuges: (1) a combined pipeline alignment alternative that features a single discharge point to the DMC (Alternative 1); (2) a separate pipeline alignment that features two discharge points to the DMC (Alternative 2); and (3) continued discharge to the San Joaquin River by the Cities of Modesto and Turlock with diversion and delivery to the DMC via an expanded Patterson Irrigation District diversion and delivery system (Alternative 3) (USBR, 2015). This antidegradation analysis only evaluates the potential water quality impacts of a single, proposed NVRRWP discharge to the DMC as described by Alternative 1 in the DEIR/EIS.

The Combined Alignment Alternative (Alternative 1), as it is described in the DEIR/EIS, would require the construction of a new pump station (PS) and pipeline from Turlock's Harding Drain

Bypass Pipeline to Modesto's Jennings Secondary Treatment Facility (Jennings Plant) pump station. Effluent flows from the Harding Drain Bypass Pipeline would be conveyed by gravity to the Jennings Plant. The Jennings Plant pump station would be modified to accept Turlock's disinfected, tertiary treated effluent. The two disinfected, tertiary treated effluent streams would be combined at the modified pump station and conveyed in a single pipeline to the DMC for discharge (USBR, 2015). The pipeline alignment of this alternative is shown in **Figure 4**. Both Modesto and Turlock intend to maintain the ability to discharge disinfected, tertiary treated effluent to the San Joaquin River, as needed, in order to retain operation flexibility in managing their respective wastewater discharges. However, their primary point of discharge will be the DMC. It should also be noted that the Cities of Modesto and Turlock will need to gain approval from the State Water Resources Control Board, Division of Water Rights, to legally change their points of discharge from the San Joaquin River to the DMC.

The location of the proposed NVRRWP side bank outfall on the east bank of the DMC is shown in **Figure 5**, along with the location where most water quality samples were collected to characterize upstream DMC receiving water quality for this antidegradation analysis. The outfall structure would consist of a reinforced concrete, open-ended rectangular box, situated below and above grade. The box would contain a fixed-point, sharp-crested weir for hydraulic stability. Downstream of the weir, the water would flow over the discharge structure concrete bottom slab and into the DMC. The facility would also include metering in a concrete vault structure and telemetry devices for communicating flow and water quality data and remote monitoring of the discharge facility (USBR, 2015).

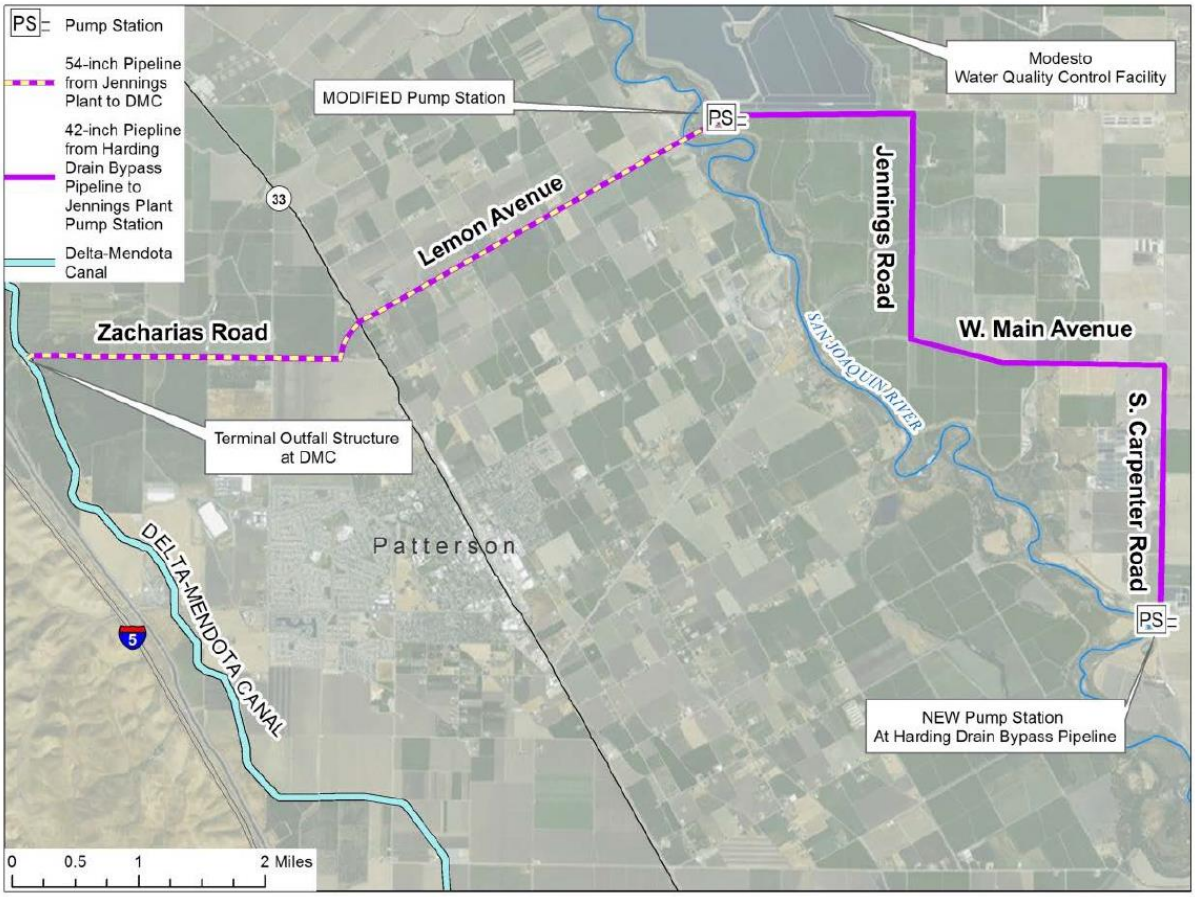


Figure 4: Pipeline Alignment of Proposed Combined Alignment Alternative that Features a Single NVRRWP Discharge to the Delta-Mendota Canal near the Intersection of Raines Road and Zacharias Road.

Figure 5: Proposed Location of NVRRWP Outfall on the East Bank of the Delta-Mendota Canal and Upstream Ambient Water Quality Monitoring Site.

SELECTION OF WATER QUALITY CONSTITUENTS

Selection Criteria

Water quality constituents were selected for quantitative near-field analyses based on two or more of the following conditions being satisfied:

1. Modesto WQCF received a limitation for a particular constituent for discharge of tertiary treated effluent in Order No. R5-2012-0031;
2. Turlock RWQCF received a limitation for a particular constituent for discharge of tertiary treated effluent in Tentative Draft Order No. R5-2015-XXXX;
3. Constituent was identified as a pollutant/stressor on the 2010 Clean Water Act Section 303(d) list for a water body downstream of the proposed NVRRWP discharge;
4. Constituent for which an adopted TMDL exists in a water body downstream of the proposed NVRRWP discharge;
5. Constituent is a known water quality concern of the Central Valley Water Board; and
6. Constituent has a water quality objective or criteria applicable to the DMC and/or downstream water body.

As described in the previous section, near-field water quality impacts of the proposed NVRRWP discharge were estimated using (1) average Modesto WQCF tertiary effluent quality, (2) average Turlock RWQCF tertiary effluent quality, (3) average DMC ambient water quality upstream of the location of the proposed NVRRWP discharge, (4) Modesto and Turlock effluent flows, and (5) DMC flows. Twenty water quality parameters were initially identified for evaluation based on the six criteria listed above. Seventeen parameters were ultimately selected for near-field analyses (see constituents in bold typeface presented in **Table 6** based on availability of data.

Data Sources

The analyses for the near-field water quality impacts assessment require high quality effluent and receiving water data. The monitoring and reporting programs operated by both cities in support of their respective NPDES permits provided the necessary effluent quality data required by the near-field analyses. Turlock's effluent quality data were collected pursuant to the monitoring and reporting program requirements specified in its current NPDES permit (Order No. R5-2010-0002-01) and generally span the period January 2010 through April 2014, with the exception of data sets for ammonia, EC, pH, and total dissolved solids (TDS). The ammonia data set covers the period January 2009 through October 2014, and the EC, pH, and TDS data sets extends from June 2010 through October 2014 (see **Appendix B**). Because Modesto has yet to discharge its disinfected, tertiary treated effluent to the San Joaquin River, the City had not routinely monitored its tertiary effluent prior to the need for such water quality data required by this antidegradation analysis. To this end, Modesto WQCF staff monitored the City's disinfected, tertiary treated effluent on August 13 and October 30, 2014, for the purpose of characterizing the quality of the effluent it will contribute to the proposed NVRRWP discharge (see **Appendix C** for water quality data compilation).

Table 6: Water Quality Constituents and their Data Sources Identified for Near-Field Water Quality Impacts Analyses.

Constituent	Data Source			Selected for Analysis
	Modesto WQCF Effluent	Turlock RWQCF Effluent	Upstream DMC Receiving Water(1)	
Total Coliform	Data available	Data available	No data	No, non-conservative parameter(2)
Electrical Conductivity	Data available	Data available	Data available	**Yes**
Total Dissolved Solids	Data available	Data available	Data available	**Yes**
Aluminum, Total	Data available	Data available	Data available	**Yes**
Boron, Total	No data(3)	Data available	No data	No, insufficient data
Copper, Total	Data available	Data available	Data available	**Yes**
Iron, Total	Data available	Data available	Data available	**Yes**
Manganese, Total	Data available	Data available	Data available	**Yes**
Mercury, Total	Data available	Data available	Data available	**Yes**
Molybdenum, Total	Data available(4)	Data available(4)	No data	No, insufficient data
Selenium, Total	Data available	Data available	Data available	**Yes**
Ammonia	Data available	Data available	Data available	**Yes**
Nitrate	Data available	Data available	Data available	**Yes**
Nitrite	Data available	Data available	Data available	**Yes**
Bis(2-ethylhexyl)phthalate	Data available	Data available	Data available	**Yes**
Carbon Tetrachloride	Data available	Data available	Data available	**Yes**
Dibromochloromethane	Data available	Data available	Data available	**Yes**
Dichlorobromomethane	Data available	Data available	Data available	**Yes**
Chlorpyrifos	Data available	Data available	Data available	**Yes**
Diazinon	Data available	Data available	Data available	**Yes**

(1) With the exception of TDS data, which represent daily average concentrations calculated by USBR, all other receiving water data except for EC were derived from two grab samples collected by LWA staff in September and October 2014 just upstream of the proposed NVRRWP discharge to the DMC. Daily average EC levels were calculated from USBR daily average TDS concentrations.

(2) Constituent is considered a non-conservative parameter and is, therefore, inappropriate for the calculation of blended effluent-DMC concentrations in the near-field. Future NVRRWP discharge concentrations of total coliform will be limited to those allowed by Title 22 Code of Regulations Water Recycling Criteria for disinfected, tertiary recycled water.

(3) The City of Modesto is not required to analyze boron as part of its current NPDES monitoring and reporting program for its tertiary discharge and therefore, tertiary effluent data are not available for this parameter. However, boron concentrations in Modesto's secondary effluent (Feb. 2010 – Mar. 2015; average = 0.247 mg/L) all exist below the Primary MCL for boron of 0.7 mg/L. Modesto's tertiary effluent concentrations of boron are expected to be the same or lower than its secondary effluent concentrations. All boron concentrations measured in Turlock's tertiary effluent exist below the parameter's Primary MCL.

(4) All molybdenum concentrations measured in the tertiary effluents of both the Cities of Modesto and Turlock exist below the Secondary MCL for molybdenum of 10 mg/L.

With the exception of data for EC and TDS, DMC receiving water quality data were collected by Larry Walker Associations (LWA) staff on September 30 and October 14, 2014, from a bridge that crosses the canal upstream of the proposed NVRRWP discharge location (see **Figure 5**; see **Appendix D** for water quality data compilation). A long-term data set (January 2000 – October 2014) for TDS collected by USBR at the DMC Headworks, Jones Pumping Plant (located approximately 33.7 miles upstream of the proposed NVRRWP discharge location; see **Figure 2**), was used in the near-field assessment. A data set of average daily EC levels was calculated from the TDS data set using the following equation recommended by Reclamation: EC (µmhos/cm) = TDS (mg/L) – 16/0.618 (USBR, 2014).

Effluent quality data from both cities were collected and analyzed according to monitoring and reporting program requirements contained in each discharger's NPDES permit. With the exception of EC and TDS data, DMC receiving water quality data were collected and analyzed according to a sample collection and analysis work plan that was provided to the Central Valley Water Board for its approval (LWA, 2014b). The constituents evaluated in the DMC were analyzed using either the same analytical methods or methods comparable to those used by the cities and featuring low method detection limits (MDL) to better quantify concentrations below relevant water quality objectives or criteria. Daily average EC and TDS data at the DMC Headworks from January 2000 through October 2014 were obtained online from USBR's Central Valley Operations Office Water Quality Reports[6] and used in the near-field water quality impacts analysis.

WATER QUALITY IMPACTS METHODOLOGY

The water quality impacts assessment is an evaluation of the potential effects from the proposed NVRRWP discharge on the DMC and downstream receiving waters. The assessment evaluates the discharge of commingled, disinfected, tertiary treated, Title 22 effluent from the Cities of Modesto and Turlock on DMC water quality downstream of the proposed discharge location. Near-field effects on DMC water quality are likely to occur between the point of discharge and some distance downstream of the NVRRWP discharge where effluent and ambient water are reasonably well-mixed. "Mixing zones" of different length can be calculated depending on the receiving water flow considered. For a number of parameters evaluated in the current analysis, the 7Q10[7] flow is appropriate for estimating downstream water quality impacts. This critical low flow condition is used in the projection of water quality impacts for pollutants with chronic-exposure-based objectives during low flow periods, such as summer or fall, when minimum ambient pollutant concentrations are observed and, thus, a receiving water is more sensitive to additional pollutant loading. For a small number of parameters that are determined to show long-term water quality impacts, including salt (EC and TDS), mercury, and some organic compounds detected in the proposed discharge, the harmonic mean flow[8] is appropriate for estimating the harmonic mean mixing zone. Use of a long-term harmonic mean flow to

[6] USBR Central Valley Operations Office water quality reports are available at http://www.usbr.gov/mp/cvo/wqrpt.html

[7] The 7Q10 flow refers to the lowest 7-day average daily flow that will statistically occur once in ten years.

[8] The harmonic mean flow is calculated by dividing the total number of flow measurements by the sum of the reciprocals of each flow measurement.

represent critical conditions in the DMC is consistent with the necessary characterization of "worst-case" conditions used to determine attainment of human health-based water quality criteria. Although these two mixing zones will be appropriate for evaluating the water quality impacts of most constituents, smaller mixing zones or "no dilution" scenarios also may apply to other parameters. However, because the proposed project will be designed and operated to meet effluent limitations at the point of discharge, the analysis here quantifies relative changes to loads and concentrations in the well-mixed cross section of the DMC at either the 7Q10 or harmonic mean flow condition.

Near-field water quality impacts of the proposed NVRRWP discharge were estimated using (1) average Modesto WQCF tertiary effluent quality; (2) average Turlock RWQCF tertiary effluent quality; (3) average ambient DMC concentrations; (4) projected NVRRWP discharge rates; and either (5) the 7Q10 flow (397 cfs) or the harmonic mean flow (2,153 cfs) calculated from DMC flow data measured at the Jones Pumping Plant during the years 1994 – 2013 (LWA, 2014a). According to the State Implementation Plan (SWRCB, 2005), the 7Q10 flow is used to calculate "dilution" credit when assessing "reasonable potential" for exceeding chronic (4-day) water quality objectives, and the harmonic mean river flow is similarly used when making comparisons to human health objectives or for those pollutants shown to have long-term impacts on water quality, such as salinity. The harmonic mean flow of 2,153 cfs only was used when estimating water quality impacts of pollutants with human health-based objectives (i.e., mercury and some organic compounds) and constituents of salt (EC and TDS). Projected impacts of all other pollutants were made using the 7Q10 flow of 397 cfs. Estimated water quality conditions were then compared to existing water quality objectives or commonly used criteria to assess the impact of the proposed NVRRWP discharge on DMC water quality. With the exception of data for EC and TDS, the upstream DMC monitoring location (see **Figure 5**) provided ambient data used in the near-field water quality impacts analysis. Ambient EC and TDS data used in the analysis were collected at the DMC Headworks, Jones Pumping Plant (see **Figure 2**).

The far-field water quality impacts assessment evaluates the effects of the proposed NVRRWP discharge on water quality at two locations near the San Luis Joint-Use Complex where surface water is diverted for eventual use as drinking water. The O'Neill Forebay is the location where the proposed project's recycled water would come into contact with SWP water supplies. Far-field water quality impacts were evaluated in a qualitative manner by estimating the percent change in the portion of water of DMC origin in a unit volume of water at a far-field location of interest with and without the proposed NVRRWP discharge. This analysis was carried out for the irrigation season when DPWD's water demands are high, as well as for the non-irrigation season when demands are low. This evaluation is described in the Far-Field Water Quality Impacts Methodology section of this report.

Near-Field Water Quality Impacts Methodology

The near-field water quality impacts assessment is an evaluation of the potential effects from the proposed NVRRWP discharge on downstream water quality of the DMC, which is a water body designated as having a variety of beneficial uses as listed in **Table 1**. The near-field assessment evaluates the DMC water quality at a location downstream of the proposed discharge location by incorporating the estimated quality and projected flow rates of the commingled, disinfected, tertiary treated, Title 22 effluent from the Cities of Modesto and Turlock. Near-field effects on DMC water quality are likely to occur between the point of discharge and where effluent and

ambient water are reasonably well-mixed. This distance is estimated to be approximately 0.5 miles downstream of the NVRRWP discharge under 7Q10 flow conditions, and approximately 3 miles downstream under harmonic mean flows (see **Appendix E** – calculations for length to complete mixing). Although the latter "mixing zone" is only appropriate for constituents of salinity (EC and TDS) and those showing human health risks, including mercury and some organic compounds detected in the proposed discharge, smaller mixing zones or "no dilution" scenarios also may apply to other parameters. However, because the proposed project will be designed and operated to meet effluent limitations at the point of discharge, the analysis here quantifies relative changes to loads and concentrations in the well-mixed cross section of the DMC.

The 7Q10 flow was selected as the appropriate flow condition to consider for constituents other than salinity and those having human health criteria because the flow nominally represents the "worst-case" condition where the proposed NVRRWP discharge would comprise the largest percentage of the total flow (effluent plus receiving water) downstream of the proposed discharge. Similar to the selection of the 7Q10 flow in the receiving water, the near-field discharge scenario considered in this analysis utilized the estimated NVRRWP discharge rate of 52.7 mgd at project buildout (projected to occur in 2045) to represent future, worst-case conditions. It is important to note that recycled water would be provided incrementally for discharge to the DMC over a period of years as the cities' treatment facilities are expanded and flows increase from projected population growth. Using average tertiary effluent quality from Modesto and Turlock and available ambient DMC water quality, along with projected NVRRWP discharge rate and DMC flows, a mass balance was performed to assess the effect of the proposed NVRRWP discharge on downstream concentrations and mass loadings of the seventeen constituents specified in **Table 6**. The estimated downstream water quality concentrations were then compared to existing water quality objectives or commonly used criteria to assess the impact of the proposed NVRRWP discharge on DMC water quality.

Near-Field Impacts Calculations

Near-field water quality impacts of the proposed NVRRWP discharge were estimated using the following information:

- Average Modesto WQCF tertiary effluent quality calculated from data collected on August 13 and October 30, 2014;
- Average Turlock RWQCF tertiary effluent quality calculated from data collected from January 2010 through April 2014 (exceptions include ammonia: January 2009 through October 2014, and TDS: June 2010 through October 2014);
- Average ambient DMC concentrations calculated from data collected on September 30 and October 14, 2014, for all parameters except EC and TDS. Average concentrations of TDS were calculated using data collected at the DMC Headworks from January 2000 through October 2014. Average EC levels were calculated from measured TDS concentrations using the following equation: EC (µmhos/cm) = TDS (mg/L) – 16/0.618;
- Projected NVRRWP discharge rate of 52.7 mgd based on the sum of the flows projected for the Cities of Modesto and Turlock by the year 2045 (see **Table 5**); and

- Either the 7Q10 flow (397 cfs) or the harmonic mean flow (2,153 cfs) calculated from DMC flow data measured at the Jones Pumping Plant during the years 1994 – 2013 (LWA, 2014a).

According to the State Implementation Plan (SIP; SWRCB, 2005), the 7Q10 flow is used to calculate "dilution" credit when assessing "reasonable potential" for exceeding chronic (4-day) water quality objectives, and the harmonic mean river flow is similarly used when making comparisons to human health objectives. The harmonic mean flow of 2,153 cfs for the DMC was used only when estimating water quality impacts of salinity and pollutants with human health-based objectives (i.e., mercury and some organic compounds). Projected impacts of all other pollutants were made using the 7Q10 flow of 397 cfs.

The estimated, near-field, concentration-based water quality impacts were calculated using the following mass balance equation:

$$C_{downstream} = \frac{\left(\left((C_{upstream})(Q_{upstream})\right) + \left((C_{Meff})(Q_{Meff} \times 1.55)\right) + \left((C_{Teff})(Q_{Teff} \times 1.55)\right)\right)}{\left(Q_{upstream} + \left((Q_{Meff} + Q_{Teff})(1.55)\right)\right)}$$

Where $C_{downstream}$ = DMC concentration, downstream of discharge at well-mixed conditions

$C_{upstream}$ = DMC concentration, upstream of proposed NVRRWP discharge

C_{Meff} = Modesto average tertiary effluent concentration

C_{Teff} = Turlock average tertiary effluent concentration

$Q_{upstream}$ = DMC flow (cfs), upstream of the proposed NVRRWP discharge

Q_{Meff} = Modesto tertiary effluent flow (mgd), estimated at buildout

Q_{Teff} = Turlock tertiary effluent flow (mgd), estimated at buildout

1.55 is the flow conversion factor for converting mgd to cfs

The estimated, near-field, mass-based water quality impacts were calculated using the following mass load equations:

$$M\ (lbs/day) = Q\ (mgd) \times C\ (mg/L) \times CF$$

Where M = Mass Load (lbs/day)

Q = Flow (mgd)

C = Concentration (mg/l or µg/L)

CF = Conversion factor for converting mg/L to lbs/day (8.34) or µg/L to lbs/day (0.00834)

Baseline (current) mass loading in the DMC was estimated using the following mass load equation:

$$M_{upstream} = Q_{upstream} \times C_{upstream} \times CF$$

Where $M_{upstream}$ = DMC mass load, upstream of the proposed NVRRWP discharge

$Q_{upstream}$ = DMC flow (cfs), upstream of the proposed NVRRWP discharge

$C_{upstream}$ = DMC concentration, upstream of the proposed NVRRWP discharge

Mass loading to the DMC estimated for the proposed NVRRWP discharge was estimated using the following mass load equation:

$$M_{NVRRWP} = \left[\left(Q_{Meff} \times C_{Meff} \times CF\right) + \left(Q_{Teff} \times C_{Teff} \times CF\right)\right]$$

Where M_{NVRRWP} = Mass load produced by the proposed NVRRWP discharge

Q_{Meff} = Modesto tertiary effluent flow (mgd), estimated at buildout

C_{Meff} = Modesto average tertiary effluent concentration

Q_{Teff} = Turlock tertiary effluent flow (mgd), estimated at buildout

C_{Teff} = Turlock average tertiary effluent concentration

The extremely low flow condition for the DMC represented by the 7Q10 flow of 397 cfs that was used in the projection of water quality impacts for pollutants with chronic-exposure-based objectives characterizes a surface water sensitive to additional pollutant loading. The projection of water quality impacts for salinity and pollutants with human health-based objectives uses the DMC harmonic mean flow of 2,153 cfs. Both flows were calculated from DMC flow data measured at the Jones Pumping Plant during the years 1994 – 2013 (LWA, 2014a). Use of a harmonic mean flow to represent long-term conditions in the DMC is consistent with the necessary characterization of worst-case conditions used to determine attainment of human health-based water quality criteria based on long-term exposures.

The use of a central tendency statistic, such as the average, characterizes commonly observed water quality conditions that occur under a wide range of environmental and hydrologic conditions. While ambient surface water concentrations and NVRRWP loadings for individual pollutants would be somewhat variable over time, central tendency concentration statistics are representative of frequently occurring conditions during the beneficial use exposure period. Moreover, critical flow and concentration conditions do not necessarily occur at the same time. Even though the use of a pollutant concentration characteristic of worst case conditions would provide insight into the greatest water quality impact that could occur, this worst case condition would not be representative of typical water quality conditions in terms of both magnitude of the impact and its frequency of occurrence.

Near-Field Analysis and Results

Estimated near-field water quality impacts in the DMC downstream of the proposed NVRRWP discharge were calculated for each constituent selected for analysis (see **Table 6**) using the mass balance equation described above. Summary statistic for Turlock tertiary effluent quality, Modesto tertiary effluent quality, and DMC receiving water quality upstream of the proposed NVRRWP discharge are shown in **Table 7**. These summary statistics were used in the estimation of near-field water quality concentrations and mass loadings with implementation of the proposed project that are provided in **Table 8** and **Table 9**, respectively. The data presented

in **Table 8** and **Table 9** provide estimates of downstream water quality impacts under well-mixed conditions, which were determined to occur approximately 0.5 miles downstream of the proposed NVRRWP discharge under 7Q10 flow conditions, and approximately 3 miles downstream of the discharge under harmonic mean flow conditions. The most stringent water quality objective or criterion (see **Table 2**) is provided for comparison to the estimated downstream water quality concentration. Note that mass loadings were not estimated for electrical conductivity.

The concentration-based results presented in **Table 8** show that implementation of the proposed NVRRWP project is estimated to produce no changes in water quality for total mercury and total selenium downstream of the discharge, and very minor increases in average downstream receiving water concentrations for most parameters evaluated. These minor, incremental increases in average concentration range from <0.0002 µg/L (chlorpyrifos) to 12 mg/L (TDS), along with an estimated 17 µmhos/cm average increase for EC. It also is estimated that discharge of the high quality Title 22 recycled water to the DMC by the proposed project will result in a slight lowering in downstream receiving water concentrations for total iron, total manganese, and diazinon. The estimated, average, downstream receiving water concentration resulting from the proposed 52.7 mgd NVRRWP discharge to the DMC (see Future Condition column in **Table 8**) is lower than the corresponding most stringent water quality objective or criterion for each constituent evaluated. The estimated downstream concentrations are also lower than Reclamation's water quality standards for acceptance of groundwater pumped into the upper DMC (see **Appendix A**).

The mass loading increases shown in **Table 9** demonstrate the estimated load increases resulting from the proposed NVRRWP discharge. Because DPWD will typically operate its DMC diversion rates to match the proposed project's discharge rates, the District will remove a significant amount of mass from the canal when it provides agricultural supply water to farmers and wetlands supply water to refuges. Under the scenario where DPWD diverts all water that the proposed project discharges to the DMC, incremental concentration changes in water quality downstream of any District diversions would be the same as those presented in **Table 8**. It would be only during times of no water demand that the District would not divert any water from the DMC to its customers, thus resulting in the full estimated incremental mass loading increases to the DMC shown in **Table 9**.

Table 7: Summary Statistics for City of Turlock Tertiary Effluent Quality, City of Modesto Tertiary Effluent Quality, and Delta Mendota Canal Receiving Water Quality Upstream of Proposed NVRRWP Discharge Used in the Estimation of Near-Field Water Quality Impacts.

	City of Turlock: Tertiary Effluent Quality				City of Modesto: Tertiary Effluent Quality				Delta Mendota Canal: receiving water quality just upstream of proposed NVRRWP discharge			
Constituent (units)	**n**	**% Det.**	**Avg.**	**Max. Det.**	**n**	**% Det.**	**Avg.**	**Max. Det.**	**n**	**% Det.**	**Avg.**	**Max. Det.**
Electrical Conductivity (µmhos/cm)	263	100	968	1325	2	100	903	1020	5359(1)	100(1)	457(1)	1173(1)
Total Dissolved Solids (mg/L)	235	100	605	810	2	100	659	728	5359	100	299	741
Aluminum, Total (µg/L)	67	100	202	607	2	100	25	29	2	100	99	130
Copper, Total (µg/L)	54	96.3	4.8	9.9	2	100	2.9	3.1	2	100	1.75	1.90
Iron, Total (µg/L)	30	100	202	480	2	100	55	67	2	100	130	180
Manganese, Total (µg/L)	26	88.5	11	47	2	100	11.7	19	2	100	25.5	36.0
Mercury, Total (µg/L)	49	93.9	0.0032	0.0130	2	100	0.00085	0.00106	2	100	0.0011	0.0013
Selenium, Total (µg/L)	55	92.7	0.31	1.3	2	100	0.81	0.89	2	100	0.60	0.72
Ammonia (mg/L as N)	321	3.4	<1	4.4	2	50	0.035	0.04	2	50	0.059	0.077
Nitrate (mg/L as N)	51	100	16.3	20.8	2	50	3.48	6.87	2	100	0.30	0.46
Nitrite (mg/L as N)	4	0	<0.1	<0.1	2	100	0.01	0.01	2	0	<0.005	<0.005
Bis(2-ethylhexyl)phthalate (µg/L)	28	50	1.25	6.60	2	0	<0.83	<0.83	2	0	<0.1	<0.1
Carbon Tetrachloride (µg/L)	52	13.5	<0.2	0.5	2	0	<0.4	<0.4	2	0	<0.16	<0.16
Dibromochloromethane (µg/L)	52	100	6.76	12.8	2	0	<0.4	<0.4	2	0	<0.03	<0.03
Dichlorobromomethane (µg/L)	52	100	22.7	41.9	2	0	<0.4	<0.4	2	0	<0.03	<0.03
Chlorpyrifos (µg/L)	17	0	<0.01	<0.01	2	0	<0.0029	<0.0029	2	0	<0.005	<0.005
Diazinon (µg/L)	17	0	<0.01	<0.01	2	0	<0.0036	<0.0036	2	0	<0.007	<0.007

(1) DMC EC levels were calculated from TDS concentrations measured at Jones Pumping Plant using the following equation:
EC (µmhos/cm) = TDS (mg/L) – 16/0.618.

Table 8: Estimated Near-Field Downstream (D/S) Water Quality Impacts, on a Concentration Basis, of the Proposed NVRRWP Discharge at the Projected Buildout Discharge Rate of 52.7 mgd.

		Baseline DMC Condition	Projected Effluent Quality	Future DMC Condition			
Constituent	**Units**	**Average Upstream DMC**	**Average Commingled Effluent[1]**	**Estimated Average D/S at 52.7 mgd**	**Incremental Change**	**Most Stringent Water Quality Objective or Criterion**	**Reference for Most Stringent Water Quality Objective or Criterion**
Electrical Conductivity	µmhos/cm	457	934	474	17	1,000	Basin Plan
Total Dissolved Solids	mg/L	299	633	311	12	500[3]	Title 22 MCL (Secondary)/ Basin Plan[2]
Aluminum, Total	µg/L	99	110	101	2	200	Title 22 MCL (Secondary)/ Basin Plan[2],[34]
Copper, Total	µg/L	1.75	3.8	2.1	0.4	9.7[5],[6]	CTR, FW Aquatic Life, (Chronic 4-day average)
Iron, Total	µg/L	130	126	129	-1	300	Title 22 MCL (Secondary)/ Basin Plan[2]
Manganese, Total	µg/L	25.5	11.4	23.1	-2.4	50	Title 22 MCL (Secondary)/ Basin Plan[2]
Mercury, Total	µg/L	0.0011	0.0020	0.0011	0.0	0.050	CTR, Human Health, Water & Organisms
Selenium, Total	µg/L	0.6	0.6	0.6	0.0	5	Basin Plan, Table III-1, monthly mean

Table 8: Estimated Near-Field Downstream (D/S) Water Quality Impacts, on a Concentration Basis, of the Proposed NVRRWP Discharge at the Proposed Buildout Discharge Rate of 52.7 mgd (Continued).

		Baseline DMC Condition	Projected Effluent Quality	Future DMC Condition			
Constituent	**Units**	**Average Upstream DMC**	**Average Commingled Effluent[1]**	**Estimated Average D/S at 52.7 mgd**	**Incremental Change**	**Most Stringent Water Quality Objective or Criterion**	**Reference for Most Stringent Water Quality Objective or Criterion**
Ammonia	mg/L (as N)	0.059	<0.500	<0.134	<0.075	0.73[7]	Basin Plan, U.S. EPA 2013 Aquatic Life Water Quality Criteria for Ammonia, FW (Chronic 30-day average)
Nitrate	mg/L (as N)	0.3	9.66	1.9	1.6	10	Title 22 MCL (Primary)/Basin Plan[2]
Nitrite	mg/L (as N)	<0.005	<0.05	<0.01	<0.01	1	Title 22 MCL (Primary)/Basin Plan[2]
Bis(2-ethylhexyl)phthalate	µg/L	<0.1	<1.03	<0.13	<0.03	1.8	CTR, Human Health, Water & Organisms
Carbon Tetrachloride	µg/L	<0.16	<0.30	<0.17	<0.01	0.25	CTR, Human Health, Water & Organisms
Dibromochloromethane	µg/L	<0.03	<3.47	<0.16	<0.13	0.41	CTR, Human Health, Water & Organisms
Dichlorobromomethane	µg/L	<0.03	<11.15	<0.44	<0.41	0.56	CTR, Human Health, Water & Organisms
Chlorpyrifos	µg/L	<0.005	<0.0063	<0.0052	<0.0002	0.014	CDFW, CCC, 4-day average
Diazinon	µg/L	<0.007	<0.0067	<0.0069	≥-0.0001	0.05	CDFW, CCC, 4-day average

Table 8: Estimated Near-Field Downstream (D/S) Water Quality Impacts, on a Concentration Basis, of the Proposed NVRRWP Discharge at the Proposed Buildout Discharge Rate of 52.7 mgd (Continued).

		Baseline DMC Condition	Projected Effluent Quality	Future DMC Condition			
Constituent	**Units**	**Average Upstream DMC**	**Average Commingled Effluent(1)**	**Estimated Average D/S at 52.7 mgd**	**Incremental Change**	**Most Stringent Water Quality Objective or Criterion**	**Reference for Most Stringent Water Quality Objective or Criterion**

References:

(1) Blended Modesto and Turlock effluents are described as commingled effluent and its average concentration was calculated using the discharge rates (in mgd) for each city at project buildout, as presented in **Table 5**.

(2) Incorporated into the Basin Plan by reference (CVRWQCB, 2011).

(3) 500 mg/L is the low end of the acceptable Title 22 Secondary MCL range for total dissolved solids.

(4) The Secondary MCL for aluminum has been determined to be the controlling water quality objective for the discharge to the Delta-Mendota Canal. This determination is made through the evaluation of aluminum toxicity bioassay results performed in the Central Valley (e.g., City of Manteca, City of Yuba City, and City of Modesto) which resulted in adjusted chronic criteria more than an order of magnitude greater than the 1988 U.S. EPA ambient water quality chronic criterion of 87 µg/L (U.S. EPA, 1988), and greatly exceeding the Secondary MCL concentration of 200 µg/L.

(5) Dissolved fraction of metal used in comparison to water quality objective.

(6) The average ambient Delta-Mendota Canal hardness of 110 mg/L was used to adjust the hardness-based CTR criterion for the ambient comparison.

(7) The numeric criterion used to interpret the Basin Plan narrative toxicity objective is based on an average pH of 8.0 standard units and an average temperature of 21.5 °C as measured in the Delta-Mendota Canal.

Table 9: Estimated Near-Field Downstream (D/S) Water Quality Impacts, on a Mass Loading Basis, of the Proposed NVRRWP Discharge at the Proposed Buildout Discharge Rate of 52.7 mgd.

Constituent	DMC Flow Condition Used in Mass Loading Calculation: 7Q10 (397 cfs) or Harmonic Mean (2,153 cfs)	Baseline Condition: Existing Upstream Mass Loading (lbs/day) in DMC at Specified Flow	Future Condition: Estimated Downstream Mass Loading (lbs/day) in DMC at NVRRWP Discharge Rate of 52.7 mgd at Specified Flow	Incremental Change (lbs/day)
Total Dissolved Solids	Harmonic Mean	3,469,796	3,748,000	278,203
Aluminum, Total	7Q10	212	260	48
Copper, Total	7Q10	3.7	5.4	1.7
Iron, Total	7Q10	278	333	55
Manganese, Total	7Q10	54.6	59.6	5.0
Mercury, Total	Harmonic Mean	4.659(1)	4.977(1)	0.318(1)
Selenium, Total	7Q10	1.28	1.53	0.25
Ammonia	7Q10	126	<346	<220
Nitrate	7Q10	642	4,887	4,245
Nitrite	7Q10	<10.7	<34.2	<23.5
Bis(2-ethylhexyl)phthalate	Harmonic Mean	<1.16	<1.61	<0.45
Carbon Tetrachloride	Harmonic Mean	<1.86	<1.99	<0.13
Dibromochloromethane	Harmonic Mean	<0.35	<1.87	<1.52
Dichlorobromomethane	Harmonic Mean	<0.35	<5.25	<4.90
Chlorpyrifos	7Q10	<0.0107	<0.0135	<0.0028
Diazinon	7Q10	<0.0150	<0.0179	<0.0029

(1) Mass loading estimates for total mercury are presented in lbs/year.

Far-Field Water Quality Impacts Methodology

The far-field water quality impacts assessment evaluates the potential effects of the proposed NVRRWP discharge on water quality at two locations near the San Luis Joint-Use Complex, approximately 32.7 miles downstream of the discharge, where surface water is diverted for eventual use as drinking water. As part of the San Luis Joint-Use Complex, the San Luis Reservoir holds water diverted from the Delta for subsequent delivery to the Silicon Valley, San Joaquin Valley, Central Coast, and Southern California. The DMC is connected to the San Luis Reservoir via the O'Neill Forebay, as shown in **Figure 6**. Generally, water is pumped into San Luis Reservoir from late fall through early spring, where it is temporarily stored for release back to the California Aqueduct to meet summertime peaking demands of SWP and CVP water contractors. When Delta flows are insufficient to supply state and federal water project needs, water is released back into the O'Neill Forebay for delivery by the two projects.

DWR monitors and reports the water and energy operations of the SWP facilities, including end-of-month storage for the San Luis Reservoir and the O'Neill Forebay. Furthermore, DWR considers the inflows, outflows and deliveries of the San Luis Joint-Use Complex to estimate storage shares between the state and federal projects within the complex. The far-field assessment used the historical operational data to estimate the federal share in two of the complex outflows that provide for water as an eventual downstream drinking water source.

The far-field water quality impacts scenario considered in this analysis utilized the estimated NVRRWP discharge rate of 52.7 mgd at project buildout (projected to occur in 2045) to represent future, worst-case conditions. This worst-case condition would only occur during times when DPWD made zero diversions of NVRRWP project water from the DMC as a result of its users having zero demand for water, most likely to occur during the non-irrigation season. It is important to note that the use of the projected discharge rate at project buildout provides a conservative approach as recycled water will be produced incrementally for discharge to the DMC over a period of years as the result of treatment facility upgrades and increase in flows due to population growth. The harmonic mean flow was selected as the appropriate flow condition to consider because it best represents the long-term water quality impacts the proposed NVRRWP discharge potentially could have on far-field water quality conditions in the DMC.

The far-field water quality impacts were evaluated in a qualitative manner by estimating the percent change in the portion of water of DMC origin in a unit volume of water at two far-field locations of interest – the O'Neill Forebay outflow to the California Aqueduct and the San Luis Reservoir outflow to the Pacheco Tunnel – with the proposed project operating at a discharge rate of 52.7 mgd. Using the average of available federal storage data in the San Luis Joint-Use Complex along with projected NVRRWP discharge rate and DMC flows, the percentage of the portion of water of DMC origin, and thus containing the proposed NVRRWP discharge, was estimated for two outflows from the complex that provide water for eventual drinking water uses.

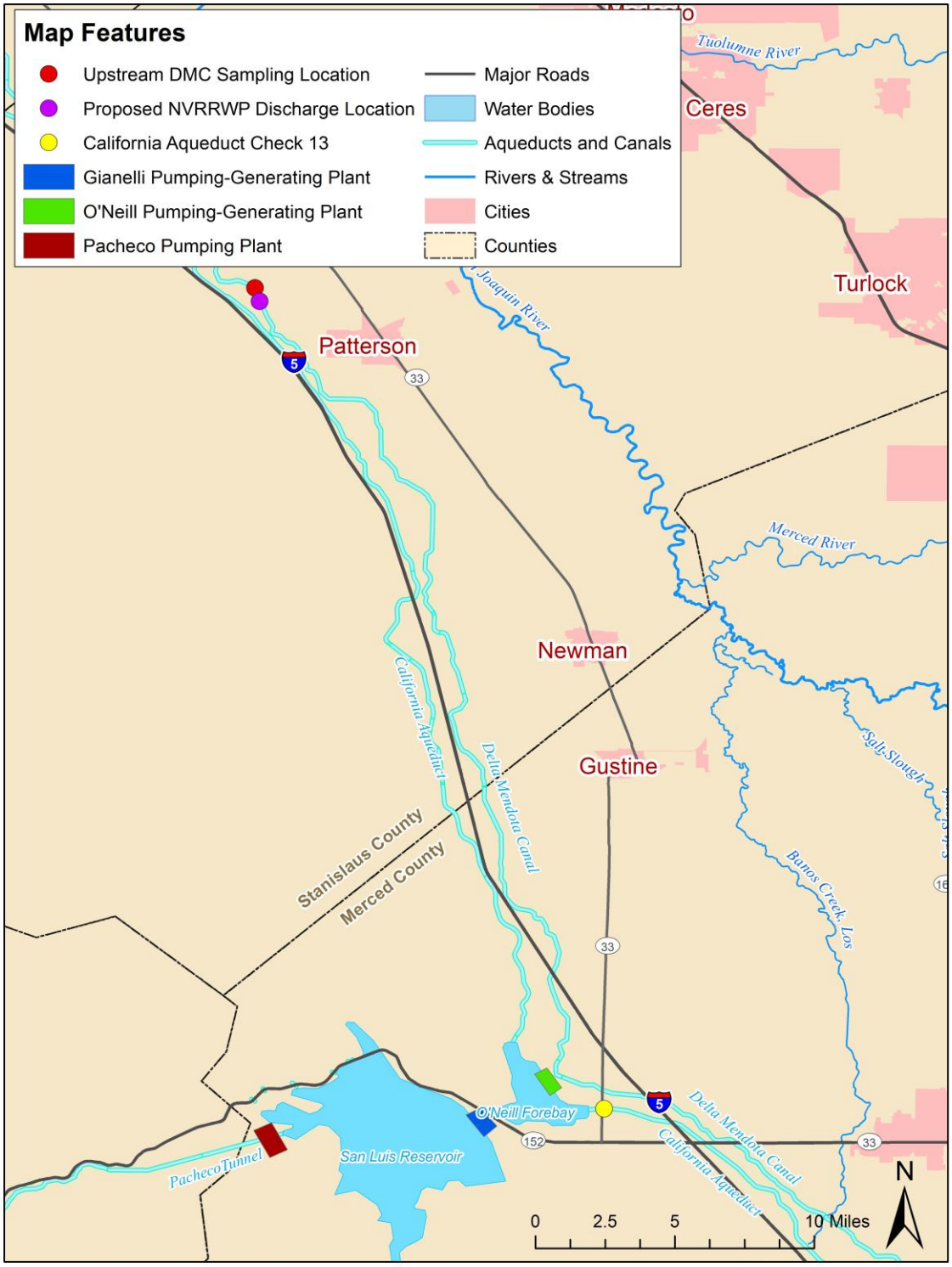


Figure 6: Proposed Project Area Showing Location of Proposed NVRRWP Discharge Site in Relation to San Luis Joint-Use Complex (San Luis Reservoir and O'Neill Forebay).

During the irrigation season when DPWD's water demands are high, the amount of the proposed NVRRWP discharge that enters the San Luis Joint-Use Complex will be significantly reduced – typically zero – as compared to that during the non-irrigation season due to diversions made to DPWD's customers between the point of discharge and the O'Neill Pumping-Generating Plant. While future contract water deliveries to DPWD are uncertain, it is anticipated that restrictions on CVP operations will result in the District receiving an average of 35 percent of its contract allocation (i.e., 49,000 AFY) on an annual basis under normal hydrologic conditions (i.e., non-drought conditions) (USBR, 2015). Given that DPWD received only 10 percent (14,000 AFY) of its contracted allocation in 2009, 20 percent (28,000 AFY) of its contracted allocation in 2013, and 0 percent of its allocation in 2014 (refer to **Figure 1**), it is very likely that future, reduced CVP water allocations to the District will result in the entire amount of recycled water produced by the proposed NVRRWP project and discharged to the DMC northwest of the City of Patterson being diverted as blended water to DPWD customers prior to being pumped into the San Luis Joint-Use Complex by the O'Neill Pumping-Generating Plant. As such, the potential water quality impacts estimated to occur during the irrigation season are best represented by the near-field methodology and estimated near-field water quality impacts of the proposed project.

Far-Field Impact Calculations

In order to provide an estimate of the far-field water quality impacts of the proposed project, the fraction or percentage of the proposed NVRRWP discharge present in the outflows from the O'Neill Forebay and San Luis Reservoir, were estimated.

The far-field water quality impacts of the proposed NVRRWP discharge were estimated using the following information:

- Average storage (over the entire period evaluated) and average end-of-month storage in the O'Neill Forebay based on daily data from January 1980 through September 2012 provided by DWR (Smith, 2015);
- Average storage (over the entire period evaluated) and average end-of-month storage in the San Luis Reservoir based on monthly data from January 1980 through September 2012 (DWR, 2014);
- Projected NVRRWP discharge rate of 52.7 mgd based on the sum of the flows projected for the Cities of Modesto and Turlock by the year 2045 (see **Table 5**); and
- Harmonic mean flow (2,153 cfs) calculated from DMC flow data measured at the Jones Pumping Plant during the years 1994 – 2013 (LWA, 2014a).

With the assumption that the federal share of the storage facilities (O'Neill Forebay and San Luis Reservoir) within the complex is an estimation based on calculations of inflows, outflows and deliveries under well-mixed conditions, the fraction of federal project water exiting the complex was approximated. Since the DMC supplies the entirety of the federal project water to the complex (the California Aqueduct provides the state project water), the portion of federal water exiting the complex is of DMC origin. The fraction of proposed NVRRWP discharge exiting either O'Neill Forebay or San Luis Reservoir is estimated as a percentage of the DMC flow.

Far-Field Analysis and Results

Using the projected NVRRWP discharge rate at project buildout (52.7 mgd), it was estimated that the discharge would amount to 3.65% of the DMC flow under the harmonic mean flow condition. As such, the fraction of the proposed NVRRWP discharge exiting the O'Neill Forebay via the California Aqueduct or the San Luis Reservoir through the Pacheco Tunnel was estimated from the percentage of the DMC flow (3.65%) and the average share of the federal water project storage volume contained in each reservoir. These estimated percentages of the NVRRWP discharge under well-mixed conditions projected to be present at the San Luis Joint-Use Complex export locations are provided in **Table 10** for O'Neill Forebay and in **Table 11** for San Luis Reservoir. Monthly averages were calculated by averaging all data from a particular month (January, for example) across all years, whereas annual averages were calculated from daily (O'Neill Forebay) and monthly (San Luis Reservoir) data for a particular year.

Table 10: Estimated, Downstream Far-Field Percentages of the Proposed NVRRWP Discharge Projected to Exit O'Neill Forebay at a Project Discharge Rate of 52.7 mgd.

Averaging Period		O'Neill Forebay Storage	
		Overall Percent (%) Federal (DMC) Water	Percent (%) NVRRWP Water Based on Harmonic Mean Flow
Average (Jan. 1980 – Oct. 2012)		48.33	1.76
Average by Month(1)	Estimated Minimum	45.26	1.65
	Estimated Maximum	49.62	1.81
	Range		1.65 – 1.81
Average by Year(2)	Estimated Minimum	36.63	1.34
	Estimated Maximum	53.32	1.95
	Range		1.34 – 1.95

(1) The estimated minimum and maximum federal share of the O'Neill Forebay storage calculated as a monthly average occurred during February and August, respectively.

(2) The estimated minimum and maximum federal share of the O'Neill Forebay storage calculated as an annual average occurred during 2009 and 1984, respectively.

The percent of NVRRWP discharge at O'Neill Forebay results presented in **Table 10** show that on average future flows exported from the forebay are estimated to contain no more than 1.95% (estimated maximum annual average) NVRRWP recycled water under long-term, harmonic mean flow conditions at a project discharge rate of 52.7 mgd. The estimated maximum monthly average is slightly lower at 1.81%, and is projected to occur in the month of August if future Complex operations are similar to historic operations. The percent of NVRRWP discharge calculated at San Luis Reservoir (see **Table 11**) is similar in magnitude as that estimated for the forebay. The reservoir is estimated to contain no more than 2.27% (estimated maximum annual average) NVRRWP recycled water under long-term, harmonic mean flow conditions at project buildout. The estimated maximum monthly average for the reservoir is slightly lower at 1.78%, and is projected to occur in the month of December if future Complex operations are similar to historic operations.

Table 11: Estimated, Downstream Far-Field Percentages of the Proposed NVRRWP Discharge Projected to Exit San Luis Reservoir at a Project Discharge Rate of 52.7 mgd.

Averaging Period		San Luis Reservoir Storage	
		Overall Percent (%) Federal (DMC) Water	Percent (%) NVRRWP Water Based on Harmonic Mean Flow
Average (Jan. 1980 – Oct. 2012)		42.18	1.54
Average by Month(1)	Estimated Minimum	27.70	1.01
	Estimated Maximum	48.83	1.78
	Range		1.01 – 1.78
Average by Year(2)	Estimated Minimum	31.53	1.15
	Estimated Maximum	62.29	2.27
	Range		1.15 – 2.27

(1) The estimated minimum and maximum federal share of the San Luis Reservoir storage calculated as a monthly average occurred during August and December, respectively.

(2) The estimated minimum and maximum federal share of the San Luis Reservoir storage calculated as an annual average occurred during 1984 and 1990, respectively.

It is important to note that the above-described far-field water quality impacts scenario evaluated for the non-irrigation season would occur only when DPWD's water demand was essentially non-existent and the District made no diversions of blended, NVRRWP project water from the DMC. Even minor diversions of DMC water to the DPWD service area would result in percentages of NVRRWP recycled water at Complex export locations less than those presented in **Table 10** and **Table 11**. Based on the minor, downstream, incremental water quality changes estimated in the near-field for the proposed discharge (see **Table 8**), the incremental impact of NVRRWP recycled water at downstream far-field locations on a concentration basis would be even less due to the dilution provided by SWP water once DMC flows are commingled with SWP flows in the O'Neill Forebay approximately 33 miles downstream from the point of the proposed discharge. Moreover, water of NVRRWP origin would be further diluted as it travels south in the California Aqueduct and west in the Santa Clara Tunnel to locations where it is diverted to drinking water treatment facilities in preparation for delivery to consumers. To this end, it is anticipated that the proposed NVRRWP discharge would have minimal impact on drinking water beneficial uses downstream of the proposed project. For further discussion of the calculations used to develop the information presented in **Table 10** and **Table 11**, refer to **Appendix F**.

The percent contribution of NVRRWP recycled water at the export points for O'Neill Forebay (California Aqueduct) and San Luis Reservoir (Pacheco Tunnel) is 1.95% and 2.27%, respectively, under the most conservative assumptions. The relative impact of the proposed NVRRWP discharge on water quality at these locations is *de minimis* for those constituents where concentrations in the proposed discharge are similar to ambient concentrations. For constituents with potentially larger differences in water quality between NVRRWP discharge concentrations and existing ambient concentrations (e.g., EC, nitrate + nitrite[9]; refer to **Table 8**),

[9] The average concentration of nitrate + nitrite in the commingled effluent was calculated by summing the average concentration of nitrate plus the average concentration of nitrite, as presented in **Table 8**:
9.66 mg/L as N (nitrate) + 0.05 mg/L as N (nitrite) = 9.71 mg/L as N (nitrate + nitrite).

the estimated, incremental water quality impacts on downstream, far-field concentrations are still relatively small, as shown in **Table 12** for EC and **Table 13** for nitrate plus nitrite.

Table 12: Estimated, Downstream Far-Field Concentration of EC (µmhos/cm) at Water Project Export Locations for the Proposed NVRRWP Project at a Discharge Rate of 52.7 mgd.

Monitoring Location	Discharge Scenario: Baseline Condition: No NVRRWP Discharge	Discharge Scenario: Future Condition: NVRRWP Discharge at 52.7 mgd	Estimated Incremental Change
California Aqueduct at Check 13 (O'Neill Forebay)(1)			
NVRRWP % Contribution	0	1.95	
Est. Average Ambient Water Quality	475(2)	484(4)	9.0
San Luis Reservoir at Pacheco Pumping Plant			
NVRRWP % Contribution	0	2.27	
Est. Average Ambient Water Quality	516(3)	525(4)	9.5

(1) DWR describes this monitoring location as the O'Neill Forebay Outlet (DWR, 2009), but it is the same location as California Aqueduct Check 13 (see **Figure 6**).

(2) Long-term average of average daily EC measured in the California Aqueduct at Check 13: Jan. 1990 – Dec. 2014. Data obtained online from DWR California Data Exchange Center: http://cdec.water.ca.gov/cgi-progs/selectQuery

(3) Long-term average of average daily EC measured at Pacheco Pumping Plant: Jan. 1990 – Dec. 2014. Data obtained online from DWR California Data Exchange Center.

(4) Estimated average EC at far-field locations based on a NVRRWP commingled effluent quality for EC of 934 µmhos/cm (see **Table 8**).

Estimated EC levels (see **Table 12**) in the two reservoirs under the projected NVRRWP discharge rate at project buildout (52.7 mgd) would be significantly below the 1,000 µmhos/cm objective specified for the DMC in the Basin Plan (see **Table 2**). Similarly, estimated nitrate plus nitrite concentrations (see **Table 13**) in the two reservoirs at buildout of the proposed project would exist well below the Title 22 Primary MCL of 10 mg/L as N (see **Table 2**) that is incorporated into the Basin Plan by reference for the protection of drinking water.

Table 13: Estimated, Downstream Far-Field Concentrations of Nitrate + Nitrite (mg/L as N) at Water Project Export Locations for the Proposed NVRRWP Project at a Discharge Rate of 52.7 mgd.

Monitoring Location	Discharge Scenario: Baseline Condition: No NVRRWP Discharge	Discharge Scenario: Future Condition: NVRRWP Discharge at 52.7 mgd	Estimated Incremental Change
California Aqueduct at Check 13 (O'Neill Forebay)(1)			
NVRRWP % Contribution	0	1.95	
Est. Average Ambient Water Quality	0.60(2)	0.78(4)	0.18
San Luis Reservoir at Pacheco Pumping Plant			
NVRRWP % Contribution	0	2.27	
Est. Average Ambient Water Quality	0.80(3)	1.00(4)	0.20

(1) DWR describes this monitoring location as the O'Neill Forebay Outlet (DWR, 2009), but it is the same location as California Aqueduct Check 13 (see **Figure 6**).

(2) Median nitrate + nitrite measured at O'Neill Forebay outlet: Jan. 2004 – Dec. 2005 (DWR, 2009).

(3) Median nitrate + nitrite measured at Pacheco Pumping Plant: Jan. 2004 – Dec. 2005 (DWR, 2009).

(4) Estimated average nitrate + nitrite at far-field locations based on a NVRRWP commingled effluent quality for nitrate + nitrite of 9.71 mg/L as N.

SUMMARY OF WATER QUALITY IMPACTS

The advanced wastewater treatment processes employed by the Cities of Modesto and Turlock produce a very high quality effluent for recycled water uses with respect to nutrients, metals, pathogens, organic compounds, and various other general water quality constituents. The vast majority of Title 22 water proposed for discharge to the DMC northwest of the City of Patterson would be diverted by DPWD at various turnouts along the canal for use by agriculture and refuges. These diversions will remove a significant portion of the mass loadings contributed to the canal by the proposed project. Incremental concentration changes to DMC water quality downstream of the proposed NVRRWP discharge were found to be very minor for most constituents evaluated in the near-field water quality impacts assessment of this report. For instance, the proposed project is estimated to produce no changes in water quality for total mercury and total selenium downstream of the discharge, and result in a slight lowering in downstream receiving water concentrations for total iron, total manganese, and diazinon. Furthermore, the estimated, average, downstream receiving water concentration resulting from the proposed 52.7 mgd NVRRWP discharge to the DMC (see **Table 8**) is lower than the corresponding most stringent water quality objective or criterion for each constituent evaluated. Additionally, estimated downstream concentrations are lower than Reclamation's water quality standards for acceptance of groundwater pumped into the upper DMC (see **Appendix A**).

During periods when DPWD might elect to not divert any water from the DMC due to low water demand in its service area, the far-field water quality impacts assessment of this report estimated the proposed NVRRWP discharge to constitute no more than 1.95% of the water available for export from the O'Neill Forebay to the California Aqueduct, and no more than 2.27% of the water available for export from the San Luis Reservoir to the Santa Clara Tunnel, on an average

annual basis at the proposed buildout discharge rate of 52.7 mgd. The maximum percentage of the NVRRWP discharge available for export at these two location decreases to approximately 1.8% when considering average monthly contributions. The results of this far-field assessment reveal that the proposed project will have very minor water quality impacts on water resources used for drinking water uses downstream of the San Luis Joint-Use Complex. Additionally, with regard to the two parameters evaluated in the far-field analysis, EC and nitrate plus nitrite, estimated concentrations of both constituents at the two San Luis Joint-Use Complex export locations are projected to exist well below relevant water quality standards used to protect the most sensitive beneficial uses of the water.

The very minor changes in water quality identified with implementation of the proposed project would not be expected to cause, or increase the frequency of, exceedances of applicable criteria/objectives in the DMC or downstream receiving waters, would not cause nuisance conditions, would not adversely affect beneficial uses in the DMC or downstream waters, and would not result in water quality less than that prescribed in state or federal policies.

Evaluation of Consistency with Antidegradation Policy

The guidelines set by the State Water Board for the antidegradation analysis (APU 90-004) provide direction on evaluating the proposed NVRRWP discharge to the DMC by focusing on whether and the degree that water quality is lowered and by considering whether or not the assumed water quality change is consistent with the maximum benefit to the people of the State. In developing the antidegradation analysis, the DMC beneficial uses and relevant water quality objectives and commonly used criteria were considered.

BENEFITS OF PROPOSED PROJECT

The proposed NVRRWP discharge to the DMC maximizes the use of a sustainable, alternative water supply within the region through the reuse of highly treated wastewater produced by the Cities of Modesto and Turlock for the beneficial uses of agricultural irrigation and wetlands management. The Title 22 recycled water proposed for conveyance in the DMC will be diverted by DPWD to growers within the District's service area, as well as provided to federal and state wildlife refuges. This new source of surface water within the project area will provide benefits such as a reduced need for growers to pump groundwater for the irrigation of their crops and an augmented water supply available to refuges for wetlands management. Substituting high quality surface water for low quality groundwater will allow greater flexibility in the types of crops that can be grown in the project area and will potentially enhance the yields of those crops. Reduced pumping of groundwater will also improve the quality of agricultural drainage, which has the potential to impact nearby surface waters, and mitigate land subsidence caused by over extraction of groundwater resources. Furthermore, the proposed project will help to reduce overall uncertainties in water supply that growers have historically experienced due to shortages in CVP deliveries. Providing a sufficient supply of high quality water for growers in the DPWD service area will help to maintain the agricultural economy in the region, and avoid the conversion of agricultural lands to non-agricultural uses in the absence of such a supply.

CONSISTENCY WITH ANTIDEGRADATION POLICIES

The proposed project, the discharge of up to 52.7 mgd of Title 22 recycled water to the DMC by the year 2045, is determined to comprise best practicable treatment or control and is consistent with federal and state antidegradation policies for the follow reasons:

- The proposed NVRRWP discharge to the DMC will not adversely affect existing or probable beneficial uses of the DMC or downstream receiving waters, nor will it cause water quality to not meet applicable water quality objectives.
- Overall, the proposed NVRRWP discharge is estimated to have a very minor impact on DMC water quality downstream of the discharge point, both in the near-field and the far-field. The proposed project is estimated to cause very minor increases in downstream water quality concentrations for some constituents (EC, TDS, total aluminum, total copper, ammonia, nitrate, nitrite, bis(2-ethylhexyl)phthalate, carbon tetrachloride, dibromochloromethane, dichlorobromomethane, and chlorpyrifos), produce very minor decreases in downstream concentrations for others (total iron, total manganese, and

diazinon), and result in no change in downstream concentrations for two parameters (total mercury and total selenium), as compared to existing receiving water conditions.

- Based on the above, the request to permit a new discharge to the DMC is consistent with federal and state antidegradation policies in that the minor lowering of water quality for several pollutants is necessary to accommodate important economic or social development, will not unreasonably affect beneficial uses, will not cause further exceedances of applicable water quality objectives, and is consistent with the maximum benefit to the people of the State.
- Based on the above, the request to permit a new discharge to the DMC is consistent with the Porter-Cologne Act in that the resulting water quality will constitute the highest water quality that is reasonable, considering all demands placed on the waters, economic and social considerations, and other public interest factors.

The proposed discharge of Title 22 recycled water to the DMC also fully supports California's *Recycled Water Policy* (SWRCB, 2013) in that it would result in an increased use of recycled water from municipal wastewater sources, would incrementally reduce reliance on the vagaries of annual precipitation, and would assist in the sustainable management of surface and groundwater resources.

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United States Environmental Protection Agency (U.S. EPA), 2005. *Memorandum to Water Management Division Directors, Regions 1-10, regarding Tier 2 Antidegradation Reviews and Significance Thresholds*. Washington, D.C.: King, Ephram S., Director, Office of Science and Technology. August 10.

Appendix A: U.S. Bureau of Reclamation Water Quality Standards for Acceptance of Groundwater Pumped into the Upper Delta-Mendota Canal

The water quality standards (maximum contaminant levels (MCLs)) listed in the table below are used by Reclamation to control the quality of groundwater pumped into the upper DMC – the portion of the canal that extends from the Jones Pumping Plant to DMC Check 13 (O'Neill Forebay). (USBR, 2014)

Constituent	Units	Maximum Contaminant Level (MCL)	Source
Aluminum	mg/L	1	(1)
Antimony	mg/L	0.006	(1)
Arsenic	mg/L	0.01	(1)
Barium	mg/L	1	(1)
Beryllium	mg/L	0.004	(1)
Boron	mg/L	0.7	(13)
Cadmium	mg/L	0.005	(1)
Chromium, Total	mg/L	0.05	(1)
Lead	mg/L	0.015	(9)
Mercury	mg/L	0.002	(1)
Nickel	mg/L	0.1	(1)
Nitrate	mg/L as N	10	(1)
Nitrate + Nitrite	mg/L as N	10	(1)
Nitrite	mg/L as N	1	(1)
Selenium	mg/L	0.002	(10)
Thallium	mg/L	0.002	(1)
Chloride	mg/L	250	(7)
Copper	mg/L	1	(10)
Iron	mg/L	0.3	(6)
Manganese	mg/L	0.05	(6)
Molybdenum	mg/L	0.01	(11)
Silver	mg/L	0.1	(6)
Sodium	mg/L	69	(12)
Specific Conductance	µS/cm	2,200	(7)
Sulfate	mg/L	250	(7)
Total Dissolved Solids	mg/L	1,500	(7)
Zinc	mg/L	5	(6)
Gross Alpha	pCi/L	15	(3)
Dibromochloropropane (DBCP)	µg/L	1	(4)

Constituent	Units	Maximum Contaminant Level (MCL)	Source
Ethylene Dibromide (EDB)	µg/L	18	(4)
Chlordane	µg/L	18	(4)
Endrin	µg/L	0.1	(4)
Heptachlor	µg/L	25	(4)
Heptachlor Epoxide	µg/L	70	(4)
Lindane	µg/L	160	(4)
Methoxychlor	µg/L	0.2	(4)
Toxaphene	µg/L	2	(4)
Diazinon	µg/L	0.16	(11)
Atrazine	µg/L	700	(4)
Simazine	µg/L	0.01	(4)
Bentazon	µg/L	0.01	(4)
2,4,5-TP (Silvex)	µg/L	30	(4)
2,4-D	µg/L	0.2	(4)
Molinate	µg/L	20	(4)
Thiobencarb	µg/L	50	(4)
Carbofuran	µg/L	4	(4)
Glyphosate	µg/L	70	(4)
Chlorpyrifos	µg/L	0.025	(11)

Sources:

Title 22. The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 4010-4037), and Administrative Code (Sections 64401 et seq.), as amended.

(1) Title 22. Table 64431-A MCLs, Inorganic Chemicals

(3) Title 22. Table 64442 Radionuclide Maximum Contaminant Levels (MCLs) and Detection Levels for Purposes of Reporting

(4) Title 22. Table 64444-A MCLs, Organic Chemicals

(6) Title 22. Table 64449-A Secondary MCLs "Consumer Acceptance Contaminant Levels"

(7) Title 22. Table 64449-B Secondary MCLs "Consumer Acceptance Contaminant Level Ranges"

(9) Title 22. Section 64678 (d) Lead Action Level

2013 California Drinking Water Regulations:

http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Lawbook.aspx

http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-2013-07-01.pdf

California Regional Water Quality Control Board, Central Valley Region, Fourth Edition of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins.

(10) Basin Plan, Table III-1 (µg/L) (selenium in Grasslands water supply channels)

(11) Basin Plan, Table III-2A (µg/L) (chlorpyrifos & diazinon in San Joaquin River from Mendota to Vernalis)

Sacramento & San Joaquin River Basin Plan 2009

http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr.pdf

Constituent	Units	Maximum Contaminant Level (MCL)	Source
Sources: Continued			
Ayers, R.S. and D.W. Westcott, Water Quality for Agriculture, Food and Agriculture Organization of the United States – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985).			
(12) Ayers, Table 1 (mg/L) (sodium)			
(13) Ayers, Table 21 (mg/L) (boron)			
Water Quality Standards for Agriculture 1985			
http://www.fao.org/docrep/003/T0234E/T0234E00.HTM			

Appendix B: City of Turlock Tertiary Effluent Monitoring Data Used to Characterize City's Contribution to Effluent Quality of Proposed NVRRWP Discharge

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/12/2010	1,1,1-Trichloroethane	8260B	ND	0.3	ug/L			Grab
EFF-001	2/2/2010	1,1,1-Trichloroethane	8260B	ND	0.3	ug/L			Grab
EFF-001	4/16/2012	1,1,1-Trichloroethane	8260B	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/14/2012	1,1,1-Trichloroethane	8260B	ND	0.1	ug/L			Grab
EFF-001	6/11/2012	1,1,1-Trichloroethane	8260B	ND	0.1	ug/L			Grab
EFF-001	7/9/2012	1,1,1-Trichloroethane	8260B	ND	0.1	ug/L			Grab
EFF-001	8/13/2012	1,1,1-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	9/10/2012	1,1,1-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	10/8/2012	1,1,1-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	11/5/2012	1,1,1-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	12/3/2012	1,1,1-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/14/2013	1,1,1-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Comp/Grab
EFF-001	2/4/2013	1,1,1-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	3/11/2013	1,1,1-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/12/2010	1,1,2,2-Tetrachloroethane	8260B	ND	0.4	ug/L			Grab
EFF-001	2/2/2010	1,1,2,2-Tetrachloroethane	8260B	ND	0.4	ug/L			Grab
EFF-001	4/16/2012	1,1,2,2-Tetrachloroethane	8260B	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/14/2012	1,1,2,2-Tetrachloroethane	8260B	ND	0.2	ug/L			Grab
EFF-001	6/11/2012	1,1,2,2-Tetrachloroethane	8260B	ND	0.2	ug/L			Grab
EFF-001	7/9/2012	1,1,2,2-Tetrachloroethane	8260B	ND	0.2	ug/L			Grab
EFF-001	8/13/2012	1,1,2,2-Tetrachloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	9/10/2012	1,1,2,2-Tetrachloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	10/8/2012	1,1,2,2-Tetrachloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	11/5/2012	1,1,2,2-Tetrachloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	12/3/2012	1,1,2,2-Tetrachloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/14/2013	1,1,2,2-Tetrachloroethane	8260B/624	ND	0.2	ug/L		0.2	Comp/Grab
EFF-001	2/4/2013	1,1,2,2-Tetrachloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	3/11/2013	1,1,2,2-Tetrachloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	1/12/2010	1,1,2-Trichloroethane	8260B	ND	0.4	ug/L			Grab
EFF-001	2/2/2010	1,1,2-Trichloroethane	8260B	ND	0.4	ug/L			Grab
EFF-001	4/16/2012	1,1,2-Trichloroethane	8260B	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/14/2012	1,1,2-Trichloroethane	8260B	ND	0.1	ug/L			Grab
EFF-001	6/11/2012	1,1,2-Trichloroethane	8260B	ND	0.1	ug/L			Grab
EFF-001	7/9/2012	1,1,2-Trichloroethane	8260B	ND	0.1	ug/L			Grab
EFF-001	8/13/2012	1,1,2-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	9/10/2012	1,1,2-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	10/8/2012	1,1,2-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	11/5/2012	1,1,2-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	12/3/2012	1,1,2-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/14/2013	1,1,2-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Comp/Grab
EFF-001	2/4/2013	1,1,2-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	3/11/2013	1,1,2-Trichloroethane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/12/2010	1,1-Dichloroethane	8260B	ND	0.3	ug/L			Grab
EFF-001	2/2/2010	1,1-Dichloroethane	8260B	ND	0.3	ug/L			Grab
EFF-001	4/16/2012	1,1-Dichloroethane	8260B	ND	0.08	ug/L			Comp/ Grab
EFF-001	5/14/2012	1,1-Dichloroethane	8260B	ND	0.08	ug/L			Grab
EFF-001	6/11/2012	1,1-Dichloroethane	8260B	ND	0.08	ug/L			Grab
EFF-001	7/9/2012	1,1-Dichloroethane	8260B	ND	0.08	ug/L			Grab
EFF-001	8/13/2012	1,1-Dichloroethane	8260B/624	ND	0.08	ug/L		0.08	Grab
EFF-001	9/10/2012	1,1-Dichloroethane	8260B/624	ND	0.08	ug/L		0.08	Grab
EFF-001	10/8/2012	1,1-Dichloroethane	8260B/624	ND	0.08	ug/L		0.08	Grab
EFF-001	11/5/2012	1,1-Dichloroethane	8260B/624	ND	0.08	ug/L		0.08	Grab
EFF-001	12/3/2012	1,1-Dichloroethane	8260B/624	ND	0.08	ug/L		0.08	Grab
EFF-001	1/14/2013	1,1-Dichloroethane	8260B/624	ND	0.08	ug/L		0.08	Comp/Grab
EFF-001	2/4/2013	1,1-Dichloroethane	8260B/624	ND	0.08	ug/L		0.08	Grab
EFF-001	3/11/2013	1,1-Dichloroethane	8260B/624	ND	0.08	ug/L		0.08	Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/12/2010	1,1-Dichloroethene	8260B	ND	0.5	ug/L			Grab
EFF-001	2/2/2010	1,1-Dichloroethene	8260B	ND	0.5	ug/L			Grab
EFF-001	4/16/2012	1,1-Dichloroethene	8260B	ND	0.08	ug/L			Comp/ Grab
EFF-001	5/14/2012	1,1-Dichloroethene	8260B	ND	0.08	ug/L			Grab
EFF-001	6/11/2012	1,1-Dichloroethene	8260B	ND	0.08	ug/L			Grab
EFF-001	7/9/2012	1,1-Dichloroethene	8260B	ND	0.08	ug/L			Grab
EFF-001	8/13/2012	1,1-Dichloroethene	8260B/624	ND	0.08	ug/L		0.08	Grab
EFF-001	9/10/2012	1,1-Dichloroethene	8260B/624	ND	0.08	ug/L		0.08	Grab
EFF-001	10/8/2012	1,1-Dichloroethene	8260B/624	ND	0.08	ug/L		0.08	Grab
EFF-001	11/5/2012	1,1-Dichloroethene	8260B/624	ND	0.08	ug/L		0.08	Grab
EFF-001	12/3/2012	1,1-Dichloroethene	8260B/624	ND	0.08	ug/L		0.08	Grab
EFF-001	1/14/2013	1,1-Dichloroethene	8260B/624	ND	0.08	ug/L		0.08	Comp/Grab
EFF-001	2/4/2013	1,1-Dichloroethene	8260B/624	ND	0.08	ug/L		0.08	Grab
EFF-001	3/11/2013	1,1-Dichloroethene	8260B/624	ND	0.08	ug/L		0.08	Grab
EFF-001	1/12/2010	1,2,4-Trichlorobenzene	8260B	ND	1.2	ug/L			Grab
EFF-001	2/2/2010	1,2,4-Trichlorobenzene	8260B	ND	1.2	ug/L			Grab
EFF-001	4/16/2012	1,2,4-Trichlorobenzene	625	ND	0.08	ug/L			Comp/ Grab
EFF-001	5/14/2012	1,2,4-Trichlorobenzene	625	ND	0.08	ug/L			Grab
EFF-001	1/12/2010	1,2-Dichlorobenzene	8260B	ND	0.3	ug/L			Grab
EFF-001	2/2/2010	1,2-Dichlorobenzene	8260B	ND	0.3	ug/L			Grab
EFF-001	4/16/2012	1,2-Dichlorobenzene	8260B	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/14/2012	1,2-Dichlorobenzene	8260B	ND	0.1	ug/L			Grab
EFF-001	6/11/2012	1,2-Dichlorobenzene	8260B	ND	0.1	ug/L			Grab
EFF-001	7/9/2012	1,2-Dichlorobenzene	8260B	ND	0.1	ug/L			Grab
EFF-001	8/13/2012	1,2-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	9/10/2012	1,2-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	10/8/2012	1,2-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	11/5/2012	1,2-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	12/3/2012	1,2-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/14/2013	1,2-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Comp/Grab
EFF-001	2/4/2013	1,2-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	3/11/2013	1,2-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/12/2010	1,2-Dichloroethane	8260B	ND	0.3	ug/L			Grab
EFF-001	2/2/2010	1,2-Dichloroethane	8260B	ND	0.3	ug/L			Grab
EFF-001	4/16/2012	1,2-Dichloroethane	8260B	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/14/2012	1,2-Dichloroethane	8260B	ND	0.2	ug/L			Grab
EFF-001	6/11/2012	1,2-Dichloroethane	8260B	ND	0.2	ug/L			Grab
EFF-001	7/9/2012	1,2-Dichloroethane	8260B	ND	0.2	ug/L			Grab
EFF-001	8/13/2012	1,2-Dichloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	9/10/2012	1,2-Dichloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	10/8/2012	1,2-Dichloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	11/5/2012	1,2-Dichloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	12/3/2012	1,2-Dichloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	1/14/2013	1,2-Dichloroethane	8260B/624	ND	0.2	ug/L		0.2	Comp/Grab
EFF-001	2/4/2013	1,2-Dichloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	3/11/2013	1,2-Dichloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	1/12/2010	1,2-Dichloropropane	8260B	ND	0.2	ug/L			Grab
EFF-001	2/2/2010	1,2-Dichloropropane	8260B	ND	0.2	ug/L			Grab
EFF-001	4/16/2012	1,2-Dichloropropane	8260B	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/14/2012	1,2-Dichloropropane	8260B	ND	0.1	ug/L			Grab
EFF-001	6/11/2012	1,2-Dichloropropane	8260B	ND	0.1	ug/L			Grab
EFF-001	7/9/2012	1,2-Dichloropropane	8260B	ND	0.1	ug/L			Grab
EFF-001	8/13/2012	1,2-Dichloropropane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	9/10/2012	1,2-Dichloropropane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	10/8/2012	1,2-Dichloropropane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	11/5/2012	1,2-Dichloropropane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	12/3/2012	1,2-Dichloropropane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/14/2013	1,2-Dichloropropane	8260B/624	ND	0.1	ug/L		0.1	Comp/Grab
EFF-001	2/4/2013	1,2-Dichloropropane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	3/11/2013	1,2-Dichloropropane	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/14/2010	1,2-Diphenylhydrazine	8270C	ND	1	ug/L			Comp
EFF-001	4/16/2012	1,2-Diphenylhydrazine	8270C	ND	0.7	ug/L			Comp/ Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	5/13/2012	1,2-Diphenylhydrazine	8270C	ND	0.7	ug/L			Comp
EFF-001	6/10/2012	1,2-Diphenylhydrazine	8270C	ND	0.7	ug/L			Comp
EFF-001	7/8/2012	1,2-Diphenylhydrazine	8270C	ND	0.7	ug/L			Comp
EFF-001	8/12/2012	1,2-Diphenylhydrazine	8270C	ND	0.7	ug/L		0.7	Comp
EFF-001	9/9/2012	1,2-Diphenylhydrazine	8270C	ND	0.7	ug/L		0.7	Comp
EFF-001	10/7/2012	1,2-Diphenylhydrazine	8270C	ND	0.7	ug/L		0.7	Comp
EFF-001	11/4/2012	1,2-Diphenylhydrazine	8270C	ND	0.7	ug/L		0.7	comp
EFF-001	12/2/2012	1,2-Diphenylhydrazine	8270C	ND	0.7	ug/L		0.7	Comp
EFF-001	1/13/2013	1,2-Diphenylhydrazine	8270C	ND	0.7	ug/L		0.7	Comp
EFF-001	2/3/2013	1,2-Diphenylhydrazine	8270C	ND	0.7	ug/L		0.7	Comp
EFF-001	3/10/2013	1,2-Diphenylhydrazine	8270C	ND	0.7	ug/L		0.7	Comp
EFF-001	1/12/2010	1,3-Dichlorobenzene	8260B	ND	0.3	ug/L			Grab
EFF-001	2/2/2010	1,3-Dichlorobenzene	8260B	ND	0.3	ug/L			Grab
EFF-001	4/16/2012	1,3-Dichlorobenzene	8260B	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/14/2012	1,3-Dichlorobenzene	8260B	ND	0.1	ug/L			Grab
EFF-001	6/11/2012	1,3-Dichlorobenzene	8260B	ND	0.1	ug/L			Grab
EFF-001	7/9/2012	1,3-Dichlorobenzene	8260B	ND	0.1	ug/L			Grab
EFF-001	8/13/2012	1,3-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	9/10/2012	1,3-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	10/8/2012	1,3-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	11/5/2012	1,3-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	12/3/2012	1,3-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/14/2013	1,3-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Comp/Grab
EFF-001	2/4/2013	1,3-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	3/11/2013	1,3-Dichlorobenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/12/2010	1,3-Dichloropropene	8260B	ND	0.4	ug/L			Grab
EFF-001	2/2/2010	1,3-Dichloropropene	8260B	ND	0.4	ug/L			Grab
EFF-001	4/16/2012	1,3-Dichloropropene	8260B	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/14/2012	1,3-Dichloropropene	8260B	ND	0.1	ug/L			Grab
EFF-001	6/11/2012	1,3-Dichloropropene	8260B	ND	0.1	ug/L			Grab
EFF-001	7/9/2012	1,3-Dichloropropene	8260B	ND	0.1	ug/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/13/2012	1,3-Dichloropropene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	9/10/2012	1,3-Dichloropropene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	10/8/2012	1,3-Dichloropropene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	11/5/2012	1,3-Dichloropropene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	12/3/2012	1,3-Dichloropropene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/14/2013	1,3-Dichloropropene	8260B/624	ND	0.1	ug/L		0.1	Comp/Grab
EFF-001	2/4/2013	1,3-Dichloropropene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	3/11/2013	1,3-Dichloropropene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/12/2010	1,4-Dichlorobenzene	8260B	ND	0.3	ug/L			Grab
EFF-001	2/2/2010	1,4-Dichlorobenzene	8260B	ND	0.3	ug/L			Grab
EFF-001	4/16/2012	1,4-Dichlorobenzene	8260B	ND	0.07	ug/L			Comp/ Grab
EFF-001	5/14/2012	1,4-Dichlorobenzene	8260B	ND	0.07	ug/L			Grab
EFF-001	6/11/2012	1,4-Dichlorobenzene	8260B	ND	0.07	ug/L			Grab
EFF-001	7/9/2012	1,4-Dichlorobenzene	8260B	ND	0.07	ug/L			Grab
EFF-001	8/13/2012	1,4-Dichlorobenzene	8260B/624	ND	0.07	ug/L		0.07	Grab
EFF-001	9/10/2012	1,4-Dichlorobenzene	8260B/624	ND	0.07	ug/L		0.07	Grab
EFF-001	10/8/2012	1,4-Dichlorobenzene	8260B/624	ND	0.07	ug/L		0.07	Grab
EFF-001	11/5/2012	1,4-Dichlorobenzene	8260B/624	ND	0.07	ug/L		0.07	Grab
EFF-001	12/3/2012	1,4-Dichlorobenzene	8260B/624	ND	0.07	ug/L		0.07	Grab
EFF-001	1/14/2013	1,4-Dichlorobenzene	8260B/624	ND	0.07	ug/L		0.07	Comp/Grab
EFF-001	2/4/2013	1.4-Dichlorobenzene	8260B/624	ND	0.07	ug/L		0.07	Grab
EFF-001	3/11/2013	1.4-Dichlorobenzene	8260B/624	ND	0.07	ug/L		0.07	Grab
EFF-001	1/13/2010	2,3,7,8-TCDD	SW846 8290	ND	2.1	pg/L			Comp
EFF-001	4/3/2012	2,3,7,8-TCDD	SW846 8290	ND	11	pg/L	11		Comp
EFF-001	5/14/2012	2,3,7,8-TCDD	SW846 8290	ND	4	pg/L	4		Comp
EFF-001	6/11/2012	2,3,7,8-TCDD	SW846 8290	ND		pg/L			Grab
EFF-001	7/8/2012	2,3,7,8-TCDD	SW846 8290	ND		pg/L			Comp
EFF-001	1/14/2010	2,4,6-Trichlorophenol	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	2,4,6-Trichlorophenol	8270C	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/13/2012	2,4,6-Trichlorophenol	8270C	ND	0.2	ug/L			Comp
EFF-001	6/10/2012	2,4,6-Trichlorophenol	8270C	ND	0.2	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	7/8/2012	2,4,6-Trichlorophenol	8270C	ND	0.2	ug/L			Comp
EFF-001	8/12/2012	2,4,6-Trichlorophenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	9/9/2012	2,4,6-Trichlorophenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	10/7/2012	2,4,6-Trichlorophenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	11/4/2012	2,4,6-Trichlorophenol	8270C	ND	0.2	ug/L		0.2	comp
EFF-001	12/2/2012	2,4,6-Trichlorophenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/13/2013	2,4,6-Trichlorophenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	2/3/2013	2,4,6-Trichlorophenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	3/10/2013	2,4,6-Trichlorophenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/14/2010	2,4-Dichlorophenol	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	2,4-Dichlorophenol	8270C	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/13/2012	2,4-Dichlorophenol	8270C	ND	0.2	ug/L			Comp
EFF-001	6/10/2012	2,4-Dichlorophenol	8270C	ND	0.2	ug/L			Comp
EFF-001	7/8/2012	2,4-Dichlorophenol	8270C	ND	0.2	ug/L			Comp
EFF-001	8/12/2012	2,4-Dichlorophenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	9/9/2012	2,4-Dichlorophenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	10/7/2012	2,4-Dichlorophenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	11/4/2012	2,4-Dichlorophenol	8270C	ND	0.2	ug/L		0.2	comp
EFF-001	12/2/2012	2,4-Dichlorophenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/13/2013	2,4-Dichlorophenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	2/3/2013	2,4-Dichlorophenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	3/10/2013	2,4-Dichlorophenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/14/2010	2,4-Dimethylphenol	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	2,4-Dimethylphenol	8270C	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/13/2012	2,4-Dimethylphenol	8270C	ND	0.2	ug/L			Comp
EFF-001	6/10/2012	2,4-Dimethylphenol	8270C	ND	0.2	ug/L			Comp
EFF-001	7/8/2012	2,4-Dimethylphenol	8270C	ND	0.2	ug/L			Comp
EFF-001	8/12/2012	2,4-Dimethylphenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	9/9/2012	2,4-Dimethylphenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	10/7/2012	2,4-Dimethylphenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	11/4/2012	2,4-Dimethylphenol	8270C	ND	0.2	ug/L		0.2	comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	12/2/2012	2,4-Dimethylphenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/13/2013	2,4-Dimethylphenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	2/3/2013	2,4-Dimethylphenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	3/10/2013	2,4-Dimethylphenol	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/14/2010	2,4-Dinitrophenol	8270C	ND	0.3	ug/L			Comp
EFF-001	4/16/2012	2,4-Dinitrophenol	8270C	ND	0.3	ug/L			Comp/ Grab
EFF-001	5/13/2012	2,4-Dinitrophenol	8270C	ND	0.3	ug/L			Comp
EFF-001	6/10/2012	2,4-Dinitrophenol	8270C	ND	0.3	ug/L			Comp
EFF-001	7/8/2012	2,4-Dinitrophenol	8270C	ND	0.3	ug/L			Comp
EFF-001	8/12/2012	2,4-Dinitrophenol	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	9/9/2012	2,4-Dinitrophenol	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	10/7/2012	2,4-Dinitrophenol	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	11/4/2012	2,4-Dinitrophenol	8270C	ND	0.3	ug/L		0.3	comp
EFF-001	12/2/2012	2,4-Dinitrophenol	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/13/2013	2,4-Dinitrophenol	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	2/3/2013	2,4-Dinitrophenol	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	3/10/2013	2,4-Dinitrophenol	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/14/2010	2,4-Dinitrotoluene	8270C	ND	0.3	ug/L			Comp
EFF-001	4/16/2012	2,4-Dinitrotoluene	8270C	ND	0.3	ug/L			Comp/ Grab
EFF-001	5/13/2012	2,4-Dinitrotoluene	8270C	ND	0.3	ug/L			Comp
EFF-001	6/10/2012	2,4-Dinitrotoluene	8270C	ND	0.3	ug/L			Comp
EFF-001	7/8/2012	2,4-Dinitrotoluene	8270C	ND	0.3	ug/L			Comp
EFF-001	8/12/2012	2,4-Dinitrotoluene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	9/9/2012	2,4-Dinitrotoluene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	10/7/2012	2,4-Dinitrotoluene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	11/4/2012	2,4-Dinitrotoluene	8270C	ND	0.3	ug/L		0.3	comp
EFF-001	12/2/2012	2,4-Dinitrotoluene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/13/2013	2,4-Dinitrotoluene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	2/3/2013	2,4-Dinitrotoluene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	3/10/2013	2,4-Dinitrotoluene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/14/2010	2,6-Dinitrotoluene	8270C	ND	0.3	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/16/2012	2,6-Dinitrotoluene	8270C	ND	0.4	ug/L			Comp/ Grab
EFF-001	5/13/2012	2,6-Dinitrotoluene	8270C	ND	0.4	ug/L			Comp
EFF-001	6/10/2012	2,6-Dinitrotoluene	8270C	ND	0.4	ug/L			Comp
EFF-001	7/8/2012	2,6-Dinitrotoluene	8270C	ND	0.4	ug/L			Comp
EFF-001	8/12/2012	2,6-Dinitrotoluene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	9/9/2012	2,6-Dinitrotoluene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	10/7/2012	2,6-Dinitrotoluene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	11/4/2012	2,6-Dinitrotoluene	8270C	ND	0.4	ug/L		0.4	comp
EFF-001	12/2/2012	2,6-Dinitrotoluene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	1/13/2013	2,6-Dinitrotoluene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	2/3/2013	2,6-Dinitrotoluene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	3/10/2013	2,6-Dinitrotoluene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	1/12/2010	2-Chloroethylvinyl Ether	8260B	ND	0.7	ug/L			Grab
EFF-001	2/2/2010	2-Chloroethylvinyl Ether	8260B	ND	0.7	ug/L			Grab
EFF-001	4/16/2012	2-Chloroethylvinyl Ether	8260B	ND	0.7	ug/L			Comp/ Grab
EFF-001	5/14/2012	2-Chloroethylvinyl Ether	8260B	ND	0.7	ug/L			Grab
EFF-001	6/11/2012	2-Chloroethylvinyl Ether	8260B	ND	0.7	ug/L			Grab
EFF-001	7/9/2012	2-Chloroethylvinyl Ether	8260B	ND	0.7	ug/L			Grab
EFF-001	8/13/2012	2-Chloroethylvinyl Ether	8260B/624	ND	0.7	ug/L		0.7	Grab
EFF-001	9/10/2012	2-Chloroethylvinyl Ether	8260B/624	ND	0.7	ug/L		0.7	Grab
EFF-001	10/8/2012	2-Chloroethylvinyl Ether	8260B/624	ND	0.7	ug/L		0.7	Grab
EFF-001	11/5/2012	2-Chloroethylvinyl Ether	8260B/624	ND	0.7	ug/L		0.7	Grab
EFF-001	12/3/2012	2-Chloroethylvinyl Ether	8260B/624	ND	0.7	ug/L		0.7	Grab
EFF-001	1/14/2013	2-Chloroethylvinyl Ether	8260B/624	ND	0.7	ug/L		0.7	Comp/Grab
EFF-001	2/4/2013	2-Chloroethylvinyl Ether	8260B/624	ND	0.7	ug/L		0.7	Grab
EFF-001	3/11/2013	2-Chloroethylvinyl Ether	8260B/624	ND	0.7	ug/L		0.7	Grab
EFF-001	1/14/2010	2-Chloronaphthalene	8270C	ND	0.1	ug/L			Comp
EFF-001	4/16/2012	2-Chloronaphthalene	8270C	ND	0.09	ug/L			Comp/ Grab
EFF-001	5/13/2012	2-Chloronaphthalene	8270C	ND	0.09	ug/L			Comp
EFF-001	6/10/2012	2-Chloronaphthalene	8270C	ND	0.09	ug/L			Comp
EFF-001	7/8/2012	2-Chloronaphthalene	8270C	ND	0.09	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/12/2012	2-Chloronaphthalene	8270C	ND	0.09	ug/L		0.09	Comp
EFF-001	9/9/2012	2-Chloronaphthalene	8270C	ND	0.09	ug/L		0.09	Comp
EFF-001	10/7/2012	2-Chloronaphthalene	8270C	ND	0.09	ug/L		0.09	Comp
EFF-001	11/4/2012	2-Chloronaphthalene	8270C	ND	0.09	ug/L		0.09	comp
EFF-001	12/2/2012	2-Chloronaphthalene	8270C	ND	0.09	ug/L		0.09	Comp
EFF-001	1/13/2013	2-Chloronaphthalene	8270C	ND	0.09	ug/L		0.09	Comp
EFF-001	2/3/2013	2-Chloronaphthalene	8270C	ND	0.09	ug/L		0.09	Comp
EFF-001	3/10/2013	2-Chloronaphthalene	8270C	ND	0.09	ug/L		0.09	Comp
EFF-001	1/14/2010	2-Chlorophenol	8270C	ND	0.1	ug/L			Comp
EFF-001	4/16/2012	2-Chlorophenol	8270C	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	2-Chlorophenol	8270C	ND	0.1	ug/L			Comp
EFF-001	6/10/2012	2-Chlorophenol	8270C	ND	0.1	ug/L			Comp
EFF-001	7/8/2012	2-Chlorophenol	8270C	ND	0.1	ug/L			Comp
EFF-001	8/12/2012	2-Chlorophenol	8270C	J	1	ug/L			Comp
EFF-001	9/9/2012	2-Chlorophenol	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	10/7/2012	2-Chlorophenol	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	11/4/2012	2-Chlorophenol	8270C	ND	0.1	ug/L		0.1	comp
EFF-001	12/2/2012	2-Chlorophenol	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	1/13/2013	2-Chlorophenol	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	2/3/2013	2-Chlorophenol	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	3/10/2013	2-Chlorophenol	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	1/14/2010	2-Nitrophenol	8270C	ND	0.3	ug/L			Comp
EFF-001	4/16/2012	2-Nitrophenol	8270C	ND	0.3	ug/L			Comp/ Grab
EFF-001	5/13/2012	2-Nitrophenol	8270C	ND	0.3	ug/L			Comp
EFF-001	6/10/2012	2-Nitrophenol	8270C	ND	0.3	ug/L			Comp
EFF-001	7/8/2012	2-Nitrophenol	8270C	ND	0.3	ug/L			Comp
EFF-001	8/12/2012	2-Nitrophenol	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	9/9/2012	2-Nitrophenol	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	10/7/2012	2-Nitrophenol	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	11/4/2012	2-Nitrophenol	8270C	ND	0.3	ug/L		0.3	comp
EFF-001	12/2/2012	2-Nitrophenol	8270C	ND	0.3	ug/L		0.3	Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/13/2013	2-Nitrophenol	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	2/3/2013	2-Nitrophenol	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	3/10/2013	2-Nitrophenol	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/14/2010	3,3'-Dichlorobenzidine	8270C	ND	0.3	ug/L			Comp
EFF-001	4/16/2012	3,3'-Dichlorobenzidine	8270C	ND	0.3	ug/L			Comp/ Grab
EFF-001	5/13/2012	3,3'-Dichlorobenzidine	8270C	ND	0.3	ug/L			Comp
EFF-001	6/10/2012	3,3'-Dichlorobenzidine	8270C	ND	0.3	ug/L			Comp
EFF-001	7/8/2012	3,3'-Dichlorobenzidine	8270C	ND	0.3	ug/L			Comp
EFF-001	8/12/2012	3,3'-Dichlorobenzidine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	9/9/2012	3,3'-Dichlorobenzidine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	10/7/2012	3,3'-Dichlorobenzidine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	11/4/2012	3,3'-Dichlorobenzidine	8270C	ND	0.3	ug/L		0.3	comp
EFF-001	12/2/2012	3,3'-Dichlorobenzidine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/13/2013	3,3'-Dichlorobenzidine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	2/3/2013	3,3'-Dichlorobenzidine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	3/10/2013	3,3'-Dichlorobenzidine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/14/2010	4,4'-DDD	8081A/608	ND	0.08	ug/L			Comp
EFF-001	4/16/2012	4,4'-DDD	8081A/608	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	4,4'-DDD	8081A/608	ND	0.05	ug/L			Comp
EFF-001	6/10/2012	4,4'-DDD	8081A/608	ND	0.1	ug/L			Comp
EFF-001	7/8/2012	4,4'-DDD	8081A/608	ND	0.1	ug/L			Comp
EFF-001	1/14/2010	4,4'-DDE	8081A/608	ND	0.08	ug/L			Comp
EFF-001	4/16/2012	4,4'-DDE	8081A/608	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	4,4'-DDE	8081A/608	ND	0.05	ug/L			Comp
EFF-001	6/10/2012	4,4'-DDE	8081A/608	ND	0.1	ug/L			Comp
EFF-001	7/8/2012	4,4'-DDE	8081A/608	ND	0.1	ug/L			Comp
EFF-001	1/14/2010	4,4'-DDT	8081A/608	ND	0.08	ug/L			Comp
EFF-001	4/16/2012	4,4'-DDT	8081A/608	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	4,4'-DDT	8081A/608	ND	0.05	ug/L			Comp
EFF-001	6/10/2012	4,4'-DDT	8081A/608	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	4,4'-DDT	8081A/608	ND	0.5	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/14/2010	4,6-Dinitro-2-methylphenol	8270C	ND	0.3	ug/L			Comp
EFF-001	4/16/2012	4,6-Dinitro-2-methylphenol	8270C	ND	2	ug/L			Comp/ Grab
EFF-001	5/13/2012	4,6-Dinitro-2-methylphenol	8270C	ND	2	ug/L			Comp
EFF-001	6/10/2012	4,6-Dinitro-2-methylphenol	8270C	ND	2	ug/L			Comp
EFF-001	7/8/2012	4,6-Dinitro-2-methylphenol	8270C	ND	2	ug/L			Comp
EFF-001	8/12/2012	4,6-Dinitro-2-methylphenol	8270C	ND	2	ug/L		2	Comp
EFF-001	9/9/2012	4,6-Dinitro-2-methylphenol	8270C	ND	2	ug/L		2	Comp
EFF-001	10/7/2012	4,6-Dinitro-2-methylphenol	8270C	ND	2	ug/L		2	Comp
EFF-001	11/4/2012	4,6-Dinitro-2-methylphenol	8270C	ND	2	ug/L		2	comp
EFF-001	12/2/2012	4,6-Dinitro-2-methylphenol	8270C	ND	2	ug/L		2	Comp
EFF-001	1/13/2013	4,6-Dinitro-2-methylphenol	8270C	ND	2	ug/L		2	Comp
EFF-001	2/3/2013	4,6-Dinitro-2-methylphenol	8270C	ND	2	ug/L		2	Comp
EFF-001	3/10/2013	4,6-Dinitro-2-methylphenol	8270C	ND	2	ug/L		2	Comp
EFF-001	1/14/2010	4-Bromophenyl phenyl ether	8270C	ND	0.4	ug/L			Comp
EFF-001	4/16/2012	4-Bromophenyl phenyl ether	8270C	ND	0.4	ug/L			Comp/ Grab
EFF-001	5/13/2012	4-Bromophenyl phenyl ether	8270C	ND	0.4	ug/L			Comp
EFF-001	6/10/2012	4-Bromophenyl phenyl ether	8270C	ND	0.4	ug/L			Comp
EFF-001	7/8/2012	4-Bromophenyl phenyl ether	8270C	ND	0.4	ug/L			Comp
EFF-001	8/12/2012	4-Bromophenyl phenyl ether	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	9/9/2012	4-Bromophenyl phenyl ether	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	10/7/2012	4-Bromophenyl phenyl ether	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	11/4/2012	4-Bromophenyl phenyl ether	8270C	ND	0.4	ug/L		0.4	comp
EFF-001	12/2/2012	4-Bromophenyl phenyl ether	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	1/13/2013	4-Bromophenyl phenyl ether	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	2/3/2013	4-Bromophenyl phenyl ether	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	3/10/2013	4-Bromophenyl phenyl ether	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	1/14/2010	4-Chloro-3-methylphenol	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	4-Chloro-3-methylphenol	8270C	ND	0.09	ug/L			Comp/ Grab
EFF-001	5/13/2012	4-Chloro-3-methylphenol	8270C	ND	0.09	ug/L			Comp
EFF-001	6/10/2012	4-Chloro-3-methylphenol	8270C	ND	0.09	ug/L			Comp
EFF-001	7/8/2012	4-Chloro-3-methylphenol	8270C	ND	0.09	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/12/2012	4-Chloro-3-methylphenol	8270C	J	0.7	ug/L			Comp
EFF-001	9/9/2012	4-Chloro-3-methylphenol	8270C	ND	0.09	ug/L		0.09	Comp
EFF-001	10/7/2012	4-Chloro-3-methylphenol	8270C	ND	0.09	ug/L		0.09	Comp
EFF-001	11/4/2012	4-Chloro-3-methylphenol	8270C	ND	0.09	ug/L		0.09	comp
EFF-001	12/2/2012	4-Chloro-3-methylphenol	8270C	ND	0.09	ug/L		0.09	Comp
EFF-001	1/13/2013	4-Chloro-3-methylphenol	8270C	ND	0.09	ug/L		0.09	Comp
EFF-001	2/3/2013	4-Chloro-3-methylphenol	8270C	ND	0.09	ug/L		0.09	Comp
EFF-001	3/10/2013	4-Chloro-3-methylphenol	8270C	ND	0.09	ug/L		0.09	Comp
EFF-001	1/14/2010	4-Chlorophenyl phenyl ether	8270C	ND	1.2	ug/L			Comp
EFF-001	4/16/2012	4-Chlorophenyl phenyl ether	8270C	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/13/2012	4-Chlorophenyl phenyl ether	8270C	ND	0.2	ug/L			Comp
EFF-001	6/10/2012	4-Chlorophenyl phenyl ether	8270C	ND	0.2	ug/L			Comp
EFF-001	7/8/2012	4-Chlorophenyl phenyl ether	8270C	ND	0.2	ug/L			Comp
EFF-001	8/12/2012	4-Chlorophenyl phenyl ether	8270C	ND	1	ug/L		1	Comp
EFF-001	9/9/2012	4-Chlorophenyl phenyl ether	8270C	ND	1	ug/L		1	Comp
EFF-001	10/7/2012	4-Chlorophenyl phenyl ether	8270C	ND	1	ug/L		1	Comp
EFF-001	11/4/2012	4-Chlorophenyl phenyl ether	8270C	ND	1	ug/L		1	comp
EFF-001	12/2/2012	4-Chlorophenyl phenyl ether	8270C	ND	1	ug/L		1	Comp
EFF-001	1/13/2013	4-Chlorophenyl phenyl ether	8270C	ND	1	ug/L		1	Comp
EFF-001	2/3/2013	4-Chlorophenyl phenyl ether	8270C	ND	1	ug/L		1	Comp
EFF-001	3/10/2013	4-Chlorophenyl phenyl ether	8270C	ND	1	ug/L		1	Comp
EFF-001	1/14/2010	4-Nitrophenol	8270C	ND	0.4	ug/L			Comp
EFF-001	4/16/2012	4-Nitrophenol	8270C	ND	0.4	ug/L			Comp/ Grab
EFF-001	5/13/2012	4-Nitrophenol	8270C	ND	0.4	ug/L			Comp
EFF-001	6/10/2012	4-Nitrophenol	8270C	ND	0.4	ug/L			Comp
EFF-001	7/8/2012	4-Nitrophenol	8270C	ND	0.4	ug/L			Comp
EFF-001	8/12/2012	4-Nitrophenol	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	9/9/2012	4-Nitrophenol	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	10/7/2012	4-Nitrophenol	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	11/4/2012	4-Nitrophenol	8270C	ND	0.4	ug/L		0.4	comp
EFF-001	12/2/2012	4-Nitrophenol	8270C	ND	0.4	ug/L		0.4	Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/13/2013	4-Nitrophenol	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	2/3/2013	4-Nitrophenol	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	3/10/2013	4-Nitrophenol	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	1/14/2010	Acenaphthene	8270C	ND	0.3	ug/L			Comp
EFF-001	4/16/2012	Acenaphthene	8270C	ND	0.3	ug/L			Comp/ Grab
EFF-001	5/13/2012	Acenaphthene	8270C	ND	0.3	ug/L			Comp
EFF-001	6/10/2012	Acenaphthene	8270C	ND	0.3	ug/L			Comp
EFF-001	7/8/2012	Acenaphthene	8270C	ND	0.3	ug/L			Comp
EFF-001	8/12/2012	Acenaphthene	8270C	J	0.6	ug/L			Comp
EFF-001	9/9/2012	Acenaphthene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	10/7/2012	Acenaphthene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	11/4/2012	Acenaphthene	8270C	ND	0.3	ug/L		0.3	comp
EFF-001	12/2/2012	Acenaphthene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/13/2013	Acenaphthene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	2/3/2013	Acenaphthene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	3/10/2013	Acenaphthene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/14/2010	Acenaphthylene	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	Acenaphthylene	8270C	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/13/2012	Acenaphthylene	8270C	ND	0.2	ug/L			Comp
EFF-001	6/10/2012	Acenaphthylene	8270C	ND	0.2	ug/L			Comp
EFF-001	7/8/2012	Acenaphthylene	8270C	ND	0.2	ug/L			Comp
EFF-001	8/12/2012	Acenaphthylene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	9/9/2012	Acenaphthylene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	10/7/2012	Acenaphthylene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	11/4/2012	Acenaphthylene	8270C	ND	0.2	ug/L		0.2	comp
EFF-001	12/2/2012	Acenaphthylene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/13/2013	Acenaphthylene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	2/3/2013	Acenaphthylene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	3/10/2013	Acenaphthylene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/12/2010	Acrolein	8260B	ND	2.3	ug/L			Grab
EFF-001	2/2/2010	Acrolein	8260B	ND	2.3	ug/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/16/2012	Acrolein	8260B/624	ND	2.3	ug/L			Comp/ Grab
EFF-001	5/14/2012	Acrolein	8260B	ND	2.3	ug/L			Grab
EFF-001	6/11/2012	Acrolein	8260B/624	ND	2.3	ug/L			Grab
EFF-001	7/9/2012	Acrolein	8260B/624	ND	2.3	ug/L			Grab
EFF-001	8/13/2012	Acrolein	8260B/624	ND	2.3	ug/L		2.3	Grab
EFF-001	9/10/2012	Acrolein	8260B/624	ND	2.3	ug/L		2.3	Grab
EFF-001	10/8/2012	Acrolein	8260B/624	ND	2.3	ug/L		2.3	Grab
EFF-001	11/5/2012	Acrolein	8260B/624	ND	2.3	ug/L		2.3	Grab
EFF-001	12/3/2012	Acrolein	8260B/624	ND	2.3	ug/L		2.3	Grab
EFF-001	1/14/2013	Acrolein	8260B/624	ND	2.3	ug/L		2.3	Comp/Grab
EFF-001	2/4/2013	Acrolein	8260B/624	ND	2.3	ug/L		2.3	Grab
EFF-001	3/11/2013	Acrolein	8260B/624	ND	2.3	ug/L		2.3	Grab
EFF-001	1/12/2010	Acrylonitrile	8260B	ND	2	ug/L			Grab
EFF-001	2/2/2010	Acrylonitrile	8260B	ND	2	ug/L			Grab
EFF-001	4/16/2012	Acrylonitrile	8260B	ND	2	ug/L			Comp/ Grab
EFF-001	5/14/2012	Acrylonitrile	8260B	ND	2	ug/L			Grab
EFF-001	6/11/2012	Acrylonitrile	8260B	ND	2	ug/L			Grab
EFF-001	7/9/2012	Acrylonitrile	8260B	ND	2	ug/L			Grab
EFF-001	8/13/2012	Acrylonitrile	8260B/624	ND	2	ug/L		2	Grab
EFF-001	9/10/2012	Acrylonitrile	8260B/624	ND	2	ug/L		2	Grab
EFF-001	10/8/2012	Acrylonitrile	8260B/624	ND	2	ug/L		2	Grab
EFF-001	11/5/2012	Acrylonitrile	8260B/624	ND	2	ug/L		2	Grab
EFF-001	12/3/2012	Acrylonitrile	8260B/624	ND	2	ug/L		2	Grab
EFF-001	1/14/2013	Acrylonitrile	8260B/624	ND	2	ug/L		2	Comp/Grab
EFF-001	2/4/2013	Acrylonitrile	8260B/624	ND	2	ug/L		2	Grab
EFF-001	3/11/2013	Acrylonitrile	8260B/624	ND	2	ug/L		2	Grab
EFF-001	1/14/2010	Aldrin	8081A/608	ND	0.09	ug/L			Comp
EFF-001	4/16/2012	Aldrin	8081A/608	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Aldrin	8081A/608	ND	0.005	ug/L			Comp
EFF-001	6/10/2012	Aldrin	8081A/608	ND	0.1	ug/L			Comp
EFF-001	7/8/2012	Aldrin	8081A/608	ND	0.1	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/14/2010	Alpha-BHC	8081A/608	ND	0.09	ug/L			Comp
EFF-001	4/16/2012	Alpha-BHC	8081A/608	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Alpha-BHC	8081A/608	ND	0.1	ug/L			Comp
EFF-001	6/10/2012	Alpha-BHC	8081A/608	ND	0.1	ug/L			Comp
EFF-001	7/8/2012	Alpha-BHC	8081A/608	ND	0.1	ug/L			Comp
EFF-001	1/14/2010	alpha-Endosulfan	8081A/608	ND	0.09	ug/L			Comp
EFF-001	4/16/2012	alpha-Endosulfan	8081A/608	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	alpha-Endosulfan	8081A/608	ND	0.02	ug/L			Comp
EFF-001	6/10/2012	alpha-Endosulfan	8081A/608	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	alpha-Endosulfan	8081A/608	ND	0.5	ug/L			Comp
EFF-001	1/14/2010	Aluminum (Total)	200.7/200.8		88	ug/L			Comp
EFF-001	2/8/2010	Aluminum (Total)	200.7/200.8	J	37	ug/L			Comp
EFF-001	3/16/2010	Aluminum (Total)	200.7/200.8		222	ug/L			comp
EFF-001	4/6/2010	Aluminum (Total)	200.7/200.8		52	ug/L			Comp
EFF-001	5/3/2010	Aluminum (Total)	200.7/200.8		150	ug/L			Comp
EFF-001	6/1/2010	Aluminum (Total)	200.7/200.8		120	ug/L			Comp
EFF-001	7/6/2010	Aluminum (Total)	200.7/200.8		54	ug/L			Comp
EFF-001	8/2/2010	Aluminum (Total)	200.7/200.8		58	ug/L			Comp
EFF-001	8/3/2010	Aluminum (Total)	200.7/200.8		45	ug/L			comp
EFF-001	9/7/2010	Aluminum (Total)	200.7/200.8		230	ug/L			comp
EFF-001	9/20/2010	Aluminum (Total)	200.7/200.8		55	ug/L			Comp
EFF-001	10/3/2010	Aluminum (Total)	200.7/200.8		117	ug/L			comp
EFF-001	11/1/2010	Aluminum (Total)	200.7/200.8		110	ug/L			Comp
EFF-001	12/5/2010	Aluminum (Total)	200.7/200.8		127	ug/L			comp
EFF-001	1/17/2011	Aluminum (Total)	200.7/200.8		315	ug/L			Comp
EFF-001	2/6/2011	Aluminum (Total)	200.7/200.8		330	ug/L			Comp
EFF-001	2/17/2011	Aluminum (Total)	200.7/200.8		40	ug/L			Comp
EFF-001	2/22/2011	Aluminum (Total)	200.7/200.8		83	ug/L			Comp
EFF-001	3/6/2011	Aluminum (Total)	200.7/200.8		29	ug/L			Comp
EFF-001	4/3/2011	Aluminum (Total)	200.7/200.8		205	ug/L			comp
EFF-001	4/25/2011	Aluminum (Total)	200.7/200.8		60	ug/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	5/8/2011	Aluminum (Total)	200.7/200.8		88	ug/L			Comp
EFF-001	6/12/2011	Aluminum (Total)	200.7/200.8		70	ug/L			comp
EFF-001	7/10/2011	Aluminum (Total)	200.7/200.8	J	41	ug/L			Comp
EFF-001	8/8/2011	Aluminum (Total)	200.7/200.8		132	ug/L			Comp
EFF-001	8/8/2011	Aluminum (Total)	200.7/200.8		154	ug/L			Grab/Comp
EFF-001	9/5/2011	Aluminum (Total)	200.7/200.8	J	31	ug/L			comp
EFF-001	10/9/2011	Aluminum (Total)	200.7/200.8		142	ug/L			Comp
EFF-001	12/4/2011	Aluminum (Total)	200.7/200.8		70	ug/L			Comp
EFF-001	1/8/2012	Aluminum (Total)	200.7/200.8		96	ug/L			Composite
EFF-001	2/5/2012	Aluminum (Total)	200.7/200.8		76	ug/L			Comp
EFF-001	4/16/2012	Aluminum (Total)	200.7/200.8	J	47	ug/L			Comp/ Grab
EFF-001	5/13/2012	Aluminum (Total)	200.7/200.8		77	ug/L			Comp
EFF-001	6/10/2012	Aluminum (Total)	200.7/200.8		140	ug/L			Comp
EFF-001	7/8/2012	Aluminum (Total)	200.7/200.8		144	ug/L			Comp
EFF-001	8/12/2012	Aluminum (Total)	200.7/200.8		246	ug/L			Comp
EFF-001	9/9/2012	Aluminum (Total)	200.7/200.8		80	ug/L			Comp
EFF-001	10/7/2012	Aluminum (Total)	200.7/200.8		50	ug/L			Comp
EFF-001	11/4/2012	Aluminum (Total)	200.7/200.8		129	ug/L			comp
EFF-001	12/2/2012	Aluminum (Total)	200.7/200.8		120	ug/L			Comp
EFF-001	1/13/2013	Aluminum (Total)	200.7/200.8		252	ug/L			Comp
EFF-001	2/3/2013	Aluminum (Total)	200.7/200.8		439	ug/L			Comp
EFF-001	3/10/2013	Aluminum (Total)	200.7/200.8		259	ug/L			Comp
EFF-001	4/7/2013	Aluminum (Total)	200.7/200.8		313	ug/L			Comp
EFF-001	5/5/2013	Aluminum (Total)	200.7/200.8		338	ug/L			Comp
EFF-001	6/3/2013	Aluminum (Total)	200.7/200.8		281	ug/L			Comp
EFF-001	6/5/2013	Aluminum (Total)	200.7/200.8		170	ug/L			Comp
EFF-001	6/23/2013	Aluminum (Total)	200.7/200.8		228	ug/L			Comp
EFF-001	6/30/2013	Aluminum (Total)	200.7/200.8		63	ug/L			Comp
EFF-001	7/1/2013	Aluminum (Total)	200.7/200.8	J	49	ug/L			Comp
EFF-001	8/12/2013	Aluminum (Total)	200.7/200.8		182	ug/L			Comp
EFF-001	9/9/2013	Aluminum (Total)	200.7/200.8		223	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	10/6/2013	Aluminum (Total)	200.7/200.8		324	ug/L			Comp
EFF-001	10/14/2013	Aluminum (Total)	200.7/200.8		240	ug/L			Comp
EFF-001	11/3/2013	Aluminum (Total)	200.7/200.8		590	ug/L			Comp
EFF-001	11/13/2013	Aluminum (Total)	200.7/200.8		488	ug/L			Comp
EFF-001	11/17/2013	Aluminum (Total)	200.7/200.8		555	ug/L			Comp
EFF-001	11/29/2013	Aluminum (Total)	200.7/200.8		69	ug/L			Comp
EFF-001	11/30/2013	Aluminum (Total)	200.7/200.8	J	38	ug/L			Comp
EFF-001	12/1/2013	Aluminum (Total)	200.7/200.8		126	ug/L			Comp
EFF-001	1/20/2014	Aluminum (Total)	200.7/200.8		528	ug/L			Comp
EFF-001	2/17/2014	Aluminum (Total)	200.7/200.8		601	ug/L			Comp
EFF-001	2/26/2014	Aluminum (Total)	200.7/200.8		433	ug/L			Comp
EFF-001	2/27/2014	Aluminum (Total)	200.7/200.8		568	ug/L			Comp
EFF-001	2/28/2014	Aluminum (Total)	200.7/200.8		607	ug/L			Comp
EFF-001	3/3/2014	Aluminum (Total)	200.7/200.8		557	ug/L			Comp
EFF-001	4/6/2014	Aluminum (Total)	200.7/200.8		544	ug/L			Comp
EFF-001	1/7/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/14/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/21/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/28/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/4/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/11/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/18/2009	Ammonia-N	SM4500-NH3		1.6	mg/L			Grab
EFF-001	2/25/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/4/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/11/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/18/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/25/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/1/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/8/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/15/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/20/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/29/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/6/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/13/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/20/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/27/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/3/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/10/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/17/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/24/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/1/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/8/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/15/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/22/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/29/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/5/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/12/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/19/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/26/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/2/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/9/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/16/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/23/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/30/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/7/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/14/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/21/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/28/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/4/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/12/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/18/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/25/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	12/2/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/9/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/16/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/23/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/30/2009	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/6/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/13/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/20/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/27/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/3/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/10/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/17/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/24/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/3/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/10/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/17/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/24/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/31/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/7/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/14/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/21/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/28/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/5/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/12/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/19/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/26/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/1/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/8/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/14/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/21/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/28/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	7/1/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/6/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/12/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/19/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/26/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/2/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/9/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/16/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/23/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/30/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/1/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/8/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/15/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/22/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/29/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/1/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/8/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/14/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/22/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/29/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/1/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/8/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/15/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/22/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/29/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/1/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/6/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/13/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/20/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/27/2010	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/3/2011	Ammonia-N	SM4500-NH3		1.1	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/10/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/18/2011	Ammonia-N	SM4500-NH3		1.1	mg/L			Grab
EFF-001	1/24/2011	Ammonia-N	SM4500-NH3	J	0.8	mg/L			Grab
EFF-001	1/31/2011	Ammonia-N	SM4500-NH3	J	0.9	mg/L			Grab
EFF-001	2/7/2011	Ammonia-N	SM4500-NH3		0.6	mg/L			Grab
EFF-001	2/14/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/22/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/28/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/7/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/14/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/21/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/28/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/4/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/11/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/18/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/25/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/2/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/9/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/16/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/23/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/31/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/6/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/13/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/20/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/27/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/5/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/11/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/18/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/25/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/1/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/8/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/15/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/22/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/29/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/6/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/12/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/19/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/26/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/3/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/10/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/17/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/24/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/31/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/1/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/7/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/14/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/21/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/28/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/5/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/12/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/19/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/27/2011	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/3/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/9/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/17/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/23/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/30/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/6/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/13/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/21/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/27/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/5/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	3/12/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/19/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/26/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/2/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/9/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/16/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/23/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/30/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/7/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/14/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/21/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/29/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/4/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/11/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/18/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/25/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/2/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/9/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/16/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/23/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/30/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/6/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/13/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/20/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/27/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/4/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/10/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/17/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/24/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/1/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/8/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	10/15/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/22/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/29/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/5/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/13/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/19/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/26/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/3/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/10/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/17/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/24/2012	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/2/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/7/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/14/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/22/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/28/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/4/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/11/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/19/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/25/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/6/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/10/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/11/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/18/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/25/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/1/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/8/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/15/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/22/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/29/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/6/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	5/13/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/20/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/28/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/3/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/10/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/18/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/24/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/1/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/8/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/15/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/22/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/29/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/5/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/12/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/19/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/26/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/3/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/9/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/16/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/23/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/30/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/7/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/14/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/21/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/28/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/4/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/12/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/18/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	11/25/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/2/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/9/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	12/16/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/23/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	12/30/2013	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/6/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/13/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/21/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/28/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/5/2014	Ammonia-N	SM4500-NH3		4.4	mg/L			Grab
EFF-001	2/10/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/11/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/12/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/13/2014	Ammonia-N	SM4500-NH3		1.8	mg/L			Grab
EFF-001	2/14/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/18/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	2/24/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/3/2014	Ammonia-N	SM4500-NH3		3.5	mg/L			Grab
EFF-001	3/5/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/6/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/17/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/24/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	3/31/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/1/2014	Ammonia-N	SM4500-NH3		1.8	mg/L			Grab
EFF-001	4/2/2014	Ammonia-N	SM4500-NH3		2	mg/L			Grab
EFF-001	4/3/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/4/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/7/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/14/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/16/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/17/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/22/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	4/28/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	5/5/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/12/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/19/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	5/27/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/2/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/9/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/16/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/23/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	6/30/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/7/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/14/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/21/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	7/28/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/4/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/11/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/18/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	8/25/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/2/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/8/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/15/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/22/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	9/29/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/6/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/13/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/20/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	10/27/2014	Ammonia-N	SM4500-NH3	ND	1	mg/L			Grab
EFF-001	1/14/2010	Anthracene	8270C	ND	0.6	ug/L			Comp
EFF-001	4/16/2012	Anthracene	8270C	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	Anthracene	8270C	ND	0.5	ug/L			Comp
EFF-001	6/10/2012	Anthracene	8270C	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	Anthracene	8270C	ND	0.5	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/12/2012	Anthracene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	9/9/2012	Anthracene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	10/7/2012	Anthracene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	11/4/2012	Anthracene	8270C	ND	0.5	ug/L		0.5	comp
EFF-001	12/2/2012	Anthracene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	1/13/2013	Anthracene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	2/3/2013	Anthracene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	3/10/2013	Anthracene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	1/14/2010	Antimony	200.8		1.4	ug/L			Comp
EFF-001	2/8/2010	Antimony	200.8		1.4	ug/L			Comp
EFF-001	3/16/2010	Antimony	200.8	ND	0.5	ug/L			comp
EFF-001	4/6/2010	Antimony	200.8		1.3	ug/L			Comp
EFF-001	8/3/2010	Antimony	200.8		30	ug/L			comp
EFF-001	8/8/2011	Antimony	200.8		4.4	ug/L			Comp
EFF-001	4/16/2012	Antimony	200.8	ND	1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Antimony	200.8		2.1	ug/L			Comp
EFF-001	6/10/2012	Antimony	200.8	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	Antimony	200.8	ND	0.5	ug/L			Comp
EFF-001	8/12/2012	Antimony	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	9/9/2012	Antimony	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	10/7/2012	Antimony	200.8		1.5	ug/L			Comp
EFF-001	11/4/2012	Antimony	200.8		1.0	ug/L			comp
EFF-001	12/2/2012	Antimony	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	1/13/2013	Antimony	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	2/3/2013	Antimony	200.8		1	ug/L			Comp
EFF-001	3/10/2013	Antimony	200.8		1.0	ug/L			Comp
EFF-001	1/14/2010	Arochlor 1016	8082	ND	0.05	ug/L			Comp
EFF-001	4/16/2012	Arochlor 1016	608	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	Arochlor 1016	8082	ND	0.05	ug/L			Comp
EFF-001	6/10/2012	Arochlor 1016	608	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	Arochlor 1016	608	ND	0.5	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/14/2010	Arochlor 1221	8082	ND	0.1	ug/L			Comp
EFF-001	4/16/2012	Arochlor 1221	8082	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	Arochlor 1221	8082	ND	0.14	ug/L			Comp
EFF-001	6/10/2012	Arochlor 1221	8082	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	Arochlor 1221	8082	ND	0.5	ug/L			Comp
EFF-001	1/14/2010	Arochlor 1232	8082	ND	0.09	ug/L			Comp
EFF-001	4/16/2012	Arochlor 1232	8082	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	Arochlor 1232	8082	ND	0.09	ug/L			Comp
EFF-001	6/10/2012	Arochlor 1232	8082	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	Arochlor 1232	8082	ND	0.5	ug/L			Comp
EFF-001	1/14/2010	Arochlor 1242	8082	ND	0.06	ug/L			Comp
EFF-001	4/16/2012	Arochlor 1242	8082	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	Arochlor 1242	8082	ND	0.06	ug/L			Comp
EFF-001	6/10/2012	Arochlor 1242	8082	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	Arochlor 1242	8082	ND	0.5	ug/L			Comp
EFF-001	1/14/2010	Arochlor 1248	8082	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	Arochlor 1248	8082	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	Arochlor 1248	8082	ND	0.15	ug/L			Comp
EFF-001	6/10/2012	Arochlor 1248	8082	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	Arochlor 1248	8082	ND	0.5	ug/L			Comp
EFF-001	1/14/2010	Arochlor 1254	8082	ND	0.06	ug/L			Comp
EFF-001	4/16/2012	Arochlor 1254	8082	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	Arochlor 1254	8082	ND	0.06	ug/L			Comp
EFF-001	6/10/2012	Arochlor 1254	8082	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	Arochlor 1254	8082	ND	0.5	ug/L			Comp
EFF-001	1/14/2010	Arochlor 1260	8082	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	Arochlor 1260	8082	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	Arochlor 1260	8082	ND	0.22	ug/L			Comp
EFF-001	6/10/2012	Arochlor 1260	8082	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	Arochlor 1260	8082	ND	0.5	ug/L			Comp
EFF-001	1/14/2010	Arsenic (Total)	200.8/1632		6.8	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	2/8/2010	Arsenic (Total)	200.8/1632		8	ug/L			Comp
EFF-001	3/16/2010	Arsenic (Total)	200.8/1632		7	ug/L			comp
EFF-001	4/6/2010	Arsenic (Total)	200.8/1632		8.7	ug/L			Comp
EFF-001	8/2/2010	Arsenic (Total)	200.8/1632		5.7	ug/L			Comp
EFF-001	8/3/2010	Arsenic (Total)	200.8/1632		9.5	ug/L			comp
EFF-001	8/8/2011	Arsenic (Total)	200.8/1632		5.38	ug/L			Comp
EFF-001	2/5/2012	Arsenic (Total)	200.8/1632		5.5	ug/L			Comp
EFF-001	4/16/2012	Arsenic (Total)	200.8/1632		6.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Arsenic (Total)	200.8/1632		7	ug/L			Comp
EFF-001	6/10/2012	Arsenic (Total)	200.8/1632		9.7	ug/L			Comp
EFF-001	7/8/2012	Arsenic (Total)	200.8/1632		5.5	ug/L			Comp
EFF-001	8/12/2012	Arsenic (Total)	200.8/1632		6.3	ug/L			Comp
EFF-001	9/9/2012	Arsenic (Total)	200.8/1632		5.9	ug/L			Comp
EFF-001	10/7/2012	Arsenic (Total)	200.8/1632		6.8	ug/L			Comp
EFF-001	11/4/2012	Arsenic (Total)	200.8/1632		6.08	ug/L			comp
EFF-001	12/2/2012	Arsenic (Total)	200.8/1632		6.6	ug/L			Comp
EFF-001	1/13/2013	Arsenic (Total)	200.8/1632		5	ug/L			Comp
EFF-001	2/3/2013	Arsenic (Total)	200.8/1632		5.4	ug/L			Comp
EFF-001	3/10/2013	Arsenic (Total)	200.8/1632		5.40	ug/L			Comp
EFF-001	1/12/2010	Asbestos	600/R-94/134-(100.2)	ND		MFL			Grab
EFF-001	4/3/2012	Asbestos	600/R-94/134-(100.2)	ND		MFL			Comp
EFF-001	5/14/2012	Asbestos	600/R-94/134-(100.2)	ND		MFL			Grab
EFF-001	6/11/2012	Asbestos	600/R-94/134-(100.2)	ND		MFL			Grab
EFF-001	7/9/2012	Asbestos	600/R-94/134-(100.2)	ND		MFL			Grab
EFF-001	1/14/2010	Barium (Total)	200.8		60.1	ug/L			Comp
EFF-001	2/8/2010	Barium (Total)	200.8		55	ug/L			Comp
EFF-001	3/16/2010	Barium (Total)	200.8		48	ug/L			comp
EFF-001	4/6/2010	Barium (Total)	200.8		45	ug/L			Comp
EFF-001	8/2/2010	Barium (Total)	200.8		65	ug/L			Comp
EFF-001	8/3/2010	Barium (Total)	200.8		65	ug/L			comp
EFF-001	8/8/2011	Barium (Total)	200.8		55.4	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	2/5/2012	Barium (Total)	200.8		54	ug/L			Comp
EFF-001	4/16/2012	Barium (Total)	200.8		54	ug/L			Comp/ Grab
EFF-001	1/12/2010	Benzene	8260B	ND	0.3	ug/L			Grab
EFF-001	2/2/2010	Benzene	8260B	ND	0.3	ug/L			Grab
EFF-001	4/16/2012	Benzene	8260B	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/14/2012	Benzene	8260B	ND	0.1	ug/L			Grab
EFF-001	6/11/2012	Benzene	8260B	ND	0.1	ug/L			Grab
EFF-001	7/9/2012	Benzene	8260B	ND	0.1	ug/L			Grab
EFF-001	8/13/2012	Benzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	9/10/2012	Benzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	10/8/2012	Benzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	11/5/2012	Benzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	12/3/2012	Benzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/14/2013	Benzene	8260B/624	ND	0.1	ug/L		0.1	Comp/Grab
EFF-001	2/4/2013	Benzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	3/11/2013	Benzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/14/2010	Benzidine	8270C	ND	2.5	ug/L			Comp
EFF-001	4/16/2012	Benzidine	8270C	ND	2.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	Benzidine	8270C	ND	2.5	ug/L			Comp
EFF-001	6/10/2012	Benzidine	8270C	ND	2.5	ug/L			Comp
EFF-001	7/8/2012	Benzidine	8270C	ND	2.5	ug/L			Comp
EFF-001	8/12/2012	Benzidine	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	9/9/2012	Benzidine	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	10/7/2012	Benzidine	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	11/4/2012	Benzidine	8270C	ND	0.2	ug/L		0.2	comp
EFF-001	12/2/2012	Benzidine	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/13/2013	Benzidine	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	2/3/2013	Benzidine	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	3/10/2013	Benzidine	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/14/2010	Benzo(a)anthracene	8270C	ND	1.3	ug/L			Comp
EFF-001	4/16/2012	Benzo(a)anthracene	8270C	ND	1	ug/L			Comp/ Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	5/13/2012	Benzo(a)anthracene	8270C	ND	1	ug/L			Comp
EFF-001	6/10/2012	Benzo(a)anthracene	8270C	ND	1	ug/L			Comp
EFF-001	7/8/2012	Benzo(a)anthracene	8270C	ND	1	ug/L			Comp
EFF-001	8/12/2012	Benzo(a)anthracene	8270C	ND	1	ug/L		1	Comp
EFF-001	9/9/2012	Benzo(a)anthracene	8270C	ND	1	ug/L		1	Comp
EFF-001	10/7/2012	Benzo(a)anthracene	8270C	ND	1	ug/L		1	Comp
EFF-001	11/4/2012	Benzo(a)anthracene	8270C	ND	1	ug/L		1	comp
EFF-001	12/2/2012	Benzo(a)anthracene	8270C	ND	1	ug/L		1	Comp
EFF-001	1/13/2013	Benzo(a)anthracene	8270C	ND	1	ug/L		1	Comp
EFF-001	2/3/2013	Benzo(a)anthracene	8270C	ND	1	ug/L		1	Comp
EFF-001	3/10/2013	Benzo(a)anthracene	8270C	ND	1	ug/L		1	Comp
EFF-001	1/14/2010	Benzo(a)pyrene	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	Benzo(a)pyrene	8270C	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/13/2012	Benzo(a)pyrene	8270C	ND	0.2	ug/L			Comp
EFF-001	6/10/2012	Benzo(a)pyrene	8270C	ND	0.2	ug/L			Comp
EFF-001	7/8/2012	Benzo(a)pyrene	8270C	ND	0.2	ug/L			Comp
EFF-001	8/12/2012	Benzo(a)pyrene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	9/9/2012	Benzo(a)pyrene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	10/7/2012	Benzo(a)pyrene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	11/4/2012	Benzo(a)pyrene	8270C	ND	0.2	ug/L		0.2	comp
EFF-001	12/2/2012	Benzo(a)pyrene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/13/2013	Benzo(a)pyrene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	2/3/2013	Benzo(a)pyrene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	3/10/2013	Benzo(a)pyrene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/14/2010	Benzo(g,h,I)perylene	8270C	ND	0.3	ug/L			Comp
EFF-001	4/16/2012	Benzo(g,h,I)perylene	8270C	ND	0.3	ug/L			Comp/ Grab
EFF-001	5/13/2012	Benzo(g,h,I)perylene	8270C	ND	0.3	ug/L			Comp
EFF-001	6/10/2012	Benzo(g,h,I)perylene	8270C	ND	0.3	ug/L			Comp
EFF-001	7/8/2012	Benzo(g,h,I)perylene	8270C	ND	0.3	ug/L			Comp
EFF-001	8/12/2012	Benzo(g,h,I)perylene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	9/9/2012	Benzo(g,h,I)perylene	8270C	ND	0.3	ug/L		0.3	Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	10/7/2012	Benzo(g,h,I)perylene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	11/4/2012	Benzo(g,h,I)perylene	8270C	ND	0.3	ug/L		0.3	comp
EFF-001	12/2/2012	Benzo(g,h,I)perylene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/13/2013	Benzo(g,h,I)perylene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	2/3/2013	Benzo(g,h,I)perylene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	3/10/2013	Benzo(g,h,I)perylene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/14/2010	Benzo(k)fluoranthene	8270C	ND	0.7	ug/L			Comp
EFF-001	4/16/2012	Benzo(k)fluoranthene	8270C	ND	0.7	ug/L			Comp/ Grab
EFF-001	5/13/2012	Benzo(k)fluoranthene	8270C	ND	0.7	ug/L			Comp
EFF-001	6/10/2012	Benzo(k)fluoranthene	8270C	ND	0.7	ug/L			Comp
EFF-001	7/8/2012	Benzo(k)fluoranthene	8270C	ND	0.7	ug/L			Comp
EFF-001	8/12/2012	Benzo(k)fluoranthene	8270C	ND	0.7	ug/L		0.7	Comp
EFF-001	9/9/2012	Benzo(k)fluoranthene	8270C	ND	0.7	ug/L		0.7	Comp
EFF-001	10/7/2012	Benzo(k)fluoranthene	8270C	ND	0.7	ug/L		0.7	Comp
EFF-001	11/4/2012	Benzo(k)fluoranthene	8270C	ND	0.7	ug/L		0.7	comp
EFF-001	12/2/2012	Benzo(k)fluoranthene	8270C	ND	0.7	ug/L		0.7	Comp
EFF-001	1/13/2013	Benzo(k)fluoranthene	8270C	ND	0.7	ug/L		0.7	Comp
EFF-001	2/3/2013	Benzo(k)fluoranthene	8270C	ND	0.7	ug/L		0.7	Comp
EFF-001	3/10/2013	Benzo(k)fluoranthene	8270C	ND	0.7	ug/L		0.7	Comp
EFF-001	1/14/2010	Beryllium (Total)	200.8	J	0.03	ug/L			Comp
EFF-001	2/8/2010	Beryllium (Total)	200.8	ND	0.02	ug/L			Comp
EFF-001	3/16/2010	Beryllium (Total)	200.8	ND	0.02	ug/L			comp
EFF-001	4/6/2010	Beryllium (Total)	200.8	ND	0.02	ug/L			Comp
EFF-001	8/3/2010	Beryllium (Total)	200.8	ND	0.02	ug/L			comp
EFF-001	8/8/2011	Beryllium (Total)	200.8	J	0.02	ug/L			Comp
EFF-001	2/5/2012	Beryllium (Total)	200.8	ND	0.02	ug/L			Comp
EFF-001	4/16/2012	Beryllium (Total)	200.8	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Beryllium (Total)	200.8	ND	0.02	ug/L			Comp
EFF-001	6/10/2012	Beryllium (Total)	200.8	ND	0.02	ug/L			Comp
EFF-001	7/8/2012	Beryllium (Total)	200.8	ND	0.02	ug/L			Comp
EFF-001	8/12/2012	Beryllium (Total)	200.8	ND	0.02	ug/L		0.02	Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	9/9/2012	Beryllium (Total)	200.8	ND	0.02	ug/L		0.02	Comp
EFF-001	10/7/2012	Beryllium (Total)	200.8	ND	0.02	ug/L		0.02	Comp
EFF-001	11/4/2012	Beryllium (Total)	200.8	ND	0.02	ug/L		0.02	comp
EFF-001	12/2/2012	Beryllium (Total)	200.8	ND	0.02	ug/L		0.02	Comp
EFF-001	1/13/2013	Beryllium (Total)	200.8	ND	0.02	ug/L		0.02	Comp
EFF-001	2/3/2013	Beryllium (Total)	200.8	ND	0.02	ug/L		0.02	Comp
EFF-001	3/10/2013	Beryllium (Total)	200.8	ND	0.02	ug/L		0.02	Comp
EFF-001	1/14/2010	Beta-BHC	8081A/608	ND	0.08	ug/L			Comp
EFF-001	4/16/2012	Beta-BHC	8081A/608	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Beta-BHC	8081A/608	ND	0.005	ug/L			Comp
EFF-001	6/10/2012	Beta-BHC	8081A/608	ND	0.1	ug/L			Comp
EFF-001	7/8/2012	Beta-BHC	8081A/608	ND	0.1	ug/L			Comp
EFF-001	1/14/2010	beta-Endosulfan	8081A/608	ND	0.05	ug/L			Comp
EFF-001	4/16/2012	beta-Endosulfan	8081A/608	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	beta-Endosulfan	8081A/608	ND	0.01	ug/L			Comp
EFF-001	6/10/2012	beta-Endosulfan	8081A/608	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	beta-Endosulfan	8081A/608	ND	0.5	ug/L			Comp
EFF-001	5/3/2010	Bicarbonate	SM2320B		95	mg/L			Comp
EFF-001	2/21/2011	Bicarbonate	SM2320B		96.5	mg/L			comp
EFF-001	8/8/2011	Bicarbonate	SM2320B		101	mg/L			Comp
EFF-001	2/5/2012	Bicarbonate	SM2320B		110	mg/L			Comp
EFF-001	8/7/2012	Bicarbonate	SM2320B		126	mg/L			Comp
EFF-001	1/14/2010	Bis(2-chloroethoxy)methane	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	Bis(2-chloroethoxy)methane	8270C	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/13/2012	Bis(2-chloroethoxy)methane	8270C	ND	0.2	ug/L			Comp
EFF-001	6/10/2012	Bis(2-chloroethoxy)methane	8270C	ND	0.2	ug/L			Comp
EFF-001	7/8/2012	Bis(2-chloroethoxy)methane	8270C	ND	0.2	ug/L			Comp
EFF-001	8/12/2012	Bis(2-chloroethoxy)methane	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	9/9/2012	Bis(2-chloroethoxy)methane	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	10/7/2012	Bis(2-chloroethoxy)methane	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	11/4/2012	Bis(2-chloroethoxy)methane	8270C	ND	0.2	ug/L		0.2	comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	12/2/2012	Bis(2-chloroethoxy)methane	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/13/2013	Bis(2-chloroethoxy)methane	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	2/3/2013	Bis(2-chloroethoxy)methane	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	3/10/2013	Bis(2-chloroethoxy)methane	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/14/2010	Bis(2-chloroethyl)Ether	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	Bis(2-chloroethyl)Ether	8270C	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/13/2012	Bis(2-chloroethyl)Ether	8270C	ND	0.2	ug/L			Comp
EFF-001	6/10/2012	Bis(2-chloroethyl)Ether	8270C	ND	0.2	ug/L			Comp
EFF-001	7/8/2012	Bis(2-chloroethyl)Ether	8270C	ND	0.2	ug/L			Comp
EFF-001	8/12/2012	Bis(2-chloroethyl)Ether	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	9/9/2012	Bis(2-chloroethyl)Ether	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	10/7/2012	Bis(2-chloroethyl)Ether	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	11/4/2012	Bis(2-chloroethyl)Ether	8270C	ND	0.2	ug/L		0.2	comp
EFF-001	12/2/2012	Bis(2-chloroethyl)Ether	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/13/2013	Bis(2-chloroethyl)Ether	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	2/3/2013	Bis(2-chloroethyl)Ether	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	3/10/2013	Bis(2-chloroethyl)Ether	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/14/2010	Bis(2-chloroisopropyl)Ether	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	Bis(2-chloroisopropyl)Ether	8270C	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/13/2012	Bis(2-chloroisopropyl)Ether	8270C	ND	0.2	ug/L			Comp
EFF-001	6/10/2012	Bis(2-chloroisopropyl)Ether	8270C	ND	0.2	ug/L			Comp
EFF-001	7/8/2012	Bis(2-chloroisopropyl)Ether	8270C	ND	0.2	ug/L			Comp
EFF-001	8/12/2012	Bis(2-chloroisopropyl)Ether	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	9/9/2012	Bis(2-chloroisopropyl)Ether	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	10/7/2012	Bis(2-chloroisopropyl)Ether	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	11/4/2012	Bis(2-chloroisopropyl)Ether	8270C	ND	0.3	ug/L		0.3	comp
EFF-001	12/2/2012	Bis(2-chloroisopropyl)Ether	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/13/2013	Bis(2-chloroisopropyl)Ether	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	2/3/2013	Bis(2-chloroisopropyl)Ether	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	3/10/2013	Bis(2-chloroisopropyl)Ether	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/14/2010	Bis(2-ethylhexyl)phthalate	8270C		2.3	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	3/15/2010	Bis(2-ethylhexyl)phthalate	8270C	J	0.9	ug/L			Grab
EFF-001	4/7/2010	Bis(2-ethylhexyl)phthalate	8270C		2.2	ug/L			Grab
EFF-001	7/7/2010	Bis(2-ethylhexyl)phthalate	8270C	ND	0.2	ug/L			Grab
EFF-001	10/1/2010	Bis(2-ethylhexyl)phthalate	8270C	ND	0.2	ug/L			Grab
EFF-001	1/18/2011	Bis(2-ethylhexyl)phthalate	8270C	ND	0.2	ug/L			Grab
EFF-001	4/4/2011	Bis(2-ethylhexyl)phthalate	8270C		1	ug/L			Grab
EFF-001	7/11/2011	Bis(2-ethylhexyl)phthalate	8270C	ND	0.17	ug/L			grab
EFF-001	10/10/2011	Bis(2-ethylhexyl)phthalate	8270C	ND	0.17	ug/L			grab
EFF-001	1/9/2012	Bis(2-ethylhexyl)phthalate	8270C	ND	0.2	ug/L			grab
EFF-001	4/16/2012	Bis(2-ethylhexyl)phthalate	8270C	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/13/2012	Bis(2-ethylhexyl)phthalate	8270C		2.5	ug/L			Comp
EFF-001	5/14/2012	Bis(2-ethylhexyl)phthalate	8270C	ND	0.2	ug/L			Grab
EFF-001	6/10/2012	Bis(2-ethylhexyl)phthalate	8270C		2.5	ug/L			Comp
EFF-001	6/11/2012	Bis(2-ethylhexyl)phthalate	8270C		3	ug/L			Grab
EFF-001	7/9/2012	Bis(2-ethylhexyl)phthalate	8270C	J	1.4	ug/L			Grab
EFF-001	8/13/2012	Bis(2-ethylhexyl)phthalate	8270C		2.2	ug/L			Grab
EFF-001	9/10/2012	Bis(2-ethylhexyl)phthalate	8270C	ND	0.2	ug/L		0.2	Grab
EFF-001	10/8/2012	Bis(2-ethylhexyl)phthalate	8270C	ND	0.2	ug/L		0.2	Grab
EFF-001	11/5/2012	Bis(2-ethylhexyl)phthalate	625	J	0.8	ug/L			Grab
EFF-001	12/3/2012	Bis(2-ethylhexyl)phthalate	8270C	ND	0.2	ug/L		0.2	Grab
EFF-001	1/14/2013	Bis(2-ethylhexyl)phthalate	8270C	ND	0.2	ug/L		0.2	Comp/Grab
EFF-001	2/4/2013	Bis(2-ethylhexyl)phthalate	8270C		0.9	ug/L			Grab
EFF-001	3/11/2013	Bis(2-ethylhexyl)phthalate	8270C		2.0	ug/L			Grab
EFF-001	5/6/2013	Bis(2-ethylhexyl)phthalate	8270C		1.3	ug/L			Grab
EFF-001	8/5/2013	Bis(2-ethylhexyl)phthalate	8270C		6.6	ug/L			Grab
EFF-001	10/7/2013	Bis(2-ethylhexyl)phthalate	8270C	ND	0.2	ug/L		0.2	Grab
EFF-001	3/4/2014	Bis(2-ethylhexyl)phthalate	8270C	ND	0.3	ug/L		0.3	Grab
EFF-001	1/14/2010	Boron	200.8		208	ug/L			Comp
EFF-001	2/8/2010	Boron	200.8		238	ug/L			Comp
EFF-001	3/16/2010	Boron	200.8		260	ug/L			comp
EFF-001	4/6/2010	Boron	200.8		196	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	5/3/2010	Boron	200.8		294	ug/L			Comp
EFF-001	5/3/2010	Boron	200.8		316	ug/L			Comp
EFF-001	6/1/2010	Boron	200.8		208	ug/L			Comp
EFF-001	7/6/2010	Boron	200.8		269	ug/L			Comp
EFF-001	8/3/2010	Boron	200.8		279	ug/L			comp
EFF-001	9/7/2010	Boron	200.8		193	ug/L			comp
EFF-001	10/3/2010	Boron	200.8		226	ug/L			comp
EFF-001	11/1/2010	Boron	200.8		220	ug/L			Comp
EFF-001	12/5/2010	Boron	200.8		231	ug/L			comp
EFF-001	1/17/2011	Boron	200.8		194	ug/L			Comp
EFF-001	2/6/2011	Boron	200.8		255	ug/L			Comp
EFF-001	2/21/2011	Boron	200.8		173	ug/L			comp
EFF-001	3/6/2011	Boron	200.8		170	ug/L			Comp
EFF-001	4/3/2011	Boron	200.8		169	ug/L			comp
EFF-001	5/8/2011	Boron	200.8		210	ug/L			Comp
EFF-001	6/12/2011	Boron	200.8		203	ug/L			comp
EFF-001	7/10/2011	Boron	200.8		197	ug/L			Comp
EFF-001	8/8/2011	Boron	200.8		240	ug/L			Comp
EFF-001	8/8/2011	Boron	200.8		232	ug/L			Grab/Comp
EFF-001	9/5/2011	Boron	200.8		175	ug/L			comp
EFF-001	10/9/2011	Boron	200.8		212	ug/L			Comp
EFF-001	11/7/2011	Boron	200.8		152	ug/L			comp
EFF-001	12/4/2011	Boron	200.8		173	ug/L			Comp
EFF-001	1/8/2012	Boron	200.8		165	ug/L			Composite
EFF-001	2/5/2012	Boron	200.8		190	ug/L			Comp
EFF-001	3/11/2012	Boron	200.8		158	ug/L			Comp
EFF-001	4/16/2012	Boron	200.8		157	ug/L			Comp/ Grab
EFF-001	5/13/2012	Boron	200.8		223	ug/L			Comp
EFF-001	6/10/2012	Boron	200.8		173	ug/L			Comp
EFF-001	7/8/2012	Boron	200.8		204	ug/L			Comp
EFF-001	8/7/2012	Boron	200.8		245	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/7/2012	Boron	200.8		245	ug/L			Comp
EFF-001	8/12/2012	Boron	200.8		224	ug/L			Comp
EFF-001	9/9/2012	Boron	200.8		200	ug/L			Comp
EFF-001	10/7/2012	Boron	200.8		164	ug/L			Comp
EFF-001	11/4/2012	Boron	200.8		175	ug/L			comp
EFF-001	12/2/2012	Boron	200.8		155	ug/L			Comp
EFF-001	1/13/2013	Boron	200.8		155	ug/L			Comp
EFF-001	2/3/2013	Boron	200.8		180	ug/L			Comp
EFF-001	3/10/2013	Boron	200.8		155	ug/L			Comp
EFF-001	4/7/2013	Boron	200.8		175	ug/L			Comp
EFF-001	5/5/2013	Boron	200.8		178	ug/L			Comp
EFF-001	6/3/2013	Boron	200.8		186	ug/L			Comp
EFF-001	7/7/2013	Boron	200.8		178	ug/L			Comp
EFF-001	8/4/2013	Boron	200.8		190	ug/L			Comp
EFF-001	9/9/2013	Boron	200.8		204	ug/L			Comp
EFF-001	10/6/2013	Boron	200.8		200	ug/L			Comp
EFF-001	11/3/2013	Boron	200.8		157	ug/L			Comp
EFF-001	12/1/2013	Boron	200.8		164	ug/L			Comp
EFF-001	1/20/2014	Boron	200.8		162	ug/L			Comp
EFF-001	2/17/2014	Boron	200.8		203	ug/L			Comp
EFF-001	3/3/2014	Boron	200.8		147	ug/L			Comp
EFF-001	4/6/2014	Boron	200.8		193	ug/L			Comp
EFF-001	1/12/2010	Bromoform	8260B	ND	0.3	ug/L			Grab
EFF-001	2/2/2010	Bromoform	8260B	ND	0.3	ug/L			Grab
EFF-001	6/13/2011	Bromoform	8260B	ND	0.21	ug/L			grab
EFF-001	7/11/2011	Bromoform	8260B	ND	0.21	ug/L			grab
EFF-001	4/16/2012	Bromoform	8260B	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/14/2012	Bromoform	8260B	J	0.3	ug/L			Grab
EFF-001	6/11/2012	Bromoform	8260B	J	0.4	ug/L			Grab
EFF-001	7/9/2012	Bromoform	8260B	J	0.4	ug/L			Grab
EFF-001	8/13/2012	Bromoform	8260B/624	J	0.5	ug/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	9/10/2012	Bromoform	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	10/8/2012	Bromoform	8260B/624	J	0.4	ug/L			Grab
EFF-001	11/5/2012	Bromoform	8260B/624	J	0.3	ug/L			Grab
EFF-001	12/3/2012	Bromoform	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	1/14/2013	Bromoform	8260B/624	ND	0.2	ug/L		0.2	Comp/Grab
EFF-001	2/4/2013	Bromoform	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	3/11/2013	Bromoform	8260B/624	ND	2	ug/L		2	Grab
EFF-001	8/13/2012	Bromomethane	8260B/624	ND	0.4	ug/L		0.4	Grab
EFF-001	9/10/2012	Bromomethane	8260B/624	ND	0.4	ug/L		0.4	Grab
EFF-001	10/8/2012	Bromomethane	8260B/624	ND	0.4	ug/L		0.4	Grab
EFF-001	11/5/2012	Bromomethane	8260B/624	ND	0.4	ug/L		0.4	Grab
EFF-001	12/3/2012	Bromomethane	8260B/624	ND	0.4	ug/L		0.4	Grab
EFF-001	1/14/2013	Bromomethane	8260B/624	ND	0.4	ug/L		0.4	Comp/Grab
EFF-001	2/4/2013	Bromomethane	8260B/624	ND	0.4	ug/L		0.4	Grab
EFF-001	3/11/2013	Bromomethane	8260B/624	ND	0.4	ug/L		0.4	Grab
EFF-001	1/14/2010	Butylbenzyl phthalate	8270C	ND	0.5	ug/L			Comp
EFF-001	4/16/2012	Butylbenzyl phthalate	8270C	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	Butylbenzyl phthalate	8270C	ND	0.5	ug/L			Comp
EFF-001	6/10/2012	Butylbenzyl phthalate	8270C	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	Butylbenzyl phthalate	8270C	ND	0.5	ug/L			Comp
EFF-001	8/12/2012	Butylbenzylphthalate	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	9/9/2012	Butylbenzylphthalate	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	10/7/2012	Butylbenzylphthalate	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	11/4/2012	Butylbenzylphthalate	8270C	ND	0.5	ug/L		0.5	comp
EFF-001	12/2/2012	Butylbenzylphthalate	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	1/13/2013	Butylbenzylphthalate	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	2/3/2013	Butylbenzylphthalate	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	3/10/2013	Butylbenzylphthalate	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	1/14/2010	Cadmium (Total)	200.8		0.1	ug/L			Comp
EFF-001	2/8/2010	Cadmium (Total)	200.8	ND	0.04	ug/L			Comp
EFF-001	3/16/2010	Cadmium (Total)	200.8	ND	0.04	ug/L			comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/6/2010	Cadmium (Total)	200.8	ND	0.04	ug/L			Comp
EFF-001	5/3/2010	Cadmium (Total)	200.7		28.6	mg/L			Comp
EFF-001	8/2/2010	Cadmium (Total)	200.8	ND	0.04	ug/L			Comp
EFF-001	8/2/2010	Cadmium (Total)	200.7		30.9	mg/L			Comp
EFF-001	8/3/2010	Cadmium (Total)	200.8	ND	0.04	ug/L			comp
EFF-001	2/21/2011	Cadmium (Total)	200.7		31.7	mg/L			comp
EFF-001	8/8/2011	Cadmium (Total)	200.8	J	0.08	ug/L			Comp
EFF-001	8/8/2011	Cadmium (Total)	200.7		32.7	mg/L			Comp
EFF-001	2/5/2012	Cadmium (Total)	200.8	ND	0.04	ug/L			Comp
EFF-001	2/5/2012	Cadmium (Total)	200.7		26.3	mg/L			Comp
EFF-001	4/16/2012	Cadmium (Total)	200.8	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Cadmium (Total)	200.8	ND	0.04	ug/L			Comp
EFF-001	6/10/2012	Cadmium (Total)	200.8	ND	0.04	ug/L			Comp
EFF-001	7/8/2012	Cadmium (Total)	200.8	ND	0.04	ug/L			Comp
EFF-001	8/7/2012	Cadmium (Total)	200.7		32.6	mg/L			Comp
EFF-001	8/12/2012	Cadmium (Total)	200.8	ND	0.04	ug/L		0.04	Comp
EFF-001	9/9/2012	Cadmium (Total)	200.8	ND	0.04	ug/L		0.04	Comp
EFF-001	10/7/2012	Cadmium (Total)	200.8	ND	0.04	ug/L		0.04	Comp
EFF-001	11/4/2012	Cadmium (Total)	200.8	ND	0.04	ug/L		0.04	comp
EFF-001	12/2/2012	Cadmium (Total)	200.8	ND	0.04	ug/L		0.04	Comp
EFF-001	1/13/2013	Cadmium (Total)	200.8	ND	0.04	ug/L		0.04	Comp
EFF-001	2/3/2013	Cadmium (Total)	200.8	ND	0.04	ug/L		0.04	Comp
EFF-001	3/10/2013	Cadmium (Total)	200.8	ND	0.04	ug/L		0.04	Comp
EFF-001	1/12/2010	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	2/2/2010	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	3/10/2010	Carbon Tetrachloride	8260B	J	0.39	ug/L			Grab
EFF-001	4/7/2010	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	5/4/2010	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	6/2/2010	Carbon Tetrachloride	8260B	J	0.4	ug/L			Grab
EFF-001	7/7/2010	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	8/2/2010	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	9/8/2010	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	10/1/2010	Carbon Tetrachloride	8260B	J	0.3	ug/L			Grab
EFF-001	11/2/2010	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	12/6/2010	Carbon Tetrachloride	8260B		0.5	ug/L			Grab
EFF-001	1/18/2011	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	2/7/2011	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	3/7/2011	Carbon Tetrachloride	8260B	J	0.23	ug/L			Grab
EFF-001	4/4/2011	Carbon Tetrachloride	8260B		0.5	ug/L			Grab
EFF-001	5/9/2011	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	6/13/2011	Carbon Tetrachloride	8260B	ND	0.2	ug/L			grab
EFF-001	7/11/2011	Carbon Tetrachloride	8260B	ND	0.2	ug/L			grab
EFF-001	8/9/2011	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	9/6/2011	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	10/10/2011	Carbon Tetrachloride	8260B	ND	0.2	ug/L			grab
EFF-001	11/8/2011	Carbon Tetrachloride	8260B	ND	0.2	ug/L			grab
EFF-001	12/5/2011	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	1/9/2012	Carbon Tetrachloride	8260B	ND	0.2	ug/L			grab
EFF-001	2/6/2012	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	3/12/2012	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	4/16/2012	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/14/2012	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	6/11/2012	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	7/9/2012	Carbon Tetrachloride	8260B	ND	0.2	ug/L			Grab
EFF-001	8/13/2012	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	9/10/2012	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	10/8/2012	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	11/5/2012	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	12/3/2012	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	1/14/2013	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Comp/Grab
EFF-001	2/4/2013	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	3/11/2013	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/8/2013	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	5/6/2013	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	6/4/2013	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	7/8/2013	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	8/5/2013	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	9/10/2013	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	10/7/2013	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	11/4/2013	Carbon Tetrachloride	8260B/624	J	0.24	ug/L			Grab
EFF-001	12/2/2013	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	1/21/2014	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	2/18/2014	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	3/4/2014	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	4/7/2014	Carbon Tetrachloride	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	5/3/2010	Carbonate	SM2320B	ND		mg/L			Comp
EFF-001	2/21/2011	Carbonate	SM2320B	ND	1	mg/L			comp
EFF-001	8/8/2011	Carbonate	SM2320B	ND	1	mg/L			Comp
EFF-001	2/5/2012	Carbonate	SM2320B	ND	1	mg/L			Comp
EFF-001	8/7/2012	Carbonate	SM2320B	ND	0.6	mg/L		0.6	Comp
EFF-001	5/3/2010	Cation-Anion Balance	SM1030E		6.69	% Diff			Comp
EFF-001	2/21/2011	Cation-Anion Balance	SM1030E		2.4	% Diff			comp
EFF-001	8/7/2012	Cation-Anion Balance	SM1030E		2.69	% Diff			Comp
EFF-001	1/14/2010	Chlordane	8081A/608	ND	0.5	ug/L			Comp
EFF-001	4/16/2012	Chlordane	8081A/608	ND	1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Chlordane	8081A/608	ND	0.1	ug/L			Comp
EFF-001	6/10/2012	Chlordane	8081A/608	ND	1	ug/L			Comp
EFF-001	7/8/2012	Chlordane	8081A/608	ND	1	ug/L			Comp
EFF-001	1/12/2010	Chloride	300.0		104	mg/L			Grab
EFF-001	2/2/2010	Chloride	300.0		100	mg/L			Grab
EFF-001	3/10/2010	Chloride	300.0		119	mg/L			Grab
EFF-001	4/7/2010	Chloride	300.0		66.3	mg/L			Grab
EFF-001	5/3/2010	Chloride	300.0		116	mg/L		1	Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	5/4/2010	Chloride	300.0		115	mg/L			Grab
EFF-001	6/2/2010	Chloride	300.0		120	mg/L			Grab
EFF-001	7/7/2010	Chloride	300.0		109	mg/L			Grab
EFF-001	8/2/2010	Chloride	300.0		113	mg/L			Comp
EFF-001	8/2/2010	Chloride	300.0		110	mg/L			Grab
EFF-001	9/7/2010	Chloride	300.0		121	mg/L			comp
EFF-001	10/1/2010	Chloride	300.0		109	mg/L			Grab
EFF-001	11/2/2010	Chloride	300.0		129	mg/L			Grab
EFF-001	12/6/2010	Chloride	300.0		111	mg/L			Grab
EFF-001	1/18/2011	Chloride	300.0		128	mg/L			Grab
EFF-001	2/7/2011	Chloride	300.0		126	mg/L			Grab
EFF-001	2/21/2011	Chloride	300.0		93.1	mg/L		1	comp
EFF-001	3/7/2011	Chloride	300.0		108	mg/L			Grab
EFF-001	4/4/2011	Chloride	300.0		114	mg/L			Grab
EFF-001	5/9/2011	Chloride	300.0		119	mg/L			Grab
EFF-001	6/13/2011	Chloride	300.0		107	mg/L			grab
EFF-001	7/11/2011	Chloride	300.0		125	mg/L			grab
EFF-001	8/8/2011	Chloride	300.0		136	mg/L			Comp
EFF-001	8/8/2011	Chloride	300.0		120	mg/L			Grab/Comp
EFF-001	9/6/2011	Chloride	300.0		107	mg/L			Grab
EFF-001	10/10/2011	Chloride	300.0		123	mg/L			grab
EFF-001	11/8/2011	Chloride	300.0		143	mg/L			grab
EFF-001	12/5/2011	Chloride	300.0		127	mg/L			Grab
EFF-001	1/9/2012	Chloride	300.0		145	mg/L			grab
EFF-001	2/5/2012	Chloride	300.0		142	mg/L			Comp
EFF-001	2/6/2012	Chloride	300.0		125	mg/L			Grab
EFF-001	3/12/2012	Chloride	300.0		115	mg/L			Grab
EFF-001	4/16/2012	Chloride	300.0		111	mg/L			Comp/ Grab
EFF-001	5/14/2012	Chloride	300.0		121	mg/L			Grab
EFF-001	6/11/2012	Chloride	300.0		124	mg/L			Grab
EFF-001	7/9/2012	Chloride	300.0		121	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/7/2012	Chloride	300.0		119	ug/L			Comp
EFF-001	8/13/2012	Chloride	300.0		127	mg/L			Grab
EFF-001	9/10/2012	Chloride	300.0		118	mg/L			Grab
EFF-001	10/8/2012	Chloride	300.0		183	mg/L			Grab
EFF-001	11/5/2012	Chloride	300.0		124	mg/L			Grab
EFF-001	12/3/2012	Chloride	300.0		85.6	mg/L			Grab
EFF-001	1/14/2013	Chloride	300.0		126	mg/L			Comp/Grab
EFF-001	2/4/2013	Chloride	300.0		110	mg/L			Grab
EFF-001	3/11/2013	Chloride	300.0		110	mg/L			Grab
EFF-001	4/8/2013	Chloride	300.0		118	mg/L			Grab
EFF-001	5/6/2013	Chloride	300.0		117	mg/L			Grab
EFF-001	6/4/2013	Chloride	300.0		116	mg/L			Grab
EFF-001	7/8/2013	Chloride	300.0		117	mg/L			Grab
EFF-001	8/5/2013	Chloride	300.0		116	mg/L			Grab
EFF-001	9/10/2013	Chloride	300.0		118	mg/L			Grab
EFF-001	10/7/2013	Chloride	300.0		124	mg/L			Grab
EFF-001	11/4/2013	Chloride	300.0		162	mg/L			Grab
EFF-001	12/2/2013	Chloride	300.0		120	mg/L			Grab
EFF-001	1/21/2014	Chloride	300.0		133	mg/L			Grab
EFF-001	2/18/2014	Chloride	300.0		125	mg/L			Grab
EFF-001	4/7/2014	Chloride	300.0		141	mg/L			Grab
EFF-001	1/12/2010	chlorobenzene	8260B	ND	0.2	ug/L			Grab
EFF-001	2/2/2010	chlorobenzene	8260B	ND	0.2	ug/L			Grab
EFF-001	4/16/2012	chlorobenzene	8260B	ND	0.09	ug/L			Comp/ Grab
EFF-001	5/14/2012	chlorobenzene	8260B	ND	0.09	ug/L			Grab
EFF-001	6/11/2012	chlorobenzene	8260B	ND	0.09	ug/L			Grab
EFF-001	7/9/2012	chlorobenzene	8260B	ND	0.09	ug/L			Grab
EFF-001	1/12/2010	Chloroethane	8260B	ND	0.2	ug/L			Grab
EFF-001	2/2/2010	Chloroethane	8260B	ND	0.2	ug/L			Grab
EFF-001	4/16/2012	Chloroethane	8260B	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/14/2012	Chloroethane	8260B	ND	0.2	ug/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	6/11/2012	Chloroethane	8260B	ND	0.2	ug/L			Grab
EFF-001	7/9/2012	Chloroethane	8260B	ND	0.2	ug/L			Grab
EFF-001	8/13/2012	Chloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	9/10/2012	Chloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	10/8/2012	Chloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	11/5/2012	Chloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	12/3/2012	Chloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	1/14/2013	Chloroethane	8260B/624	ND	0.2	ug/L		0.2	Comp/Grab
EFF-001	2/4/2013	Chloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	3/11/2013	Chloroethane	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	1/12/2010	Chloroform	8260B		22	ug/L			Grab
EFF-001	2/2/2010	Chloroform	8260B		29.6	ug/L			Grab
EFF-001	6/13/2011	Chloroform	8260B		40	ug/L			grab
EFF-001	7/11/2011	Chloroform	8260B		78.5	ug/L			grab
EFF-001	4/16/2012	Chloroform	8260B		48.8	ug/L			Comp/ Grab
EFF-001	5/14/2012	Chloroform	8260B		53.4	ug/L			Grab
EFF-001	6/11/2012	Chloroform	8260B		51.8	ug/L			Grab
EFF-001	7/9/2012	Chloroform	8260B		63.9	ug/L			Grab
EFF-001	8/13/2012	Chloroform	8260B/624		64.4	ug/L			Grab
EFF-001	9/10/2012	Chloroform	8260B/624		67.9	ug/L			Grab
EFF-001	10/8/2012	Chloroform	8260B/624		50.6	ug/L			Grab
EFF-001	11/5/2012	Chloroform	8260B/624		49.7	ug/L			Grab
EFF-001	12/3/2012	Chloroform	8260B/624		34.0	ug/L			Grab
EFF-001	1/14/2013	Chloroform	8260B/624		27.8	ug/L			Comp/Grab
EFF-001	2/4/2013	Chloroform	8260B/624		33.4	ug/L			Grab
EFF-001	3/11/2013	Chloroform	8260B/624		48	ug/L			Grab
EFF-001	1/14/2010	Chlorpyrifos	8141	ND	0.01	ug/L			Comp
EFF-001	4/6/2010	Chlorpyrifos	8141	ND	0.01	ug/L			Comp
EFF-001	7/6/2010	Chlorpyrifos	8141	ND	0.01	ug/L			Comp
EFF-001	10/3/2010	Chlorpyrifos	8141	ND	0.02	ug/L			comp
EFF-001	1/17/2011	Chlorpyrifos	8141	ND	0.01	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/3/2011	Chlorpyrifos	8141	ND	0.01	ug/L			comp
EFF-001	7/10/2011	Chlorpyrifos	8141	ND	0.02	ug/L			Comp
EFF-001	10/9/2011	Chlorpyrifos	8141	ND	0.01	ug/L			Comp
EFF-001	1/8/2012	Chlorpyrifos	8141	ND	0.01	ug/L			Composite
EFF-001	4/4/2012	Chlorpyrifos	8141	ND	0.01	ug/L			Comp
EFF-001	7/8/2012	Chlorpyrifos	8141	ND	0.01	ug/L			comp
EFF-001	10/7/2012	Chlorpyrifos	8141	ND	0.01	ug/L		0.01	Comp
EFF-001	3/10/2013	Chlorpyrifos	8141	ND	0.01	ug/L		0.01	Comp
EFF-001	5/5/2013	Chlorpyrifos	8141	ND	0.01	ug/L		0.01	Comp
EFF-001	8/4/2013	Chlorpyrifos	8141	ND	0.01	ug/L		0.01	Comp
EFF-001	10/6/2013	Chlorpyrifos	8141	ND	0.01	ug/L		0.01	Comp
EFF-001	3/3/2014	Chlorpyrifos	8141	ND	0.01	ug/L		0.01	Comp
EFF-001	1/14/2010	Chromium (Total)	200.8		6.9	ug/L			Comp
EFF-001	2/8/2010	Chromium (Total)	200.8		4.7	ug/L			Comp
EFF-001	3/16/2010	Chromium (Total)	200.8		3.5	ug/L			comp
EFF-001	4/6/2010	Chromium (Total)	200.8		3.5	ug/L			Comp
EFF-001	8/2/2010	Chromium (Total)	200.8		2.2	ug/L			Comp
EFF-001	8/3/2010	Chromium (Total)	200.8		3.9	ug/L			comp
EFF-001	8/8/2011	Chromium (Total)	200.8		2.59	ug/L			Comp
EFF-001	2/5/2012	Chromium (Total)	200.8		2.4	ug/L			Comp
EFF-001	4/16/2012	Chromium (Total)	200.8		2.6	ug/L			Comp/ Grab
EFF-001	4/16/2012	Chromium (Total)	200.8		2.3	ug/L			Comp/ Grab
EFF-001	5/13/2012	Chromium (Total)	200.8		3.7	ug/L			Comp
EFF-001	5/13/2012	Chromium (Total)	200.8		3.2	ug/L			Comp
EFF-001	6/10/2012	Chromium (Total)	200.8		3	ug/L			Comp
EFF-001	6/10/2012	Chromium (Total)	200.8		2.7	ug/L			Comp
EFF-001	7/8/2012	Chromium (Total)	200.8		1.9	ug/L			Comp
EFF-001	7/8/2012	Chromium (Total)	200.8		1.5	ug/L			Comp
EFF-001	7/9/2012	Chromium (Total)	200.8		1.5	ug/L			Grab
EFF-001	8/12/2012	Chromium (Total)	200.8		2.3	ug/L			Comp
EFF-001	8/12/2012	Chromium (Total)	200.8		1.8	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	9/9/2012	Chromium (Total)	200.8		1.6	ug/L			Comp
EFF-001	9/9/2012	Chromium (Total)	200.8		1.26	ug/L			Comp
EFF-001	10/7/2012	Chromium (Total)	200.8		3.00	ug/L			Comp
EFF-001	10/7/2012	Chromium (Total)	200.8		2.43	ug/L			Comp
EFF-001	11/4/2012	Chromium (Total)	200.8		2.65	ug/L			comp
EFF-001	11/4/2012	Chromium (Total)	200.8		2.13	ug/L			comp
EFF-001	12/2/2012	Chromium (Total)	200.8		3.5	ug/L			Comp
EFF-001	12/2/2012	Chromium (Total)	200.8		3.17	ug/L			Comp
EFF-001	1/13/2013	Chromium (Total)	200.8		3	ug/L			Comp
EFF-001	1/13/2013	Chromium (Total)	200.8		2.7	ug/L			Comp
EFF-001	2/3/2013	Chromium (Total)	200.8		3.3	ug/L			Comp
EFF-001	2/3/2013	Chromium (Total)	200.8		2.95	ug/L			Comp
EFF-001	3/10/2013	Chromium (Total)	200.8	ND	0.08	ug/L		0.08	Comp
EFF-001	4/16/2012	Chromium (VI)	200.8	J	0.31	ug/L			Comp/ Grab
EFF-001	5/13/2012	Chromium (VI)	200.8		0.52	ug/L			Comp
EFF-001	6/10/2012	Chromium (VI)	200.8	J	0.34	ug/L			Comp
EFF-001	7/8/2012	Chromium (VI)	200.8	J	0.41	ug/L			Comp
EFF-001	7/9/2012	Chromium (VI)	200.8	J	0.41	ug/L			Grab
EFF-001	8/12/2012	Chromium (VI)	200.8	J	0.47	ug/L			Comp
EFF-001	9/9/2012	Chromium (VI)	200.8	J	0.34	ug/L			Comp
EFF-001	10/7/2012	Chromium (VI)	200.8		0.57	ug/L			Comp
EFF-001	11/4/2012	Chromium (VI)	200.8		0.52	ug/L			comp
EFF-001	12/2/2012	Chromium (VI)	200.8	J	0.33	ug/L			Comp
EFF-001	1/13/2013	Chromium (VI)	200.8	J	0.3	ug/L			Comp
EFF-001	2/3/2013	Chromium (VI)	200.8	J	0.35	ug/L			Comp
EFF-001	3/10/2013	Chromium (VI)	200.8	J	0.4	ug/L			Comp
EFF-001	1/14/2010	Chrysene	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	Chrysene	8270C	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/13/2012	Chrysene	8270C	ND	0.2	ug/L			Comp
EFF-001	6/10/2012	Chrysene	8270C	ND	0.2	ug/L			Comp
EFF-001	7/8/2012	Chrysene	8270C	ND	0.2	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/12/2012	Chrysene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	9/9/2012	Chrysene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	10/7/2012	Chrysene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	11/4/2012	Chrysene	8270C	ND	0.2	ug/L		0.2	comp
EFF-001	12/2/2012	Chrysene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/13/2013	Chrysene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	2/3/2013	Chrysene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	3/10/2013	Chrysene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/14/2010	Copper (Dissolved)	200.8		5.14	ug/L			Comp
EFF-001	2/8/2010	Copper (Dissolved)	200.8		4.8	ug/L			Comp
EFF-001	3/16/2010	Copper (Dissolved)	200.8		2	ug/L			comp
EFF-001	1/14/2010	Copper (Total)	200.8		6.86	ug/L			Comp
EFF-001	2/8/2010	Copper (Total)	200.8		6	ug/L			Comp
EFF-001	3/16/2010	Copper (Total)	200.8		2	ug/L			comp
EFF-001	4/6/2010	Copper (Total)	200.8		4.2	ug/L			Comp
EFF-001	5/3/2010	Copper (Total)	200.8		2.9	ug/L			Comp
EFF-001	6/1/2010	Copper (Total)	200.8		3.7	ug/L			Comp
EFF-001	7/6/2010	Copper (Total)	200.8		3.1	ug/L			Comp
EFF-001	8/2/2010	Copper (Total)	200.8		9.9	ug/L			Comp
EFF-001	8/3/2010	Copper (Total)	200.8		7.2	ug/L			comp
EFF-001	9/7/2010	Copper (Total)	200.8		3	ug/L			comp
EFF-001	10/3/2010	Copper (Total)	200.8		2.8	ug/L			comp
EFF-001	11/1/2010	Copper (Total)	200.8		4	ug/L			Comp
EFF-001	12/5/2010	Copper (Total)	200.8		3.2	ug/L			comp
EFF-001	1/17/2011	Copper (Total)	200.8		6.5	ug/L			Comp
EFF-001	2/6/2011	Copper (Total)	200.8		5.9	ug/L			Comp
EFF-001	3/6/2011	Copper (Total)	200.8		4.3	ug/L			Comp
EFF-001	4/3/2011	Copper (Total)	200.8		5.3	ug/L			comp
EFF-001	5/8/2011	Copper (Total)	200.8	ND	0.29	ug/L			Comp
EFF-001	6/12/2011	Copper (Total)	200.8		3.5	ug/L			comp
EFF-001	7/10/2011	Copper (Total)	200.8		4.5	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/8/2011	Copper (Total)	200.8		5.36	ug/L			Comp
EFF-001	8/8/2011	Copper (Total)	200.8		5.44	ug/L			Grab/Comp
EFF-001	9/5/2011	Copper (Total)	200.8		5.4	ug/L			comp
EFF-001	10/9/2011	Copper (Total)	200.8		4	ug/L			Comp
EFF-001	11/7/2011	Copper (Total)	200.8		5	ug/L			comp
EFF-001	12/4/2011	Copper (Total)	200.8		3.91	ug/L			Comp
EFF-001	1/8/2012	Copper (Total)	200.8		4.6	ug/L			Composite
EFF-001	2/5/2012	Copper (Total)	200.8		7	ug/L			Comp
EFF-001	3/11/2012	Copper (Total)	200.8		8.5	ug/L			Comp
EFF-001	4/16/2012	Copper (Total)	200.8		4	ug/L			Comp/ Grab
EFF-001	5/13/2012	Copper (Total)	200.8		4.5	ug/L			Comp
EFF-001	6/10/2012	Copper (Total)	200.8		4.7	ug/L			Comp
EFF-001	7/8/2012	Copper (Total)	200.8		3.7	ug/L			Comp
EFF-001	8/12/2012	Copper (Total)	200.8		5	ug/L			Comp
EFF-001	9/9/2012	Copper (Total)	200.8		4.2	ug/L			Comp
EFF-001	10/7/2012	Copper (Total)	200.8		3.70	ug/L			Comp
EFF-001	11/4/2012	Copper (Total)	200.8		6.04	ug/L			comp
EFF-001	12/2/2012	Copper (Total)	200.8		4.5	ug/L			Comp
EFF-001	1/13/2013	Copper (Total)	200.8		4.8	ug/L			Comp
EFF-001	2/3/2013	Copper (Total)	200.8		6	ug/L			Comp
EFF-001	3/10/2013	Copper (Total)	200.8		6.00	ug/L			Comp
EFF-001	4/7/2013	Copper (Total)	200.8		5.0	ug/L			Comp
EFF-001	5/5/2013	Copper (Total)	200.8	ND	0.29	ug/L		0.29	Comp
EFF-001	6/3/2013	Copper (Total)	200.8		5.9	ug/L			Comp
EFF-001	7/7/2013	Copper (Total)	200.8		6.00	ug/L			Comp
EFF-001	8/4/2013	Copper (Total)	200.8		4.00	ug/L			Comp
EFF-001	9/9/2013	Copper (Total)	200.8		5.00	ug/L			Comp
EFF-001	10/6/2013	Copper (Total)	200.8		4.8	ug/L			Comp
EFF-001	11/3/2013	Copper (Total)	200.8		8.10	ug/L			Comp
EFF-001	12/1/2013	Copper (Total)	200.8		4.9	ug/L			Comp
EFF-001	1/20/2014	Copper (Total)	200.8		3.7	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	2/17/2014	Copper (Total)	200.8		4.4	ug/L			Comp
EFF-001	3/3/2014	Copper (Total)	200.8		4.4	ug/L			Comp
EFF-001	4/6/2014	Copper (Total)	200.8		4.5	ug/L			Comp
EFF-001	1/14/2010	Cyanide	335.2/9014	ND	5	ug/L	5	10	Comp
EFF-001	2/8/2010	Cyanide	335.2/9014	ND	5	ug/L	5	10	Comp
EFF-001	3/16/2010	Cyanide	335.2/9014	ND	5	ug/L	5	10	comp
EFF-001	8/8/2011	Cyanide	335.2/9014	ND	5	ug/L	5	10	Comp
EFF-001	2/5/2012	Cyanide	335.2/9014	ND	5	ug/L	5	10	Comp
EFF-001	4/16/2012	Cyanide	335.2/9014	ND	5	ug/L	5	10	Comp/ Grab
EFF-001	5/13/2012	Cyanide	335.2/9014	ND	5	ug/L	5	10	Comp
EFF-001	6/10/2012	Cyanide	335.2/9014		10	ug/L	5	10	Comp
EFF-001	7/8/2012	Cyanide	335.2/9014	ND	5	ug/L	5	10	Comp
EFF-001	8/12/2012	Cyanide	335.2/9014	ND	10	ug/L		10	Comp
EFF-001	9/9/2012	Cyanide	335.2/9014	ND	10	ug/L		10	Comp
EFF-001	10/7/2012	Cyanide	335.2/9014	ND	10	ug/L		10	Comp
EFF-001	11/4/2012	Cyanide	335.2/9014	ND	10	ug/L		10	comp
EFF-001	12/2/2012	Cyanide	335.2/9014	ND	10	ug/L		10	Comp
EFF-001	1/13/2013	Cyanide	335.2/9014	ND	10	ug/L		10	Comp
EFF-001	2/3/2013	Cyanide	335.2/9014	ND	10	ug/L		10	Comp
EFF-001	3/10/2013	Cyanide	335.2/9014	ND	10	ug/L		10	Comp
EFF-001	1/14/2010	Delta-BHC	8081A/608	ND	0.13	ug/L			Comp
EFF-001	4/16/2012	Delta-BHC	8081A/608	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Delta-BHC	8081A/608	ND	0.005	ug/L			Comp
EFF-001	6/10/2012	Delta-BHC	8081A/608	ND	0.1	ug/L			Comp
EFF-001	7/8/2012	Delta-BHC	8081A/608	ND	0.1	ug/L			Comp
EFF-001	1/14/2010	Diazinon	8141	ND	0.02	ug/L			Comp
EFF-001	4/6/2010	Diazinon	8141	ND	0.02	ug/L			Comp
EFF-001	7/6/2010	Diazinon	8141	ND	0.02	ug/L			Comp
EFF-001	10/3/2010	Diazinon	8141	ND	0.01	ug/L			comp
EFF-001	1/17/2011	Diazinon	8141	ND	0.02	ug/L			Comp
EFF-001	4/3/2011	Diazinon	8141	ND	0.02	ug/L			comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	7/10/2011	Diazinon	8141	ND	0.01	ug/L			Comp
EFF-001	10/9/2011	Diazinon	8141	ND	0.02	ug/L			Comp
EFF-001	1/8/2012	Diazinon	8141	ND	0.02	ug/L			Composite
EFF-001	4/4/2012	Diazinon	8141	ND	0.02	ug/L			Comp
EFF-001	7/8/2012	Diazinon	8141	ND	0.2	ug/L			comp
EFF-001	10/7/2012	Diazinon	8141	ND	0.02	ug/L		0.02	Comp
EFF-001	3/10/2013	Diazinon	8141	ND	0.02	ug/L		0.02	Comp
EFF-001	5/5/2013	Diazinon	8141	ND	0.02	ug/L		0.02	Comp
EFF-001	8/4/2013	Diazinon	8141	ND	0.02	ug/L		0.02	Comp
EFF-001	10/6/2013	Diazinon	8141	ND	0.02	ug/L		0.02	Comp
EFF-001	3/3/2014	Diazinon	8141	ND	0.02	ug/L		0.02	Comp
EFF-001	1/14/2010	Dibenzo(a,h)anthracene	8270C	ND	0.3	ug/L			Comp
EFF-001	4/16/2012	Dibenzo(a,h)anthracene	8270C	ND	0.3	ug/L			Comp/ Grab
EFF-001	5/13/2012	Dibenzo(a,h)anthracene	8270C	ND	0.3	ug/L			Comp
EFF-001	6/10/2012	Dibenzo(a,h)anthracene	8270C	ND	0.3	ug/L			Comp
EFF-001	7/8/2012	Dibenzo(a,h)anthracene	8270C	ND	0.3	ug/L			Comp
EFF-001	8/12/2012	Dibenzo(a,h)anthracene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	9/9/2012	Dibenzo(a,h)anthracene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	10/7/2012	Dibenzo(a,h)anthracene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	11/4/2012	Dibenzo(a,h)anthracene	8270C	ND	0.3	ug/L		0.3	comp
EFF-001	12/2/2012	Dibenzo(a,h)anthracene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/13/2013	Dibenzo(a,h)anthracene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	2/3/2013	Dibenzo(a,h)anthracene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	3/10/2013	Dibenzo(a,h)anthracene	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/12/2010	Dibromochloromethane	8260B		4.8	ug/L			Grab
EFF-001	2/2/2010	Dibromochloromethane	8260B		4.4	ug/L			Grab
EFF-001	3/10/2010	Dibromochloromethane	8260B		5.19	ug/L			Grab
EFF-001	4/7/2010	Dibromochloromethane	8260B		5	ug/L			Grab
EFF-001	5/4/2010	Dibromochloromethane	8260B		6.92	ug/L			Grab
EFF-001	6/2/2010	Dibromochloromethane	8260B		6	ug/L			Grab
EFF-001	7/7/2010	Dibromochloromethane	8260B		8.7	ug/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/2/2010	Dibromochloromethane	8260B		10.9	ug/L			Grab
EFF-001	9/8/2010	Dibromochloromethane	8260B		10.4	ug/L			Grab
EFF-001	10/1/2010	Dibromochloromethane	8260B		10.3	ug/L			Grab
EFF-001	11/2/2010	Dibromochloromethane	8260B		7.9	ug/L			Grab
EFF-001	12/6/2010	Dibromochloromethane	8260B		4.6	ug/L			Grab
EFF-001	1/18/2011	Dibromochloromethane	8260B		1.2	ug/L			Grab
EFF-001	2/7/2011	Dibromochloromethane	8260B		1.5	ug/L			Grab
EFF-001	3/7/2011	Dibromochloromethane	8260B		5.23	ug/L			Grab
EFF-001	4/4/2011	Dibromochloromethane	8260B		5.1	ug/L			Grab
EFF-001	5/9/2011	Dibromochloromethane	8260B		5.5	ug/L			Grab
EFF-001	6/13/2011	Dibromochloromethane	8260B		6.91	ug/L			grab
EFF-001	7/11/2011	Dibromochloromethane	8260B		11.7	ug/L			grab
EFF-001	8/9/2011	Dibromochloromethane	8260B		10.8	ug/L			Grab
EFF-001	9/6/2011	Dibromochloromethane	8260B		8.9	ug/L			Grab
EFF-001	10/10/2011	Dibromochloromethane	8260B		7.6	ug/L			grab
EFF-001	11/8/2011	Dibromochloromethane	8260B		4.4	ug/L			grab
EFF-001	12/5/2011	Dibromochloromethane	8260B		5.4	ug/L			Grab
EFF-001	1/9/2012	Dibromochloromethane	8260B		6.7	ug/L			grab
EFF-001	2/6/2012	Dibromochloromethane	8260B		5	ug/L			Grab
EFF-001	3/12/2012	Dibromochloromethane	8260B		4.8	ug/L			Grab
EFF-001	4/16/2012	Dibromochloromethane	8260B		5.6	ug/L			Comp/ Grab
EFF-001	5/14/2012	Dibromochloromethane	8260B		7.9	ug/L			Grab
EFF-001	6/11/2012	Dibromochloromethane	8260B		9.6	ug/L			Grab
EFF-001	7/9/2012	Dibromochloromethane	8260B		10.5	ug/L			Grab
EFF-001	8/13/2012	Dibromochloromethane	8260B/624		12.8	ug/L			Grab
EFF-001	9/10/2012	Dibromochloromethane	8260B/624		6.7	ug/L			Grab
EFF-001	10/8/2012	Dibromochloromethane	8260B/624		8.3	ug/L			Grab
EFF-001	11/5/2012	Dibromochloromethane	8260B/624		7.8	ug/L			Grab
EFF-001	12/3/2012	Dibromochloromethane	8260B/624		3.8	ug/L			Grab
EFF-001	1/14/2013	Dibromochloromethane	8260B/624		5.2	ug/L			Comp/Grab
EFF-001	2/4/2013	Dibromochloromethane	8260B/624		3.8	ug/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	3/11/2013	Dibromochloromethane	8260B/624		4.5	ug/L			Grab
EFF-001	4/8/2013	Dibromochloromethane	8260B/624		5.98	ug/L			Grab
EFF-001	5/6/2013	Dibromochloromethane	8260B/624		7.29	ug/L			Grab
EFF-001	6/4/2013	Dibromochloromethane	8260B/624		6.75	ug/L			Grab
EFF-001	7/8/2013	Dibromochloromethane	8260B/624		12	ug/L			Grab
EFF-001	8/5/2013	Dibromochloromethane	8260B/624		10.2	ug/L			Grab
EFF-001	9/10/2013	Dibromochloromethane	8260B/624		8.95	ug/L			Grab
EFF-001	10/7/2013	Dibromochloromethane	8260B/624		7.71	ug/L			Grab
EFF-001	11/4/2013	Dibromochloromethane	8260B/624		5.55	ug/L			Grab
EFF-001	12/2/2013	Dibromochloromethane	8260B/624		5.28	ug/L			Grab
EFF-001	1/21/2014	Dibromochloromethane	8260B/624		5.19	ug/L			Grab
EFF-001	2/18/2014	Dibromochloromethane	8260B/624		4.35	ug/L			Grab
EFF-001	3/4/2014	Dibromochloromethane	8260B/624		1.16	ug/L			Grab
EFF-001	4/7/2014	Dibromochloromethane	8260B/624		8.59	ug/L			Grab
EFF-001	1/12/2010	Dichlorobromomethane	8260B		13.7	ug/L			Grab
EFF-001	2/2/2010	Dichlorobromomethane	8260B		15.9	ug/L			Grab
EFF-001	3/10/2010	Dichlorobromomethane	8260B		17.5	ug/L			Grab
EFF-001	4/7/2010	Dichlorobromomethane	8260B		25.9	ug/L			Grab
EFF-001	5/4/2010	Dichlorobromomethane	8260B		20.7	ug/L			Grab
EFF-001	6/2/2010	Dichlorobromomethane	8260B		18.8	ug/L			Grab
EFF-001	7/7/2010	Dichlorobromomethane	8260B		18.3	ug/L			Grab
EFF-001	8/2/2010	Dichlorobromomethane	8260B		27.9	ug/L			Grab
EFF-001	9/8/2010	Dichlorobromomethane	8260B		29.7	ug/L			Grab
EFF-001	10/1/2010	Dichlorobromomethane	8260B		33	ug/L			Grab
EFF-001	11/2/2010	Dichlorobromomethane	8260B		23.4	ug/L			Grab
EFF-001	12/6/2010	Dichlorobromomethane	8260B		17	ug/L			Grab
EFF-001	1/18/2011	Dichlorobromomethane	8260B		5.4	ug/L			Grab
EFF-001	2/7/2011	Dichlorobromomethane	8260B		6.3	ug/L			Grab
EFF-001	3/7/2011	Dichlorobromomethane	8260B		17.5	ug/L			Grab
EFF-001	4/4/2011	Dichlorobromomethane	8260B		18	ug/L			Grab
EFF-001	5/9/2011	Dichlorobromomethane	8260B		22.2	ug/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	6/13/2011	Dichlorobromomethane	8260B		20.1	ug/L			grab
EFF-001	7/11/2011	Dichlorobromomethane	8260B		40.6	ug/L			grab
EFF-001	8/9/2011	Dichlorobromomethane	8260B		33.4	ug/L			Grab
EFF-001	9/6/2011	Dichlorobromomethane	8260B		28.9	ug/L			Grab
EFF-001	10/10/2011	Dichlorobromomethane	8260B		28.6	ug/L			grab
EFF-001	11/8/2011	Dichlorobromomethane	8260B		19.7	ug/L			grab
EFF-001	12/5/2011	Dichlorobromomethane	8260B		26.7	ug/L			Grab
EFF-001	1/9/2012	Dichlorobromomethane	8260B		16.7	ug/L			grab
EFF-001	2/6/2012	Dichlorobromomethane	8260B		15.8	ug/L			Grab
EFF-001	3/12/2012	Dichlorobromomethane	8260B		19.2	ug/L			Grab
EFF-001	4/16/2012	Dichlorobromomethane	8260B		22.3	ug/L			Comp/ Grab
EFF-001	5/14/2012	Dichlorobromomethane	8260B		27.8	ug/L			Grab
EFF-001	6/11/2012	Dichlorobromomethane	8260B		31.4	ug/L			Grab
EFF-001	7/9/2012	Dichlorobromomethane	8260B		33.4	ug/L			Grab
EFF-001	8/13/2012	Dichlorobromomethane	8260B/624		36.3	ug/L			Grab
EFF-001	9/10/2012	Dichlorobromomethane	8260B/624		34	ug/L			Grab
EFF-001	10/8/2012	Dichlorobromomethane	8260B/624		26.2	ug/L			Grab
EFF-001	11/5/2012	Dichlorobromomethane	8260B/624		24.3	ug/L			Grab
EFF-001	12/3/2012	Dichlorobromomethane	8260B/624		13.9	ug/L			Grab
EFF-001	1/14/2013	Dichlorobromomethane	8260B/624		15.6	ug/L			Comp/Grab
EFF-001	2/4/2013	Dichlorobromomethane	8260B/624		14.5	ug/L			Grab
EFF-001	3/11/2013	Dichlorobromomethane	8260B/624		21	ug/L			Grab
EFF-001	4/8/2013	Dichlorobromomethane	8260B/624		20.8	ug/L			Grab
EFF-001	5/6/2013	Dichlorobromomethane	8260B/624		21.5	ug/L			Grab
EFF-001	6/4/2013	Dichlorobromomethane	8260B/624		27.2	ug/L			Grab
EFF-001	7/8/2013	Dichlorobromomethane	8260B/624		41.9	ug/L			Grab
EFF-001	8/5/2013	Dichlorobromomethane	8260B/624		30.0	ug/L			Grab
EFF-001	9/10/2013	Dichlorobromomethane	8260B/624		25.8	ug/L			Grab
EFF-001	10/7/2013	Dichlorobromomethane	8260B/624		25.1	ug/L			Grab
EFF-001	11/4/2013	Dichlorobromomethane	8260B/624		19.3	ug/L			Grab
EFF-001	12/2/2013	Dichlorobromomethane	8260B/624		23.7	ug/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/21/2014	Dichlorobromomethane	8260B/624		14.7	ug/L			Grab
EFF-001	2/18/2014	Dichlorobromomethane	8260B/624		12.8	ug/L			Grab
EFF-001	3/4/2014	Dichlorobromomethane	8260B/624		5.33	ug/L			Grab
EFF-001	4/7/2014	Dichlorobromomethane	8260B/624		29.1	ug/L			Grab
EFF-001	8/13/2012	Dichloromethane	8260B/624	ND	0.4	ug/L		0.4	Grab
EFF-001	9/10/2012	Dichloromethane	8260B/624	ND	0.4	ug/L		0.4	Grab
EFF-001	10/8/2012	Dichloromethane	8260B/624	ND	0.4	ug/L		0.4	Grab
EFF-001	11/5/2012	Dichloromethane	8260B/624	ND	0.4	ug/L		0.4	Grab
EFF-001	12/3/2012	Dichloromethane	8260B/624	ND	0.4	ug/L		0.4	Grab
EFF-001	1/14/2013	Dichloromethane	8260B/624	ND	0.4	ug/L		0.4	Comp/Grab
EFF-001	2/4/2013	Dichloromethane	8260B/624	ND	0.4	ug/L		0.4	Grab
EFF-001	3/11/2013	Dichloromethane	8260B/624	ND	0.4	ug/L		0.4	Grab
EFF-001	1/14/2010	Dieldrin	8081A/608	ND	0.08	ug/L			Comp
EFF-001	4/16/2012	Dieldrin	8081A/608	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Dieldrin	8081A/608	ND	0.01	ug/L			Comp
EFF-001	6/10/2012	Dieldrin	8081A/608	ND	0.1	ug/L			Comp
EFF-001	7/8/2012	Dieldrin	8081A/608	ND	0.1	ug/L			Comp
EFF-001	1/14/2010	Diethyl phthalate	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	Diethyl phthalate	8270C		6.7	ug/L			Comp/ Grab
EFF-001	5/13/2012	Diethyl phthalate	8270C		2.6	ug/L			Comp
EFF-001	6/10/2012	Diethyl phthalate	8270C	J	1	ug/L			Comp
EFF-001	7/8/2012	Diethyl phthalate	8270C	ND	0.2	ug/L			Comp
EFF-001	8/12/2012	Diethyl phthalate	8270C	J	1.0	ug/L			Comp
EFF-001	9/9/2012	Diethyl phthalate	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	10/7/2012	Diethyl phthalate	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	11/4/2012	Diethyl phthalate	8270C	J	0.6	ug/L			comp
EFF-001	12/2/2012	Diethyl phthalate	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/13/2013	Diethyl phthalate	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	2/3/2013	Diethyl phthalate	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	3/10/2013	Diethyl phthalate	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/14/2010	Dimethyl Phthalate	8270C	ND	1.8	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/16/2012	Dimethyl Phthalate	8270C	ND	0.8	ug/L			Comp/ Grab
EFF-001	5/13/2012	Dimethyl Phthalate	8270C	ND	0.8	ug/L			Comp
EFF-001	6/10/2012	Dimethyl Phthalate	8270C	ND	0.8	ug/L			Comp
EFF-001	7/8/2012	Dimethyl Phthalate	8270C	ND	0.8	ug/L			Comp
EFF-001	8/12/2012	Dimethyl Phthalate	8270C	ND	0.8	ug/L		0.8	Comp
EFF-001	9/9/2012	Dimethyl Phthalate	8270C	ND	0.8	ug/L		0.8	Comp
EFF-001	10/7/2012	Dimethyl Phthalate	8270C	ND	0.8	ug/L		0.8	Comp
EFF-001	11/4/2012	Dimethyl Phthalate	8270C	ND	0.8	ug/L		0.8	comp
EFF-001	12/2/2012	Dimethyl Phthalate	8270C	ND	0.8	ug/L		0.8	Comp
EFF-001	1/13/2013	Dimethyl Phthalate	8270C	ND	0.8	ug/L		0.8	Comp
EFF-001	2/3/2013	Dimethyl Phthalate	8270C	ND	0.8	ug/L		0.8	Comp
EFF-001	3/10/2013	Dimethyl Phthalate	8270C	ND	0.8	ug/L		0.8	Comp
EFF-001	1/14/2010	Di-n-butylphthalate	8270C	ND	0.4	ug/L			Comp
EFF-001	4/16/2012	Di-n-butylphthalate	8270C	ND	0.4	ug/L			Comp/ Grab
EFF-001	5/13/2012	Di-n-butylphthalate	8270C	J	0.9	ug/L			Comp
EFF-001	6/10/2012	Di-n-butylphthalate	8270C	J	0.5	ug/L			Comp
EFF-001	7/8/2012	Di-n-butylphthalate	8270C	ND	0.4	ug/L			Comp
EFF-001	8/12/2012	Di-n-butylphthalate	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	9/9/2012	Di-n-butylphthalate	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	10/7/2012	Di-n-butylphthalate	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	11/4/2012	Di-n-butylphthalate	8270C	J	0.8	ug/L			comp
EFF-001	12/2/2012	Di-n-butylphthalate	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	1/13/2013	Di-n-butylphthalate	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	2/3/2013	Di-n-butylphthalate	8270C	J	1	ug/L			Comp
EFF-001	3/10/2013	Di-n-butylphthalate	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	1/14/2010	Di-n-octylphthalate	8270C	ND	0.4	ug/L			Comp
EFF-001	4/16/2012	Di-n-octylphthalate	8270C	ND	0.4	ug/L			Comp/ Grab
EFF-001	5/13/2012	Di-n-octylphthalate	8270C	ND	0.4	ug/L			Comp
EFF-001	6/10/2012	Di-n-octylphthalate	8270C	ND	0.4	ug/L			Comp
EFF-001	7/8/2012	Di-n-octylphthalate	8270C	ND	0.4	ug/L			Comp
EFF-001	8/12/2012	Di-n-octylphthalate	8270C	ND	0.4	ug/L		0.4	Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	9/9/2012	Di-n-octylphthalate	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	10/7/2012	Di-n-octylphthalate	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	11/4/2012	Di-n-octylphthalate	8270C	ND	0.4	ug/L		0.4	comp
EFF-001	12/2/2012	Di-n-octylphthalate	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	1/13/2013	Di-n-octylphthalate	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	2/3/2013	Di-n-octylphthalate	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	3/10/2013	Di-n-octylphthalate	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	6/1/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		852	umhos/cm			Grab
EFF-001	6/7/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		893	umhos/cm			Grab
EFF-001	6/15/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		922	umhos/cm			Grab
EFF-001	6/21/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		1004	umhos/cm			Grab
EFF-001	6/28/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		1047	umhos/cm			Grab
EFF-001	7/1/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		960	umhos/cm			Grab
EFF-001	7/8/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		958	umhos/cm			Grab
EFF-001	7/15/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		1028	umhos/cm			Grab
EFF-001	7/22/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		1031	umhos/cm			Grab
EFF-001	7/29/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		898	umhos/cm			Grab
EFF-001	8/2/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		917	umhos/cm			Grab
EFF-001	8/9/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		985	umhos/cm			Grab
EFF-001	8/16/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		897	umhos/cm			Grab
EFF-001	8/23/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		1001	umhos/cm			Grab
EFF-001	8/30/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		1018	umhos/cm			Grab
EFF-001	9/7/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		920	umhos/cm			Grab
EFF-001	9/13/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		944	umhos/cm			Grab
EFF-001	9/20/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		1042	umhos/cm			Grab
EFF-001	9/27/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		907	umhos/cm			Grab
EFF-001	10/4/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		880	umhos/cm			Grab
EFF-001	10/11/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		989	umhos/cm			Grab
EFF-001	10/18/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		878	umhos/cm			Grab
EFF-001	10/25/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		811	umhos/cm			Grab
EFF-001	11/1/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		945	umhos/cm			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	11/8/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		952	umhos/cm			Grab
EFF-001	11/15/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		874	umhos/cm			Grab
EFF-001	11/22/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		803	umhos/cm			Grab
EFF-001	11/29/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		941	umhos/cm			Grab
EFF-001	12/6/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		950	umhos/cm			Grab
EFF-001	12/13/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		981	umhos/cm			Grab
EFF-001	12/20/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		770	umhos/cm			Grab
EFF-001	12/27/2010	Electrical Conductivity @ 25 Deg. C	SM2510B		901	umhos/cm			Grab
EFF-001	1/3/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		774	umhos/cm			Grab
EFF-001	1/10/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		833	umhos/cm			Grab
EFF-001	1/18/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		918	umhos/cm			Grab
EFF-001	1/24/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		915	umhos/cm			Grab
EFF-001	1/31/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		934	umhos/cm			Grab
EFF-001	2/7/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		903	umhos/cm			Grab
EFF-001	2/14/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		867	umhos/cm			Grab
EFF-001	2/22/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		774	umhos/cm			Grab
EFF-001	2/28/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		799	umhos/cm			Grab
EFF-001	3/7/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		858	umhos/cm			Grab
EFF-001	3/14/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		905	umhos/cm			Grab
EFF-001	3/21/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		705	umhos/cm			Grab
EFF-001	3/28/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		681	umhos/cm			Grab
EFF-001	4/4/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		835	umhos/cm			Grab
EFF-001	4/11/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		916	umhos/cm			Grab
EFF-001	4/18/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		944	umhos/cm			Grab
EFF-001	4/25/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		902	umhos/cm			Grab
EFF-001	5/2/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		946	umhos/cm			Grab
EFF-001	5/9/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		962	umhos/cm			Grab
EFF-001	5/16/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		856	umhos/cm			Grab
EFF-001	5/23/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		949	umhos/cm			Grab
EFF-001	5/31/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		863	umhos/cm			Grab
EFF-001	6/6/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		846	umhos/cm			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	6/13/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		899	umhos/cm			Grab
EFF-001	6/20/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		883	umhos/cm			Grab
EFF-001	6/27/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		940	umhos/cm			Grab
EFF-001	7/5/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		950	umhos/cm			Grab
EFF-001	7/11/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		942	umhos/cm			Grab
EFF-001	7/18/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		1028	umhos/cm			Grab
EFF-001	7/25/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		1021	umhos/cm			Grab
EFF-001	8/1/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		906	umhos/cm			Grab
EFF-001	8/8/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		932	umhos/cm			Grab
EFF-001	8/15/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		727	umhos/cm			Grab
EFF-001	8/22/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		920	umhos/cm			Grab
EFF-001	8/29/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		907	umhos/cm			Grab
EFF-001	9/6/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		817	umhos/cm			Grab
EFF-001	9/12/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		874	umhos/cm			Grab
EFF-001	9/19/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		880	umhos/cm			Grab
EFF-001	9/26/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		978	umhos/cm			Grab
EFF-001	10/3/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		975	umhos/cm			Grab
EFF-001	10/10/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		971	umhos/cm			Grab
EFF-001	10/17/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		938	umhos/cm			Grab
EFF-001	10/24/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		1012	umhos/cm			Grab
EFF-001	10/31/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		857	umhos/cm			Grab
EFF-001	11/7/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		941	umhos/cm			Grab
EFF-001	11/14/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		962	umhos/cm			Grab
EFF-001	11/21/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		891	umhos/cm			Grab
EFF-001	11/28/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		813	umhos/cm			Grab
EFF-001	12/5/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		911	umhos/cm			Grab
EFF-001	12/12/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		933	umhos/cm			Grab
EFF-001	12/19/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		893	umhos/cm			Grab
EFF-001	12/27/2011	Electrical Conductivity @ 25 Deg. C	SM2510B		823	umhos/cm			Grab
EFF-001	1/3/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		876	umhos/cm			Grab
EFF-001	1/9/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		964	umhos/cm			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/17/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		924	umhos/cm			Grab
EFF-001	1/23/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		859	umhos/cm			Grab
EFF-001	1/30/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		879	umhos/cm			Grab
EFF-001	2/6/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		953	umhos/cm			Grab
EFF-001	2/13/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		867	umhos/cm			Grab
EFF-001	2/21/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		877	umhos/cm			Grab
EFF-001	2/27/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		853	umhos/cm			Grab
EFF-001	3/5/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		876	umhos/cm			Grab
EFF-001	3/12/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		924	umhos/cm			Grab
EFF-001	3/19/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		796	umhos/cm			Grab
EFF-001	3/26/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		891	umhos/cm			Grab
EFF-001	4/2/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		890	umhos/cm			Grab
EFF-001	4/9/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		910	umhos/cm			Grab
EFF-001	4/16/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		930	umhos/cm			Grab
EFF-001	4/23/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		920	umhos/cm			Grab
EFF-001	4/30/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		835	umhos/cm			Grab
EFF-001	5/7/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		901	umhos/cm			Grab
EFF-001	5/14/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		877	umhos/cm			Grab
EFF-001	5/21/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		957	umhos/cm			Grab
EFF-001	5/29/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		912	umhos/cm			Grab
EFF-001	6/4/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		948	umhos/cm			Grab
EFF-001	6/11/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		946	umhos/cm			Grab
EFF-001	6/18/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		935	umhos/cm			Grab
EFF-001	6/25/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		960	umhos/cm			Grab
EFF-001	7/2/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		908	umhos/cm			Grab
EFF-001	7/9/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		920	umhos/cm			Grab
EFF-001	7/16/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		956	umhos/cm			Grab
EFF-001	7/23/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		929	umhos/cm			Grab
EFF-001	7/30/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		963	umhos/cm			Grab
EFF-001	8/6/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		870	umhos/cm			Grab
EFF-001	8/13/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		934	umhos/cm			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/20/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		941	umhos/cm			Grab
EFF-001	8/27/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		911	umhos/cm			Grab
EFF-001	9/4/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		962	umhos/cm			Grab
EFF-001	9/10/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		932	umhos/cm			Grab
EFF-001	9/17/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		1017	umhos/cm			Grab
EFF-001	9/24/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		1050	umhos/cm			Grab
EFF-001	10/1/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		987	umhos/cm			Grab
EFF-001	10/8/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		899	umhos/cm			Grab
EFF-001	10/15/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		951	umhos/cm			Grab
EFF-001	10/22/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		947	umhos/cm			Grab
EFF-001	10/29/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		1012	umhos/cm			Grab
EFF-001	11/5/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		960	umhos/cm			Grab
EFF-001	11/13/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		991	umhos/cm			Grab
EFF-001	11/19/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		892	umhos/cm			Grab
EFF-001	11/26/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		928	umhos/cm			Grab
EFF-001	12/3/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		982	umhos/cm			Grab
EFF-001	12/10/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		929	umhos/cm			Grab
EFF-001	12/17/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		926	umhos/cm			Grab
EFF-001	12/24/2012	Electrical Conductivity @ 25 Deg. C	SM2510B		987	umhos/cm			Grab
EFF-001	1/2/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		1008	umhos/cm			Grab
EFF-001	1/7/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		852	umhos/cm			Grab
EFF-001	1/14/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		925	umhos/cm			Grab
EFF-001	1/22/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		888	umhos/cm			Grab
EFF-001	1/28/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		890	umhos/cm			Grab
EFF-001	2/4/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		904	umhos/cm			Grab
EFF-001	2/11/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		912	umhos/cm			Grab
EFF-001	2/19/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		882	umhos/cm			Grab
EFF-001	2/25/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		891	umhos/cm			Grab
EFF-001	3/6/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		916	umhos/cm			Grab
EFF-001	3/11/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		890	umhos/cm			Grab
EFF-001	3/18/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		965	umhos/cm			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	3/25/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		981	umhos/cm			Grab
EFF-001	4/1/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		844	umhos/cm			Grab
EFF-001	4/8/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		933	umhos/cm			Grab
EFF-001	4/15/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		925	umhos/cm			Grab
EFF-001	4/22/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		918	umhos/cm			Grab
EFF-001	4/29/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		946	umhos/cm			Grab
EFF-001	5/6/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		975	umhos/cm			Grab
EFF-001	5/13/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		890	umhos/cm			Grab
EFF-001	5/20/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		964	umhos/cm			Grab
EFF-001	5/28/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		940	umhos/cm			Grab
EFF-001	6/3/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		950	umhos/cm			Grab
EFF-001	6/10/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		934	umhos/cm			Grab
EFF-001	6/17/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		1040	umhos/cm			Grab
EFF-001	6/24/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		985	umhos/cm			Grab
EFF-001	7/1/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		971	umhos/cm			Grab
EFF-001	7/8/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		1018	umhos/cm			Grab
EFF-001	7/15/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		983	umhos/cm			Grab
EFF-001	7/22/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		1004	umhos/cm			Grab
EFF-001	7/29/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		998	umhos/cm			Grab
EFF-001	8/5/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		939	umhos/cm			Grab
EFF-001	8/12/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		993	umhos/cm			Grab
EFF-001	8/19/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		997	umhos/cm			Grab
EFF-001	8/26/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		985	umhos/cm			Grab
EFF-001	9/3/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		997	umhos/cm			Grab
EFF-001	9/9/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		977	umhos/cm			Grab
EFF-001	9/16/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		1020	umhos/cm			Grab
EFF-001	9/23/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		997	umhos/cm			Grab
EFF-001	9/30/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		1016	umhos/cm			Grab
EFF-001	10/7/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		1018	umhos/cm			Grab
EFF-001	10/14/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		976	umhos/cm			Grab
EFF-001	10/21/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		939	umhos/cm			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	10/28/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		1007	umhos/cm			Grab
EFF-001	11/4/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		1077	umhos/cm			Grab
EFF-001	11/12/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		990	umhos/cm			Grab
EFF-001	11/18/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		983	umhos/cm			Grab
EFF-001	11/25/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		1040	umhos/cm			Grab
EFF-001	12/2/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		981	umhos/cm			Grab
EFF-001	12/9/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		951	umhos/cm			Grab
EFF-001	12/16/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		1010	umhos/cm			Grab
EFF-001	12/23/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		1001	umhos/cm			Grab
EFF-001	12/30/2013	Electrical Conductivity @ 25 Deg. C	SM2510B		1004	umhos/cm			Grab
EFF-001	1/6/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1078	umhos/cm			Grab
EFF-001	1/13/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		991	umhos/cm			Grab
EFF-001	1/21/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		928	umhos/cm			Grab
EFF-001	1/27/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		993	umhos/cm			Grab
EFF-001	2/3/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1033	umhos/cm			Grab
EFF-001	2/10/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1000	umhos/cm			Grab
EFF-001	2/18/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		972	umhos/cm			Grab
EFF-001	2/24/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		980	umhos/cm			Grab
EFF-001	3/3/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		879	umhos/cm			Grab
EFF-001	3/10/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1023	umhos/cm			Grab
EFF-001	3/17/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		978	umhos/cm			Grab
EFF-001	3/18/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		959	umhos/cm			Grab
EFF-001	3/24/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1031	umhos/cm			Grab
EFF-001	3/31/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		883	umhos/cm			Grab
EFF-001	4/7/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		994	umhos/cm			Grab
EFF-001	4/14/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1010	umhos/cm			Grab
EFF-001	4/21/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1036	umhos/cm			Grab
EFF-001	4/28/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1014	umhos/cm			Grab
EFF-001	5/5/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		985	umhos/cm			Grab
EFF-001	5/12/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1032	umhos/cm			Grab
EFF-001	5/19/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1099	umhos/cm			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	5/28/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		995	umhos/cm			Grab
EFF-001	6/2/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1035	umhos/cm			Grab
EFF-001	6/9/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1100	umhos/cm			Grab
EFF-001	6/16/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1043	umhos/cm			Grab
EFF-001	6/23/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1047	umhos/cm			Grab
EFF-001	6/30/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1190	umhos/cm			Grab
EFF-001	7/7/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1040	umhos/cm			Grab
EFF-001	7/14/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1083	umhos/cm			Grab
EFF-001	7/21/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1138	umhos/cm			Grab
EFF-001	7/28/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1150	umhos/cm			Grab
EFF-001	8/4/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1196	umhos/cm			Grab
EFF-001	8/11/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1199	umhos/cm			Grab
EFF-001	8/18/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1020	umhos/cm			Grab
EFF-001	8/25/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1072	umhos/cm			Grab
EFF-001	8/27/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1111	umhos/cm			Grab
EFF-001	8/28/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1095	umhos/cm			Grab
EFF-001	8/29/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1116	umhos/cm			Grab
EFF-001	8/30/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1107	umhos/cm			Grab
EFF-001	8/31/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1080	umhos/cm			Grab
EFF-001	9/1/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1110	umhos/cm			Grab
EFF-001	9/2/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1033	umhos/cm			Grab
EFF-001	9/3/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1007	umhos/cm			Grab
EFF-001	9/4/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1040	umhos/cm			Grab
EFF-001	9/5/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1099	umhos/cm			Grab
EFF-001	9/6/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1052	umhos/cm			Grab
EFF-001	9/7/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1132	umhos/cm			Grab
EFF-001	9/8/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1106	umhos/cm			Grab
EFF-001	9/9/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1040	umhos/cm			Grab
EFF-001	9/10/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1073	umhos/cm			Grab
EFF-001	9/11/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1134	umhos/cm			Grab
EFF-001	9/12/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1214	umhos/cm			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	9/13/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1148	umhos/cm			Grab
EFF-001	9/14/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1105	umhos/cm			Grab
EFF-001	9/15/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1100	umhos/cm			Grab
EFF-001	9/16/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1050	umhos/cm			Grab
EFF-001	9/17/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1073	umhos/cm			Grab
EFF-001	9/18/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1140	umhos/cm			Grab
EFF-001	9/19/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1059	umhos/cm			Grab
EFF-001	9/20/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1041	umhos/cm			Grab
EFF-001	9/21/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1160	umhos/cm			Grab
EFF-001	9/22/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1060	umhos/cm			Grab
EFF-001	9/23/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1032	umhos/cm			Grab
EFF-001	9/24/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1132	umhos/cm			Grab
EFF-001	9/25/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1123	umhos/cm			Grab
EFF-001	9/26/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1111	umhos/cm			Grab
EFF-001	9/27/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1141	umhos/cm			Grab
EFF-001	9/28/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1325	umhos/cm			Grab
EFF-001	9/29/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1154	umhos/cm			Grab
EFF-001	9/30/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1076	umhos/cm			Grab
EFF-001	10/6/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1077	umhos/cm			Grab
EFF-001	10/13/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1083	umhos/cm			Grab
EFF-001	10/20/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1047	umhos/cm			Grab
EFF-001	10/27/2014	Electrical Conductivity @ 25 Deg. C	SM2510B		1055	umhos/cm			Grab
EFF-001	1/14/2010	Endosulfan Sulfate	8081A/608	ND	0.22	ug/L			Comp
EFF-001	4/16/2012	Endosulfan Sulfate	8081A/608	ND	1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Endosulfan Sulfate	8081A/608	ND	0.05	ug/L			Comp
EFF-001	6/10/2012	Endosulfan Sulfate	8081A/608	ND	1	ug/L			Comp
EFF-001	7/8/2012	Endosulfan Sulfate	8081A/608	ND	1	ug/L			Comp
EFF-001	1/14/2010	Endrin	8081A/608	ND	0.09	ug/L			Comp
EFF-001	4/16/2012	Endrin	8081A/608	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Endrin	8081A/608	ND	0.01	ug/L			Comp
EFF-001	6/10/2012	Endrin	8081A/608	ND	0.1	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	7/8/2012	Endrin	8081A/608	ND	0.1	ug/L			Comp
EFF-001	1/14/2010	Endrin Aldehyde	8081A/608	ND	0.07	ug/L			Comp
EFF-001	4/16/2012	Endrin Aldehyde	8081A/608	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	Endrin Aldehyde	8081A/608	ND	0.01	ug/L			Comp
EFF-001	6/10/2012	Endrin Aldehyde	8081A/608	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	Endrin Aldehyde	8081A/608	ND	0.5	ug/L			Comp
EFF-001	1/12/2010	Ethylbenzene	8260B	ND	0.3	ug/L			Grab
EFF-001	2/2/2010	Ethylbenzene	8260B	ND	0.3	ug/L			Grab
EFF-001	4/16/2012	Ethylbenzene	8260B	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/14/2012	Ethylbenzene	8260B	ND	0.1	ug/L			Grab
EFF-001	6/11/2012	Ethylbenzene	8260B	ND	0.1	ug/L			Grab
EFF-001	7/9/2012	Ethylbenzene	8260B	ND	0.1	ug/L			Grab
EFF-001	8/13/2012	Ethylbenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	9/10/2012	Ethylbenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	10/8/2012	Ethylbenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	11/5/2012	Ethylbenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	12/3/2012	Ethylbenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/14/2013	Ethylbenzene	8260B/624	ND	0.1	ug/L		0.1	Comp/Grab
EFF-001	2/4/2013	Ethylbenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	3/11/2013	Ethylbenzene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/14/2010	Fluoranthene	8270C	ND	0.4	ug/L			Comp
EFF-001	4/16/2012	Fluoranthene	8270C	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/13/2012	Fluoranthene	8270C	ND	0.2	ug/L			Comp
EFF-001	6/10/2012	Fluoranthene	8270C	ND	0.2	ug/L			Comp
EFF-001	7/8/2012	Fluoranthene	8270C	ND	0.2	ug/L			Comp
EFF-001	8/12/2012	Fluoranthene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	9/9/2012	Fluoranthene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	10/7/2012	Fluoranthene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	11/4/2012	Fluoranthene	8270C	ND	0.4	ug/L		0.4	comp
EFF-001	12/2/2012	Fluoranthene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	1/13/2013	Fluoranthene	8270C	ND	0.4	ug/L		0.4	Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	2/3/2013	Fluoranthene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	3/10/2013	Fluoranthene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	1/14/2010	Fluorene	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	Fluorene	8270C	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/13/2012	Fluorene	8270C	ND	0.2	ug/L			Comp
EFF-001	6/10/2012	Fluorene	8270C	ND	0.2	ug/L			Comp
EFF-001	7/8/2012	Fluorene	8270C	ND	0.2	ug/L			Comp
EFF-001	8/12/2012	Fluorene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	9/9/2012	Fluorene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	10/7/2012	Fluorene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	11/4/2012	Fluorene	8270C	ND	0.2	ug/L		0.2	comp
EFF-001	12/2/2012	Fluorene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/13/2013	Fluorene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	2/3/2013	Fluorene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	3/10/2013	Fluorene	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	5/3/2010	Fluoride	SM4500-FC		0.18	mg/L			Comp
EFF-001	8/2/2010	Fluoride	SM4500-F C		0.13	mg/L			Comp
EFF-001	2/21/2011	Fluoride	SM4500-FC		0.13	mg/L			comp
EFF-001	8/8/2011	Fluoride	SM4500-FC		0.11	mg/L			Comp
EFF-001	2/5/2012	Fluoride	SM4500-FC		0.13	mg/L			Comp
EFF-001	8/7/2012	Fluoride	SM4500-FC		0.12	mg/L			Comp
EFF-001	1/14/2010	Gamma-BHC	8081A/608	ND	0.11	ug/L			Comp
EFF-001	4/16/2012	Gamma-BHC	8081A/608	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Gamma-BHC	8081A/608	ND	0.2	ug/L			Comp
EFF-001	6/10/2012	Gamma-BHC	8081A/608	ND	0.1	ug/L			Comp
EFF-001	7/8/2012	Gamma-BHC	8081A/608	ND	0.1	ug/L			Comp
EFF-001	1/12/2010	Hardness (as CaCO3)	200.7		88.2	mg/L			Grab
EFF-001	1/14/2010	Hardness (as CaCO3)	200.7		95.3	mg/L			Comp
EFF-001	2/8/2010	Hardness (as CaCO3)	200.7		95.9	mg/L			Comp
EFF-001	3/16/2010	Hardness (as CaCO3)	200.7		98.7	mg/L			comp
EFF-001	4/6/2010	Hardness (as CaCO3)	200.7		98.1	mg/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	5/3/2010	Hardness (as CaCO3)	200.7		104	mg/L			Comp
EFF-001	5/3/2010	Hardness (as CaCO3)	200.7		102	mg/L			Comp
EFF-001	6/1/2010	Hardness (as CaCO3)	200.7		110	mg/L			Comp
EFF-001	7/6/2010	Hardness (as CaCO3)	200.7		111	mg/L			Comp
EFF-001	8/2/2010	Hardness (as CaCO3)	200.7		110	mg/L			Comp
EFF-001	8/3/2010	Hardness (as CaCO3)	200.7		114	mg/L			comp
EFF-001	9/7/2010	Hardness (as CaCO3)	200.7		103	mg/L			comp
EFF-001	10/3/2010	Hardness (as CaCO3)	200.7		110	mg/L			comp
EFF-001	11/1/2010	Hardness (as CaCO3)	200.7		119	mg/L			Comp
EFF-001	12/5/2010	Hardness (as CaCO3)	200.7		112	mg/L			comp
EFF-001	1/17/2011	Hardness (as CaCO3)	200.7		109	mg/L			Comp
EFF-001	2/6/2011	Hardness (as CaCO3)	200.7		120	mg/L			Comp
EFF-001	2/21/2011	Hardness (as CaCO3)	200.7		111	mg/L			comp
EFF-001	3/6/2011	Hardness (as CaCO3)	200.7		123	mg/L			Comp
EFF-001	4/3/2011	Hardness (as CaCO3)	200.7		119	mg/L			comp
EFF-001	5/8/2011	Hardness (as CaCO3)	200.7		115	mg/L			Comp
EFF-001	6/12/2011	Hardness (as CaCO3)	200.7		110	mg/L			comp
EFF-001	7/10/2011	Hardness (as CaCO3)	200.7		117	mg/L			Comp
EFF-001	8/8/2011	Hardness (as CaCO3)	200.7		117	mg/L			Comp
EFF-001	9/5/2011	Hardness (as CaCO3)	200.7		105	mg/L			comp
EFF-001	10/9/2011	Hardness (as CaCO3)	200.7		109	mg/L			Comp
EFF-001	11/7/2011	Hardness (as CaCO3)	200.7		106	mg/L			comp
EFF-001	12/4/2011	Hardness (as CaCO3)	200.7		106	mg/L			Comp
EFF-001	1/8/2012	Hardness (as CaCO3)	200.7		112	mg/L			Composite
EFF-001	2/5/2012	Hardness (as CaCO3)	200.7		92.9	mg/L			Comp
EFF-001	3/11/2012	Hardness (as CaCO3)	200.7		107	mg/L			Comp
EFF-001	4/4/2012	Hardness (as CaCO3)	200.7		120	mg/L			Comp
EFF-001	5/13/2012	Hardness (as CaCO3)	200.7		109	mg/L			Comp
EFF-001	6/10/2012	Hardness (as CaCO3)	200.7		111	mg/L			Comp
EFF-001	7/8/2012	Hardness (as CaCO3)	200.7		110	mg/L			Comp
EFF-001	8/7/2012	Hardness (as CaCO3)	200.7		116	mg/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/12/2012	Hardness (as CaCO3)	200.7		115	mg/L			Comp
EFF-001	9/9/2012	Hardness (as CaCO3)	200.7		106	mg/L			Comp
EFF-001	10/7/2012	Hardness (as CaCO3)	200.7		119	mg/L			Comp
EFF-001	11/4/2012	Hardness (as CaCO3)	200.7		119	mg/L			comp
EFF-001	12/2/2012	Hardness (as CaCO3)	200.7		104	mg/L			Comp
EFF-001	1/13/2013	Hardness (as CaCO3)	200.7		116	mg/L			Comp
EFF-001	2/3/2013	Hardness (as CaCO3)	200.7		115	mg/L			Comp
EFF-001	3/10/2013	Hardness (as CaCO3)	200.7		129	mg/L			Comp
EFF-001	4/7/2013	Hardness (as CaCO3)	200.7		120	mg/L			Comp
EFF-001	5/5/2013	Hardness (as CaCO3)	200.7		114	mg/L			Comp
EFF-001	6/3/2013	Hardness (as CaCO3)	200.7		120	mg/L			Comp
EFF-001	7/7/2013	Hardness (as CaCO3)	200.7		127	mg/L			Comp
EFF-001	8/4/2013	Hardness (as CaCO3)	200.7		129	mg/L			Comp
EFF-001	9/9/2013	Hardness (as CaCO3)	200.7		124	mg/L			Comp
EFF-001	10/6/2013	Hardness (as CaCO3)	200.7		122	mg/L			Comp
EFF-001	11/3/2013	Hardness (as CaCO3)	200.7		110	mg/L			Comp
EFF-001	12/1/2013	Hardness (as CaCO3)	200.7		119	mg/L			Comp
EFF-001	1/20/2014	Hardness (as CaCO3)	200.7		125	mg/L			Comp
EFF-001	2/17/2014	Hardness (as CaCO3)	200.7		116	mg/L			Comp
EFF-001	3/3/2014	Hardness (as CaCO3)	200.7		115	mg/L			Comp
EFF-001	4/6/2014	Hardness (as CaCO3)	200.7		118	mg/L			Comp
EFF-001	1/14/2010	Heptachlor	8081A/608	ND	0.1	ug/L			Comp
EFF-001	4/16/2012	Heptachlor	8081A/608	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Heptachlor	8081A/608	ND	0.1	ug/L			Comp
EFF-001	6/10/2012	Heptachlor	8081A/608	ND	0.1	ug/L			Comp
EFF-001	7/8/2012	Heptachlor	8081A/608	ND	0.1	ug/L			Comp
EFF-001	1/14/2010	Heptachlor Epoxide	8081A/608	ND	0.1	ug/L			Comp
EFF-001	4/16/2012	Heptachlor Epoxide	8081A/608	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Heptachlor Epoxide	8081A/608	ND	0.01	ug/L			Comp
EFF-001	6/10/2012	Heptachlor Epoxide	8081A/608	ND	0.1	ug/L			Comp
EFF-001	7/8/2012	Heptachlor Epoxide	8081A/608	ND	0.1	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/14/2010	Hexachlorobenzene	8270C	ND	0.5	ug/L			Comp
EFF-001	4/16/2012	Hexachlorobenzene	8270C	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	Hexachlorobenzene	8270C	ND	0.5	ug/L			Comp
EFF-001	6/10/2012	Hexachlorobenzene	8270C	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	Hexachlorobenzene	8270C	ND	0.5	ug/L			Comp
EFF-001	8/12/2012	Hexachlorobenzene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	9/9/2012	Hexachlorobenzene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	10/7/2012	Hexachlorobenzene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	11/4/2012	Hexachlorobenzene	8270C	ND	0.5	ug/L		0.5	comp
EFF-001	12/2/2012	Hexachlorobenzene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	1/13/2013	Hexachlorobenzene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	2/3/2013	Hexachlorobenzene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	3/10/2013	Hexachlorobenzene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	1/12/2010	Hexachlorobutadiene	8260B	ND	0.1	ug/L			Grab
EFF-001	2/2/2010	Hexachlorobutadiene	8260B	ND	0.1	ug/L			Grab
EFF-001	4/16/2012	Hexachlorobutadiene	625	ND	0.09	ug/L			Comp/ Grab
EFF-001	5/14/2012	Hexachlorobutadiene	625	ND	0.09	ug/L			Grab
EFF-001	1/14/2010	Hexachlorocyclopentadiene	8270C	ND	0.1	ug/L			Comp
EFF-001	4/16/2012	Hexachlorocyclopentadiene	8270C	ND	0.1	ug/L			Comp/ Grab
EFF-001	5/13/2012	Hexachlorocyclopentadiene	8270C	ND	0.1	ug/L			Comp
EFF-001	6/10/2012	Hexachlorocyclopentadiene	8270C	ND	0.1	ug/L			Comp
EFF-001	7/8/2012	Hexachlorocyclopentadiene	8270C	ND	0.1	ug/L			Comp
EFF-001	8/12/2012	Hexachlorocyclopentadiene	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	9/9/2012	Hexachlorocyclopentadiene	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	10/7/2012	Hexachlorocyclopentadiene	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	11/4/2012	Hexachlorocyclopentadiene	8270C	ND	0.1	ug/L		0.1	comp
EFF-001	12/2/2012	Hexachlorocyclopentadiene	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	1/13/2013	Hexachlorocyclopentadiene	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	2/3/2013	Hexachlorocyclopentadiene	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	3/10/2013	Hexachlorocyclopentadiene	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	1/12/2010	Hexachloroethane	8260B	ND	0.5	ug/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/14/2010	Hexachloroethane	8270C	ND	0.8	ug/L			Comp
EFF-001	2/2/2010	Hexachloroethane	8260B	ND	0.5	ug/L			Grab
EFF-001	4/16/2012	Hexachloroethane	8260B	ND	0.8	ug/L			Comp/ Grab
EFF-001	4/16/2012	Hexachloroethane	8270C	ND	0.8	ug/L			Comp/ Grab
EFF-001	5/13/2012	Hexachloroethane	8270C	ND	0.8	ug/L			Comp
EFF-001	5/14/2012	Hexachloroethane	8260B	ND	0.8	ug/L			Grab
EFF-001	6/10/2012	Hexachloroethane	8270C	ND	0.8	ug/L			Comp
EFF-001	7/8/2012	Hexachloroethane	8270C	ND	0.8	ug/L			Comp
EFF-001	8/12/2012	Hexachloroethane	8270C	ND	0.8	ug/L		0.8	Comp
EFF-001	9/9/2012	Hexachloroethane	8270C	ND	0.8	ug/L		0.8	Comp
EFF-001	10/7/2012	Hexachloroethane	8270C	ND	0.8	ug/L		0.8	Comp
EFF-001	11/4/2012	Hexachloroethane	8270C	ND	0.8	ug/L		0.8	comp
EFF-001	12/2/2012	Hexachloroethane	8270C	ND	0.8	ug/L		0.8	Comp
EFF-001	1/13/2013	Hexachloroethane	8270C	ND	0.8	ug/L		0.8	Comp
EFF-001	2/3/2013	Hexachloroethane	8270C	ND	0.8	ug/L		0.8	Comp
EFF-001	3/10/2013	Hexachloroethane	8270C	ND	0.8	ug/L		0.8	Comp
EFF-001	1/14/2010	Indeno(1,2,3-cd)pyrene	8270C	ND	0.4	ug/L			Comp
EFF-001	4/16/2012	Indeno(1,2,3-cd)pyrene	8270C	ND	0.4	ug/L			Comp/ Grab
EFF-001	5/13/2012	Indeno(1,2,3-cd)pyrene	8270C	ND	0.4	ug/L			Comp
EFF-001	6/10/2012	Indeno(1,2,3-cd)pyrene	8270C	ND	0.4	ug/L			Comp
EFF-001	7/8/2012	Indeno(1,2,3-cd)pyrene	8270C	ND	0.4	ug/L			Comp
EFF-001	8/12/2012	Indeno(1,2,3-cd)pyrene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	9/9/2012	Indeno(1,2,3-cd)pyrene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	10/7/2012	Indeno(1,2,3-cd)pyrene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	11/4/2012	Indeno(1,2,3-cd)pyrene	8270C	ND	0.4	ug/L		0.4	comp
EFF-001	12/2/2012	Indeno(1,2,3-cd)pyrene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	1/13/2013	Indeno(1,2,3-cd)pyrene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	2/3/2013	Indeno(1,2,3-cd)pyrene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	3/10/2013	Indeno(1,2,3-cd)pyrene	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	1/14/2010	Iron (Total)	200.7		193	ug/L			Comp
EFF-001	2/8/2010	Iron (Total)	200.7		305	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	3/16/2010	Iron (Total)	200.7		117	ug/L			comp
EFF-001	4/6/2010	Iron (Total)	200.7		156	ug/L			Comp
EFF-001	5/3/2010	Iron (Total)	200.8		144	ug/L			Comp
EFF-001	7/6/2010	Iron (Total)	200.7		266	ug/L			Comp
EFF-001	8/2/2010	Iron (Total)	200.7		368	ug/L			Comp
EFF-001	8/3/2010	Iron (Total)	200.7		356	ug/L			comp
EFF-001	10/3/2010	Iron (Total)	200.7		220	ug/L			comp
EFF-001	12/5/2010	Iron (Total)	200.7		148	ug/L			comp
EFF-001	1/17/2011	Iron (Total)	200.7		250	ug/L			Comp
EFF-001	2/6/2011	Iron (Total)	200.7		400	ug/L			Comp
EFF-001	2/21/2011	Iron (Total)	200.8		480	ug/L			comp
EFF-001	4/3/2011	Iron (Total)	200.7		147	ug/L			comp
EFF-001	7/10/2011	Iron (Total)	200.7		140	ug/L			Comp
EFF-001	8/8/2011	Iron (Total)	200.7		170	ug/L			Comp
EFF-001	10/9/2011	Iron (Total)	200.7		184	ug/L			Comp
EFF-001	11/7/2011	Iron (Total)	200.7		373	ug/L			comp
EFF-001	1/8/2012	Iron (Total)	200.7		167	ug/L			comp
EFF-001	2/5/2012	Iron (Total)	200.8		213	ug/L			Comp
EFF-001	2/5/2012	Iron (Total)	200.7		213	ug/L			Comp
EFF-001	4/16/2012	Iron (Total)	200.7		119	ug/L			Comp/ Grab
EFF-001	7/8/2012	Iron (Total)	200.7		182	ug/L			Comp
EFF-001	8/7/2012	Iron (Total)	200.8		210	ug/L			Comp
EFF-001	10/7/2012	Iron (Total)	200.7		112	ug/L			Comp
EFF-001	3/10/2013	Iron (Total)	200.7		222	ug/L			Comp
EFF-001	5/5/2013	Iron (Total)	200.7		57.0	ug/L			Comp
EFF-001	8/4/2013	Iron (Total)	200.7		56.0	ug/L			Comp
EFF-001	10/6/2013	Iron (Total)	200.7		54.0	ug/L			Comp
EFF-001	3/3/2014	Iron (Total)	200.7	J	41	ug/L			Comp
EFF-001	1/14/2010	Isophorone	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	Isophorone	8270C	ND	0.2	ug/L			Comp/ Grab
EFF-001	5/13/2012	Isophorone	8270C	ND	0.2	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	6/10/2012	Isophorone	8270C	ND	0.2	ug/L			Comp
EFF-001	7/8/2012	Isophorone	8270C	ND	0.2	ug/L			Comp
EFF-001	8/12/2012	Isophorone	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	9/9/2012	Isophorone	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	10/7/2012	Isophorone	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	11/4/2012	Isophorone	8270C	ND	0.2	ug/L		0.2	comp
EFF-001	12/2/2012	Isophorone	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/13/2013	Isophorone	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	2/3/2013	Isophorone	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	3/10/2013	Isophorone	8270C	ND	0.2	ug/L		0.2	Comp
EFF-001	1/14/2010	Lead (Total)	200.8		0.5	ug/L			Comp
EFF-001	2/8/2010	Lead (Total)	200.8	ND	0.5	ug/L			Comp
EFF-001	3/16/2010	Lead (Total)	200.8	ND	0.5	ug/L			comp
EFF-001	4/6/2010	Lead (Total)	200.8	ND	0.17	ug/L			Comp
EFF-001	6/1/2010	Lead (Total)	200.8		0.51	ug/L			Comp
EFF-001	7/6/2010	Lead (Total)	200.8	ND	0.17	ug/L			Comp
EFF-001	8/2/2010	Lead (Total)	200.8	ND	0.5	ug/L			Comp
EFF-001	8/3/2010	Lead (Total)	200.8	ND	0.17	ug/L			comp
EFF-001	9/7/2010	Lead (Total)	200.8	ND	0.5	ug/L			comp
EFF-001	10/3/2010	Lead (Total)	200.8	ND	0.17	ug/L			comp
EFF-001	11/1/2010	Lead (Total)	200.8	ND	0.17	ug/L			Comp
EFF-001	12/5/2010	Lead (Total)	200.8	ND	0.17	ug/L			comp
EFF-001	1/17/2011	Lead (Total)	200.8	ND	0.17	ug/L			Comp
EFF-001	2/6/2011	Lead (Total)	200.8	ND	0.17	ug/L			Comp
EFF-001	4/3/2011	Lead (Total)	200.8	ND	0.17	ug/L			comp
EFF-001	8/8/2011	Lead (Total)	200.8	J	0.7	ug/L			Comp
EFF-001	9/5/2011	Lead (Total)	200.8	ND	0.17	ug/L			comp
EFF-001	10/9/2011	Lead (Total)	200.8	ND	0.17	ug/L			Comp
EFF-001	11/7/2011	Lead (Total)	200.8	ND	2.3	ug/L			comp
EFF-001	1/8/2012	Lead (Total)	200.8		1.6	ug/L			comp
EFF-001	2/5/2012	Lead (Total)	200.8		1.8	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	3/11/2012	Lead (Total)	200.8		1.2	ug/L			Comp
EFF-001	4/16/2012	Lead (Total)	200.8	ND	0.5	ug/L			Comp/ Grab
EFF-001	5/13/2012	Lead (Total)	200.8	ND	0.5	ug/L			Comp
EFF-001	6/10/2012	Lead (Total)	200.8	ND	0.17	ug/L			Comp
EFF-001	7/8/2012	Lead (Total)	200.8	ND	0.5	ug/L			Comp
EFF-001	8/12/2012	Lead (Total)	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	9/9/2012	Lead (Total)	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	10/7/2012	Lead (Total)	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	11/4/2012	Lead (Total)	200.8	ND	0.5	ug/L		0.5	comp
EFF-001	12/2/2012	Lead (Total)	200.8	ND	0.17	ug/L		0.17	Comp
EFF-001	1/13/2013	Lead (Total)	200.8	ND	0.17	ug/L		0.17	Comp
EFF-001	2/3/2013	Lead (Total)	200.8	ND	0.17	ug/L		0.17	Comp
EFF-001	3/10/2013	Lead (Total)	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	1/14/2010	Magnesium	200.7		6.91	mg/l			Comp
EFF-001	2/8/2010	Magnesium	200.7		6.76	mg/l			Comp
EFF-001	3/16/2010	Magnesium	200.7		7	mg/l			comp
EFF-001	4/6/2010	Magnesium	200.7		6.99	mg/l			Comp
EFF-001	5/3/2010	Magnesium	200.7		7.54	mg/L			Comp
EFF-001	8/2/2010	Magnesium	200.7		7.9	mg/L			Comp
EFF-001	8/3/2010	Magnesium	200.7		8.39	mg/l			comp
EFF-001	2/21/2011	Magnesium	200.7		7.84	mg/L			comp
EFF-001	8/8/2011	Magnesium	200.7		8.66	mg/l			Comp
EFF-001	8/8/2011	Magnesium	200.7		8.66	mg/L			Comp
EFF-001	2/5/2012	Magnesium	200.7		6.61	mg/l			Comp
EFF-001	4/16/2012	Magnesium	200.7		7.18	mg/l			Comp/ Grab
EFF-001	7/8/2012	Magnesium	200.7		7.8	mg/l			Comp
EFF-001	8/7/2012	Magnesium	200.7		8.38	mg/L			Comp
EFF-001	10/7/2012	Magnesium	200.7		8.43	mg/l			Comp
EFF-001	1/14/2010	Manganese (Total)	200.8		13	ug/L			Comp
EFF-001	2/8/2010	Manganese (Total)	200.8	J	6	ug/L			Comp
EFF-001	3/16/2010	Manganese (Total)	200.8		12	ug/L			comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/6/2010	Manganese (Total)	200.8	J	8.8	ug/L			Comp
EFF-001	7/6/2010	Manganese (Total)	200.8	J	7.3	ug/L			Comp
EFF-001	8/2/2010	Manganese (Total)	200.8	J	7.1	ug/L			Comp
EFF-001	8/3/2010	Manganese (Total)	200.8	J	6.6	ug/L			comp
EFF-001	10/3/2010	Manganese (Total)	200.8		11	ug/L			comp
EFF-001	12/5/2010	Manganese (Total)	200.8		12	ug/L			comp
EFF-001	1/17/2011	Manganese (Total)	200.8		19	ug/L			Comp
EFF-001	4/3/2011	Manganese (Total)	200.8		47	ug/L			comp
EFF-001	7/10/2011	Manganese (Total)	200.8		19	ug/L			Comp
EFF-001	8/8/2011	Manganese (Total)	200.8		10.4	ug/L			Comp
EFF-001	10/9/2011	Manganese (Total)	200.8		11	ug/L			Comp
EFF-001	1/8/2012	Manganese (Total)	200.8	ND	1	ug/L			Comp
EFF-001	2/5/2012	Manganese (Total)	200.8		11	ug/L			Comp
EFF-001	4/16/2012	Manganese (Total)	200.8	J	4.6	ug/L			Comp/ Grab
EFF-001	7/8/2012	Manganese (Total)	200.8	J	9	ug/L			Comp
EFF-001	8/7/2012	Manganese (Total)	200.8	ND	1	ug/L		1	Comp
EFF-001	10/7/2012	Manganese (Total)	200.8	J	6	ug/L			Comp
EFF-001	2/3/2013	Manganese (Total)	200.8	J	6.9	ug/L			Comp
EFF-001	3/10/2013	Manganese (Total)	200.8	J	5.4	ug/L			Comp
EFF-001	5/5/2013	Manganese (Total)	200.8	ND	1	ug/L		1	Comp
EFF-001	8/4/2013	Manganese (Total)	200.8		13.0	ug/L			Comp
EFF-001	10/6/2013	Manganese (Total)	200.8		11.0	ug/L			Comp
EFF-001	3/3/2014	Manganese (Total)	200.8		19	ug/L			Comp
EFF-001	1/12/2010	MBAS	SM5540C	J	0.04	mg/L			Grab
EFF-001	1/26/2010	MBAS	SM5540C	J	0.03	mg/L			Grab
EFF-001	2/2/2010	MBAS	SM5540C	J	0.03	mg/L			Grab
EFF-001	2/17/2010	MBAS	SM5540C		0.05	mg/L			Grab
EFF-001	3/15/2010	MBAS	SM5540C		0.06	mg/L			Grab
EFF-001	8/2/2010	MBAS	SM5540C	J	0.04	mg/L			Comp
EFF-001	8/8/2011	MBAS	SM5540C	J	0.03	mg/L			Comp
EFF-001	2/5/2012	MBAS	SM5540C	J	0.02	mg/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	6/4/2013	MBAS	SM5540C		0.06	mg/L			Grab
EFF-001	6/5/2013	MBAS	SM5540C		0.05	mg/L			Grab
EFF-001	7/8/2013	MBAS	SM5540C		0.06	mg/L			Grab
EFF-001	11/4/2013	MBAS	SM5540C		0.05	mg/L			Grab
EFF-001	12/2/2013	MBAS	SM5540C	J	0.04	mg/L			Grab
EFF-001	1/21/2014	MBAS	SM5540C		0.06	mg/L			Grab
EFF-001	2/18/2014	MBAS	SM5540C	J	0.04	mg/L			Grab
EFF-001	3/4/2014	MBAS	SM5540C		0.08	mg/L			Grab
EFF-001	4/7/2014	MBAS	SM5540C		0.05	mg/L			Grab
EFF-001	8/2/2010	Mercury (Total)	1631	ND	0.3	ug/L			Comp
EFF-001	8/8/2011	Mercury (Total)	1631		1.31	ug/L			Comp
EFF-001	2/5/2012	Mercury (Total)	1631	ND	0.3	ug/L			Comp
EFF-001	1/13/2010	Mercury (Total), low level	1631		0.00525	ug/L			Grab
EFF-001	2/8/2010	Mercury (Total), low level	1631		0.0037	ug/L			Grab
EFF-001	3/16/2010	Mercury (Total), low level	1631		0.0014	ug/L			Grab
EFF-001	4/7/2010	Mercury (Total), low level	1631		0.0023	ug/L			Grab
EFF-001	5/3/2010	Mercury (Total), low level	1631		0.0023	ug/L			Grab
EFF-001	6/2/2010	Mercury (Total), low level	1631		0.0023	ug/L			Grab
EFF-001	7/6/2010	Mercury (Total), low level	1631		0.0043	ug/L			Grab
EFF-001	8/2/2010	Mercury (Total), low level	1631		0.003	ug/L			Grab
EFF-001	9/8/2010	Mercury (Total), low level	1631		0.0025	ug/L			Grab
EFF-001	10/3/2010	Mercury (Total), low level	1631		0.0035	ug/L			Grab
EFF-001	11/2/2010	Mercury (Total), low level	1631		0.0025	ug/L			Grab
EFF-001	12/6/2010	Mercury (Total), low level	1631	ND	0.0002	ug/L			Grab
EFF-001	1/17/2011	Mercury (Total), low level	1631		0.0032	ug/L			Grab
EFF-001	2/6/2011	Mercury (Total), low level	1631		0.0025	ug/L			Grab
EFF-001	3/7/2011	Mercury (Total), low level	1631		0.003	ug/L			Grab
EFF-001	4/4/2011	Mercury (Total), low level	1631		0.0017	ug/L			Grab
EFF-001	5/9/2011	Mercury (Total), low level	1631		0.002	ug/L			Grab
EFF-001	6/13/2011	Mercury (Total), low level	1631		0.0029	ug/L			Grab
EFF-001	7/11/2011	Mercury (Total), low level	1631	ND	0.0002	ug/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/7/2011	Mercury (Total), low level	1631		0.0026	ug/L			Grab
EFF-001	9/5/2011	Mercury (Total), low level	1631		0.0021	ug/L			Grab
EFF-001	12/4/2011	Mercury (Total), low level	1631		0.0024	ug/L			Grab
EFF-001	1/9/2012	Mercury (Total), low level	1631		0.0024	ug/L			Grab
EFF-001	2/5/2012	Mercury (Total), low level	1631		0.0024	ug/L			Grab
EFF-001	3/11/2012	Mercury (Total), low level	1631	ND	0.0002	ug/L			Grab
EFF-001	4/16/2012	Mercury (Total), low level	1631		0.0025	ug/L			Grab
EFF-001	5/14/2012	Mercury (Total), low level	1631		0.0028	ug/L			Grab
EFF-001	6/11/2012	Mercury (Total), low level	1631		0.0045	ug/L			Grab
EFF-001	7/8/2012	Mercury (Total), low level	1631		0.0029	ug/L			Comp/Grab
EFF-001	8/12/2012	Mercury (Total), low level	1631		0.0041	ug/L			Comp/Grab
EFF-001	9/9/2012	Mercury (Total), low level	1631		0.0040	ug/L			Comp/Grab
EFF-001	10/8/2012	Mercury (Total), low level	1631		0.0033	ug/L			Comp/Grab
EFF-001	11/4/2012	Mercury (Total), low level	1631		0.003	ug/L			Comp/Grab
EFF-001	12/2/2012	Mercury (Total), low level	1631		0.0028	ug/L			Comp/Grab
EFF-001	1/13/2013	Mercury (Total), low level	1631		0.0015	ug/L			Comp/Grab
EFF-001	2/3/2013	Mercury (Total), low level	1631		0.0029	ug/L			comp/Grab
EFF-001	3/10/2013	Mercury (Total), low level	1631		0.0022	ug/L			Grab
EFF-001	4/7/2013	Mercury (Total), low level	1631		0.0017	ug/L			Comp/Grab
EFF-001	5/6/2013	Mercury (Total), low level	1631		0.0028	ug/L			Grab
EFF-001	6/3/2013	Mercury (Total), low level	1631		0.0033	ug/L			Comp
EFF-001	7/7/2013	Mercury (Total), low level	1631		0.0028	ug/L			Comp/Grab
EFF-001	8/5/2013	Mercury (Total), low level	1631		0.0065	ug/L			Comp/Grab
EFF-001	9/9/2013	Mercury (Total), low level	1631		0.013	ug/L			Comp/Grab
EFF-001	10/7/2013	Mercury (Total), low level	1631		0.0054	ug/L			Comp/Grab
EFF-001	11/3/2013	Mercury (Total), low level	1631		0.0043	ug/L			Comp/Grab
EFF-001	12/2/2013	Mercury (Total), low level	1631		0.0032	ug/L			Grab
EFF-001	1/21/2014	Mercury (Total), low level	1631		0.0028	ug/L			Grab
EFF-001	2/17/2014	Mercury (Total), low level	1631		0.0065	ug/L			Comp
EFF-001	3/4/2014	Mercury (Total), low level	1631		0.0023	ug/L			Comp/Grab
EFF-001	1/14/2010	Methoxychlor	8081A/608	ND	0.31	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/16/2012	Methoxychlor	8081A/608	ND	1	ug/L			Comp/Grab
EFF-001	5/13/2012	Methoxychlor	8081A/608	ND	1	ug/L			Comp
EFF-001	6/10/2012	Methoxychlor	8081A/608	ND	1	ug/L			Comp
EFF-001	7/8/2012	Methoxychlor	8081A/608	ND	1	ug/L			Comp
EFF-001	1/12/2010	Methyl bromide	8260B	ND	1.6	ug/L			Grab
EFF-001	2/2/2010	Methyl bromide	8260B	ND	1.6	ug/L			Grab
EFF-001	4/16/2012	Methyl bromide	8260B	ND	0.4	ug/L			Comp/Grab
EFF-001	5/14/2012	Methyl bromide	8260B	ND	0.4	ug/L			Grab
EFF-001	6/11/2012	Methyl bromide	8260B	ND	0.4	ug/L			Grab
EFF-001	7/9/2012	Methyl bromide	8260B	ND	0.4	ug/L			Grab
EFF-001	1/12/2010	Methyl chloride	8260B	ND	0.6	ug/L			Grab
EFF-001	2/2/2010	Methyl chloride	8260B	ND	0.6	ug/L			Grab
EFF-001	4/16/2012	Methyl chloride	8260B	ND	0.3	ug/L			Comp/Grab
EFF-001	5/14/2012	Methyl chloride	8260B	ND	0.3	ug/L			Grab
EFF-001	6/11/2012	Methyl chloride	8260B	ND	0.3	ug/L			Grab
EFF-001	7/9/2012	Methyl chloride	8260B	ND	0.3	ug/L			Grab
EFF-001	1/12/2010	Methylene chloride	8260B	ND	0.06	ug/L			Grab
EFF-001	2/2/2010	Methylene chloride	8260B	ND	0.06	ug/L			Grab
EFF-001	4/16/2012	Methylene chloride	8260B	ND	0.4	ug/L			Comp/Grab
EFF-001	5/14/2012	Methylene chloride	8260B	ND	0.4	ug/L			Grab
EFF-001	6/11/2012	Methylene chloride	8260B	ND	0.4	ug/L			Grab
EFF-001	7/9/2012	Methylene chloride	8260B	ND	0.4	ug/L			Grab
EFF-001	8/13/2012	Methylene chloride	8260B/624	ND	0.3	ug/L		0.3	Grab
EFF-001	9/10/2012	Methylene chloride	8260B/624	ND	0.3	ug/L		0.3	Grab
EFF-001	10/8/2012	Methylene chloride	8260B/624	ND	0.3	ug/L		0.3	Grab
EFF-001	11/5/2012	Methylene chloride	8260B/624	ND	0.3	ug/L		0.3	Grab
EFF-001	12/3/2012	Methylene chloride	8260B/624	ND	0.3	ug/L		0.3	Grab
EFF-001	1/14/2013	Methylene chloride	8260B/624	ND	0.3	ug/L		0.3	Comp/Grab
EFF-001	2/4/2013	Methylene chloride	8260B/624	ND	0.3	ug/L		0.3	Grab
EFF-001	3/11/2013	Methylene chloride	8260B/624	ND	0.3	ug/L		0.3	Grab
EFF-001	2/8/2010	Methylmercury	1631		0.085	ng/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	3/16/2010	Methylmercury	1631	J	0.0283	ng/L			Grab
EFF-001	4/7/2010	Methylmercury	1631	ND	0.02	ng/L			Grab
EFF-001	5/3/2010	Methylmercury	1631	ND	0.02	ng/L	0.02	0.05	Grab
EFF-001	6/2/2010	Methylmercury	1631	J	0.0356	ng/L			Grab
EFF-001	7/6/2010	Methylmercury	1631	J	0.047	ng/L			Grab
EFF-001	8/2/2010	Methylmercury	1631		0.0653	ng/L			Grab
EFF-001	9/8/2010	Methylmercury	1631		0.0561	ng/L			Grab
EFF-001	10/3/2010	Methylmercury	1631		0.0565	ng/L			Grab
EFF-001	11/2/2010	Methylmercury	1631	J	0.0248	ng/L			Grab
EFF-001	12/6/2010	Methylmercury	1631	J	0.0353	ng/L			Grab
EFF-001	1/17/2011	Methylmercury	1631		0.0652	ng/L			Grab
EFF-001	2/6/2011	Methylmercury	1631		0.05	ng/L			Grab
EFF-001	3/7/2011	Methylmercury	1631		0.06	ng/L			Grab
EFF-001	4/4/2011	Methylmercury	1631	ND	0.02	ng/L			Grab
EFF-001	5/9/2011	Methylmercury	1631	J	0.03	ng/L			Grab
EFF-001	6/13/2011	Methylmercury	1631	J	0.03	ng/L			Grab
EFF-001	7/11/2011	Methylmercury	1631	J	0.04	ng/L			Grab
EFF-001	8/7/2011	Methylmercury	1631	J	0.04	ng/L			Grab
EFF-001	9/5/2011	Methylmercury	1631	J	0.04	ng/L			Grab
EFF-001	12/4/2011	Methylmercury	1631	J	0.04	ng/L			Grab
EFF-001	1/9/2012	Methylmercury	1631		0.06	ng/L			Grab
EFF-001	2/5/2012	Methylmercury	1631	J	0.02	ng/L			Grab
EFF-001	3/11/2012	Methylmercury	1631	J	0.02	ng/L			Grab
EFF-001	4/16/2012	Methylmercury	1631	ND	0.02	ng/L			Grab
EFF-001	5/14/2012	Methylmercury	1631	J	0.04	ng/L			Grab
EFF-001	6/11/2012	Methylmercury	1631	J	0.04	ng/L			Grab
EFF-001	7/8/2012	Methylmercury	1631		0.06	ng/L			Comp/Grab
EFF-001	8/12/2012	Methylmercury	1631	J	0.03	ng/L			Comp/Grab
EFF-001	9/9/2012	Methylmercury	1631		0.07	ng/L			Comp/Grab
EFF-001	10/8/2012	Methylmercury	1631	J	0.05	ng/L			Comp/Grab
EFF-001	11/4/2012	Methylmercury	1631		0.0495	ng/L			Comp/Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	12/2/2012	Methylmercury	1631		0.06	ng/L			Comp/Grab
EFF-001	1/13/2013	Methylmercury	1631	J	0.04	ng/L			Comp/Grab
EFF-001	2/3/2013	Methylmercury	1631	J	0.04	ng/L			comp/Grab
EFF-001	3/10/2013	Methylmercury	1631	ND	0.02	ng/L		0.02	Grab
EFF-001	4/7/2013	Methylmercury	1631	ND	0.02	ng/L		0.02	Comp/Grab
EFF-001	5/6/2013	Methylmercury	1631		0.07	ng/L			Grab
EFF-001	6/3/2013	Methylmercury	1631		0.05	ng/L			Comp
EFF-001	7/7/2013	Methylmercury	1631	J	0.04	ng/L			Comp/Grab
EFF-001	8/5/2013	Methylmercury	1631	J	0.05	ng/L			Comp/Grab
EFF-001	9/9/2013	Methylmercury	1631		0.21	ng/L			Comp/Grab
EFF-001	10/7/2013	Methylmercury	1631		0.08	ng/L			Comp/Grab
EFF-001	11/3/2013	Methylmercury	1631		0.08	ng/L			Comp/Grab
EFF-001	12/2/2013	Methylmercury	1631	ND	0.02	ng/L		0.02	Grab
EFF-001	1/21/2014	Methylmercury	1631	ND	0.02	ng/L		0.02	Grab
EFF-001	2/17/2014	Methylmercury	1631		0.2	ng/L			Comp
EFF-001	3/4/2014	Methylmercury	1631	J	0.04	ng/L			Comp/Grab
EFF-001	1/14/2010	Molybdenum (Total)	200.8	J	3.5	ug/L			Comp
EFF-001	2/8/2010	Molybdenum (Total)	200.8	J	3	ug/L			Comp
EFF-001	3/16/2010	Molybdenum (Total)	200.8	J	3.4	ug/L			comp
EFF-001	4/6/2010	Molybdenum (Total)	200.8	J	3.2	ug/L			Comp
EFF-001	8/3/2010	Molybdenum (Total)	200.8	J	5.7	ug/L			comp
EFF-001	8/8/2011	Molybdenum (Total)	200.8		7.4	ug/L			Comp
EFF-001	4/16/2012	Molybdenum (Total)	200.8	J	3.3	ug/L			Comp/Grab
EFF-001	7/8/2012	Molybdenum (Total)	200.8	J	5.3	ug/L			Comp
EFF-001	10/7/2012	Molybdenum (Total)	200.8	J	3.8	ug/L			Comp
EFF-001	2/3/2013	Molybdenum (Total)	200.8	J	3.8	ug/L			Comp
EFF-001	8/13/2012	Monochlorobenzene	8260B/624	ND	0.09	ug/L		0.09	Grab
EFF-001	9/10/2012	Monochlorobenzene	8260B/624	ND	0.09	ug/L		0.09	Grab
EFF-001	10/8/2012	Monochlorobenzene	8260B/624	ND	0.09	ug/L		0.09	Grab
EFF-001	11/5/2012	Monochlorobenzene	8260B/624	ND	0.09	ug/L		0.09	Grab
EFF-001	12/3/2012	Monochlorobenzene	8260B/624	ND	0.09	ug/L		0.09	Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/14/2013	Monochlorobenzene	8260B/624	ND	0.09	ug/L		0.09	Comp/Grab
EFF-001	2/4/2013	Monochlorobenzene	8260B/624	ND	0.09	ug/L		0.09	Grab
EFF-001	3/11/2013	Monochlorobenzene	8260B/624	ND	0.09	ug/L		0.09	Grab
EFF-001	1/12/2010	Naphthalene	8260B	ND	0.2	ug/L			Grab
EFF-001	2/2/2010	Naphthalene	8260B	ND	0.2	ug/L			Grab
EFF-001	4/16/2012	Naphthalene	625	ND	0.4	ug/L			Comp/Grab
EFF-001	5/14/2012	Naphthalene	625	ND	0.4	ug/L			Grab
EFF-001	1/14/2010	Nickel (Total)	200.8		2.7	ug/L			Comp
EFF-001	2/8/2010	Nickel (Total)	200.8		4.2	ug/L			Comp
EFF-001	3/16/2010	Nickel (Total)	200.8		1.6	ug/L			comp
EFF-001	4/6/2010	Nickel (Total)	200.8		1.9	ug/L			Comp
EFF-001	8/3/2010	Nickel (Total)	200.8		8.6	ug/L			comp
EFF-001	8/8/2011	Nickel (Total)	200.8		1.7	ug/L			Comp
EFF-001	4/16/2012	Nickel (Total)	200.8		1.4	ug/L			Comp/Grab
EFF-001	5/13/2012	Nickel (Total)	200.8		5	ug/L			Comp
EFF-001	6/10/2012	Nickel (Total)	200.8		3.2	ug/L			Comp
EFF-001	7/8/2012	Nickel (Total)	200.8		3.2	ug/L			Comp
EFF-001	8/7/2012	Nickel (Total)	200.8		3.7	ug/L			Comp
EFF-001	8/12/2012	Nickel (Total)	200.8		3.8	ug/L			Comp
EFF-001	9/9/2012	Nickel (Total)	200.8		2.3	ug/L			Comp
EFF-001	10/7/2012	Nickel (Total)	200.8		1.5	ug/L			Comp
EFF-001	11/4/2012	Nickel (Total)	200.8		1.8	ug/L			comp
EFF-001	12/2/2012	Nickel (Total)	200.8		2.0	ug/L			Comp
EFF-001	1/13/2013	Nickel (Total)	200.8		2.0	ug/L			Comp
EFF-001	2/3/2013	Nickel (Total)	200.8		2.1	ug/L			Comp
EFF-001	3/10/2013	Nickel (Total)	200.8		2.0	ug/L			Comp
EFF-001	1/14/2010	Nitrate (NO3-N)	300.0		12.9	mg/L			Comp
EFF-001	2/8/2010	Nitrate (NO3-N)	300.0		17.1	mg/L			Comp
EFF-001	3/16/2010	Nitrate (NO3-N)	300.0		17.3	mg/L			comp
EFF-001	4/6/2010	Nitrate (NO3-N)	300.0		14.5	mg/L			Comp
EFF-001	5/3/2010	Nitrate (NO3-N)	300.0		16.6	mg/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	6/1/2010	Nitrate (NO3-N)	300.0		13.7	mg/L			Comp
EFF-001	7/6/2010	Nitrate (NO3-N)	300.0		12.9	mg/L			Comp
EFF-001	8/3/2010	Nitrate (NO3-N)	300.0		11.7	mg/L			comp
EFF-001	9/7/2010	Nitrate (NO3-N)	300.0		14.8	mg/L			comp
EFF-001	10/3/2010	Nitrate (NO3-N)	300.0		15	mg/L			comp
EFF-001	11/1/2010	Nitrate (NO3-N)	300.0		17.7	mg/L			Comp
EFF-001	12/5/2010	Nitrate (NO3-N)	300.0		18.4	mg/L			comp
EFF-001	1/17/2011	Nitrate (NO3-N)	300.0		17.8	mg/L			Comp
EFF-001	2/6/2011	Nitrate (NO3-N)	300.0		17.1	mg/L			Comp
EFF-001	3/6/2011	Nitrate (NO3-N)	300.0		19.5	mg/L			Comp
EFF-001	4/3/2011	Nitrate (NO3-N)	300.0		20.8	mg/L			comp
EFF-001	5/8/2011	Nitrate (NO3-N)	300.0		19	mg/L			Comp
EFF-001	6/12/2011	Nitrate (NO3-N)	300.0		18.8	mg/L			comp
EFF-001	7/10/2011	Nitrate (NO3-N)	300.0		16.2	mg/L			Comp
EFF-001	8/8/2011	Nitrate (NO3-N)	300.0		16.4	mg/L			Comp
EFF-001	8/8/2011	Nitrate (NO3-N)	300.0		16.5	mg/L			Comp/Grab
EFF-001	9/5/2011	Nitrate (NO3-N)	300.0		15.4	mg/L			comp
EFF-001	10/9/2011	Nitrate (NO3-N)	300.0		17.1	mg/L			Comp
EFF-001	11/7/2011	Nitrate (NO3-N)	300.0		17.5	mg/L			comp
EFF-001	12/4/2011	Nitrate (NO3-N)	300.0		18.4	mg/L			Comp
EFF-001	1/8/2012	Nitrate (NO3-N)	300.0		19.4	mg/L			Comp
EFF-001	2/5/2012	Nitrate (NO3-N)	300.0		18.6	mg/L			Comp
EFF-001	3/11/2012	Nitrate (NO3-N)	300.0		17.4	mg/L			Comp
EFF-001	4/16/2012	Nitrate (NO3-N)	300.0		18.4	mg/L			Comp/Grab
EFF-001	7/8/2012	Nitrate (NO3-N)	300.0		14.1	mg/L			Comp
EFF-001	8/12/2012	Nitrate (NO3-N)	300.0		16.9	mg/L			Comp
EFF-001	9/9/2012	Nitrate (NO3-N)	300.0		15.8	mg/L			Comp
EFF-001	10/7/2012	Nitrate (NO3-N)	300.0		13.3	mg/L			Comp
EFF-001	11/4/2012	Nitrate (NO3-N)	300.0		15.7	mg/L			comp
EFF-001	12/2/2012	Nitrate (NO3-N)	300.0		14.2	mg/L			Comp
EFF-001	1/13/2013	Nitrate (NO3-N)	300.0		18.0	mg/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	2/3/2013	Nitrate (NO3-N)	300.0		19.1	mg/L			Comp
EFF-001	3/10/2013	Nitrate (NO3-N)	300.0		15.7	mg/L			Comp
EFF-001	4/7/2013	Nitrate (NO3-N)	300.0		16.2	mg/L			Comp
EFF-001	5/5/2013	Nitrate (NO3-N)	300.0		15.1	mg/L			Comp
EFF-001	6/3/2013	Nitrate (NO3-N)	300.0		16.6	mg/L			Comp
EFF-001	7/7/2013	Nitrate (NO3-N)	300.0		16.5	mg/L			Comp
EFF-001	8/4/2013	Nitrate (NO3-N)	300.0		15.5	mg/L			Comp
EFF-001	9/9/2013	Nitrate (NO3-N)	300.0		11.5	mg/L			Comp
EFF-001	10/6/2013	Nitrate (NO3-N)	300.0		13.8	mg/L			Comp
EFF-001	11/3/2013	Nitrate (NO3-N)	300.0		19.7	mg/L			Comp
EFF-001	12/1/2013	Nitrate (NO3-N)	300.0		17.6	mg/L			Comp
EFF-001	1/20/2014	Nitrate (NO3-N)	300.0		15.6	mg/L			Comp
EFF-001	2/17/2014	Nitrate (NO3-N)	300.0		14.7	mg/L			Comp
EFF-001	3/3/2014	Nitrate (NO3-N)	300.0		12.4	mg/L			Comp
EFF-001	4/6/2014	Nitrate (NO3-N)	300.0		16.7	mg/L			Comp
EFF-001	1/14/2010	Nitrite (NO2-N)	300.0	ND	0.1	mg/L			Comp
EFF-001	12/5/2010	Nitrite (NO2-N)	300.0	ND	0.4	mg/L			comp
EFF-001	5/8/2011	Nitrite (NO2-N)	300.0	ND	0.1	mg/L	0.1		Comp
EFF-001	6/12/2011	Nitrite (NO2-N)	300.0	ND	0.1	mg/L			comp
EFF-001	1/14/2010	Nitrobenzene	8270C	ND	0.3	ug/L			Comp
EFF-001	4/16/2012	Nitrobenzene	8270C	ND	1	ug/L			Comp/Grab
EFF-001	5/13/2012	Nitrobenzene	8270C	ND	1	ug/L			Comp
EFF-001	6/10/2012	Nitrobenzene	8270C	ND	1	ug/L			Comp
EFF-001	7/8/2012	Nitrobenzene	8270C	ND	1	ug/L			Comp
EFF-001	8/12/2012	Nitrobenzene	8270C	ND	1	ug/L		1	Comp
EFF-001	9/9/2012	Nitrobenzene	8270C	ND	1	ug/L		1	Comp
EFF-001	10/7/2012	Nitrobenzene	8270C	ND	1	ug/L		1	Comp
EFF-001	11/4/2012	Nitrobenzene	8270C	ND	1	ug/L		1	comp
EFF-001	12/2/2012	Nitrobenzene	8270C	ND	1	ug/L		1	Comp
EFF-001	1/13/2013	Nitrobenzene	8270C	ND	1	ug/L		1	Comp
EFF-001	2/3/2013	Nitrobenzene	8270C	ND	1	ug/L		1	Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	3/10/2013	Nitrobenzene	8270C	ND	1	ug/L		1	Comp
EFF-001	1/14/2010	N-Nitrosodimethylamine	8270C	ND	2.1	ug/L			Comp
EFF-001	4/16/2012	N-Nitrosodimethylamine	8270C	ND	2.1	ug/L			Comp/Grab
EFF-001	5/13/2012	N-Nitrosodimethylamine	8270C	ND	2.1	ug/L			Comp
EFF-001	6/10/2012	N-Nitrosodimethylamine	8270C	ND	2.1	ug/L			Comp
EFF-001	7/8/2012	N-Nitrosodimethylamine	8270C	ND	2.1	ug/L			Comp
EFF-001	8/12/2012	N-Nitrosodimethylamine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	9/9/2012	N-Nitrosodimethylamine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	10/7/2012	N-Nitrosodimethylamine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	11/4/2012	N-Nitrosodimethylamine	8270C	ND	0.3	ug/L		0.3	comp
EFF-001	12/2/2012	N-Nitrosodimethylamine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/13/2013	N-Nitrosodimethylamine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	2/3/2013	N-Nitrosodimethylamine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	3/10/2013	N-Nitrosodimethylamine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/14/2010	N-Nitrosodi-n-propylamine	8270C	ND	0.3	ug/L			Comp
EFF-001	4/16/2012	N-Nitrosodi-n-propylamine	8270C	ND	0.3	ug/L			Comp/Grab
EFF-001	5/13/2012	N-Nitrosodi-n-propylamine	8270C	ND	0.3	ug/L			Comp
EFF-001	6/10/2012	N-Nitrosodi-n-propylamine	8270C	ND	0.3	ug/L			Comp
EFF-001	7/8/2012	N-Nitrosodi-n-propylamine	8270C	ND	0.3	ug/L			Comp
EFF-001	8/12/2012	N-Nitrosodi-n-propylamine	8270C	J	0.7	ug/L			Comp
EFF-001	9/9/2012	N-Nitrosodi-n-propylamine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	10/7/2012	N-Nitrosodi-n-propylamine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	11/4/2012	N-Nitrosodi-n-propylamine	8270C	ND	0.3	ug/L		0.3	comp
EFF-001	12/2/2012	N-Nitrosodi-n-propylamine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/13/2013	N-Nitrosodi-n-propylamine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	2/3/2013	N-Nitrosodi-n-propylamine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	3/10/2013	N-Nitrosodi-n-propylamine	8270C	ND	0.3	ug/L		0.3	Comp
EFF-001	1/14/2010	N-Nitrosodiphenylamine	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	N-Nitrosodiphenylamine	8270C	ND	2.1	ug/L			Comp/Grab
EFF-001	5/13/2012	N-Nitrosodiphenylamine	8270C	ND	2.1	ug/L			Comp
EFF-001	6/10/2012	N-Nitrosodiphenylamine	8270C	ND	2.1	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	7/8/2012	N-Nitrosodiphenylamine	8270C	ND	2.1	ug/L			Comp
EFF-001	8/12/2012	N-Nitrosodiphenylamine	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	9/9/2012	N-Nitrosodiphenylamine	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	10/7/2012	N-Nitrosodiphenylamine	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	11/4/2012	N-Nitrosodiphenylamine	8270C	ND	0.1	ug/L		0.1	comp
EFF-001	12/2/2012	N-Nitrosodiphenylamine	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	1/13/2013	N-Nitrosodiphenylamine	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	2/3/2013	N-Nitrosodiphenylamine	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	3/10/2013	N-Nitrosodiphenylamine	8270C	ND	0.1	ug/L		0.1	Comp
EFF-001	1/14/2010	Pentachlorophenol	8270C	ND	0.4	ug/L			Comp
EFF-001	4/16/2012	Pentachlorophenol	8270C	ND	0.4	ug/L			Comp/Grab
EFF-001	5/13/2012	Pentachlorophenol	8270C	ND	0.4	ug/L			Comp
EFF-001	6/10/2012	Pentachlorophenol	8270C	ND	0.4	ug/L			Comp
EFF-001	7/8/2012	Pentachlorophenol	8270C	ND	0.4	ug/L			Comp
EFF-001	8/12/2012	Pentachlorophenol	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	9/9/2012	Pentachlorophenol	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	10/7/2012	Pentachlorophenol	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	11/4/2012	Pentachlorophenol	8270C	ND	0.4	ug/L		0.4	comp
EFF-001	12/2/2012	Pentachlorophenol	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	1/13/2013	Pentachlorophenol	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	2/3/2013	Pentachlorophenol	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	3/10/2013	Pentachlorophenol	8270C	ND	0.4	ug/L		0.4	Comp
EFF-001	6/1/2010	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/2/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/3/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/4/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/5/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/6/2010	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	6/7/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/8/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	6/9/2010	pH, daily average	SM4500-H+		7.3	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	6/10/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	6/11/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	6/12/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	6/13/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/14/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/15/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	6/16/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	6/17/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/18/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/19/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	6/20/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/21/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/22/2010	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/23/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/24/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/25/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/26/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/27/2010	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/28/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/29/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	6/30/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	7/1/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	7/2/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	7/3/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	7/4/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	7/5/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	7/6/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	7/7/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	7/8/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	7/9/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	7/10/2010	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	7/11/2010	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/12/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/13/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/14/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/15/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/16/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/17/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/18/2010	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/19/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/20/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/21/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/22/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	7/23/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/24/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/25/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/26/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/27/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/28/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	7/29/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	7/30/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	7/31/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/1/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/2/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/3/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/4/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/5/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/6/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/7/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/8/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/9/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/10/2010	pH, daily average	SM4500-H+		7.2	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/11/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	8/12/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	8/13/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/14/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/15/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/16/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/17/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/18/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/19/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/20/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/21/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/22/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/23/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/24/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/25/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/26/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/27/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/28/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/29/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/30/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/31/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/1/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/2/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/3/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/4/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/5/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/6/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/7/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/8/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	9/9/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	9/10/2010	pH, daily average	SM4500-H+		7.3	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	9/11/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/12/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/13/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/14/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/15/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/16/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/17/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/18/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/19/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/20/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/21/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/22/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/23/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/24/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/25/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/26/2010	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/27/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/28/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/29/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/30/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/1/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/2/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/3/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/4/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	10/5/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	10/6/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/7/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/8/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/9/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/10/2010	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/11/2010	pH, daily average	SM4500-H+		6.8	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	10/12/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/13/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/14/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/15/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/16/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/17/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/18/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	10/19/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	10/20/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/21/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	10/22/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	10/23/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	10/24/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/25/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/26/2010	pH, daily average	SM4500-H+		7.4	SU			continuous
EFF-001	10/27/2010	pH, daily average	SM4500-H+		7.4	SU			continuous
EFF-001	10/28/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/29/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/30/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/31/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/1/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/2/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/3/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/4/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/5/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/6/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/7/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/8/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/9/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	11/10/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	11/11/2010	pH, daily average	SM4500-H+		7.2	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	11/12/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/13/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/14/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/15/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/16/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/17/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/18/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	11/19/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/20/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/21/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/22/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/23/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	11/24/2010	pH, daily average	SM4500-H+		7.4	SU			continuous
EFF-001	11/25/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	11/26/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	11/27/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	11/28/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	11/29/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/30/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/1/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	12/2/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	12/3/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/4/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/5/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/6/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/7/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/8/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/9/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/10/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/11/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/12/2010	pH, daily average	SM4500-H+		7.2	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	12/13/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/14/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	12/15/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	12/16/2010	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	12/17/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/18/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/19/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/20/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/21/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/22/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/23/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/24/2010	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/25/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/26/2010	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/27/2010	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/28/2010	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/29/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/30/2010	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/31/2010	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/1/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/2/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/3/2011	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/4/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/5/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	1/6/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/7/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/8/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	1/9/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/10/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/11/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/12/2011	pH, daily average	SM4500-H+		7.1	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/13/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/14/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/15/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/16/2011	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/17/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/18/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/19/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	1/20/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/21/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/22/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/23/2011	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/24/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/25/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/26/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/27/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/28/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	1/29/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	1/30/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/31/2011	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	2/1/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/2/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/3/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/4/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/5/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/6/2011	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	2/7/2011	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	2/8/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	2/9/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	2/10/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/11/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/12/2011	pH, daily average	SM4500-H+		6.9	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	2/13/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/14/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	2/15/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/16/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/17/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/18/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/19/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/20/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/21/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/22/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/23/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/24/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/25/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/26/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/27/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/28/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/1/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/2/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/3/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/4/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/5/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/6/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/7/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/8/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/9/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/10/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/11/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/12/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/13/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/14/2011	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/15/2011	pH, daily average	SM4500-H+		6.8	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	3/16/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/17/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/18/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/19/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/20/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/21/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/22/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/23/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/24/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/25/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/26/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/27/2011	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/28/2011	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/29/2011	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/30/2011	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/31/2011	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	4/1/2011	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	4/2/2011	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	4/3/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/4/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/5/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/6/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	4/7/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	4/8/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	4/9/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	4/10/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	4/11/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	4/12/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	4/13/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	4/14/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	4/15/2011	pH, daily average	SM4500-H+		7.2	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/16/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/17/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/18/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/19/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/20/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/21/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/22/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/23/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/24/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/25/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/26/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	4/27/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	4/28/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/29/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/30/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	5/1/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/2/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/3/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/4/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/5/2011	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	5/6/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/7/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/8/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/9/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/10/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/11/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	5/12/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/13/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/14/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/15/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/16/2011	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	5/17/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/18/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/19/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	5/20/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	5/21/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	5/22/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/23/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/24/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/25/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	5/26/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	5/27/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/28/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/29/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/30/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/31/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/1/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/2/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/3/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/4/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/5/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/6/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/7/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/8/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/9/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/10/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/11/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/12/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/13/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/14/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/15/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/16/2011	pH, daily average	SM4500-H+		7.1	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	6/17/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/18/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/19/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/20/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/21/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/22/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/23/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/24/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/25/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/26/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/27/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/28/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/29/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/30/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/1/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/2/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/3/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/4/2011	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	7/5/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/6/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/7/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/8/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/9/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/10/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/11/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/12/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/13/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/14/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/15/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/16/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/17/2011	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	7/18/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/19/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/20/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/21/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/22/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/23/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/24/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/25/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/26/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	7/27/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	7/28/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/29/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/30/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/31/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/1/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/2/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/3/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/4/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/5/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/6/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/7/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/8/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/9/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/10/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/11/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/12/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/13/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/14/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/15/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/16/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/17/2011	pH, daily average	SM4500-H+		7.1	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/18/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/19/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/20/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/21/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/22/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/23/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/24/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/25/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/26/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/27/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/28/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/29/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/30/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	8/31/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/1/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/2/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/3/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/4/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/5/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/6/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/7/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/8/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/9/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/10/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/11/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/12/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/13/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/14/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/15/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/16/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/17/2011	pH, daily average	SM4500-H+		7.2	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	9/18/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/19/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/20/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/21/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/22/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/23/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/24/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/25/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/26/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/27/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	9/28/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/29/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/30/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/1/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/2/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/3/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/4/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/5/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/6/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/7/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/8/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/9/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/10/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/11/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/12/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/13/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/14/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/15/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/16/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/17/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/18/2011	pH, daily average	SM4500-H+		7.1	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	10/19/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/20/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/21/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/22/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/23/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/24/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/25/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/26/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/27/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/28/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/29/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/30/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/31/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/1/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/2/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/3/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	11/4/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/5/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/6/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/7/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/8/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/9/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/10/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/11/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/12/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/13/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/14/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/15/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/16/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/17/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/18/2011	pH, daily average	SM4500-H+		7.1	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	11/19/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/20/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/21/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/22/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/23/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/24/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/25/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/26/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/27/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/28/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/29/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/30/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/1/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/2/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/3/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/4/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/5/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/6/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/7/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/8/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/9/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/10/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/11/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/12/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/13/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/14/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/15/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/16/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/17/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/18/2011	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	12/19/2011	pH, daily average	SM4500-H+		7.1	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	12/20/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/21/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/22/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/23/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/24/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/25/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/26/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/27/2011	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/28/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/29/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/30/2011	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/31/2011	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/1/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/2/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/3/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/4/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/5/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/6/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/7/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/8/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/9/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/10/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/11/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/12/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/13/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/14/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/15/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/16/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/17/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/18/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/19/2012	pH, daily average	SM4500-H+		7.1	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/20/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/21/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	1/22/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/23/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/24/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/25/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/26/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/27/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	1/28/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/29/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/30/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/31/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	2/1/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	2/2/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/3/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/4/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/5/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/6/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/7/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/8/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/9/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	2/10/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	2/11/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	2/12/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	2/13/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/14/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	2/15/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/16/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/17/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/18/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/19/2012	pH, daily average	SM4500-H+		7.1	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	2/20/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/21/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/22/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	2/23/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/24/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/25/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/26/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/27/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	2/28/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	2/29/2012	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	3/1/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	3/2/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	3/3/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/4/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/5/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/6/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/7/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/8/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/9/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/10/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/11/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/12/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/13/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/14/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/15/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/16/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/17/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/18/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/19/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/20/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/21/2012	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	3/22/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/23/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/24/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/25/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/26/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/27/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/28/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	3/29/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/30/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	3/31/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/1/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/2/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/3/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/4/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/5/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/6/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/7/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/8/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/9/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/10/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/11/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/12/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	4/13/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/14/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/15/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/16/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/17/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/18/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/19/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/20/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/21/2012	pH, daily average	SM4500-H+		6.9	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/22/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/23/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/24/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/25/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/26/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	4/27/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	4/28/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	4/29/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/30/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/1/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/2/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/3/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/4/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/5/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/6/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/7/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/8/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/9/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/10/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/11/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/12/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/13/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/14/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/15/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/16/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/17/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/18/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/19/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/20/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/21/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/22/2012	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	5/23/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/24/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/25/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/26/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/27/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/28/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/29/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/30/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/31/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/1/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/2/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/3/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/4/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/5/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/6/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/7/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/8/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/9/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/10/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/11/2012	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	6/12/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/13/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/14/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/15/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/16/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/17/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/18/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/19/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/20/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/21/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/22/2012	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	6/23/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/24/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/25/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/26/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/27/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/28/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/29/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/30/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/1/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/2/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/3/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/4/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/5/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/6/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/7/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/8/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/9/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/10/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/11/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/12/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/13/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/14/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/15/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/16/2012	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	7/17/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/18/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/19/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/20/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/21/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/22/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/23/2012	pH, daily average	SM4500-H+		6.9	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	7/24/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/25/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/26/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/27/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/28/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/29/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/30/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/31/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/1/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/2/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/3/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/4/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/5/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/6/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/7/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/8/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/9/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/10/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/11/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/12/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/13/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/14/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/15/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/16/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/17/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/18/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/19/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/20/2012	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	8/21/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/22/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/23/2012	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/24/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/25/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/26/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/27/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/28/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/29/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/30/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/31/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/1/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/2/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/3/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/4/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/5/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/6/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/7/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/8/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/9/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/10/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/11/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/12/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/13/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/14/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/15/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/16/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/17/2012	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	9/18/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/19/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/20/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/21/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/22/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/23/2012	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	9/24/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/25/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/26/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/27/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/28/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/29/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/30/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/1/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/2/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/3/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/4/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/5/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/6/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/7/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/8/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/9/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/10/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/11/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/12/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/13/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/14/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/15/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/16/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/17/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/18/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/19/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/20/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/21/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/22/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/23/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/24/2012	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	10/25/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/26/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/27/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/28/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/29/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/30/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/31/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/1/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/2/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/3/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/4/2012	pH, daily average	SM4500-H+		7.7	SU			continuous
EFF-001	11/5/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/6/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	11/7/2012	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	11/8/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/9/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/10/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/11/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	11/12/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	11/13/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/14/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/15/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/16/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/17/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/18/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/19/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/20/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/21/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/22/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/23/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/24/2012	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	11/25/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/26/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/27/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/28/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/29/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/30/2012	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/1/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/2/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/3/2012	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	12/4/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/5/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/6/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/7/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/8/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/9/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/10/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/11/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/12/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/13/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/14/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/15/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/16/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/17/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/18/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/19/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/20/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/21/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/22/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/23/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/24/2012	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	12/25/2012	pH, daily average	SM4500-H+		6.9	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	12/26/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/27/2012	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	12/28/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/29/2012	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/30/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/31/2012	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/1/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/2/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/3/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/4/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/5/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/6/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/7/2013	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	1/8/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/9/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/10/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/11/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/12/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/13/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/14/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/15/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/16/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/17/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/18/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/19/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/20/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/21/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/22/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/23/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/24/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/25/2013	pH, daily average	SM4500-H+		6.9	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/26/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/27/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/28/2013	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	1/29/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/30/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/31/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/1/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/2/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/3/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/4/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/5/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/6/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/7/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/8/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/9/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/10/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/11/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/12/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/13/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/14/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/15/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/16/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/17/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/18/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/19/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/20/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/21/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/22/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/23/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/24/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/25/2013	pH, daily average	SM4500-H+		6.9	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	2/26/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/27/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	2/28/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/1/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/2/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/3/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/5/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/6/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/7/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/8/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/9/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/10/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/11/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/12/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/13/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/14/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/15/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/16/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/17/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/18/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/19/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/20/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/21/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/22/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/23/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/24/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/25/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/26/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/27/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/28/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/29/2013	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	3/30/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/31/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/1/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	4/2/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	4/3/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/4/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/5/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/6/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/7/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/8/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/9/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/10/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/11/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	4/12/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	4/13/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/14/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/15/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/16/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/17/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/18/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/19/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/20/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/21/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/22/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/23/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/24/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	4/25/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	4/26/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	4/27/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/28/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/29/2013	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/30/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/1/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/2/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	5/3/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	5/4/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/5/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/6/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/7/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/8/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/9/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/10/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/11/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/12/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	5/13/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	5/14/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	5/15/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/16/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/17/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/18/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/19/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/20/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/21/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/22/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/23/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/24/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/25/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/26/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/27/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/28/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	5/29/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/30/2013	pH, daily average	SM4500-H+		6.8	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	5/31/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/1/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/2/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/3/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	6/4/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/5/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/6/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/7/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/8/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/9/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/10/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/11/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/12/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/13/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/14/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/15/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/16/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/17/2013	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	6/18/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/19/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	6/20/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/21/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/22/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/23/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/24/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/25/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/26/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/27/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/28/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/29/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/30/2013	pH, daily average	SM4500-H+		6.9	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	7/1/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/2/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	7/3/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/4/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/5/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/6/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/7/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/8/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/9/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/10/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/11/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/12/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/13/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/14/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/15/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/16/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/17/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/18/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/19/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/20/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/21/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/22/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/23/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/24/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	7/25/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/26/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/27/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/28/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/29/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/30/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/31/2013	pH, daily average	SM4500-H+		7.1	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/1/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	8/2/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/3/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/4/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/5/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/6/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/7/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/8/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/9/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/10/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/11/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/12/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/13/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/14/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/15/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/16/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/17/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/18/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/19/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/20/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	8/21/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/22/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/23/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/24/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/25/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/26/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	8/27/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/28/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/29/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/30/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/31/2013	pH, daily average	SM4500-H+		6.8	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	9/1/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	9/2/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	9/3/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	9/4/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/5/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/6/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/7/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/8/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/9/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/10/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/11/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/12/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/13/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/14/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/15/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/16/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/17/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/18/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/19/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/20/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/21/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/22/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/23/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/24/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/25/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/26/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/27/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/28/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/29/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/30/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/1/2013	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	10/2/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/3/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/4/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/5/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	10/6/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/7/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/8/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/9/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/10/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	10/11/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/12/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/13/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/14/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/15/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/16/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/17/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	10/18/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/19/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/20/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/21/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/22/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/23/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/24/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/25/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	10/26/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/27/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/28/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/29/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/30/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/31/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/1/2013	pH, daily average	SM4500-H+		6.8	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	11/2/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	11/3/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	11/4/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	11/5/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	11/6/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	11/7/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	11/8/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	11/9/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	11/10/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	11/11/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	11/12/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	11/13/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	11/14/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	11/15/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	11/16/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	11/17/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	11/18/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	11/19/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	11/20/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	11/21/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	11/22/2013	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	11/23/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/24/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	11/25/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/26/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/27/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/28/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/29/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	11/30/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/1/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/2/2013	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	12/3/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/4/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/5/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/6/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/7/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/8/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/9/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/10/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/11/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/12/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/13/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/14/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/15/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/16/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/17/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/18/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/19/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/20/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/21/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/22/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/23/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/24/2013	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	12/25/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/26/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/27/2013	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	12/28/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/29/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/30/2013	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	12/31/2013	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	1/1/2014	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	1/2/2014	pH, daily average	SM4500-H+		7.2	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/3/2014	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	1/4/2014	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	1/5/2014	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	1/6/2014	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	1/7/2014	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	1/8/2014	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	1/9/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	1/10/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/11/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/12/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/13/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/14/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/15/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/16/2014	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	1/17/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/18/2014	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	1/19/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/20/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/21/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/22/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/23/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/24/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/25/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	1/26/2014	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	1/27/2014	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	1/28/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/29/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/30/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	1/31/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	2/1/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/2/2014	pH, daily average	SM4500-H+		6.9	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	2/3/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/4/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/5/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/6/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/7/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/8/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/9/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	2/10/2014	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	2/11/2014	pH, daily average	SM4500-H+		6.6	SU			continuous
EFF-001	2/12/2014	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	2/13/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	2/14/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	2/15/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	2/16/2014	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	2/17/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	2/18/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	2/19/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	2/20/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	2/21/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	2/22/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	2/23/2014	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	2/24/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	2/25/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/26/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/27/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	2/28/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/1/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/2/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/3/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/4/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/5/2014	pH, daily average	SM4500-H+		6.9	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	3/6/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/7/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/8/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/9/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/10/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/11/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/12/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/13/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/14/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/15/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/16/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/17/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/18/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	3/19/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/20/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	3/21/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/22/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/23/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/24/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/25/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/26/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/27/2014	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	3/28/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/29/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/30/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	3/31/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	4/1/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	4/2/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	4/3/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/4/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/5/2014	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/6/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/7/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/8/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/9/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/10/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/11/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/12/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/13/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/14/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/15/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/16/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/17/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/18/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	4/19/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/20/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/21/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	4/22/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/23/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/24/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/25/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/26/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	4/27/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/28/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/29/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	4/30/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/1/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/2/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/3/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/4/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/5/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/6/2014	pH, daily average	SM4500-H+		7.1	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	5/7/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/8/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	5/9/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/10/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/11/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/12/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/13/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	5/14/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	5/15/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/16/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/17/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/18/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	5/19/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/20/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/21/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/22/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/23/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	5/24/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/25/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/26/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/27/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/28/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/29/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/30/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	5/31/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/1/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/2/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/3/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/4/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/5/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/6/2014	pH, daily average	SM4500-H+		6.9	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	6/7/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/8/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/9/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/10/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/11/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/12/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/13/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/14/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/15/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	6/16/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/17/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/18/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/19/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/20/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	6/21/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/22/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	6/23/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/24/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/25/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/26/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/27/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/28/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	6/29/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	6/30/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/1/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	7/2/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/3/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/4/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/5/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/6/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/7/2014	pH, daily average	SM4500-H+		6.9	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	7/8/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/9/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/10/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/11/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	7/12/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	7/13/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/14/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/15/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/16/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/17/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	7/18/2014	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	7/19/2014	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	7/20/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/21/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/22/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/23/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	7/24/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/25/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/26/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/27/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/28/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/29/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/30/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	7/31/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/1/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/2/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/3/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/4/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/5/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/6/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/7/2014	pH, daily average	SM4500-H+		6.9	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/8/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/9/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	8/10/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	8/11/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	8/12/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/13/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/14/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	8/15/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	8/16/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/17/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/18/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/19/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/20/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	8/21/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/22/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/23/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/24/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/25/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/26/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/27/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	8/28/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/29/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	8/30/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	8/31/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	9/1/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/2/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/3/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/4/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/5/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/6/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/7/2014	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	9/8/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/9/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/10/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/11/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/12/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/13/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	9/14/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	9/15/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	9/16/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/17/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	9/18/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/19/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/20/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/21/2014	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	9/22/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	9/23/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/24/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/25/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/26/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/27/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/28/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	9/29/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	9/30/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/1/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/2/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/3/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/4/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/5/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/6/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/7/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/8/2014	pH, daily average	SM4500-H+		7	SU			continuous

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	10/9/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/10/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/11/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/12/2014	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/13/2014	pH, daily average	SM4500-H+		7.2	SU			continuous
EFF-001	10/14/2014	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	10/15/2014	pH, daily average	SM4500-H+		7.3	SU			continuous
EFF-001	10/16/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/17/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/18/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/19/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/20/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/21/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/22/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/23/2014	pH, daily average	SM4500-H+		6.8	SU			continuous
EFF-001	10/24/2014	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	10/25/2014	pH, daily average	SM4500-H+		6.7	SU			continuous
EFF-001	10/26/2014	pH, daily average	SM4500-H+		6.9	SU			continuous
EFF-001	10/27/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/28/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/29/2014	pH, daily average	SM4500-H+		7.1	SU			continuous
EFF-001	10/30/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	10/31/2014	pH, daily average	SM4500-H+		7	SU			continuous
EFF-001	1/14/2010	Phenanthrene	8270C	ND	0.6	ug/L			Comp
EFF-001	4/16/2012	Phenanthrene	8270C	ND	0.5	ug/L			Comp/Grab
EFF-001	5/13/2012	Phenanthrene	8270C	ND	0.5	ug/L			Comp
EFF-001	6/10/2012	Phenanthrene	8270C	ND	0.5	ug/L			Comp
EFF-001	7/8/2012	Phenanthrene	8270C	ND	0.5	ug/L			Comp
EFF-001	8/12/2012	Phenanthrene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	9/9/2012	Phenanthrene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	10/7/2012	Phenanthrene	8270C	ND	0.5	ug/L		0.5	Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	11/4/2012	Phenanthrene	8270C	ND	0.5	ug/L		0.5	comp
EFF-001	12/2/2012	Phenanthrene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	1/13/2013	Phenanthrene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	2/3/2013	Phenanthrene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	3/10/2013	Phenanthrene	8270C	ND	0.5	ug/L		0.5	Comp
EFF-001	1/14/2010	Phenol	8270C	ND	0.2	ug/L			Comp
EFF-001	4/16/2012	Phenol	625	ND	0.3	ug/L			Comp/Grab
EFF-001	5/13/2012	Phenol	8270C	ND	0.3	ug/L			Comp
EFF-001	6/10/2012	Phenol	625	ND	0.3	ug/L			Comp
EFF-001	7/8/2012	Phenol	625	ND	0.3	ug/L			Comp
EFF-001	8/12/2012	Phenol	625	ND	0.3	ug/L		0.3	Comp
EFF-001	9/9/2012	Phenol	625	ND	0.3	ug/L		0.3	Comp
EFF-001	10/7/2012	Phenol	625	ND	0.3	ug/L		0.3	Comp
EFF-001	11/4/2012	Phenol	8270C/625	ND	0.3	ug/L		0.3	comp
EFF-001	12/2/2012	Phenol	625	ND	0.3	ug/L		0.3	Comp
EFF-001	1/13/2013	Phenol	625	ND	0.3	ug/L		0.3	Comp
EFF-001	2/3/2013	Phenol	625	ND	0.3	ug/L		0.3	Comp
EFF-001	3/10/2013	Phenol	8270C/625	ND	0.3	ug/L		0.3	Comp
EFF-001	5/3/2010	Phosphorous (Total)	365.2		1.85	mg/L			Comp
EFF-001	2/21/2011	Phosphorous (Total)	365.2		5.35	mg/L			comp
EFF-001	8/7/2012	Phosphorous (Total)	365.2		5.9	mg/L			Comp
EFF-001	5/3/2010	Potassium	200.7		16.1	mg/L			Comp
EFF-001	8/2/2010	Potassium	200.7		16.2	mg/L			Comp
EFF-001	2/21/2011	Potassium	200.7		15.3	mg/L			comp
EFF-001	8/8/2011	Potassium	200.7		20.2	mg/L			Comp
EFF-001	2/5/2012	Potassium	200.7		18.3	mg/L			Comp
EFF-001	8/7/2012	Potassium	200.7		20.3	mg/L			Comp
EFF-001	1/14/2010	Pyrene	8270C	ND	0.7	ug/L			Comp
EFF-001	4/16/2012	Pyrene	8270C	ND	0.6	ug/L			Comp/Grab
EFF-001	5/13/2012	Pyrene	8270C	ND	0.6	ug/L			Comp
EFF-001	6/10/2012	Pyrene	8270C	ND	0.6	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	7/8/2012	Pyrene	8270C	ND	0.6	ug/L			Comp
EFF-001	8/12/2012	Pyrene	8270C	ND	0.6	ug/L		0.6	Comp
EFF-001	9/9/2012	Pyrene	8270C	ND	0.6	ug/L		0.6	Comp
EFF-001	10/7/2012	Pyrene	8270C	ND	0.6	ug/L		0.6	Comp
EFF-001	11/4/2012	Pyrene	8270C	ND	0.6	ug/L		0.6	comp
EFF-001	12/2/2012	Pyrene	8270C	ND	0.6	ug/L		0.6	Comp
EFF-001	1/13/2013	Pyrene	8270C	ND	0.6	ug/L		0.6	Comp
EFF-001	2/3/2013	Pyrene	8270C	ND	0.6	ug/L		0.6	Comp
EFF-001	3/10/2013	Pyrene	8270C	ND	0.6	ug/L		0.6	Comp
EFF-001	1/14/2010	Selenium (Total)	200.8		1.2	ug/L			Comp
EFF-001	2/8/2010	Selenium (Total)	200.8		1	ug/L			Comp
EFF-001	2/8/2010	Selenium (Total)	200.8	J	0.32	ug/L			comp
EFF-001	3/16/2010	Selenium (Total)	200.8	J	0.26	ug/L			comp
EFF-001	3/16/2010	Selenium (Total)	200.8	ND	0.5	ug/L			comp
EFF-001	4/6/2010	Selenium (Total)	200.8	J	0.23	ug/L			Comp
EFF-001	5/3/2010	Selenium (Total)	200.8	J	0.24	ug/L	0.06	1	Comp/Grab
EFF-001	6/1/2010	Selenium (Total)	200.8	J	0.22	ug/L			Comp
EFF-001	7/6/2010	Selenium (Total)	200.8	J	0.25	ug/L			Comp/Grab
EFF-001	8/2/2010	Selenium (Total)	200.8	ND	0.5	ug/L			Comp
EFF-001	8/3/2010	Selenium (Total)	200.8	J	0.24	ug/L			Comp
EFF-001	9/7/2010	Selenium (Total)	200.8	J	0.27	ug/L			Comp
EFF-001	10/3/2010	Selenium (Total)	200.8	J	0.28	ug/L			Comp
EFF-001	11/2/2010	Selenium (Total)	200.8	J	0.25	ug/L			Comp
EFF-001	12/6/2010	Selenium (Total)	200.8	J	0.25	ug/L			Grab
EFF-001	1/17/2011	Selenium (Total)	200.8	J	0.31	ug/L			Comp
EFF-001	2/6/2011	Selenium (Total)	200.8	J	0.32	ug/L			Comp
EFF-001	3/7/2011	Selenium (Total)	200.8	J	0.29	ug/L			Grab
EFF-001	4/3/2011	Selenium (Total)	200.8	J	0.29	ug/L			comp
EFF-001	5/9/2011	Selenium (Total)	200.8	J	0.27	ug/L			grab
EFF-001	6/12/2011	Selenium (Total)	200.8	J	0.23	ug/L			comp
EFF-001	7/10/2011	Selenium (Total)	200.8	J	0.28	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/7/2011	Selenium (Total)	200.8	J	0.28	ug/L			Comp
EFF-001	8/8/2011	Selenium (Total)	200.8	ND	0.5	ug/L			Comp
EFF-001	9/5/2011	Selenium (Total)	200.8	J	0.25	ug/L			Comp/Grab
EFF-001	12/4/2011	Selenium (Total)	200.8	J	0.23	ug/L			Comp/Grab
EFF-001	1/9/2012	Selenium (Total)	200.8	J	0.24	ug/L			Comp/Grab
EFF-001	2/5/2012	Selenium (Total)	200.8	ND	0.5	ug/L			Comp
EFF-001	2/5/2012	Selenium (Total)	200.8	J	0.24	ug/L			comp
EFF-001	3/11/2012	Selenium (Total)	200.8	J	0.24	ug/L			Comp/Grab
EFF-001	4/16/2012	Selenium (Total)	200.8	J	0.24	ug/L			Comp/Grab
EFF-001	4/16/2012	Selenium (Total)	200.8		1.3	ug/L			Comp/Grab
EFF-001	5/14/2012	Selenium (Total)	200.8	J	0.27	ug/L			Comp/Grab
EFF-001	6/11/2012	Selenium (Total)	200.8	J	0.2	ug/L			Comp/Grab
EFF-001	7/8/2012	Selenium (Total)	200.8	J	0.24	ug/L			Comp/Grab
EFF-001	8/12/2012	Selenium (Total)	200.8	J	0.3	ug/L			Comp/Grab
EFF-001	9/9/2012	Selenium (Total)	200.8	J	0.26	ug/L			Comp/Grab
EFF-001	10/8/2012	Selenium (Total)	200.8	J	0.22	ug/L			Comp/Grab
EFF-001	11/4/2012	Selenium (Total)	200.8	J	0.24	ug/L			Comp/Grab
EFF-001	12/2/2012	Selenium (Total)	200.8	J	0.25	ug/L			Comp/Grab
EFF-001	1/13/2013	Selenium (Total)	200.8	J	0.3	ug/L			Comp/Grab
EFF-001	2/3/2013	Selenium (Total)	200.8	J	0.24	ug/L			comp/Grab
EFF-001	3/10/2013	Selenium (Total)	200.8	J	0.3	ug/L			Comp
EFF-001	4/7/2013	Selenium (Total)	200.8	J	0.27	ug/L			Comp/Grab
EFF-001	5/5/2013	Selenium (Total)	200.8	J	0.25	ug/L			Comp
EFF-001	6/3/2013	Selenium (Total)	200.8	J	0.28	ug/L			Comp
EFF-001	7/7/2013	Selenium (Total)	200.8	J	0.26	ug/L			Comp/Grab
EFF-001	8/5/2013	Selenium (Total)	200.8	J	0.43	ug/L			Comp/Grab
EFF-001	9/9/2013	Selenium (Total)	200.8	J	0.26	ug/L			Comp/Grab
EFF-001	10/7/2013	Selenium (Total)	200.8	J	0.25	ug/L			Comp/Grab
EFF-001	11/3/2013	Selenium (Total)	200.8	J	0.27	ug/L			Comp/Grab
EFF-001	12/2/2013	Selenium (Total)	200.8	J	0.24	ug/L			Grab
EFF-001	1/20/2014	Selenium (Total)	200.8	J	0.24	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	2/17/2014	Selenium (Total)	200.8	J	0.16	ug/L			Comp
EFF-001	3/4/2014	Selenium (Total)	200.8	J	0.2	ug/L			Comp/Grab
EFF-001	5/3/2010	Silica as SiO_2	200.7		51.1	mg/L			Comp
EFF-001	2/21/2011	Silica as SiO_2	200.7		42.9	mg/L			comp
EFF-001	8/7/2012	Silica as SiO_2	200.7		51	mg/L			Comp
EFF-001	1/14/2010	Silver (Total)	200.8		2	ug/L			Comp
EFF-001	2/8/2010	Silver (Total)	200.8		0.6	ug/L			Comp
EFF-001	2/8/2010	Silver (Total)	200.8	ND	0.063	ug/L			comp
EFF-001	3/16/2010	Silver (Total)	200.8	ND	0.063	ug/L			comp
EFF-001	3/16/2010	Silver (Total)	200.8	ND	0.6	ug/L			comp
EFF-001	4/6/2010	Silver (Total)	200.8	J	0.01	ug/L			Comp
EFF-001	5/3/2010	Silver (Total)	200.8	J	0.01	ug/L	0.009	0.1	Comp/Grab
EFF-001	6/1/2010	Silver (Total)	200.8	ND	0.063	ug/L			Comp
EFF-001	7/6/2010	Silver (Total)	200.8	ND	0.063	ug/L			Comp/Grab
EFF-001	8/2/2010	Silver (Total)	200.8	ND	0.6	ug/L			Comp
EFF-001	8/3/2010	Silver (Total)	200.8	ND	0.063	ug/L			Comp
EFF-001	9/7/2010	Silver (Total)	200.8	J	0.03	ug/L			Comp
EFF-001	10/3/2010	Silver (Total)	200.8	ND	0.063	ug/L			Comp
EFF-001	11/2/2010	Silver (Total)	200.8	J	0.02	ug/L			Comp
EFF-001	12/6/2010	Silver (Total)	200.8	ND	0.063	ug/L			Grab
EFF-001	1/17/2011	Silver (Total)	200.8	ND	0.063	ug/L			Comp
EFF-001	2/6/2011	Silver (Total)	200.8	ND	0.063	ug/L			Comp
EFF-001	3/7/2011	Silver (Total)	200.8	ND	0.063	ug/L			Grab
EFF-001	4/3/2011	Silver (Total)	200.8	J	0.02	ug/L			comp
EFF-001	5/9/2011	Silver (Total)	200.8	ND	0.02	ug/L			grab
EFF-001	6/12/2011	Silver (Total)	200.8	ND	0.02	ug/L			comp
EFF-001	7/10/2011	Silver (Total)	200.8	ND	0.02	ug/L			Comp
EFF-001	8/7/2011	Silver (Total)	200.8	ND	0.02	ug/L			Comp
EFF-001	8/8/2011	Silver (Total)	200.8	ND	0.6	ug/L			Comp
EFF-001	9/5/2011	Silver (Total)	200.8	ND	0.02	ug/L			Comp/Grab
EFF-001	12/4/2011	Silver (Total)	200.8	ND	0.02	ug/L			Comp/Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	1/9/2012	Silver (Total)	200.8	ND	0.02	ug/L			Comp/Grab
EFF-001	2/5/2012	Silver (Total)	200.8	ND	0.6	ug/L			Comp
EFF-001	2/5/2012	Silver (Total)	200.8	ND	0.02	ug/L			comp
EFF-001	3/11/2012	Silver (Total)	200.8	ND	0.02	ug/L			Comp/Grab
EFF-001	4/16/2012	Silver (Total)	200.8	ND	0.02	ug/L			Comp/Grab
EFF-001	4/16/2012	Silver (Total)	200.8	ND	2	ug/L			Comp/Grab
EFF-001	5/14/2012	Silver (Total)	200.8	ND	0.02	ug/L			Comp/Grab
EFF-001	6/11/2012	Silver (Total)	200.8	ND	0.02	ug/L			Comp/Grab
EFF-001	7/8/2012	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp/Grab
EFF-001	8/12/2012	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp/Grab
EFF-001	9/9/2012	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp/Grab
EFF-001	10/8/2012	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp/Grab
EFF-001	11/4/2012	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp/Grab
EFF-001	12/2/2012	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp/Grab
EFF-001	1/13/2013	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp/Grab
EFF-001	2/3/2013	Silver (Total)	200.8	ND	0.02	ug/L		0.02	comp/Grab
EFF-001	3/10/2013	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp
EFF-001	4/7/2013	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp/Grab
EFF-001	5/5/2013	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp
EFF-001	6/3/2013	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp
EFF-001	7/7/2013	Silver (Total)	200.8	ND	0.1	ug/L		0.1	Comp/Grab
EFF-001	8/5/2013	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp/Grab
EFF-001	9/9/2013	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp/Grab
EFF-001	10/7/2013	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp/Grab
EFF-001	11/3/2013	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp/Grab
EFF-001	12/2/2013	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Grab
EFF-001	1/20/2014	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp
EFF-001	2/17/2014	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp
EFF-001	3/4/2014	Silver (Total)	200.8	ND	0.02	ug/L		0.02	Comp/Grab
EFF-001	5/3/2010	Sodium	200.7		109	ug/L			Comp
EFF-001	8/2/2010	Sodium	200.7		105	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	2/21/2011	Sodium	200.7		92.3	ug/L			comp
EFF-001	8/8/2011	Sodium	200.7		124	ug/L			Comp
EFF-001	2/5/2012	Sodium	200.7		134	ug/L			Comp
EFF-001	8/7/2012	Sodium	200.7		116	mg/L			Comp
EFF-001	5/3/2010	Sulfate as SO4	300.0		90.4	mg/L			Comp
EFF-001	8/2/2010	Sulfate as SO4	300.0		65	mg/L			Comp
EFF-001	2/21/2011	Sulfate as SO4	300.0		54.1	mg/L			comp
EFF-001	8/8/2011	Sulfate as SO4	300.0		69.9	mg/L			Comp
EFF-001	2/5/2012	Sulfate as SO4	300.0		83.8	mg/L			Comp
EFF-001	8/7/2012	Sulfate as SO4	300.0		76.7	mg/L			Comp
EFF-001	1/12/2010	Tetrachloroethylene	8260B	ND	0.09	ug/L			Grab
EFF-001	2/2/2010	Tetrachloroethylene	8260B	ND	0.09	ug/L			Grab
EFF-001	4/16/2012	Tetrachloroethylene	8260B	ND	0.2	ug/L			Comp/Grab
EFF-001	5/14/2012	Tetrachloroethylene	8260B	ND	0.2	ug/L			Grab
EFF-001	6/11/2012	Tetrachloroethylene	8260B	ND	0.2	ug/L			Grab
EFF-001	7/9/2012	Tetrachloroethylene	8260B	ND	0.2	ug/L			Grab
EFF-001	8/13/2012	Tetrachloroethylene	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	9/10/2012	Tetrachloroethylene	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	10/8/2012	Tetrachloroethylene	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	11/5/2012	Tetrachloroethylene	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	12/3/2012	Tetrachloroethylene	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	1/14/2013	Tetrachloroethylene	8260B/624	ND	0.2	ug/L		0.2	Comp/Grab
EFF-001	2/4/2013	Tetrachloroethylene	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	3/11/2013	Tetrachloroethylene	8260B/624	ND	0.2	ug/L		0.2	Grab
EFF-001	1/14/2010	Thallium (Total)	200.8	ND	0.5	ug/L			Comp
EFF-001	2/8/2010	Thallium (Total)	200.8		0.5	ug/L			Comp
EFF-001	3/16/2010	Thallium (Total)	200.8	ND	0.5	ug/L			comp
EFF-001	4/6/2010	Thallium (Total)	200.8	ND	0.5	ug/L			Comp
EFF-001	8/3/2010	Thallium (Total)	200.8	ND	0.5	ug/L			comp
EFF-001	8/8/2011	Thallium (Total)	200.8	ND	0.5	ug/L			Comp
EFF-001	2/5/2012	Thallium (Total)	200.8	ND	0.5	ug/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/16/2012	Thallium (Total)	200.8	ND	1	ug/L			Comp/Grab
EFF-001	5/13/2012	Thallium (Total)	200.8	ND	0.5	ug/L			Comp
EFF-001	6/10/2012	Thallium (Total)	200.8	ND	0.5	ug/L			Comp
EFF-001	8/12/2012	Thallium (Total)	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	9/9/2012	Thallium (Total)	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	10/7/2012	Thallium (Total)	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	11/4/2012	Thallium (Total)	200.8	ND	0.5	ug/L		0.5	comp
EFF-001	12/2/2012	Thallium (Total)	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	1/13/2013	Thallium (Total)	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	2/3/2013	Thallium (Total)	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	3/10/2013	Thallium (Total)	200.8	ND	0.5	ug/L		0.5	Comp
EFF-001	1/12/2010	Toluene	8260B	ND	0.3	ug/L			Grab
EFF-001	2/2/2010	Toluene	8260B	ND	0.3	ug/L			Grab
EFF-001	4/16/2012	Toluene	8260B	J	1.2	ug/L			Comp/Grab
EFF-001	5/14/2012	Toluene	8260B	J	0.2	ug/L			Grab
EFF-001	6/11/2012	Toluene	8260B	J	0.6	ug/L			Grab
EFF-001	7/9/2012	Toluene	8260B	ND	0.05	ug/L			Grab
EFF-001	8/13/2012	Toluene	8260B/624	ND	0.05	ug/L		0.05	Grab
EFF-001	9/10/2012	Toluene	8260B/624	ND	0.05	ug/L		0.05	Grab
EFF-001	10/8/2012	Toluene	8260B/624	ND	0.05	ug/L		0.05	Grab
EFF-001	11/5/2012	Toluene	8260B/624	ND	0.05	ug/L		0.05	Grab
EFF-001	12/3/2012	Toluene	8260B/624	J	0.3	ug/L			Grab
EFF-001	1/14/2013	Toluene	8260B/624	J	0.4	ug/L			Comp/Grab
EFF-001	2/4/2013	Toluene	8260B/624	J	0.5	ug/L			Grab
EFF-001	3/11/2013	Toluene	8260B/624	ND	0.05	ug/L		0.05	Grab
EFF-001	1/31/2010	Total Alkalinity as CaCO3	SM2320B		5.5	mg/L			Comp
EFF-001	2/8/2010	Total Alkalinity as CaCO3	SM2320B		3.8	mg/L			Comp
EFF-001	8/2/2010	Total Alkalinity as CaCO3	SM2320B		135	mg/L			Comp
EFF-001	2/21/2011	Total Alkalinity as CaCO3	SM2320B		96.5	mg/L			comp
EFF-001	8/8/2011	Total Alkalinity as CaCO3	SM2320B		101	mg/L			Comp
EFF-001	2/5/2012	Total Alkalinity as CaCO3	SM2320B		110	mg/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	8/7/2012	Total Alkalinity as CaCO3	SM2320B		103	mg/L			Comp
EFF-001	6/1/2010	Total Dissolved Solids	SM2540C		622	mg/L			Grab
EFF-001	6/7/2010	Total Dissolved Solids	SM2540C		524	mg/L			Grab
EFF-001	6/15/2010	Total Dissolved Solids	SM2540C		488	mg/L			Grab
EFF-001	6/21/2010	Total Dissolved Solids	SM2540C		554	mg/L			Grab
EFF-001	6/28/2010	Total Dissolved Solids	SM2540C		660	mg/L			Grab
EFF-001	7/6/2010	Total Dissolved Solids	SM2540C		582	mg/L			Grab
EFF-001	7/12/2010	Total Dissolved Solids	SM2540C		676	mg/L			Grab
EFF-001	7/19/2010	Total Dissolved Solids	SM2540C		422	mg/L			Grab
EFF-001	7/26/2010	Total Dissolved Solids	SM2540C		646	mg/L			Grab
EFF-001	8/2/2010	Total Dissolved Solids	SM2540C		642	mg/L			Grab
EFF-001	8/2/2010	Total Dissolved Solids	160.1		568	mg/L			Comp
EFF-001	8/9/2010	Total Dissolved Solids	SM2540C		570	mg/L			Grab
EFF-001	8/16/2010	Total Dissolved Solids	SM2540C		576	mg/L			Grab
EFF-001	8/23/2010	Total Dissolved Solids	SM2540C		512	mg/L			Grab
EFF-001	8/30/2010	Total Dissolved Solids	SM2540C		590	mg/L			Grab
EFF-001	9/7/2010	Total Dissolved Solids	SM2540C		532	mg/L			Grab
EFF-001	9/13/2010	Total Dissolved Solids	SM2540C		628	mg/L			Grab
EFF-001	9/20/2010	Total Dissolved Solids	SM2540C		722	mg/L			Grab
EFF-001	9/27/2010	Total Dissolved Solids	SM2540C		642	mg/L			Grab
EFF-001	10/4/2010	Total Dissolved Solids	SM2540C		594	mg/L			Grab
EFF-001	10/11/2010	Total Dissolved Solids	SM2540C		702	mg/L			Grab
EFF-001	10/18/2010	Total Dissolved Solids	SM2540C		624	mg/L			Grab
EFF-001	10/25/2010	Total Dissolved Solids	SM2540C		504	mg/L			Grab
EFF-001	11/1/2010	Total Dissolved Solids	SM2540C		652	mg/L			Grab
EFF-001	11/8/2010	Total Dissolved Solids	SM2540C		434	mg/L			Grab
EFF-001	11/15/2010	Total Dissolved Solids	SM2540C		586	mg/L			Grab
EFF-001	11/22/2010	Total Dissolved Solids	SM2540C		562	mg/L			Grab
EFF-001	11/29/2010	Total Dissolved Solids	SM2540C		608	mg/L			Grab
EFF-001	12/6/2010	Total Dissolved Solids	SM2540C		632	mg/L			Grab
EFF-001	12/13/2010	Total Dissolved Solids	SM2540C		624	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	12/20/2010	Total Dissolved Solids	SM2540C		540	mg/L			Grab
EFF-001	12/27/2010	Total Dissolved Solids	SM2540C		549	mg/L			Grab
EFF-001	1/3/2011	Total Dissolved Solids	SM2540C		502	mg/L			Grab
EFF-001	1/10/2011	Total Dissolved Solids	SM2540C		514	mg/L			Grab
EFF-001	1/18/2011	Total Dissolved Solids	SM2540C		584	mg/L			Grab
EFF-001	1/24/2011	Total Dissolved Solids	SM2540C		494	mg/L			Grab
EFF-001	1/31/2011	Total Dissolved Solids	SM2540C		602	mg/L			Grab
EFF-001	2/7/2011	Total Dissolved Solids	SM2540C		650	mg/L			Grab
EFF-001	2/14/2011	Total Dissolved Solids	SM2540C		654	mg/L			Grab
EFF-001	2/21/2011	Total Dissolved Solids	160.1		612	mg/L			comp
EFF-001	2/22/2011	Total Dissolved Solids	SM2540C		612	mg/L			Grab
EFF-001	2/28/2011	Total Dissolved Solids	SM2540C		520	mg/L			Grab
EFF-001	3/7/2011	Total Dissolved Solids	SM2540C		546	mg/L			Grab
EFF-001	3/14/2011	Total Dissolved Solids	SM2540C		582	mg/L			Grab
EFF-001	3/21/2011	Total Dissolved Solids	SM2540C		444	mg/L			Grab
EFF-001	3/28/2011	Total Dissolved Solids	SM2540C		496	mg/L			Grab
EFF-001	4/4/2011	Total Dissolved Solids	SM2540C		592	mg/L			Grab
EFF-001	4/11/2011	Total Dissolved Solids	SM2540C		648	mg/L			Grab
EFF-001	4/18/2011	Total Dissolved Solids	SM2540C		644	mg/L			Grab
EFF-001	4/25/2011	Total Dissolved Solids	SM2540C		612	mg/L			Grab
EFF-001	5/2/2011	Total Dissolved Solids	SM2540C		612	mg/L			Grab
EFF-001	5/9/2011	Total Dissolved Solids	SM2540C		598	mg/L			Grab
EFF-001	5/16/2011	Total Dissolved Solids	SM2540C		536	mg/L			Grab
EFF-001	5/23/2011	Total Dissolved Solids	SM2540C		568	mg/L			Grab
EFF-001	5/31/2011	Total Dissolved Solids	SM2540C		574	mg/L			Grab
EFF-001	6/6/2011	Total Dissolved Solids	SM2540C		530	mg/L			Grab
EFF-001	6/13/2011	Total Dissolved Solids	SM2540C		794	mg/L			Grab
EFF-001	6/20/2011	Total Dissolved Solids	SM2540C		616	mg/L			Grab
EFF-001	6/27/2011	Total Dissolved Solids	SM2540C		626	mg/L			Grab
EFF-001	7/5/2011	Total Dissolved Solids	SM2540C		678	mg/L			Grab
EFF-001	7/11/2011	Total Dissolved Solids	SM2540C		594	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	7/18/2011	Total Dissolved Solids	SM2540C		660	mg/L			Grab
EFF-001	7/25/2011	Total Dissolved Solids	SM2540C		640	mg/L			Grab
EFF-001	8/1/2011	Total Dissolved Solids	SM2540C		586	mg/L			Grab
EFF-001	8/8/2011	Total Dissolved Solids	SM2540C		580	mg/L			Grab
EFF-001	8/8/2011	Total Dissolved Solids	160.1		602	mg/L			Comp
EFF-001	8/15/2011	Total Dissolved Solids	SM2540C		616	mg/L			Grab
EFF-001	8/22/2011	Total Dissolved Solids	SM2540C		566	mg/L			Grab
EFF-001	8/29/2011	Total Dissolved Solids	SM2540C		570	mg/L			Grab
EFF-001	9/6/2011	Total Dissolved Solids	SM2540C		556	mg/L			Grab
EFF-001	9/12/2011	Total Dissolved Solids	SM2540C		602	mg/L			Grab
EFF-001	9/19/2011	Total Dissolved Solids	SM2540C		582	mg/L			Grab
EFF-001	9/26/2011	Total Dissolved Solids	SM2540C		520	mg/L			Grab
EFF-001	10/3/2011	Total Dissolved Solids	SM2540C		631	mg/L			Grab
EFF-001	10/10/2011	Total Dissolved Solids	SM2540C		610	mg/L			Grab
EFF-001	10/17/2011	Total Dissolved Solids	SM2540C		554	mg/L			Grab
EFF-001	10/24/2011	Total Dissolved Solids	SM2540C		516	mg/L			Grab
EFF-001	10/31/2011	Total Dissolved Solids	SM2540C		612	mg/L			Grab
EFF-001	11/7/2011	Total Dissolved Solids	SM2540C		604	mg/L			Grab
EFF-001	11/14/2011	Total Dissolved Solids	SM2540C		688	mg/L			Grab
EFF-001	11/21/2011	Total Dissolved Solids	SM2540C		558	mg/L			Grab
EFF-001	11/28/2011	Total Dissolved Solids	SM2540C		494	mg/L			Grab
EFF-001	12/5/2011	Total Dissolved Solids	SM2540C		598	mg/L			Grab
EFF-001	12/12/2011	Total Dissolved Solids	SM2540C		628	mg/L			Grab
EFF-001	12/19/2011	Total Dissolved Solids	SM2540C		514	mg/L			Grab
EFF-001	12/27/2011	Total Dissolved Solids	SM2540C		572	mg/L			Grab
EFF-001	1/3/2012	Total Dissolved Solids	SM2540C		544	mg/L			Grab
EFF-001	1/9/2012	Total Dissolved Solids	SM2540C		598	mg/L			Grab
EFF-001	1/17/2012	Total Dissolved Solids	SM2540C		588	mg/L			Grab
EFF-001	1/23/2012	Total Dissolved Solids	SM2540C		562	mg/L			Grab
EFF-001	1/30/2012	Total Dissolved Solids	SM2540C		614	mg/L			Grab
EFF-001	2/5/2012	Total Dissolved Solids	160.1		645	mg/L			Comp

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	2/6/2012	Total Dissolved Solids	SM2540C		560	mg/L			Grab
EFF-001	2/13/2012	Total Dissolved Solids	SM2540C		586	mg/L			Grab
EFF-001	2/21/2012	Total Dissolved Solids	SM2540C		566	mg/L			Grab
EFF-001	2/27/2012	Total Dissolved Solids	SM2540C		540	mg/L			Grab
EFF-001	3/5/2012	Total Dissolved Solids	SM2540C		524	mg/L			Grab
EFF-001	3/12/2012	Total Dissolved Solids	SM2540C		636	mg/L			Grab
EFF-001	3/19/2012	Total Dissolved Solids	SM2540C		496	mg/L			Grab
EFF-001	3/26/2012	Total Dissolved Solids	SM2540C		578	mg/L			Grab
EFF-001	4/2/2012	Total Dissolved Solids	SM2540C		550	mg/L			Grab
EFF-001	4/9/2012	Total Dissolved Solids	SM2540C		516	mg/L			Grab
EFF-001	4/16/2012	Total Dissolved Solids	SM2540C		506	mg/L			Grab
EFF-001	4/23/2012	Total Dissolved Solids	SM2540C		600	mg/L			Grab
EFF-001	4/30/2012	Total Dissolved Solids	SM2540C		584	mg/L			Grab
EFF-001	5/7/2012	Total Dissolved Solids	SM2540C		618	mg/L			Grab
EFF-001	5/14/2012	Total Dissolved Solids	SM2540C		528	mg/L			Grab
EFF-001	5/21/2012	Total Dissolved Solids	SM2540C		608	mg/L			Grab
EFF-001	5/29/2012	Total Dissolved Solids	SM2540C		613	mg/L			Grab
EFF-001	6/4/2012	Total Dissolved Solids	SM2540C		593	mg/L			Grab
EFF-001	6/11/2012	Total Dissolved Solids	SM2540C		572	mg/L			Grab
EFF-001	6/18/2012	Total Dissolved Solids	SM2540C		642	mg/L			Grab
EFF-001	6/25/2012	Total Dissolved Solids	SM2540C		570	mg/L			Grab
EFF-001	7/2/2012	Total Dissolved Solids	SM2540C		524	mg/L			Grab
EFF-001	7/9/2012	Total Dissolved Solids	SM2540C		562	mg/L			Grab
EFF-001	7/16/2012	Total Dissolved Solids	SM2540C		606	mg/L			Grab
EFF-001	7/23/2012	Total Dissolved Solids	SM2540C		606	mg/L			Grab
EFF-001	7/30/2012	Total Dissolved Solids	SM2540C		574	mg/L			Grab
EFF-001	8/6/2012	Total Dissolved Solids	SM2540C		620	mg/L			Grab
EFF-001	8/13/2012	Total Dissolved Solids	SM2540C		580	mg/L			Grab
EFF-001	8/20/2012	Total Dissolved Solids	SM2540C		676	mg/L			Grab
EFF-001	8/27/2012	Total Dissolved Solids	SM2540C		566	mg/L			Grab
EFF-001	9/4/2012	Total Dissolved Solids	SM2540C		572	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	9/10/2012	Total Dissolved Solids	SM2540C		604	mg/L			Grab
EFF-001	9/17/2012	Total Dissolved Solids	SM2540C		606	mg/L			Grab
EFF-001	9/24/2012	Total Dissolved Solids	SM2540C		600	mg/L			Grab
EFF-001	10/1/2012	Total Dissolved Solids	SM2540C		598	mg/L			Grab
EFF-001	10/8/2012	Total Dissolved Solids	SM2540C		500	mg/L			Grab
EFF-001	10/15/2012	Total Dissolved Solids	SM2540C		568	mg/L			Grab
EFF-001	10/22/2012	Total Dissolved Solids	SM2540C		580	mg/L			Grab
EFF-001	10/29/2012	Total Dissolved Solids	SM2540C		642	mg/L			Grab
EFF-001	11/5/2012	Total Dissolved Solids	SM2540C		666	mg/L			Grab
EFF-001	11/13/2012	Total Dissolved Solids	SM2540C		586	mg/L			Grab
EFF-001	11/19/2012	Total Dissolved Solids	SM2540C		580	mg/L			Grab
EFF-001	11/26/2012	Total Dissolved Solids	SM2540C		612	mg/L			Grab
EFF-001	12/3/2012	Total Dissolved Solids	SM2540C		572	mg/L			Grab
EFF-001	12/10/2012	Total Dissolved Solids	SM2540C		532	mg/L			Grab
EFF-001	12/17/2012	Total Dissolved Solids	SM2540C		612	mg/L			Grab
EFF-001	12/24/2012	Total Dissolved Solids	SM2540C		390	mg/L			Grab
EFF-001	1/2/2013	Total Dissolved Solids	SM2540C		564	mg/L			Grab
EFF-001	1/7/2013	Total Dissolved Solids	SM2540C		500	mg/L			Grab
EFF-001	1/14/2013	Total Dissolved Solids	SM2540C		528	mg/L			Grab
EFF-001	1/22/2013	Total Dissolved Solids	SM2540C		500	mg/L			Grab
EFF-001	1/28/2013	Total Dissolved Solids	SM2540C		724	mg/L			Grab
EFF-001	2/4/2013	Total Dissolved Solids	SM2540C		634	mg/L			Grab
EFF-001	2/11/2013	Total Dissolved Solids	SM2540C		522	mg/L			Grab
EFF-001	2/19/2013	Total Dissolved Solids	SM2540C		552	mg/L			Grab
EFF-001	2/25/2013	Total Dissolved Solids	SM2540C		584	mg/L			Grab
EFF-001	3/6/2013	Total Dissolved Solids	SM2540C		551	mg/L			Grab
EFF-001	3/11/2013	Total Dissolved Solids	SM2540C		592	mg/L			Grab
EFF-001	3/18/2013	Total Dissolved Solids	SM2540C		692	mg/L			Grab
EFF-001	3/25/2013	Total Dissolved Solids	SM2540C		596	mg/L			Grab
EFF-001	4/1/2013	Total Dissolved Solids	SM2540C		558	mg/L			Grab
EFF-001	4/8/2013	Total Dissolved Solids	SM2540C		562	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	4/15/2013	Total Dissolved Solids	SM2540C		554	mg/L			Grab
EFF-001	4/22/2013	Total Dissolved Solids	SM2540C		594	mg/L			Grab
EFF-001	4/29/2013	Total Dissolved Solids	SM2540C		732	mg/L			Grab
EFF-001	5/6/2013	Total Dissolved Solids	SM2540C		606	mg/L			Grab
EFF-001	5/13/2013	Total Dissolved Solids	SM2540C		602	mg/L			Grab
EFF-001	5/20/2013	Total Dissolved Solids	SM2540C		648	mg/L			Grab
EFF-001	5/28/2013	Total Dissolved Solids	SM2540C		638	mg/L			Grab
EFF-001	6/3/2013	Total Dissolved Solids	SM2540C		692	mg/L			Grab
EFF-001	6/10/2013	Total Dissolved Solids	SM2540C		606	mg/L			Grab
EFF-001	6/17/2013	Total Dissolved Solids	SM2540C		538	mg/L			Grab
EFF-001	6/24/2013	Total Dissolved Solids	SM2540C		604	mg/L			Grab
EFF-001	7/1/2013	Total Dissolved Solids	SM2540C		656	mg/L			Grab
EFF-001	7/8/2013	Total Dissolved Solids	SM2540C		566	mg/L			Grab
EFF-001	7/15/2013	Total Dissolved Solids	SM2540C		614	mg/L			Grab
EFF-001	7/22/2013	Total Dissolved Solids	SM2540C		644	mg/L			Grab
EFF-001	7/29/2013	Total Dissolved Solids	SM2540C		636	mg/L			Grab
EFF-001	8/5/2013	Total Dissolved Solids	SM2540C		596	mg/L			Grab
EFF-001	8/12/2013	Total Dissolved Solids	SM2540C		662	mg/L			Grab
EFF-001	8/19/2013	Total Dissolved Solids	SM2540C		570	mg/L			Grab
EFF-001	8/26/2013	Total Dissolved Solids	SM2540C		600	mg/L			Grab
EFF-001	9/3/2013	Total Dissolved Solids	SM2540C		574	mg/L			Grab
EFF-001	9/9/2013	Total Dissolved Solids	SM2540C		620	mg/L			Grab
EFF-001	9/16/2013	Total Dissolved Solids	SM2540C		622	mg/L			Grab
EFF-001	9/23/2013	Total Dissolved Solids	SM2540C		604	mg/L			Grab
EFF-001	9/30/2013	Total Dissolved Solids	SM2540C		600	mg/L			Grab
EFF-001	10/7/2013	Total Dissolved Solids	SM2540C		662	mg/L			Grab
EFF-001	10/14/2013	Total Dissolved Solids	SM2540C		568	mg/L			Grab
EFF-001	10/21/2013	Total Dissolved Solids	SM2540C		588	mg/L			Grab
EFF-001	10/28/2013	Total Dissolved Solids	SM2540C		648	mg/L			Grab
EFF-001	11/4/2013	Total Dissolved Solids	SM2540C		642	mg/L			Grab
EFF-001	11/12/2013	Total Dissolved Solids	SM2540C		642	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	11/18/2013	Total Dissolved Solids	SM2540C		674	mg/L			Grab
EFF-001	11/25/2013	Total Dissolved Solids	SM2540C		668	mg/L			Grab
EFF-001	12/2/2013	Total Dissolved Solids	SM2540C		646	mg/L			Grab
EFF-001	12/9/2013	Total Dissolved Solids	SM2540C		564	mg/L			Grab
EFF-001	12/16/2013	Total Dissolved Solids	SM2540C		554	mg/L			Grab
EFF-001	12/23/2013	Total Dissolved Solids	SM2540C		698	mg/L			Grab
EFF-001	12/30/2013	Total Dissolved Solids	SM2540C		663	mg/L			Grab
EFF-001	1/6/2014	Total Dissolved Solids	SM2540C		593	mg/L			Grab
EFF-001	1/13/2014	Total Dissolved Solids	SM2540C		644	mg/L			Grab
EFF-001	1/21/2014	Total Dissolved Solids	SM2540C		564	mg/L			Grab
EFF-001	1/27/2014	Total Dissolved Solids	SM2540C		669	mg/L			Grab
EFF-001	2/3/2014	Total Dissolved Solids	SM2540C		580	mg/L			Grab
EFF-001	2/10/2014	Total Dissolved Solids	SM2540C		628	mg/L			Grab
EFF-001	2/18/2014	Total Dissolved Solids	SM2540C		624	mg/L			Grab
EFF-001	2/24/2014	Total Dissolved Solids	SM2540C		670	mg/L			Grab
EFF-001	3/3/2014	Total Dissolved Solids	SM2540C		554	mg/L			Grab
EFF-001	3/10/2014	Total Dissolved Solids	SM2540C		628	mg/L			Grab
EFF-001	3/17/2014	Total Dissolved Solids	SM2540C		664	mg/L			Grab
EFF-001	3/24/2014	Total Dissolved Solids	SM2540C		740	mg/L			Grab
EFF-001	3/31/2014	Total Dissolved Solids	SM2540C		502	mg/L			Grab
EFF-001	4/7/2014	Total Dissolved Solids	SM2540C		572	mg/L			Grab
EFF-001	4/14/2014	Total Dissolved Solids	SM2540C		606	mg/L			Grab
EFF-001	4/21/2014	Total Dissolved Solids	SM2540C		654	mg/L			Grab
EFF-001	4/28/2014	Total Dissolved Solids	SM2540C		598	mg/L			Grab
EFF-001	5/5/2014	Total Dissolved Solids	SM2540C		566	mg/L			Grab
EFF-001	5/12/2014	Total Dissolved Solids	SM2540C		692	mg/L			Grab
EFF-001	5/19/2014	Total Dissolved Solids	SM2540C		680	mg/L			Grab
EFF-001	5/28/2014	Total Dissolved Solids	SM2540C		750	mg/L			Grab
EFF-001	6/2/2014	Total Dissolved Solids	SM2540C		596	mg/L			Grab
EFF-001	6/9/2014	Total Dissolved Solids	SM2540C		678	mg/L			Grab
EFF-001	6/16/2014	Total Dissolved Solids	SM2540C		716	mg/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	6/23/2014	Total Dissolved Solids	SM2540C		720	mg/L			Grab
EFF-001	6/30/2014	Total Dissolved Solids	SM2540C		634	mg/L			Grab
EFF-001	7/7/2014	Total Dissolved Solids	SM2540C		736	mg/L			Grab
EFF-001	7/14/2014	Total Dissolved Solids	SM2540C		628	mg/L			Grab
EFF-001	7/21/2014	Total Dissolved Solids	SM2540C		746	mg/L			Grab
EFF-001	7/28/2014	Total Dissolved Solids	SM2540C		800	mg/L			Grab
EFF-001	8/4/2014	Total Dissolved Solids	SM2540C		730	mg/L			Grab
EFF-001	8/11/2014	Total Dissolved Solids	SM2540C		810	mg/L			Grab
EFF-001	8/18/2014	Total Dissolved Solids	SM2540C		690	mg/L			Grab
EFF-001	8/25/2014	Total Dissolved Solids	SM2540C		740	mg/L			Grab
EFF-001	9/2/2014	Total Dissolved Solids	SM2540C		702	mg/L			Grab
EFF-001	9/8/2014	Total Dissolved Solids	SM2540C		698	mg/L			Grab
EFF-001	9/15/2014	Total Dissolved Solids	SM2540C		730	mg/L			Grab
EFF-001	9/22/2014	Total Dissolved Solids	SM2540C		732	mg/L			Grab
EFF-001	9/29/2014	Total Dissolved Solids	SM2540C		645	mg/L			Grab
EFF-001	10/6/2014	Total Dissolved Solids	SM2540C		745	mg/L			Grab
EFF-001	10/13/2014	Total Dissolved Solids	SM2540C		706	mg/L			Grab
EFF-001	10/20/2014	Total Dissolved Solids	SM2540C		755	mg/L			Grab
EFF-001	10/27/2014	Total Dissolved Solids	SM2540C		728	mg/L			Grab
EFF-001	1/14/2010	Toxaphene	8081A/608	ND	0.5	ug/L			Comp
EFF-001	4/16/2012	Toxaphene	8081A/608	ND	1	ug/L			Comp/Grab
EFF-001	5/13/2012	Toxaphene	8081A/608	ND	0.5	ug/L			Comp
EFF-001	6/10/2012	Toxaphene	8081A/608	ND	1	ug/L			Comp
EFF-001	7/8/2012	Toxaphene	8081A/608	ND	1	ug/L			Comp
EFF-001	1/12/2010	trans-1,2-Dichloroethene	8260B	ND	0.2	ug/L			Grab
EFF-001	2/2/2010	trans-1,2-Dichloroethene	8260B	ND	0.2	ug/L			Grab
EFF-001	4/16/2012	trans-1,2-Dichloroethene	8260B	ND	0.1	ug/L			Comp/Grab
EFF-001	5/14/2012	trans-1,2-Dichloroethene	8260B	ND	0.1	ug/L			Grab
EFF-001	6/11/2012	trans-1,2-Dichloroethene	8260B	ND	0.1	ug/L			Grab
EFF-001	7/9/2012	trans-1,2-Dichloroethene	8260B	ND	0.1	ug/L			Grab
EFF-001	8/13/2012	trans-1,2-Dichloroethene	8260B/624	ND	0.1	ug/L		0.1	Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	9/10/2012	trans-1,2-Dichloroethene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	10/8/2012	trans-1,2-Dichloroethene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	11/5/2012	trans-1,2-Dichloroethene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	12/3/2012	trans-1,2-Dichloroethene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/14/2013	trans-1,2-Dichloroethene	8260B/624	ND	0.1	ug/L		0.1	Comp/Grab
EFF-001	2/4/2013	trans-1,2-Dichloroethene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	3/11/2013	trans-1,2-Dichloroethene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/31/2010	Tributyltin	GC/FPD		5.5	ng/L			Comp
EFF-001	2/8/2010	Tributyltin	GC/FPD		3.8	ng/L			Comp
EFF-001	1/12/2010	Trichloroethylene	8260B	ND	0.4	ug/L			Grab
EFF-001	2/2/2010	Trichloroethylene	8260B	ND	0.4	ug/L			Grab
EFF-001	4/16/2012	Trichloroethylene	8260B	ND	0.1	ug/L			Comp/Grab
EFF-001	5/14/2012	Trichloroethylene	8260B	ND	0.1	ug/L			Grab
EFF-001	6/11/2012	Trichloroethylene	8260B	ND	0.1	ug/L			Grab
EFF-001	7/9/2012	Trichloroethylene	8260B	ND	0.1	ug/L			Grab
EFF-001	8/13/2012	Trichloroethylene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	9/10/2012	Trichloroethylene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	10/8/2012	Trichloroethylene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	11/5/2012	Trichloroethylene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	12/3/2012	Trichloroethylene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	1/14/2013	Trichloroethylene	8260B/624	ND	0.1	ug/L		0.1	Comp/Grab
EFF-001	2/4/2013	Trichloroethylene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	3/11/2013	Trichloroethylene	8260B/624	ND	0.1	ug/L		0.1	Grab
EFF-001	8/2/2010	Turbidity	180.1		0.7	NTU			Comp
EFF-001	8/8/2011	Turbidity	180.1		1.5	NTU			Comp
EFF-001	2/5/2012	Turbidity	180.1		1.3	NTU			Comp
EFF-001	1/12/2010	Vinyl Chloride	8260B	ND	0.5	ug/L			Grab
EFF-001	2/2/2010	Vinyl Chloride	8260B	ND	0.5	ug/L			Grab
EFF-001	4/16/2012	Vinyl Chloride	8260B	ND	0.3	ug/L			Comp/Grab
EFF-001	5/14/2012	Vinyl Chloride	8260B	ND	0.3	ug/L			Grab
EFF-001	6/11/2012	Vinyl Chloride	8260B	ND	0.3	ug/L			Grab

Monitoring Location	Sample Date	Analyte Name	Method Name	Qualifier	Result	Unit	MDL	RL or MDL	Sample Type
EFF-001	7/9/2012	Vinyl Chloride	8260B	ND	0.3	ug/L			Grab
EFF-001	8/13/2012	Vinyl Chloride	8260B/624	ND	0.3	ug/L		0.3	Grab
EFF-001	9/10/2012	Vinyl Chloride	8260B/624	ND	0.3	ug/L		0.3	Grab
EFF-001	10/8/2012	Vinyl Chloride	8260B/624	ND	0.3	ug/L		0.3	Grab
EFF-001	11/5/2012	Vinyl Chloride	8260B/624	ND	0.3	ug/L		0.3	Grab
EFF-001	12/3/2012	Vinyl Chloride	8260B/624	ND	0.3	ug/L		0.3	Grab
EFF-001	1/14/2013	Vinyl Chloride	8260B/624	ND	0.3	ug/L		0.3	Comp/Grab
EFF-001	2/4/2013	Vinyl Chloride	8260B/624	ND	0.3	ug/L		0.3	Grab
EFF-001	3/11/2013	Vinyl Chloride	8260B/624	ND	0.3	ug/L		0.3	Grab
EFF-001	1/14/2010	Zinc (Total)	200.8		45	ug/L			Comp
EFF-001	2/8/2010	Zinc (Total)	200.8		41	ug/L			Comp
EFF-001	3/16/2010	Zinc (Total)	200.8		41	ug/L			comp
EFF-001	4/6/2010	Zinc (Total)	200.8		35	ug/L			Comp
EFF-001	8/2/2010	Zinc (Total)	200.8		82	ug/L			Comp
EFF-001	8/3/2010	Zinc (Total)	200.8		54	ug/L			comp
EFF-001	8/8/2011	Zinc (Total)	200.8		52.8	ug/L			Comp
EFF-001	2/5/2012	Zinc (Total)	200.8		92	ug/L			Comp
EFF-001	4/16/2012	Zinc (Total)	200.8		43	ug/L			Comp/Grab
EFF-001	5/13/2012	Zinc (Total)	200.8		42	ug/L			Comp
EFF-001	6/10/2012	Zinc (Total)	200.8		30	ug/L			Comp
EFF-001	7/8/2012	Zinc (Total)	200.8		28	ug/L			Comp
EFF-001	8/12/2012	Zinc (Total)	200.8		31	ug/L			Comp
EFF-001	9/9/2012	Zinc (Total)	200.8		35	ug/L			Comp
EFF-001	10/7/2012	Zinc (Total)	200.8		37.0	ug/L			Comp
EFF-001	11/4/2012	Zinc (Total)	200.8		49.2	ug/L			comp
EFF-001	12/2/2012	Zinc (Total)	200.8		111	ug/L			Comp
EFF-001	1/13/2013	Zinc (Total)	200.8		42	ug/L			Comp
EFF-001	2/3/2013	Zinc (Total)	200.8		41	ug/L			Comp
EFF-001	3/10/2013	Zinc (Total)	200.8		36.0	ug/L			Comp

Appendix C: City of Modesto Tertiary Effluent Monitoring Data Used to Characterize City's Contribution to Effluent Quality of Proposed NVRRWP Discharge

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
EFF-001B Grab	8/13/2014	9:49	8/20/2014	1,1,1-Trichloroethane	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	1,1,1-Trichloroethane	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	1,1,2,2-Tetrachloroethane	None	EPA 624	ND	0.30	ug/L	0.30	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	1,1,2,2-Tetrachloroethane	None	EPA 624	ND	0.30	ug/L	0.30	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	1,1,2-Trichloroethane	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	1,1,2-Trichloroethane	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	1,1-Dichloroethane	None	EPA 624	ND	0.50	ug/L	0.50	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	1,1-Dichloroethane	None	EPA 624	ND	0.50	ug/L	0.50	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	1,1-Dichloroethene	None	EPA 624	ND	0.30	ug/L	0.30	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	1,1-Dichloroethene	None	EPA 624	ND	0.30	ug/L	0.30	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	1,2,4-Trichlorobenzene	None	EPA 625	ND	0.59	ug/L	0.59	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	1,2,4-Trichlorobenzene	None	EPA 625	ND	0.59	ug/L	0.59	5.0		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	1,2-Dibromo-3-chloropropane	None	EPA 624	ND	0.60	ug/L	0.60	2.0		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	1,2-Dibromo-3-chloropropane	None	EPA 624	ND	0.60	ug/L	0.60	2.0		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	1,2-Dibromoethane (EDB)	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	1,2-Dibromoethane (EDB)	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	1,2-Dichlorobenzene	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	1,2-Dichlorobenzene	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	1,2-Dichloroethane	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	1,2-Dichloroethane	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	1,2-Dichloropropane	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	1,2-Dichloropropane	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	1,2-Diphenylhydrazine	None	EPA 625	ND	0.33	ug/L	0.33	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	1,2-Diphenylhydrazine	None	EPA 625	ND	0.33	ug/L	0.33	1.0		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	1,3-Dichlorobenzene	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	1,3-Dichlorobenzene	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	1,4-Dichlorobenzene	None	EPA 624	ND	0.30	ug/L	0.30	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	1,4-Dichlorobenzene	None	EPA 624	ND	0.30	ug/L	0.30	0.50		Alpha
EFF-001B Grab	8/13/2014	9:27	8/22/2014	2,3,7,8-TCDD	None	EPA 1613B	ND	2.62	pg/L	2.62			Ceres
EFF-001B Grab	10/30/2014	9:56	11/11/2014	2,3,7,8-TCDD	None	EPA 1613B	ND	1.03	pg/L	1.03			Ceres

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
EFF-001B Comp	8/13/2014	8:47	8/23/2014	2,4,5-T	None	EPA 515.1	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/8/2014	2,4,5-T	None	EPA 515.1	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	2,4,5-TP (Silvex)	None	EPA 515.1	ND	0.50	ug/L	0.50	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/8/2014	2,4,5-TP (Silvex)	None	EPA 515.1	ND	0.50	ug/L	0.50	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	2,4,6-Trichlorophenol	None	EPA 625	ND	0.74	ug/L	0.74	10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	2,4,6-Trichlorophenol	None	EPA 625	ND	0.74	ug/L	0.74	10		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	2,4-D	None	EPA 515.1	ND	0.80	ug/L	0.80	10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/8/2014	2,4-D	None	EPA 515.1	ND	0.80	ug/L	0.80	10		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	2,4-DB	None	EPA 515.1	ND	4.0	ug/L	4.0	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/8/2014	2,4-DB	None	EPA 515.1	ND	4.0	ug/L	4.0	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	2,4-Dichlorophenol	None	EPA 625	ND	0.66	ug/L	0.66	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	2,4-Dichlorophenol	None	EPA 625	ND	0.66	ug/L	0.66	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	2,4-Dimethylphenol	None	EPA 625	ND	1.2	ug/L	1.2	2.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	2,4-Dimethylphenol	None	EPA 625	ND	1.2	ug/L	1.2	2.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	2,4-Dinitrophenol	None	EPA 625	ND	1.3	ug/L	1.3	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	2,4-Dinitrophenol	None	EPA 625	ND	1.3	ug/L	1.3	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	2,4-Dinitrotoluene	None	EPA 625	ND	0.68	ug/L	0.68	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	2,4-Dinitrotoluene	None	EPA 625	ND	0.68	ug/L	0.68	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	2,6-Dinitrotoluene	None	EPA 625	ND	0.54	ug/L	0.54	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	2,6-Dinitrotoluene	None	EPA 625	ND	0.54	ug/L	0.54	5.0		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	2-Chloroethylvinyl ether	None	EPA 624	ND	0.70	ug/L	0.70	1.0		Alpha
EFF-001B Grab	10/30/2014	9:56	10/31/2014	2-Chloroethylvinyl ether	None	EPA 624	ND	0.70	ug/L	0.70	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	2-Chloronaphthalene	None	EPA 625	ND	0.57	ug/L	0.57	10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	2-Chloronaphthalene	None	EPA 625	ND	0.57	ug/L	0.57	10		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	2-Chlorophenol	None	EPA 625	ND	0.66	ug/L	0.66	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	2-Chlorophenol	None	EPA 625	ND	0.66	ug/L	0.66	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/26/2014	2-Methylnaphthalene	None	EPA 625SIM	ND	0.04	ug/L	0.04	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	2-Methylnaphthalene	None	EPA 625SIM	ND	0.04	ug/L	0.04	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	2-Nitrophenol	None	EPA 625	ND	0.90	ug/L	0.90	10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	2-Nitrophenol	None	EPA 625	ND	0.90	ug/L	0.90	10		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	3,3´-Dichlorobenzidine	None	EPA 625	ND	2.0	ug/L	2.0	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	3,3'-Dichlorobenzidine	None	EPA 625	ND	2.0	ug/L	2.0	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	3-Hydroxycarbofuran	None	EPA 531.1	ND	3	ug/L	3			FGL
EFF-001B Comp	10/30/2014	9:48	11/19/2014	3-Hydroxycarbofuran	None	EPA 531.1	ND	3	ug/L	3			FGL
EFF-001B Comp	8/13/2014	8:47	8/25/2014	4,4´-DDD	None	EPA 608	ND	0.02	ug/L	0.02	0.02		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	4,4'-DDD	None	EPA 608	ND	0.02	ug/L	0.02	0.02		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	4,4´-DDE	None	EPA 608	ND	0.004	ug/L	0.004	0.02		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	4,4'-DDE	None	EPA 608	ND	0.004	ug/L	0.004	0.02		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	4,4´-DDT	None	EPA 608	ND	0.003	ug/L	0.003	0.01		Alpha

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
EFF-001B Comp	10/30/2014	9:48	11/4/2014	4,4'-DDT	None	EPA 608	ND	0.003	ug/L	0.003	0.01		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	4,6-Dinitro-2-methylphenol	None	EPA 625	ND	0.75	ug/L	0.75	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	4,6-Dinitro-2-methylphenol	None	EPA 625	ND	0.75	ug/L	0.75	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	4-Bromophenyl phenyl ether	None	EPA 625	ND	0.43	ug/L	0.43	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	4-Bromophenyl phenyl ether	None	EPA 625	ND	0.43	ug/L	0.43	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	4-Chloro-3-methylphenol	None	EPA 625	ND	0.58	ug/L	0.58	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	4-Chloro-3-methylphenol	None	EPA 625	ND	0.58	ug/L	0.58	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	4-Chlorophenyl phenyl ether	None	EPA 625	ND	0.93	ug/L	0.93	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	4-Chlorophenyl phenyl ether	None	EPA 625	ND	0.93	ug/L	0.93	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	4-Nitrophenol	None	EPA 515.1	ND	0.7	ug/L	0.70	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/8/2014	4-Nitrophenol	None	EPA 515.1	ND	0.7	ug/L	0.70	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Acenaphthene	None	EPA 625SIM	ND	0.03	ug/L	0.03	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Acenaphthene	None	EPA 625SIM	ND	0.03	ug/L	0.03	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Acenaphthylene	None	EPA 625SIM	ND	0.03	ug/L	0.03	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Acenaphthylene	None	EPA 625SIM	ND	0.03	ug/L	0.03	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Acifluorfen	None	EPA 515.1	ND	0.50	ug/L	0.50	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/8/2014	Acifluorfen	None	EPA 515.1	ND	0.50	ug/L	0.50	1.0		Alpha
EFF-001B Grab	8/13/2014	9:49	8/14/2014	Acrolein	None	EPA 624	ND	2.0	ug/L	2.0	5.0		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Acrolein	None	EPA 624	ND	2.0	ug/L	2.0	5.0		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Acrylonitrile	None	EPA 624	ND	0.40	ug/L	0.40	2.0		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Acrylonitrile	None	EPA 624	ND	0.40	ug/L	0.40	2.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/21/2014	Alachlor	None	EPA 507	ND	0.5	ug/L	0.50	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/7/2014	Alachlor	None	EPA 507	ND	0.5	ug/L	0.50	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Aldicarb	None	EPA 531.1	ND	3	ug/L	3			FGL
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Aldicarb	None	EPA 531.1	ND	3	ug/L	3			FGL
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Aldicarb sulfone	None	EPA 531.1	ND	2	ug/L	2			FGL
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Aldicarb sulfone	None	EPA 531.1	ND	2	ug/L	2			FGL
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Aldicarb sulfoxide	None	EPA 531.1	ND	3	ug/L	3			FGL
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Aldicarb sulfoxide	None	EPA 531.1	ND	3	ug/L	3			FGL
EFF-001B Comp	8/13/2014	8:47	8/25/2014	Aldrin	None	EPA 608	ND	0.002	ug/L	0.002	0.005		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Aldrin	None	EPA 608	ND	0.002	ug/L	0.002	0.005		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	alpha-BHC	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	alpha-BHC	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Alpha
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Aluminum	Total	EPA 200.8	=	29	ug/L	2.0	10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Aluminum	Total	EPA 200.8	=	21	ug/L	2.0	10		Alpha
EFF-001B Grab	8/13/2014	10:07	8/22/2014	Ammonia-N	None	SM4500-NH3-D	J	0.04	mg/L	0.03			Modesto
EFF-001B Grab	10/27/2014	9:53	11/5/2014	Ammonia-N	None	SM4500-NH3-D	ND	0.03	mg/L	0.03			Modesto
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Anthracene	None	EPA 625SIM	ND	0.03	ug/L	0.03	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Anthracene	None	EPA 625SIM	ND	0.03	ug/L	0.03	0.20		Alpha

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Antimony	Total	EPA 200.8	J	0.48	ug/L	0.02	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Antimony	Total	EPA 200.8	=	0.55	ug/L	0.02	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	9/4/2014	Arsenic	Total	EPA 1638DRC	=	2.91	ug/L	0.01	0.03		Modesto
EFF-001B Comp	10/30/2014	9:48	11/18/2014	Arsenic	Total	EPA 1638DRC	=	1.18	ug/L	0.01	0.03		Modesto
EFF-001B Grab	8/13/2014	9:28	8/26/2014	Asbestos	None	EPA 100.2	ND	0.20	MFL	0.20			ATEML
EFF-001B Grab	10/30/2014	9:56	11/12/2014	Asbestos	None	EPA 100.2	ND	0.20	MFL	0.20			ATEML
EFF-001B Comp	8/13/2014	8:47	8/21/2014	Atrazine	None	EPA 507	ND	0.30	ug/L	0.30	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/7/2014	Atrazine	None	EPA 507	ND	0.30	ug/L	0.30	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Barium	Total	EPA 200.8	=	70	ug/L	0.03	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Barium	Total	EPA 200.8	=	30	ug/L	0.03	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Bentazon	None	EPA 515.1	ND	0.40	ug/L	0.40	2.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/8/2014	Bentazon	None	EPA 515.1	ND	0.40	ug/L	0.40	2.0		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Benzene	None	EPA 624	ND	0.30	ug/L	0.30	0.30		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Benzene	None	EPA 624	ND	0.30	ug/L	0.30	0.30		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Benzidine	None	EPA 625	ND	3.4	ug/L	3.4	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Benzidine	None	EPA 625	ND	3.4	ug/L	3.4	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Benzo (a) anthracene	None	EPA 625SIM	ND	0.04	ug/L	0.04	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Benzo (a) anthracene	None	EPA 625SIM	ND	0.04	ug/L	0.04	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Benzo (a) pyrene	None	EPA 625SIM	ND	0.04	ug/L	0.04	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Benzo (a) pyrene	None	EPA 625SIM	ND	0.04	ug/L	0.04	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Benzo (b) fluoranthene	None	EPA 625SIM	ND	0.04	ug/L	0.04	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Benzo (b) fluoranthene	None	EPA 625SIM	ND	0.04	ug/L	0.04	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Benzo (g,h,i) perylene	None	EPA 625SIM	ND	0.04	ug/L	0.04	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Benzo (g,h,i) perylene	None	EPA 625SIM	ND	0.04	ug/L	0.04	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Benzo (k) fluoranthene	None	EPA 625SIM	ND	0.04	ug/L	0.04	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Benzo (k) fluoranthene	None	EPA 625SIM	ND	0.04	ug/L	0.04	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Beryllium	Total	EPA 200.8	ND	0.02	ug/L	0.02	0.10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Beryllium	Total	EPA 200.8	ND	0.02	ug/L	0.02	0.10		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	beta-BHC	None	EPA 608	ND	0.002	ug/L	0.002	0.005		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	beta-BHC	None	EPA 608	ND	0.002	ug/L	0.002	0.005		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Bis(2-chloroethoxy)methane	None	EPA 625	ND	0.81	ug/L	0.81	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Bis(2-chloroethoxy)methane	None	EPA 625	ND	0.81	ug/L	0.81	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Bis(2-chloroethyl)ether	None	EPA 625	ND	0.14	ug/L	0.14	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Bis(2-chloroethyl)ether	None	EPA 625	ND	0.14	ug/L	0.14	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Bis(2-chloroisopropyl)ether	None	EPA 625	ND	0.41	ug/L	0.41	2.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Bis(2-chloroisopropyl)ether	None	EPA 625	ND	0.41	ug/L	0.41	2.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Bis(2-ethylhexyl)phthalate	None	EPA 625	ND	0.83	ug/L	0.83	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Bis(2-ethylhexyl)phthalate	None	EPA 625	ND	0.83	ug/L	0.83	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Bolstar	None	EPA 8270C	ND	0.0035	ug/L	0.0035	0.10		BSK

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
EFF-001B Comp	8/13/2014	8:47	8/21/2014	Bromacil	None	EPA 507	ND	0.50	ug/L	0.50	10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/7/2014	Bromacil	None	EPA 507	ND	0.50	ug/L	0.50	10		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Bromodichloromethane	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Bromodichloromethane	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Bromoform	None	EPA 624	ND	0.30	ug/L	0.30	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Bromoform	None	EPA 624	ND	0.30	ug/L	0.30	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Bromomethane	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Bromomethane	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Butyl benzyl phthalate	None	EPA 625	ND	0.64	ug/L	0.64	10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Butyl benzyl phthalate	None	EPA 625	ND	0.64	ug/L	0.64	10		Alpha
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Cadmium	Total	EPA 200.8	ND	0.02	ug/L	0.02	0.10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Cadmium	Total	EPA 200.8	ND	0.02	ug/L	0.02	0.10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/11/2014	Calcium	None	EPA 200.7	=	47	mg/L	0.01	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Carbaryl	None	EPA 531.1	ND	5	ug/L	5			FGL
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Carbaryl	None	EPA 531.1	ND	5	ug/L	5			FGL
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Carbofuran	None	EPA 531.1	ND	5	ug/L	5			FGL
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Carbofuran	None	EPA 531.1	ND	5	ug/L	5			FGL
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Carbon tetrachloride	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Carbon tetrachloride	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	Chlordane (tech)	None	EPA 608	ND	0.04	ug/L	0.04	0.05		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Chlordane (tech)	None	EPA 608	ND	0.04	ug/L	0.04	0.05		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	Chloride	None	SM4500-Cl-E	=	186	mg/L	0.55			Modesto
EFF-001B Comp	10/30/2014	9:48	11/18/2014	Chloride	None	SM4500-Cl-E	=	192	mg/L	0.55			Modesto
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Chlorobenzene	None	EPA 624	ND	0.3	ug/L	0.30	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Chlorobenzene	None	EPA 624	ND	0.3	ug/L	0.30	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Chloroethane	None	EPA 624	ND	0.4	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Chloroethane	None	EPA 624	ND	0.4	ug/L	0.40	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Chloroform	None	EPA 624	ND	0.4	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Chloroform	None	EPA 624	ND	0.4	ug/L	0.40	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Chloromethane	None	EPA 624	ND	0.4	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Chloromethane	None	EPA 624	ND	0.4	ug/L	0.40	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Chlorpyrifos	None	EPA 8270C	ND	0.0029	ug/L	0.0029	0.01		BSK
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Chlorpyrifos	None	EPA 8270C	ND	0.0029	ug/L	0.0029	0.01		BSK
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Chromium	Total	EPA 200.8	=	0.87	ug/L	0.08	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Chromium	Total	EPA 200.8	=	0.56	ug/L	0.08	0.50		Alpha
EFF-001B Grab	8/13/2014	9:47	8/19/2014	Chromium, hexavalent	Dissolved	EPA 218.6	ND	0.05	ug/L	0.05	0.20		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Chromium, hexavalent	Dissolved	EPA 218.6	ND	0.05	ug/L	0.05	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Chrysene	None	EPA 625SIM	ND	0.04	ug/L	0.04	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Chrysene	None	EPA 625SIM	ND	0.04	ug/L	0.04	0.20		Alpha

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
EFF-001B Grab	8/13/2014	9:49	8/20/2014	cis-1,2-Dichloroethene	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	cis-1,2-Dichloroethene	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	cis-1,3-Dichloropropene	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	cis-1,3-Dichloropropene	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/13/2014	Conductivity	None	SM2510B	=	1020	umhos/cm	1			Modesto
EFF-001B Comp	10/30/2014	9:48	11/7/2014	Conductivity	None	SM2510B	=	786	umhos/cm	1			Modesto
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Copper	Total	EPA 200.8	=	3.1	ug/L	0.04	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Copper	Total	EPA 200.8	=	2.6	ug/L	0.04	0.50		Alpha
EFF-001B Grab	8/13/2014	9:46	8/15/2014	Cyanide (total)	Total	10-204-00-1X	ND	2.0	ug/L	2.0	3.00		Alpha
EFF-001B Grab	10/30/2014	9:56	10/31/2014	Cyanide (total)	Total	10-204-00-1X	ND	2.0	ug/L	2.0	3.00		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Dalapon	None	EPA 515.1	ND	6.0	ug/L	6.0	10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/8/2014	Dalapon	None	EPA 515.1	ND	6.0	ug/L	6.0	10		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	delta-BHC	None	EPA 608	ND	0.002	ug/L	0.002	0.005		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	delta-BHC	None	EPA 608	ND	0.002	ug/L	0.002	0.005		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Demeton O & S	None	EPA 8270C	ND	0.025	ug/L	0.025	0.10		BSK
EFF-001B Comp	8/13/2014	8:47	9/22/2014	Di(2-ethylhexyl)adipate	None	EPA 625	ND	4.0	ug/L	4.0	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Di(2-ethylhexyl)adipate	None	EPA 625	ND	4.0	ug/L	4.0	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Diazinon	None	EPA 8270C	ND	0.0036	ug/L	0.0036	0.05		BSK
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Diazinon	None	EPA 8270C	ND	0.0036	ug/L	0.0036	0.05		BSK
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Dibenz (a,h) anthracene	None	EPA 625SIM	ND	0.08	ug/L	0.08	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Dibenz (a,h) anthracene	None	EPA 625SIM	ND	0.08	ug/L	0.08	0.20		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Dibromochloromethane	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Dibromochloromethane	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/20/2014	Dibutyltin	None	GC-FPD	ND	0.007	ug/L	0.01	0.02		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Dicamba	None	EPA 515.1	ND	0.40	ug/L	0.40	1.5		Alpha
EFF-001B Comp	10/30/2014	9:48	11/8/2014	Dicamba	None	EPA 515.1	ND	0.40	ug/L	0.40	1.5		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Dichlorprop	None	EPA 515.1	ND	1.0	ug/L	1.0	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/8/2014	Dichlorprop	None	EPA 515.1	ND	1.0	ug/L	1.0	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Dichlorvos	None	EPA 8270C	ND	0.0048	ug/L	0.0048	0.15		BSK
EFF-001B Comp	8/13/2014	8:47	8/25/2014	Dieldrin	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Dieldrin	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Diethyl phthalate	None	EPA 625	ND	0.86	ug/L	0.86	2.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Diethyl phthalate	None	EPA 625	ND	0.86	ug/L	0.86	2.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/21/2014	Dimethoate	None	EPA 507	ND	0.2	ug/L	0.20	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Dimethoate	None	EPA 8270C	ND	0.0075	ug/L	0.0075	0.25		BSK
EFF-001B Comp	10/30/2014	9:48	11/7/2014	Dimethoate	None	EPA 507	ND	0.2	ug/L	0.20	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Dimethyl phthalate	None	EPA 625	ND	0.68	ug/L	0.68	2.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Dimethyl phthalate	None	EPA 625	ND	0.68	ug/L	0.68	2.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Di-n-butyl phthalate	None	EPA 625	ND	0.91	ug/L	0.91	10		Alpha

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Di-n-butyl phthalate	None	EPA 625	ND	0.91	ug/L	0.91	10		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Di-n-octyl phthalate	None	EPA 625	ND	0.65	ug/L	0.65	10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Di-n-octyl phthalate	None	EPA 625	ND	0.65	ug/L	0.65	10		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Dinoseb	None	EPA 515.1	ND	0.8	ug/L	0.80	2.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/8/2014	Dinoseb	None	EPA 515.1	ND	0.8	ug/L	0.80	2.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/21/2014	Diquat	None	EPA 549.2	ND	2	ug/L	2			FGL
EFF-001B Comp	10/30/2014	9:48	11/6/2014	Diquat	None	EPA 549.2	ND	2	ug/L	2			FGL
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Disulfoton	None	EPA 8270C	ND	0.024	ug/L	0.024	0.10		BSK
EFF-001B Comp	8/13/2014	8:47	8/25/2014	Endosulfan I	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Endosulfan I	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	Endosulfan II	None	EPA 608	ND	0.002	ug/L	0.002	0.01		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Endosulfan II	None	EPA 608	ND	0.002	ug/L	0.002	0.01		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	Endosulfan sulfate	None	EPA 608	ND	0.02	ug/L	0.02	0.05		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Endosulfan sulfate	None	EPA 608	ND	0.02	ug/L	0.02	0.05		Alpha
EFF-001B Comp	9/4/2014	9:50	9/6/2014	Endothall	None	EPA 548.1	ND	3.7	ug/L	3.7	45		BSK
EFF-001B Comp	10/30/2014	9:48	11/14/2014	Endothall	None	EPA 548.1	ND	40	ug/L	40			FGL
EFF-001B Comp	8/13/2014	8:47	8/25/2014	Endrin	None	EPA 608	ND	0.002	ug/L	0.002	0.01		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Endrin	None	EPA 608	ND	0.002	ug/L	0.002	0.01		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	Endrin aldehyde	None	EPA 608	ND	0.002	ug/L	0.002	0.01		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Endrin aldehyde	None	EPA 608	ND	0.002	ug/L	0.002	0.01		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Ethion	None	EPA 8270C	ND	0.004	ug/L	0.004	0.10		BSK
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Ethoprop	None	EPA 8270C	ND	0.0042	ug/L	0.0042	0.15		BSK
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Ethylbenzene	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Ethylbenzene	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Fensulfothion	None	EPA 8270C	ND	0.0082	ug/L	0.0082	0.10		BSK
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Fenthion	None	EPA 8270C	ND	0.0029	ug/L	0.0029	0.10		BSK
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Fluoranthene	None	EPA 625SIM	ND	0.03	ug/L	0.03	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Fluoranthene	None	EPA 625SIM	ND	0.03	ug/L	0.03	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Fluorene	None	EPA 625SIM	ND	0.03	ug/L	0.03	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Fluorene	None	EPA 625SIM	ND	0.03	ug/L	0.03	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/16/2014	Fluoride	None	EPA 300.0	ND	0.07	mg/L	0.07	0.10		Alpha
EFF-001B Comp	10/30/2014	9:48	10/31/2014	Fluoride	None	EPA 300.0	J	0.097	mg/L	0.07	0.10		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	gamma-BHC (Lindane)	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	gamma-BHC (Lindane)	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Alpha
EFF-001B Comp	8/13/2014	8:47	8/20/2014	Glyphosate	None	EPA 547	ND	3.0	ug/L	3.0	25		Alpha
EFF-001B Comp	10/30/2014	9:48	11/6/2014	Glyphosate	None	EPA 547	ND	20	ug/L	20			FGL
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Guthion	None	EPA 8270C	ND	0.032	ug/L	0.032	0.15		BSK
EFF-001B Comp	8/13/2014	8:47	8/15/2014	Hardness as CaCO3	Total	SM2340C	=	162	mg/L	2			Modesto
EFF-001B Comp	10/30/2014	9:48	11/11/2014	Hardness, Total	Total	SM2340B	=	165	mg/L	1	5		Alpha

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
EFF-001B Comp	8/13/2014	8:47	8/25/2014	Heptachlor	None	EPA 608	ND	0.003	ug/L	0.003	0.01		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Heptachlor	None	EPA 608	ND	0.003	ug/L	0.003	0.01		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	Heptachlor epoxide	None	EPA 608	ND	0.009	ug/L	0.009	0.01		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Heptachlor epoxide	None	EPA 608	ND	0.009	ug/L	0.009	0.01		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Hexachlorobenzene	None	EPA 625	ND	0.89	ug/L	0.89	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Hexachlorobenzene	None	EPA 625	ND	0.89	ug/L	0.89	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Hexachlorobutadiene	None	EPA 625	ND	0.84	ug/L	0.84	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Hexachlorobutadiene	None	EPA 625	ND	0.84	ug/L	0.84	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Hexachlorocyclopentadiene	None	EPA 625	ND	0.45	ug/L	0.45	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Hexachlorocyclopentadiene	None	EPA 625	ND	0.45	ug/L	0.45	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Hexachloroethane	None	EPA 625	ND	0.58	ug/L	0.58	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Hexachloroethane	None	EPA 625	ND	0.58	ug/L	0.58	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Indeno (1,2,3-cd) pyrene	None	EPA 625SIM	ND	0.05	ug/L	0.05	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Indeno (1,2,3-cd) pyrene	None	EPA 625SIM	ND	0.05	ug/L	0.05	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Iron	Total	EPA 200.8	J	43	ug/L	2	50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Iron	Total	EPA 200.8	=	67	ug/L	2	50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Isophorone	None	EPA 625	ND	0.81	ug/L	0.81	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Isophorone	None	EPA 625	ND	0.81	ug/L	0.81	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Lead	Total	EPA 200.8	J	0.088	ug/L	0.02	0.25		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Lead	Total	EPA 200.8	J	0.09	ug/L	0.02	0.25		Alpha
EFF-001B Comp	10/30/2014	9:48	11/11/2014	Magnesium	None	EPA 200.7	=	11	mg/L	0.008	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Malathion	None	EPA 8270C	ND	0.0046	ug/L	0.0046	0.25		BSK
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Manganese	Total	EPA 200.8	J	4.4	ug/L	0.03	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Manganese	Total	EPA 200.8	=	19	ug/L	0.03	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	10/31/2014	MBAS	None	SM5540C	J	0.031	mg/L	0.03	0.05		Alpha
EFF-001B Comp	8/13/2014	8:47	8/26/2014	MBAS, calculated as LAS, mw 340	None	SM5540C	J	0.032	mg/L	0.03	0.05		Alpha
EFF-001B Grab	8/13/2014	9:45	8/26/2014	Mercury	Total	EPA 1631E	=	0.00106	ug/L	0.0002	0.0005		Alpha
EFF-001B Grab	10/30/2014	9:56	11/7/2014	Mercury	Total	EPA 1631E	=	0.000636	ug/L	0.0002	0.0005		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Methomyl	None	EPA 531.1	ND	2	ug/L	2			FGL
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Methomyl	None	EPA 531.1	ND	2	ug/L	2			FGL
EFF-001B Comp	8/13/2014	8:47	8/25/2014	Methoxychlor	None	EPA 608	ND	0.006	ug/L	0.006	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Methoxychlor	None	EPA 608	ND	0.006	ug/L	0.006	0.50		Alpha
EFF-001B Grab	8/13/2014	10:00	8/19/2014	Methyl mercury	Total	EPA 1630	J	0.0203	ng/L	0.02	0.05		Alpha
EFF-001B Grab	10/30/2014	9:56	11/11/2014	Methyl mercury	Total	EPA 1630	J	0.0226	ng/L	0.02	0.05		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Methyl tert-butyl ether	None	EPA 624	ND	0.50	ug/L	0.50	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Methyl tert-butyl ether	None	EPA 624	ND	0.50	ug/L	0.50	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Methylene chloride	None	EPA 624	ND	0.50	ug/L	0.50	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Methylene chloride	None	EPA 624	ND	0.50	ug/L	0.50	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/21/2014	Metolachlor	None	EPA 507	ND	0.30	ug/L	0.30	0.50		Alpha

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
EFF-001B Comp	10/30/2014	9:48	11/7/2014	Metolachlor	None	EPA 507	ND	0.30	ug/L	0.30	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/21/2014	Metribuzin	None	EPA 507	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/7/2014	Metribuzin	None	EPA 507	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Mevinphos	None	EPA 8270C	ND	0.0052	ug/L	0.0052	0.10		BSK
EFF-001B Comp	8/13/2014	8:47	8/21/2014	Molinate	None	EPA 507	ND	0.2	ug/L	0.20	2.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/7/2014	Molinate	None	EPA 507	ND	0.2	ug/L	0.20	2.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Molybdenum	Total	EPA 200.8	=	5.3	ug/L	0.02	0.25		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Molybdenum	Total	EPA 200.8	=	2.7	ug/L	0.02	0.25		Alpha
EFF-001B Comp	8/13/2014	8:47	8/20/2014	Monobutyltin	None	GC-FPD	ND	0.012	ug/L	0.012	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Naled	None	EPA 8270C	ND	0.025	ug/L	0.025	0.10		BSK
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Naphthalene	None	EPA 625SIM	ND	0.04	ug/L	0.04	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Naphthalene	None	EPA 625SIM	ND	0.04	ug/L	0.04	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Nickel	Total	EPA 200.8	=	1.4	ug/L	0.06	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Nickel	Total	EPA 200.8	J	2.1	ug/L	0.06	0.50		Alpha
EFF-001B Grab	8/13/2014	10:07	8/13/2014	Nitrate+Nitrite-N	None	SM4500-NO3-F	ND	0.09	mg/L	0.01			Modesto
EFF-001B Grab	10/27/2014	9:53	10/28/2014	Nitrate+Nitrite-N	None	SM4500-NO3-F	=	6.88	mg/L	0.09			Modesto
EFF-001B Grab	8/13/2014	10:07	8/13/2014	Nitrate-N	None	SM4500-NO3-F	ND	0.09	mg/L	0.09			Modesto
EFF-001B Grab	10/27/2014	9:53	10/28/2014	Nitrate-N	None	SM4500-NO3-F	=	6.87	mg/L	0.09			Modesto
EFF-001B Grab	8/13/2014	10:07	8/13/2014	Nitrite-N	None	SM4500-NO3-F	J	0.01	mg/L	0.01			Modesto
EFF-001B Grab	10/27/2014	9:53	10/28/2014	Nitrite-N	None	SM4500-NO3-F	=	0.01	mg/L	0.01			Modesto
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Nitrobenzene	None	EPA 625	ND	0.74	ug/L	0.74	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Nitrobenzene	None	EPA 625	ND	0.74	ug/L	0.74	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	N-Nitrosodimethylamine	None	EPA 625	ND	1.1	ug/L	1.1	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	N-Nitrosodimethylamine	None	EPA 625	ND	1.1	ug/L	1.1	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	N-Nitrosodi-n-propylamine	None	EPA 625	ND	0.85	ug/L	0.85	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	N-Nitrosodi-n-propylamine	None	EPA 625	ND	0.85	ug/L	0.85	5.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	N-Nitrosodiphenylamine	None	EPA 625	ND	0.90	ug/L	0.90	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	N-Nitrosodiphenylamine	None	EPA 625	ND	0.90	ug/L	0.90	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Oxamyl	None	EPA 531.1	ND	5	ug/L	5			FGL
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Oxamyl	None	EPA 531.1	ND	5	ug/L	5			FGL
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Parathion Ethyl	None	EPA 8270C	ND	0.0029	ug/L	0.00			BSK
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Parathion Methyl	None	EPA 8270C	ND	0.003	ug/L	0.00			BSK
EFF-001B Comp	8/13/2014	8:47	8/25/2014	PCB 1016	None	EPA 608	ND	0.08	ug/L	0.08	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	PCB 1016	None	EPA 608	ND	0.08	ug/L	0.08	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	PCB 1221	None	EPA 608	ND	0.2	ug/L	0.20	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	PCB 1221	None	EPA 608	ND	0.2	ug/L	0.20	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	PCB 1232	None	EPA 608	ND	0.1	ug/L	0.10	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	PCB 1232	None	EPA 608	ND	0.1	ug/L	0.10	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	PCB 1242	None	EPA 608	ND	0.04	ug/L	0.04	0.50		Alpha

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
EFF-001B Comp	10/30/2014	9:48	11/4/2014	PCB 1242	None	EPA 608	ND	0.04	ug/L	0.04	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	PCB 1248	None	EPA 608	ND	0.06	ug/L	0.06	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	PCB 1248	None	EPA 608	ND	0.06	ug/L	0.06	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	PCB 1254	None	EPA 608	ND	0.04	ug/L	0.04	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	PCB 1254	None	EPA 608	ND	0.04	ug/L	0.04	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/25/2014	PCB 1260	None	EPA 608	ND	0.04	ug/L	0.04	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	PCB 1260	None	EPA 608	ND	0.04	ug/L	0.04	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Pentachlorophenol	None	EPA 515.1	ND	0.2	ug/L	0.20	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/8/2014	Pentachlorophenol	None	EPA 515.1	ND	0.2	ug/L	0.20	0.20		Alpha
EFF-001B Grab	8/13/2014	10:07	8/13/2014	pH, field	None	SM4500-HB	=	7.86	SU				Modesto
EFF-001B Grab	10/27/2014	9:53	10/27/2014	pH, field	None	SM4500-HB	=	7.41	SU				Modesto
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Phenanthrene	None	EPA 625SIM	ND	0.03	ug/L	0.03	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Phenanthrene	None	EPA 625SIM	ND	0.03	ug/L	0.03	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/28/2014	Phenol	None	EPA 625	ND	0.46	ug/L	0.46	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/13/2014	Phenol	None	EPA 625	ND	0.46	ug/L	0.46	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Phorate	None	EPA 8270C	ND	0.0033	ug/L	0.0033	0.10		BSK
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Phosmet	None	EPA 8270C	ND	0.029	ug/L	0.029	1.0		BSK
EFF-001B Comp	8/13/2014	8:47	8/17/2014	Phosphorus, Total (as P)	Total	SM4500-P-F	=	0.05	mg/L	0.01			Modesto
EFF-001B Comp	10/30/2014	9:48	11/11/2014	Phosphorus, Total (as P)	Total	EPA 200.7	J	0.21	mg/L	0.02	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Picloram	None	EPA 515.1	ND	0.50	ug/L	0.50	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/8/2014	Picloram	None	EPA 515.1	ND	0.50	ug/L	0.50	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/21/2014	Prometryn	None	EPA 507	ND	0.50	ug/L	0.50	2.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/7/2014	Prometryn	None	EPA 507	ND	0.50	ug/L	0.50	2.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/21/2014	Propachlor	None	EPA 507	ND	0.30	ug/L	0.30	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/7/2014	Propachlor	None	EPA 507	ND	0.30	ug/L	0.30	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/26/2014	Pyrene	None	EPA 625SIM	ND	0.03	ug/L	0.03	0.20		Alpha
EFF-001B Comp	10/30/2014	9:48	11/19/2014	Pyrene	None	EPA 625SIM	ND	0.03	ug/L	0.03	0.20		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Ronnel	None	EPA 8270C	ND	0.0028	ug/L	0.0028	0.10		BSK
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Selenium	Total	EPA 200.8	J	0.89	ug/L	0.20	2.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Selenium	Total	EPA 200.8	J	0.72	ug/L	0.20	2.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Silver	Total	EPA 200.8	ND	0.02	ug/L	0.02	0.10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Silver	Total	EPA 200.8	ND	0.02	ug/L	0.02	0.10		Alpha
EFF-001B Comp	8/13/2014	8:47	8/21/2014	Simazine	None	EPA 507	ND	0.30	ug/L	0.30	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/7/2014	Simazine	None	EPA 507	ND	0.30	ug/L	0.30	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Stirophos	None	EPA 8270C	ND	0.014	ug/L	0.014	0.10		BSK
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Styrene	None	EPA 624	ND	0.4	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Styrene	None	EPA 624	ND	0.4	ug/L	0.40	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/16/2014	Sulfate as SO4	None	EPA 300.0	=	40	mg/L	0.09	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	10/31/2014	Sulfate as SO4	None	EPA 300.0	=	32	mg/L	0.09	0.50		Alpha

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
EFF-001B Comp	8/13/2014	8:47	8/15/2014	Sulfide	None	SM4500SD	ND	0.02	mg/L	0.02	0.10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Sulfide	None	SM4500SD	ND	0.02	mg/L	0.02	0.10		Alpha
EFF-001B Comp	8/13/2014	9:47	8/14/2014	Sulfite	None	EPA 300.1	ND	0.1	mg/L		0.10		McCampbell
EFF-001B Comp	10/30/2014	9:48	10/31/2014	Sulfite	None	EPA 300.1	ND	0.1	mg/L		0.10		McCampbell
EFF-001B Grab	8/13/2014	10:07	8/13/2014	Temperature, field	None	SM2550-B1	=	26.8	C				Modesto
EFF-001B Grab	10/27/2014	9:53	10/27/2014	Temperature, field	None	SM2550-B1	=	24.9	C				Modesto
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Tetrachloroethene	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Tetrachloroethene	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Thallium	Total	EPA 200.8	ND	0.02	ug/L	0.02	0.10		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Thallium	Total	EPA 200.8	ND	0.02	ug/L	0.02	0.10		Alpha
EFF-001B Comp	8/13/2014	8:47	8/21/2014	Thiobencarb	None	EPA 507	ND	0.20	ug/L	0.20	1.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/7/2014	Thiobencarb	None	EPA 507	ND	0.20	ug/L	0.20	1.0		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Tokuthion	None	EPA 8270C	ND	0.0033	ug/L	0.0033	0.10		BSK
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Toluene	None	EPA 624	ND	0.30	ug/L	0.30	0.30		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Toluene	None	EPA 624	ND	0.30	ug/L	0.30	0.30		Alpha
EFF-001B Comp	8/13/2014	8:47	8/13/2014	Total Dissolved Solids	Dissolved	SM2540C	=	590	mg/L	25			Modesto
EFF-001B Comp	10/30/2014	9:48	11/7/2014	Total Dissolved Solids	Dissolved	SM2540C	=	728	mg/L	25			Modesto
EFF-001B Comp	8/13/2014	8:47	8/25/2014	Toxaphene	None	EPA 608	ND	0.2	ug/L	0.20	0.50		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Toxaphene	None	EPA 608	ND	0.2	ug/L	0.20	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	trans-1,2-Dichloroethene	None	EPA 624	ND	0.4	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	trans-1,2-Dichloroethene	None	EPA 624	ND	0.4	ug/L	0.40	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	trans-1,3-Dichloropropene	None	EPA 624	ND	0.4	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	trans-1,3-Dichloropropene	None	EPA 624	ND	0.4	ug/L	0.40	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/20/2014	Tributyltin	None	GC-FPD	ND	0.004	ug/L	0.004	0.005		Alpha
EFF-001B Comp	10/30/2014	9:48	11/7/2014	Tributyltin	None	GC-FPD	ND	0.004	ug/L	0.004	0.005		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Trichloroethene	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Trichloroethene	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Trichlorofluoromethane	None	EPA 624	ND	0.50	ug/L	0.50	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Trichlorofluoromethane	None	EPA 624	ND	0.50	ug/L	0.50	0.50		Alpha
EFF-001B Comp	8/13/2014	8:47	8/23/2014	Trichloronate	None	EPA 8270C	ND	0.0041	ug/L	0.0041	0.10		BSK
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Trichlorotrifluoroethane	None	EPA 624	ND	0.50	ug/L	0.50	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Trichlorotrifluoroethane	None	EPA 624	ND	0.50	ug/L	0.50	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Trihalomethanes (total)	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Trihalomethanes (total)	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Vinyl chloride	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Vinyl chloride	None	EPA 624	ND	0.40	ug/L	0.40	0.50		Alpha
EFF-001B Grab	8/13/2014	9:49	8/20/2014	Xylenes (total)	None	EPA 624	ND	0.50	ug/L	0.50	0.50		Alpha
EFF-001B Grab	10/30/2014	9:56	11/5/2014	Xylenes (total)	None	EPA 624	ND	0.50	ug/L	0.50	0.50		Alpha

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
EFF-001B Comp	8/13/2014	8:47	8/19/2014	Zinc	Total	EPA 200.8	=	24	ug/L	0.50	5.0		Alpha
EFF-001B Comp	10/30/2014	9:48	11/4/2014	Zinc	Total	EPA 200.8	=	24	ug/L	0.50	5.0		Alpha

Appendix D: Delta-Mendota Canal Water Quality Monitoring Data Used to Characterize Upstream Receiving Water Quality for Proposed NVRRWP Discharge

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
DMC	9/30/2014	13:15	10/2/14 21:59	1,1,1-Trichloroethane	None	EPA 624	ND	0.19	ug/L	0.19	0.5		Caltest
DMC	10/14/2014	11:30	10/17/14 23:19	1,1,1-Trichloroethane	None	EPA 624	ND	0.19	ug/L	0.19	0.5		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	1,1,2,2-Tetrachloroethane	None	EPA 624	ND	0.2	ug/L	0.2	0.5		Caltest
DMC	10/14/2014	11:30	10/17/14 23:19	1,1,2,2-Tetrachloroethane	None	EPA 624	ND	0.2	ug/L	0.2	0.5		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	1,1,2-Trichloroethane	None	EPA 624	ND	0.16	ug/L	0.16	0.5		Caltest
DMC	10/14/2014	11:30	10/17/14 23:19	1,1,2-Trichloroethane	None	EPA 624	ND	0.16	ug/L	0.16	0.5		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	1,1-Dichloroethane	None	EPA 624	ND	0.19	ug/L	0.19	0.5		Caltest
DMC	10/14/2014	11:30	10/17/14 23:19	1,1-Dichloroethane	None	EPA 624	ND	0.19	ug/L	0.19	0.5		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	1,1-Dichloroethene	None	EPA 624	ND	0.21	ug/L	0.21	0.5		Caltest
DMC	10/14/2014	11:30	10/17/14 23:19	1,1-Dichloroethene	None	EPA 624	ND	0.21	ug/L	0.21	0.5		Caltest
DMC	9/30/2014	13:15	10/14/14 19:18	1,2,3,4,6,7,8-HpCDD	None	EPA 1613 D/F	J	5.97	pg/L	0.36			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	1,2,3,4,6,7,8-HpCDD	None	EPA 1613 D/F	J	14.5	pg/L	0.36			Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	1,2,3,4,6,7,8-HpCDF	None	EPA 1613 D/F	ND	1.23	pg/L	0.197			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	1,2,3,4,6,7,8-HpCDF	None	EPA 1613 D/F	ND	1.63	pg/L	0.197			Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	1,2,3,4,7,8,9-HpCDF	None	EPA 1613 D/F	ND	1.68	pg/L	0.317			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	1,2,3,4,7,8,9-HpCDF	None	EPA 1613 D/F	ND	2.33	pg/L	0.317			Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	1,2,3,4,7,8-HxCDD	None	EPA 1613 D/F	ND	1.58	pg/L	0.273			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	1,2,3,4,7,8-HxCDD	None	EPA 1613 D/F	ND	1.44	pg/L	0.273			Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	1,2,3,4,7,8-HxCDF	None	EPA 1613 D/F	ND	0.575	pg/L	0.168			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	1,2,3,4,7,8-HxCDF	None	EPA 1613 D/F	ND	1	pg/L	0.168			Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	1,2,3,6,7,8-HxCDD	None	EPA 1613 D/F	ND	1.73	pg/L	0.291			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	1,2,3,6,7,8-HxCDD	None	EPA 1613 D/F	ND	1.56	pg/L	0.291			Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	1,2,3,6,7,8-HxCDF	None	EPA 1613 D/F	ND	0.528	pg/L	0.173			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	1,2,3,6,7,8-HxCDF	None	EPA 1613 D/F	ND	0.976	pg/L	0.173			Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	1,2,3,7,8,9-HxCDD	None	EPA 1613 D/F	ND	1.53	pg/L	0.264			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	1,2,3,7,8,9-HxCDD	None	EPA 1613 D/F	ND	1.38	pg/L	0.264			Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	1,2,3,7,8,9-HxCDF	None	EPA 1613 D/F	ND	0.674	pg/L	0.242			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	1,2,3,7,8,9-HxCDF	None	EPA 1613 D/F	ND	1.3	pg/L	0.242			Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	1,2,3,7,8-PeCDD	None	EPA 1613 D/F	ND	1.07	pg/L	0.205			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	1,2,3,7,8-PeCDD	None	EPA 1613 D/F	ND	1.64	pg/L	0.205			Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	1,2,3,7,8-PeCDF	None	EPA 1613 D/F	ND	0.689	pg/L	0.152			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	1,2,3,7,8-PeCDF	None	EPA 1613 D/F	ND	0.675	pg/L	0.152			Frontier
DMC	9/30/2014	13:15	10/2/14 21:59	1,2,4-Trichlorobenzene	None	EPA 624	ND	0.19	ug/L	0.19	0.5		Caltest
DMC	10/14/2014	11:30	10/17/14 23:19	1,2,4-Trichlorobenzene	None	EPA 624	ND	0.19	ug/L	0.19	0.5		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	1,2-Dichlorobenzene	None	EPA 624	ND	0.27	ug/L	0.27	0.5		Caltest

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
DMC	10/14/2014	11:30	10/17/14 23:19	1,2-Dichlorobenzene	None	EPA 624	ND	0.27	ug/L	0.27	0.5		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	1,2-Dichloroethane	None	EPA 624	ND	0.18	ug/L	0.18	0.5		Caltest
DMC	10/14/2014	11:30	10/17/14 23:19	1,2-Dichloroethane	None	EPA 624	ND	0.18	ug/L	0.18	0.5		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	1,2-Dichloropropane	None	EPA 624	ND	0.18	ug/L	0.18	0.5		Caltest
DMC	10/14/2014	11:30	10/17/14 23:19	1,2-Dichloropropane	None	EPA 624	ND	0.18	ug/L	0.18	0.5		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	1,2-Diphenylhydrazine/Azobenzene	None	EPA 625	ND	0.7	ug/L	0.7	1		Caltest
DMC	10/14/2014	11:30	10/17/14 23:19	1,2-Diphenylhydrazine/Azobenzene	None	EPA 625	ND	0.81	ug/L	0.81	1.2		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	1,3-Dichlorobenzene	None	EPA 624	ND	0.18	ug/L	0.18	0.5		Caltest
DMC	10/14/2014	11:30	10/17/14 23:19	1,3-Dichlorobenzene	None	EPA 624	ND	0.18	ug/L	0.18	0.5		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	1,4-Dichlorobenzene	None	EPA 624	ND	0.18	ug/L	0.18	0.5		Caltest
DMC	10/14/2014	11:30	10/17/14 23:19	1,4-Dichlorobenzene	None	EPA 624	ND	0.18	ug/L	0.18	0.5		Caltest
DMC	9/30/2014	13:15	10/14/14 19:18	2,3,4,6,7,8-HxCDF	None	EPA 1613 D/F	ND	0.584	pg/L	0.187			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	2,3,4,6,7,8-HxCDF	None	EPA 1613 D/F	ND	1.07	pg/L	0.187			Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	2,3,4,7,8-PeCDF	None	EPA 1613 D/F	ND	0.729	pg/L	0.151			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	2,3,4,7,8-PeCDF	None	EPA 1613 D/F	ND	0.728	pg/L	0.151			Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	2,3,7,8-TCDD	None	EPA 1613 D/F	ND	0.455	pg/L	0.151			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	2,3,7,8-TCDD	None	EPA 1613 D/F	ND	0.559	pg/L	0.151			Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	2,3,7,8-TCDF	None	EPA 1613 D/F	ND	0.654	pg/L	0.0985			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	2,3,7,8-TCDF	None	EPA 1613 D/F	ND	0.63	pg/L	0.0985			Frontier
DMC	9/30/2014	13:15	10/7/14 5:32	2,4,5-T	None	EPA 515.4	ND	0.03	ug/L	0.03	0.2		Eurofins
DMC	10/14/2014	11:30	10/21/14 21:51	2,4,5-T	None	EPA 515.4	J	0.037	ug/L	0.03	0.2		Eurofins
DMC	9/30/2014	13:15	10/7/14 5:32	2,4,5-TP	None	EPA 515.4	ND	0.02	ug/L	0.02	0.2		Eurofins
DMC	10/14/2014	11:30	10/21/14 21:51	2,4,5-TP	None	EPA 515.4	ND	0.02	ug/L	0.02	0.2		Eurofins
DMC	9/30/2014	12:45	10/15/14 22:45	2,4,6-Trichlorophenol	None	EPA 625	ND	0.97	ug/L	0.97	5		Caltest
DMC	10/14/2014	11:30	10/28/14 19:20	2,4,6-Trichlorophenol	None	EPA 625	ND	1.1	ug/L	1.1	5		Caltest
DMC	9/30/2014	13:15	10/7/14 5:32	2,4-D	None	EPA 515.4	ND	0.03	ug/L	0.03	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 20:03	2,4-D	None	EPA 515.4	=	0.24	ug/L	0.03	0.1		Eurofins
DMC	9/30/2014	13:15	10/7/14 5:32	2,4-DB	None	EPA 515.4	ND	0.5	ug/L	0.5	2		Eurofins
DMC	10/14/2014	11:30	10/21/14 21:51	2,4-DB	None	EPA 515.4	ND	0.5	ug/L	0.5	2		Eurofins
DMC	9/30/2014	12:45	10/15/14 22:45	2,4-Dichlorophenol	None	EPA 625	ND	0.9	ug/L	0.9	1		Caltest
DMC	10/14/2014	11:30	10/28/14 19:20	2,4-Dichlorophenol	None	EPA 625	ND	1	ug/L	1	1.2		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	2,4-Dimethylphenol	None	EPA 625	ND	0.8	ug/L	0.8	2		Caltest
DMC	10/14/2014	11:30	10/28/14 19:20	2,4-Dimethylphenol	None	EPA 625	ND	0.93	ug/L	0.93	2		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	2,4-Dinitrophenol	None	EPA 625	ND	0.9	ug/L	0.9	5		Caltest
DMC	10/14/2014	11:30	10/28/14 19:20	2,4-Dinitrophenol	None	EPA 625	ND	1	ug/L	1	5		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	2,4-Dinitrotoluene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	2,4-Dinitrotoluene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.1		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	2,6-Dinitrotoluene	None	EPA 525.2	ND	0.04	ug/L	0.04	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	2,6-Dinitrotoluene	None	EPA 525.2	ND	0.04	ug/L	0.04	0.1		Eurofins
DMC	9/30/2014	13:15	10/2/14 21:59	2-Chloroethyl vinyl ether	None	EPA 624	ND	0.28	ug/L	0.28	1		Caltest
DMC	10/14/2014	11:30	10/17/14 23:19	2-Chloroethyl vinyl ether	None	EPA 624	ND	0.28	ug/L	0.28	1		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	2-Chloronaphthalene	None	EPA 625	ND	0.9	ug/L	0.9	5		Caltest
DMC	10/14/2014	11:30	10/28/14 19:20	2-Chloronaphthalene	None	EPA 625	ND	1	ug/L	1	5		Caltest

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
DMC	9/30/2014	12:45	10/15/14 22:45	2-Chlorophenol	None	EPA 625	ND	0.7	ug/L	0.7	2		Caltest
DMC	10/14/2014	11:30	10/28/14 19:20	2-Chlorophenol	None	EPA 625	ND	0.81	ug/L	0.81	2.3		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	2-Methyl-4,6-dinitrophenol	None	EPA 625	ND	0.6	ug/L	0.6	5		Caltest
DMC	10/14/2014	11:30	10/28/14 19:20	2-Methyl-4,6-dinitrophenol	None	EPA 625	ND	0.7	ug/L	0.7	5		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	2-Nitrophenol	None	EPA 625	ND	0.8	ug/L	0.8	5		Caltest
DMC	10/14/2014	11:30	10/28/14 19:20	2-Nitrophenol	None	EPA 625	ND	0.93	ug/L	0.93	5		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	3,3'-Dichlorobenzidine	None	EPA 625	ND	5	ug/L	5	5		Caltest
DMC	10/14/2014	11:30	10/28/14 19:20	3,3'-Dichlorobenzidine	None	EPA 625	ND	5.8	ug/L	5.8	5.8		Caltest
DMC	9/30/2014	13:15	10/7/14 5:32	3,5-Dichlorobenzoic acid	None	EPA 515.4	ND	0.07	ug/L	0.07	0.5		Eurofins
DMC	10/14/2014	11:30	10/21/14 21:51	3,5-Dichlorobenzoic acid	None	EPA 515.4	ND	0.07	ug/L	0.07	0.5		Eurofins
DMC	9/30/2014	13:15	10/3/14 7:52	3-Hydroxycarbofuran	None	EPA 531.2	ND	0.1	ug/L	0.1	0.5		Eurofins
DMC	10/14/2014	11:30	10/17/14 0:59	3-Hydroxycarbofuran	None	EPA 531.2	ND	0.1	ug/L	0.1	0.5		Eurofins
DMC	9/30/2014	13:15	10/22/14 15:17	4,4'-DDD	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Caltest
DMC	10/14/2014	11:30	10/31/14 11:16	4,4'-DDD	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Caltest
DMC	9/30/2014	13:15	10/22/14 15:17	4,4'-DDE	None	EPA 608	ND	0.003	ug/L	0.003	0.01		Caltest
DMC	10/14/2014	11:30	10/31/14 11:16	4,4'-DDE	None	EPA 608	ND	0.003	ug/L	0.003	0.01		Caltest
DMC	9/30/2014	13:15	10/22/14 15:17	4,4'-DDT	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Caltest
DMC	10/14/2014	11:30	10/31/14 11:16	4,4'-DDT	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	4-Bromophenyl phenyl ether	None	EPA 625	ND	0.7	ug/L	0.7	5		Caltest
DMC	10/14/2014	11:30	10/28/14 19:20	4-Bromophenyl phenyl ether	None	EPA 625	ND	0.81	ug/L	0.81	5		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	4-Chloro-3-methylphenol	None	EPA 625	ND	0.8	ug/L	0.8	1		Caltest
DMC	10/14/2014	11:30	10/28/14 19:20	4-Chloro-3-methylphenol	None	EPA 625	ND	0.93	ug/L	0.93	1.2		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	4-Chlorophenyl phenyl ether	None	EPA 625	ND	0.9	ug/L	0.9	5		Caltest
DMC	10/14/2014	11:30	10/28/14 19:20	4-Chlorophenyl phenyl ether	None	EPA 625	ND	1	ug/L	1	5		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	4-Nitrophenol	None	EPA 625	ND	0.5	ug/L	0.5	5		Caltest
DMC	10/14/2014	11:30	10/28/14 19:20	4-Nitrophenol	None	EPA 625	ND	0.58	ug/L	0.58	5		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	Acenaphthene	None	EPA 625	ND	0.01	ug/L	0.01	0.3		Caltest
DMC	10/14/2014	11:30	10/21/14 0:00	Acenaphthene	None	EPA 625	ND	0.012	ug/L	0.012	0.3		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Acenaphthylene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Acenaphthylene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.1		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Acetochlor	None	EPA 525.2	ND	0.009	ug/L	0.009	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Acetochlor	None	EPA 525.2	ND	0.009	ug/L	0.009	0.1		Eurofins
DMC	9/30/2014	13:15	10/7/14 5:32	Acifluorfen	None	EPA 515.4	ND	0.04	ug/L	0.04	0.2		Eurofins
DMC	10/14/2014	11:30	10/21/14 21:51	Acifluorfen	None	EPA 515.4	ND	0.04	ug/L	0.04	0.2		Eurofins
DMC	9/30/2014	13:15	10/2/14 21:59	Acrolein	None	EPA 624	ND	1.7	ug/L	1.7	5		Caltest
DMC	10/14/2014	11:30	10/17/14 23:19	Acrolein	None	EPA 624	ND	1.7	ug/L	1.7	2		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	Acrylonitrile	None	EPA 624	ND	1	ug/L	1	2		Caltest
DMC	10/14/2014	11:30	10/17/14 23:19	Acrylonitrile	None	EPA 624	ND	1	ug/L	1	2		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Alachlor	None	EPA 525.2	ND	0.02	ug/L	0.02	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Alachlor	None	EPA 525.2	ND	0.02	ug/L	0.02	0.05		Eurofins
DMC	9/30/2014	13:15	10/3/14 7:52	Aldicarb	None	EPA 531.2	ND	0.2	ug/L	0.2	0.5		Eurofins
DMC	10/14/2014	11:30	10/17/14 0:59	Aldicarb	None	EPA 531.2	ND	0.2	ug/L	0.2	0.5		Eurofins
DMC	9/30/2014	13:15	10/3/14 7:52	Aldicarb sulfone	None	EPA 531.2	ND	0.2	ug/L	0.2	0.5		Eurofins

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
DMC	10/14/2014	11:30	10/17/14 0:59	Aldicarb sulfone	None	EPA 531.2	ND	0.2	ug/L	0.2	0.5	L3	Eurofins
DMC	9/30/2014	13:15	10/3/14 7:52	Aldicarb sulfoxide	None	EPA 531.2	ND	0.1	ug/L	0.1	0.5		Eurofins
DMC	10/14/2014	11:30	10/17/14 0:59	Aldicarb sulfoxide	None	EPA 531.2	ND	0.1	ug/L	0.1	0.5		Eurofins
DMC	9/30/2014	13:15	10/3/14 17:13	Aldrin	None	EPA 505	ND	0.002	ug/L	0.002	0.01		Eurofins
DMC	10/14/2014	11:30	10/18/14 5:36	Aldrin	None	EPA 505	ND	0.002	ug/L	0.002	0.01		Eurofins
DMC	9/30/2014	13:15	10/22/14 15:17	alpha-BHC	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	10/14/2014	11:30	10/31/14 11:16	alpha-BHC	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	9/30/2014	13:15	10/7/14 14:38	Aluminum	Total	EPA 200.8	=	130	ug/L	0.8	10		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Aluminum	Total	EPA 200.8	=	68	ug/L	1.2	10		Caltest
DMC	9/30/2014	13:45	10/28/14 0:00	Ammonia as N	None	SM20-4500-NH3 C	ND	0.04	mg/L	0.04	0.1		Caltest
DMC	10/14/2014	11:30	10/30/2014 0:00	Ammonia as N	None	SM20-4500-NH3 C	J	0.077	mg/L	0.04	0.1		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	Anthracene	None	EPA 625	ND	0.01	ug/L	0.01	0.3		Caltest
DMC	10/14/2014	11:30	10/28/2014 19:20	Anthracene	None	EPA 625	ND	0.012	ug/L	0.012	0.3		Caltest
DMC	9/30/2014	13:15	10/7/14 14:38	Antimony	Total	EPA 200.8	J	0.11	ug/L	0.02	0.5		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Antimony	Total	EPA 200.8	J	0.12	ug/L	0.05	0.5		Caltest
DMC	9/30/2014	13:15	10/7/14 14:38	Arsenic	Total	EPA 200.8	=	3.4	ug/L	0.2	0.5		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Arsenic	Total	EPA 200.8	=	3.1	ug/L	0.06	0.5		Caltest
DMC	9/30/2014		10/15/14 0:00	Asbestos	None	EPA 600	ND	0.99	MFL	0.99	0.99		EMSL
DMC	10/14/2014	11:30	10/30/14 0:00	Asbestos	None	EPA 600	ND	0.99	MFL	0.99	0.99		EMSL
DMC	9/30/2014	13:15	10/10/14 1:10	Atrazine	None	EPA 525.2	ND	0.05	ug/L	0.05	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Atrazine	None	EPA 525.2	ND	0.05	ug/L	0.05	0.05		Eurofins
DMC	9/30/2014	13:15	10/22/14 7:54	Azinphos methyl	None	EPA 614	ND	0.04	ug/L	0.04	0.05		Caltest
DMC	10/14/2014	11:30	10/31/2014 3:53	Azinphos methyl	None	EPA 614	ND	0.04	ug/L	0.04	0.05		Caltest
DMC	9/30/2014	13:15	10/7/14 14:38	Barium	Total	EPA 200.8	=	35	ug/L	0.07	0.1		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Barium	Total	EPA 200.8	=	41	ug/L	0.08	0.1		Caltest
DMC	9/30/2014	13:15	10/3/14 7:52	Baygon	None	EPA 531.2	ND	0.2	ug/L	0.2	0.5		Eurofins
DMC	10/14/2014	11:30	10/17/14 0:59	Baygon	None	EPA 531.2	ND	0.2	ug/L	0.2	0.5		Eurofins
DMC	9/30/2014	13:15	10/7/14 5:32	Bentazon	None	EPA 515.4	ND	0.06	ug/L	0.06	0.5		Eurofins
DMC	10/14/2014	11:30	10/21/14 21:51	Bentazon	None	EPA 515.4	ND	0.06	ug/L	0.06	0.5		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Benz(a)anthracene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Benz(a)anthracene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.05		Eurofins
DMC	9/30/2014	13:15	10/2/14 21:59	Benzene	None	EPA 624	ND	0.18	ug/L	0.18	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Benzene	None	EPA 624	ND	0.18	ug/L	0.18	0.5		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	Benzidine	None	EPA 625	ND	5	ug/L	5	5		Caltest
DMC	10/14/2014	11:30	10/28/2014 19:20	Benzidine	None	EPA 625	ND	5.8	ug/L	5.8	5.8		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Benzo(a)pyrene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.02		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Benzo(a)pyrene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.02	VC	Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Benzo(b)fluoranthene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.02		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Benzo(b)fluoranthene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.02		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Benzo(g,h,i)perylene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Benzo(g,h,i)perylene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.05		Eurofins
DMC	9/30/2014	12:45	10/15/14 22:45	Benzo(k)fluoranthene	None	EPA 625	ND	0.01	ug/L	0.01	0.3		Caltest
DMC	10/14/2014	11:30	10/21/14 0:00	Benzo(k)fluoranthene	None	EPA 625	ND	0.012	ug/L	0.012	0.3		Caltest

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
DMC	9/30/2014	12:45	10/15/14 22:45	Benzyl butyl phthalate	None	EPA 625	ND	0.7	ug/L	0.7	5		Caltest
DMC	10/14/2014	11:30	10/28/2014 19:20	Benzyl butyl phthalate	None	EPA 625	ND	0.81	ug/L	0.81	5		Caltest
DMC	9/30/2014	13:15	10/7/14 14:38	Beryllium	Total	EPA 200.8	ND	0.02	ug/L	0.02	0.1		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Beryllium	Total	EPA 200.8	ND	0.09	ug/L	0.09	0.1		Caltest
DMC	9/30/2014	13:15	10/22/14 15:17	beta-BHC	None	EPA 608	ND	0.004	ug/L	0.004	0.005		Caltest
DMC	10/14/2014	11:30	10/21/14 0:00	beta-BHC	None	EPA 608	ND	0.004	ug/L	0.004	0.005		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	Bis(2-chloroethoxy)methane	None	EPA 625	ND	0.9	ug/L	0.9	5		Caltest
DMC	10/14/2014	11:30	10/28/2014 19:20	Bis(2-chloroethoxy)methane	None	EPA 625	ND	1	ug/L	1	5		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	Bis(2-chloroethyl)ether	None	EPA 625	ND	0.7	ug/L	0.7	1		Caltest
DMC	10/14/2014	11:30	10/28/2014 19:20	Bis(2-chloroethyl)ether	None	EPA 625	ND	0.81	ug/L	0.81	1.2		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	Bis(2-chloroisopropyl)ether	None	EPA 625	ND	0.6	ug/L	0.6	2		Caltest
DMC	10/14/2014	11:30	10/28/2014 19:20	Bis(2-chloroisopropyl)ether	None	EPA 625	ND	0.7	ug/L	0.7	2		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Bis(2-ethylhexyl)adipate	None	EPA 525.2	ND	0.06	ug/L	0.06	0.6		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Bis(2-ethylhexyl)adipate	None	EPA 525.2	ND	0.06	ug/L	0.06	0.6		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Bis(2-ethylhexyl)phthalate	None	EPA 525.2	ND	0.1	ug/L	0.1	0.6		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Bis(2-ethylhexyl)phthalate	None	EPA 525.2	ND	0.1	ug/L	0.1	0.6		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Bromacil	None	EPA 525.2	ND	0.03	ug/L	0.03	0.2		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Bromacil	None	EPA 525.2	ND	0.03	ug/L	0.03	0.2		Eurofins
DMC	9/30/2014	13:15	10/7/14 16:21	Bromodichloromethane	None	EPA 624 (Low Level)	ND	0.03	ug/L	0.03	0.05		Caltest
DMC	10/14/2014	11:30	10/22/2014 19:20	Bromodichloromethane	None	EPA 624 (Low Level)	ND	0.03	ug/L	0.03	0.05		Caltest
DMC	9/30/2014	13:15	10/7/14 16:21	Bromoform	None	EPA 624 (Low Level)	ND	0.04	ug/L	0.04	0.05		Caltest
DMC	10/14/2014	11:30	10/22/2014 19:20	Bromoform	None	EPA 624 (Low Level)	ND	0.04	ug/L	0.04	0.05		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	Bromomethane	None	EPA 624	ND	0.17	ug/L	0.17	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Bromomethane	None	EPA 624	ND	0.17	ug/L	0.17	0.5		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Butachlor	None	EPA 525.2	ND	0.03	ug/L	0.03	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Butachlor	None	EPA 525.2	ND	0.03	ug/L	0.03	0.05		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Butyl benzyl phthalate	None	EPA 525.2	ND	0.06	ug/L	0.06	0.5		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Butyl benzyl phthalate	None	EPA 525.2	ND	0.06	ug/L	0.06	0.5		Eurofins
DMC	9/30/2014	13:15	10/7/14 14:38	Cadmium	Total	EPA 200.8	ND	0.05	ug/L	0.05	0.1		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Cadmium	Total	EPA 200.8	ND	0.05	ug/L	0.05	0.1		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Caffeine	None	EPA 525.2	ND	0.02	ug/L	0.02	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Caffeine	None	EPA 525.2	ND	0.02	ug/L	0.02	0.05		Eurofins
DMC	9/30/2014	13:15	10/3/14 7:52	Carbaryl	None	EPA 531.2	ND	0.2	ug/L	0.2	0.5		Eurofins
DMC	10/14/2014	11:30	10/17/14 0:59	Carbaryl	None	EPA 531.2	ND	0.2	ug/L	0.2	0.5		Eurofins
DMC	9/30/2014	13:15	10/3/14 7:52	Carbofuran	None	EPA 531.2	ND	0.1	ug/L	0.1	0.5		Eurofins
DMC	10/14/2014	11:30	10/17/14 0:59	Carbofuran	None	EPA 531.2	ND	0.1	ug/L	0.1	0.5		Eurofins
DMC	9/30/2014	13:15	10/2/14 21:59	Carbon tetrachloride	None	EPA 624	ND	0.16	ug/L	0.16	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Carbon tetrachloride	None	EPA 624	ND	0.16	ug/L	0.16	0.5		Caltest
DMC	9/30/2014	13:15	10/22/14 15:17	Chlordane (technical)	None	EPA 608	ND	0.02	ug/L	0.02	0.05		Caltest
DMC	10/14/2014	11:30	10/31/2014 11:16	Chlordane (technical)	None	EPA 608	ND	0.02	ug/L	0.02	0.05		Caltest
DMC	9/30/2014	13:45	10/14/14 0:32	Chloride	None	EPA 300.0	=	130	mg/L	5	20		Caltest
DMC	10/14/2014	11:30	10/15/2014 23:35	Chloride	None	EPA 300.0	=	120	mg/L	2	10		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	Chlorobenzene	None	EPA 624	ND	0.18	ug/L	0.18	0.5		Caltest

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
DMC	10/14/2014	11:30	10/17/2014 23:19	Chlorobenzene	None	EPA 624	ND	0.18	ug/L	0.18	0.5		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Chlorobenzilate	None	EPA 525.2	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Chlorobenzilate	None	EPA 525.2	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	9/30/2014	13:15	10/2/14 21:59	Chloroethane	None	EPA 624	ND	0.38	ug/L	0.38	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Chloroethane	None	EPA 624	ND	0.38	ug/L	0.38	0.5		Caltest
DMC	9/30/2014	13:15	10/7/14 16:21	Chloroform	None	EPA 624 (Low Level)	ND	0.02	ug/L	0.02	0.05		Caltest
DMC	10/14/2014	11:30	10/22/2014 19:20	Chloroform	None	EPA 624 (Low Level)	ND	0.02	ug/L	0.02	0.05		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	Chloromethane	None	EPA 624	ND	0.23	ug/L	0.23	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Chloromethane	None	EPA 624	ND	0.23	ug/L	0.23	0.5		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Chloroneb	None	EPA 525.2	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Chloroneb	None	EPA 525.2	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Chlorothalonil (Draconil, Bravo)	None	EPA 525.2	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Chlorothalonil (Draconil, Bravo)	None	EPA 525.2	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	9/30/2014	13:15	10/22/14 7:54	Chlorpyrifos	None	EPA 614	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	10/14/2014	11:30	10/31/2014 3:53	Chlorpyrifos	None	EPA 614	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	9/30/2014	13:15	10/7/14 14:38	Chromium	Total	EPA 200.8	=	0.64	ug/L	0.07	0.5		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Chromium	Total	EPA 200.8	=	0.68	ug/L	0.05	0.5		Caltest
DMC	9/30/2014	13:45	10/3/14 12:27	Chromium VI	Dissolved	EPA 218.6	=	0.16	ug/L	0.009	0.02		Eurofins
DMC	10/14/2014	11:30	10/21/14 16:49	Chromium VI	Dissolved	EPA 218.6	=	0.28	ug/L	0.009	0.02		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Chrysene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.02		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Chrysene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.02		Eurofins
DMC	9/30/2014	13:15	10/2/14 21:59	cis-1,2-Dichloroethene	None	EPA 624	ND	0.2	ug/L	0.2	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	cis-1,2-Dichloroethene	None	EPA 624	ND	0.2	ug/L	0.2	0.5		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	cis-1,3-Dichloropropene	None	EPA 624	ND	0.16	ug/L	0.16	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	cis-1,3-Dichloropropene	None	EPA 624	ND	0.16	ug/L	0.16	0.5		Caltest
DMC	9/30/2014	13:00	10/2/14 9:49	Conductivity	None	EPA 120.1	=	570	uS/cm	10	10		Caltest
DMC	10/14/2014	11:30	10/14/14 0:00	Conductivity	None	Field Meter	=	669.7	uS/cm				LWA
DMC	9/30/2014	13:15	10/7/14 14:38	Copper	Total	EPA 200.8	=	1.6	ug/L	0.07	0.5		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Copper	Total	EPA 200.8	=	1.9	ug/L	0.15	0.5		Caltest
DMC	9/30/2014	13:45	10/7/14 16:51	Cyanide	Total	SM20-4500-CN C&E	ND	0.9	ug/L	0.9	3		Caltest
DMC	10/14/2014	11:30	10/23/2014 16:39	Cyanide	Total	SM20-4500-CN C&E	ND	0.9	ug/L	0.9	3		Caltest
DMC	9/30/2014	13:15	10/7/14 5:32	Dalapon	None	EPA 515.4	J	0.22	ug/L	0.1	1		Eurofins
DMC	10/14/2014	11:30	10/21/14 21:51	Dalapon	None	EPA 515.4	ND	0.1	ug/L	0.1	1		Eurofins
DMC	9/30/2014	13:15	10/22/14 15:17	delta-BHC	None	EPA 608	ND	0.004	ug/L	0.004	0.005		Caltest
DMC	10/14/2014	11:30	10/31/2014 11:16	delta-BHC	None	EPA 608	ND	0.004	ug/L	0.004	0.005		Caltest
DMC	9/30/2014	13:15	10/22/14 7:54	Demeton -O and -S	None	EPA 614	ND	0.09	ug/L	0.09	0.1		Caltest
DMC	10/14/2014	11:30	10/31/2014 3:53	Demeton -O and -S	None	EPA 614	ND	0.09	ug/L	0.09	0.1		Caltest
DMC	9/30/2014	13:15	10/22/14 7:54	Diazinon	None	EPA 614	ND	0.007	ug/L	0.007	0.02		Caltest
DMC	10/14/2014	11:30	10/31/2014 3:53	Diazinon	None	EPA 614	ND	0.007	ug/L	0.007	0.02		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Dibenz(a,h)anthracene	None	EPA 525.2	ND	0.03	ug/L	0.03	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Dibenz(a,h)anthracene	None	EPA 525.2	ND	0.03	ug/L	0.03	0.05	R7	Eurofins
DMC	9/30/2014	13:15	10/7/14 16:21	Dibromochloromethane	None	EPA 624 (Low Level)	ND	0.03	ug/L	0.03	0.05		Caltest
DMC	10/14/2014	11:30	10/22/2014 19:20	Dibromochloromethane	None	EPA 624 (Low Level)	ND	0.03	ug/L	0.03	0.05		Caltest

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
DMC	9/30/2014	13:15	10/4/14 1:10	Dibromochloropropane (DBCP)	None	EPA 551.1	ND	0.008	ug/L	0.008	0.01		Eurofins
DMC	10/14/2014	11:30	10/17/14 2:31	Dibromochloropropane (DBCP)	None	EPA 551.1	ND	0.008	ug/L	0.008	0.01		Eurofins
DMC	9/30/2014	13:15	10/7/14 5:32	Dicamba	None	EPA 515.4	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 21:51	Dicamba	None	EPA 515.4	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	9/30/2014	13:15	10/2/14 21:59	Dichlorodifluoromethane (F-12)	None	EPA 624	ND	0.3	ug/L	0.3	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Dichlorodifluoromethane (F-12)	None	EPA 624	ND	0.3	ug/L	0.3	0.5		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	Dichlorotrifluoroethane (F123)	None	EPA 624	ND	0.14	ug/L	0.14	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Dichlorotrifluoroethane (F123)	None	EPA 624	ND	0.14	ug/L	0.14	0.5		Caltest
DMC	9/30/2014	13:15	10/7/14 5:32	Dichlorprop	None	EPA 515.4	J	0.26	ug/L	0.06	0.5		Eurofins
DMC	10/14/2014	11:30	10/21/14 21:51	Dichlorprop	None	EPA 515.4	J	0.12	ug/L	0.06	0.5		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Dichlorvos	None	EPA 525.2	ND	0.02	ug/L	0.02	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Dichlorvos	None	EPA 525.2	ND	0.02	ug/L	0.02	0.05		Eurofins
DMC	9/30/2014	13:15	10/22/14 15:17	Dieldrin	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Caltest
DMC	10/14/2014	11:30	10/31/2014 11:16	Dieldrin	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Diethyl phthalate	None	EPA 525.2	ND	0.05	ug/L	0.05	0.5		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Diethyl phthalate	None	EPA 525.2	ND	0.05	ug/L	0.05	0.5		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Dimethoate	None	EPA 525.2	ND	0.03	ug/L	0.03	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Dimethoate	None	EPA 525.2	ND	0.03	ug/L	0.03	0.1	LE	Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Dimethyl phthalate	None	EPA 525.2	ND	0.04	ug/L	0.04	0.5		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Dimethyl phthalate	None	EPA 525.2	ND	0.04	ug/L	0.04	0.5		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Di-n-butylphthalate	None	EPA 525.2	ND	0.07	ug/L	0.07	1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Di-n-butylphthalate	None	EPA 525.2	ND	0.07	ug/L	0.07	1		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Di-n-octylphthalate	None	EPA 525.2	ND	0.03	ug/L	0.03	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Di-n-octylphthalate	None	EPA 525.2	ND	0.03	ug/L	0.03	0.1		Eurofins
DMC	9/30/2014	13:15	10/7/14 5:32	Dinoseb	None	EPA 515.4	ND	0.02	ug/L	0.02	0.2		Eurofins
DMC	10/14/2014	11:30	10/21/14 21:51	Dinoseb	None	EPA 515.4	ND	0.02	ug/L	0.02	0.2		Eurofins
DMC	9/30/2014	13:45	10/3/14 13:35	Diquat	None	EPA 549.2	ND	0.3	ug/L	0.3	0.4		Eurofins
DMC	10/14/2014	11:30	10/17/14 13:48	Diquat	None	EPA 549.2	ND	0.3	ug/L	0.3	0.4		Eurofins
DMC	9/30/2014	13:15	10/22/14 7:54	Disulfoton	None	EPA 614	ND	0.08	ug/L	0.08	0.1		Caltest
DMC	10/14/2014	11:30	10/31/2014 3:53	Disulfoton	None	EPA 614	ND	0.08	ug/L	0.08	0.1		Caltest
DMC	9/30/2014	11:25	9/30/14 0:00	DO	None	Field Meter	=	8	mg/L				LWA
DMC	10/14/2014	11:30	10/14/14 0:00	DO	None	Field Meter	=	8.61	mg/L				LWA
DMC	9/30/2014	13:15	10/22/14 15:17	Endosulfan I	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Caltest
DMC	10/14/2014	11:30	10/31/2014 11:16	Endosulfan I	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Caltest
DMC	9/30/2014	13:15	10/22/14 15:17	Endosulfan II	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	10/14/2014	11:30	10/31/2014 11:16	Endosulfan II	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	9/30/2014	13:15	10/22/14 15:17	Endosulfan sulfate	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	10/14/2014	11:30	10/31/2014 11:16	Endosulfan sulfate	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	9/30/2014	13:15	10/6/14 12:18	Endothall	None	EPA 548.1	ND	3	ug/L	3	5		Eurofins
DMC	10/14/2014	11:30	10/22/14 13:49	Endothall	None	EPA 548.1	ND	3	ug/L	3	5	LK	Eurofins
DMC	9/30/2014	13:15	10/22/14 15:17	Endrin	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	10/14/2014	11:30	10/31/2014 11:16	Endrin	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	9/30/2014	13:15	10/22/14 15:17	Endrin aldehyde	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Caltest

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
DMC	10/14/2014	11:30	10/31/2014 11:16	Endrin aldehyde	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	9/30/2014	13:15	10/22/14 15:17	Endrin ketone	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	10/14/2014	11:30	10/31/2014 11:16	Endrin ketone	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	EPTC	None	EPA 525.2	ND	0.01	ug/L	0.01	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	EPTC	None	EPA 525.2	ND	0.01	ug/L	0.01	0.1		Eurofins
DMC	9/30/2014	13:15	10/22/14 7:54	Ethion	None	EPA 614	ND	0.005	ug/L	0.005	0.02		Caltest
DMC	10/14/2014	11:30	10/31/2014 3:53	Ethion	None	EPA 614	ND	0.005	ug/L	0.005	0.02		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	Ethylbenzene	None	EPA 624	ND	0.26	ug/L	0.26	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Ethylbenzene	None	EPA 624	ND	0.26	ug/L	0.26	0.5		Caltest
DMC	9/30/2014	13:15	10/4/14 2:49	Ethylene dibromide (EDB)	None	EPA 551.1	ND	0.006	ug/L	0.006	0.01		Eurofins
DMC	10/14/2014	11:30	10/17/14 2:31	Ethylene dibromide (EDB)	None	EPA 551.1	ND	0.006	ug/L	0.006	0.01		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Fluoranthene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Fluoranthene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.1		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Fluorene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Fluorene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.05		Eurofins
DMC	9/30/2014	13:45	10/20/14 22:26	Fluoride	Total	EPA 300.0	J	0.037	mg/L	0.01	0.1		Caltest
DMC	10/14/2014	11:30	11/6/2014 5:28	Fluoride	Total	EPA 300.0	=	0.1	mg/L	0.01	0.1		Caltest
DMC	9/30/2014	13:15	10/22/14 15:17	gamma-BHC (Lindane)	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Caltest
DMC	10/14/2014	11:30	10/31/2014 11:16	gamma-BHC (Lindane)	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	gamma-Chlordane	None	EPA 525.2	ND	0.02	ug/L	0.02	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	gamma-Chlordane	None	EPA 525.2	ND	0.02	ug/L	0.02	0.05		Eurofins
DMC	9/30/2014	13:15	10/8/14 16:15	Glyphosate	None	EPA 547	ND	2	ug/L	2	6		Eurofins
DMC	10/14/2014	11:30	10/20/14 0:00	Glyphosate	None	EPA 547	ND	2	ug/L	2	6		Eurofins
DMC	9/30/2014	13:15	10/8/14 11:00	Hardness as CaCO3	Total	SM20-2340 C	=	110	mg/L	1.7	5		Caltest
DMC	10/14/2014	11:30	10/23/2014 14:00	Hardness as CaCO3	Total	SM20-2340 C	=	130	mg/L	1.7	5		Caltest
DMC	9/30/2014	13:15	10/3/14 17:13	Heptachlor	None	EPA 505	ND	0.003	ug/L	0.003	0.01		Eurofins
DMC	10/14/2014	11:30	10/18/14 5:36	Heptachlor	None	EPA 505	ND	0.003	ug/L	0.003	0.01		Eurofins
DMC	9/30/2014	13:15	10/22/14 15:17	Heptachlor epoxide	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Caltest
DMC	10/14/2014	11:30	10/31/2014 11:16	Heptachlor epoxide	None	EPA 608	ND	0.004	ug/L	0.004	0.01		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Hexachlorobenzene	None	EPA 525.2	ND	0.04	ug/L	0.04	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Hexachlorobenzene	None	EPA 525.2	ND	0.04	ug/L	0.04	0.05		Eurofins
DMC	9/30/2014	12:45	10/15/14 22:45	Hexachlorobutadiene	None	EPA 625	ND	0.6	ug/L	0.6	1		Caltest
DMC	10/14/2014	11:30	10/28/2014 19:20	Hexachlorobutadiene	None	EPA 625	ND	0.7	ug/L	0.7	1.2		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Hexachlorocyclopentadiene	None	EPA 525.2	ND	0.04	ug/L	0.04	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Hexachlorocyclopentadiene	None	EPA 525.2	ND	0.04	ug/L	0.04	0.05		Eurofins
DMC	9/30/2014	12:45	10/15/14 22:45	Hexachloroethane	None	EPA 625	ND	0.6	ug/L	0.6	1		Caltest
DMC	10/14/2014	11:30	10/28/2014 19:20	Hexachloroethane	None	EPA 625	ND	0.7	ug/L	0.7	1.2		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	Indeno(1,2,3-cd)pyrene	None	EPA 625	ND	0.02	ug/L	0.02	0.05		Caltest
DMC	10/14/2014	11:30	10/28/2014 19:20	Indeno(1,2,3-cd)pyrene	None	EPA 625	ND	0.023	ug/L	0.023	0.06		Caltest
DMC	9/30/2014	13:15	10/6/14 14:52	Iron	Total	EPA 200.8	=	0.18	mg/L	0.005	0.05		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Iron	Total	EPA 200.8	=	0.08	mg/L	0.005	0.05		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Isophorone	None	EPA 525.2	ND	0.02	ug/L	0.02	0.5		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Isophorone	None	EPA 525.2	ND	0.02	ug/L	0.02	0.5		Eurofins

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
DMC	9/30/2014	13:15	10/7/14 14:38	Lead	Total	EPA 200.8	J	0.14	ug/L	0.03	0.25		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Lead	Total	EPA 200.8	J	0.1	ug/L	0.03	0.25		Caltest
DMC	9/30/2014	13:15	10/22/14 7:54	Malathion	None	EPA 614	ND	0.005	ug/L	0.005	0.05		Caltest
DMC	10/14/2014	11:30	10/31/2014 3:53	Malathion	None	EPA 614	ND	0.005	ug/L	0.005	0.05		Caltest
DMC	9/30/2014	13:15	10/6/14 14:52	Manganese	Total	EPA 200.8	=	36	ug/L	0.1	0.5		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Manganese	Total	EPA 200.8	=	15	ug/L	0.1	0.5		Caltest
DMC	9/30/2014	13:45	10/1/2014 10:30	MBAS (Surfactants)	None	SM20-5540 C	ND	0.02	mg/L	0.02	0.1		Caltest
DMC	10/14/2014	11:30	10/16/2014 8:36	MBAS (Surfactants)	None	SM20-5540 C	J	0.043	mg/L	0.02	0.1		Caltest
DMC	9/30/2014	12:30	10/7/14 9:03	Mercury	Total	EPA 1631E	=	0.0009	ug/L	0.0002	0.0005		Caltest
DMC	10/14/2014	11:30	10/21/2014 9:00	Mercury	Total	EPA 1631E	=	0.0013	ug/L	0.0002	0.0005		Caltest
DMC	9/30/2014	13:15	10/3/14 7:52	Methiocarb	None	EPA 531.2	ND	0.1	ug/L	0.1	0.5		Eurofins
DMC	10/14/2014	11:30	10/17/14 0:59	Methiocarb	None	EPA 531.2	ND	0.1	ug/L	0.1	0.5		Eurofins
DMC	9/30/2014	13:15	10/3/14 7:52	Methomyl	None	EPA 531.2	ND	0.2	ug/L	0.2	0.5		Eurofins
DMC	10/14/2014	11:30	10/17/14 0:59	Methomyl	None	EPA 531.2	ND	0.2	ug/L	0.2	0.5		Eurofins
DMC	9/30/2014	13:15	10/22/14 15:17	Methoxychlor	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	10/14/2014	11:30	10/31/2014 11:16	Methoxychlor	None	EPA 608	ND	0.005	ug/L	0.005	0.01		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	Methyl tert-butyl ether (MTBE)	None	EPA 624	ND	0.15	ug/L	0.15	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Methyl tert-butyl ether (MTBE)	None	EPA 624	ND	0.15	ug/L	0.15	0.5		Caltest
DMC	9/30/2014	13:15	10/2/14 21:59	Methylene chloride	None	EPA 624	ND	0.3	ug/L	0.3	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Methylene chloride	None	EPA 624	ND	0.3	ug/L	0.3	0.5		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Metolachlor	None	EPA 525.2	ND	0.02	ug/L	0.02	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Metolachlor	None	EPA 525.2	ND	0.02	ug/L	0.02	0.05		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Metribuzin	None	EPA 525.2	ND	0.02	ug/L	0.02	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Metribuzin	None	EPA 525.2	ND	0.02	ug/L	0.02	0.05		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Molinate	None	EPA 525.2	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Molinate	None	EPA 525.2	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Naphthalene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.3		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Naphthalene	None	EPA 525.2	ND	0.01	ug/L	0.01	0.3		Eurofins
DMC	9/30/2014	13:15	10/7/14 14:38	Nickel	Total	EPA 200.8	=	1.6	ug/L	0.08	0.5		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Nickel	Total	EPA 200.8	=	1.1	ug/L	0.06	0.5		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	Nitrobenzene	None	EPA 625	ND	0.9	ug/L	0.9	1		Caltest
DMC	10/14/2014	11:30	10/28/2014 19:20	Nitrobenzene	None	EPA 625	ND	1	ug/L	1	1.2		Caltest
DMC	9/30/2014	13:45	10/1/14 14:52	Nitrogen, Nitrate (as N)	None	EPA 300.0	=	0.14	mg/L	0.01	0.1		Caltest
DMC	10/14/2014	11:30	10/15/2014 21:19	Nitrogen, Nitrate (as N)	None	EPA 300.0	=	0.46	mg/L	0.01	0.1		Caltest
DMC	9/30/2014	13:45	10/1/14 10:20	Nitrogen, Nitrite	None	SM20-4500-NO2 B	ND	0.005	mg/L	0.005	0.03		Caltest
DMC	10/14/2014	11:30	10/15/2014 10:18	Nitrogen, Nitrite	None	SM20-4500-NO2 B	ND	0.005	mg/L	0.005	0.03		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	N-Nitrosodimethylamine	None	EPA 625	ND	0.5	ug/L	0.5	5		Caltest
DMC	10/14/2014	11:30	10/28/2014 19:20	N-Nitrosodimethylamine	None	EPA 625	ND	0.58	ug/L	0.58	5		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	N-Nitrosodi-N-propylamine	None	EPA 625	ND	0.8	ug/L	0.8	5		Caltest
DMC	10/14/2014	11:30	10/28/2014 19:20	N-Nitrosodi-N-propylamine	None	EPA 625	ND	0.93	ug/L	0.93	5		Caltest
DMC	9/30/2014	12:45	10/15/14 22:45	N-Nitrosodiphenylamine	None	EPA 625	ND	0.5	ug/L	0.5	1		Caltest
DMC	10/14/2014	11:30	10/28/2014 19:20	N-Nitrosodiphenylamine	None	EPA 625	ND	0.58	ug/L	0.58	1.2		Caltest
DMC	9/30/2014	13:15	10/14/14 19:18	OCDD	None	EPA 1613 D/F	=	57.1	pg/L	0.667			Frontier

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
DMC	10/14/2014	11:30	10/30/14 17:22	OCDD	None	EPA 1613 D/F	=	151	pg/L	0.667			Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	OCDF	None	EPA 1613 D/F	ND	2.48	pg/L	0.481			Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	OCDF	None	EPA 1613 D/F	ND	2.79	pg/L	0.481			Frontier
DMC	9/30/2014	13:15	10/3/14 7:52	Oxayml	None	EPA 531.2	ND	0.2	ug/L	0.2	0.5		Eurofins
DMC	10/14/2014	11:30	10/17/14 0:59	Oxayml	None	EPA 531.2	ND	0.2	ug/L	0.2	0.5		Eurofins
DMC	9/30/2014	13:15	10/22/14 7:54	Parathion, ethyl	None	EPA 614	ND	0.008	ug/L	0.008	0.05		Caltest
DMC	10/14/2014	11:30	10/31/2014 3:53	Parathion, ethyl	None	EPA 614	ND	0.008	ug/L	0.008	0.05		Caltest
DMC	9/30/2014	13:15	10/22/14 7:54	Parathion, methyl	None	EPA 614	ND	0.08	ug/L	0.08	0.1		Caltest
DMC	10/14/2014	11:30	10/31/2014 3:53	Parathion, methyl	None	EPA 614	ND	0.08	ug/L	0.08	0.1		Caltest
DMC	9/30/2014	13:15	10/3/14 17:13	PCB Aroclor 1016	None	EPA 505	ND	0.02	ug/L	0.02	0.08		Eurofins
DMC	10/14/2014	11:30	10/18/14 5:36	PCB Aroclor 1016	None	EPA 505	ND	0.02	ug/L	0.02	0.08		Eurofins
DMC	9/30/2014	13:15	10/22/14 15:17	PCB Aroclor 1221	None	EPA 608	ND	0.05	ug/L	0.05	0.1		Caltest
DMC	10/14/2014	11:30	10/18/14 0:00	PCB Aroclor 1221	None	EPA 608	ND	0.05	ug/L	0.05	0.1		Caltest
DMC	9/30/2014	13:15	10/22/14 15:17	PCB Aroclor 1232	None	EPA 608	ND	0.05	ug/L	0.05	0.1		Caltest
DMC	10/14/2014	11:30	10/18/14 0:00	PCB Aroclor 1232	None	EPA 608	ND	0.05	ug/L	0.05	0.1		Caltest
DMC	9/30/2014	13:15	10/22/14 15:17	PCB Aroclor 1242	None	EPA 608	ND	0.04	ug/L	0.04	0.1		Caltest
DMC	10/14/2014	11:30	10/18/14 0:00	PCB Aroclor 1242	None	EPA 608	ND	0.04	ug/L	0.04	0.1		Caltest
DMC	9/30/2014	13:15	10/3/14 17:13	PCB Aroclor 1248	None	EPA 505	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	10/14/2014	11:30	10/18/14 5:36	PCB Aroclor 1248	None	EPA 505	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	9/30/2014	13:15	10/3/14 17:13	PCB Aroclor 1254	None	EPA 505	ND	0.04	ug/L	0.04	0.1		Eurofins
DMC	10/14/2014	11:30	10/18/14 5:36	PCB Aroclor 1254	None	EPA 505	ND	0.04	ug/L	0.04	0.1		Eurofins
DMC	9/30/2014	13:15	10/3/14 17:13	PCB Aroclor 1260	None	EPA 505	ND	0.03	ug/L	0.03	0.1		Eurofins
DMC	10/14/2014	11:30	10/18/14 5:36	PCB Aroclor 1260	None	EPA 505	ND	0.03	ug/L	0.03	0.1		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Pendimethalin	None	EPA 525.2	ND	0.05	ug/L	0.05	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Pendimethalin	None	EPA 525.2	ND	0.05	ug/L	0.05	0.1		Eurofins
DMC	9/30/2014	13:15	10/7/14 5:32	Pentachlorophenol	None	EPA 515.4	J	0.014	ug/L	0.005	0.04		Eurofins
DMC	10/14/2014	11:30	10/21/14 21:51	Pentachlorophenol	None	EPA 515.4	ND	0.005	ug/L	0.005	0.04		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Permethrin	None	EPA 525.2	ND	0.04	ug/L	0.04	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Permethrin	None	EPA 525.2	ND	0.04	ug/L	0.04	0.1	LE	Eurofins
DMC	9/30/2014	11:25	9/30/14 11:25	pH	None	Field Meter	=	8.08	SU				LWA
DMC	10/14/2014	11:30	10/14/14 0:00	pH	None	Field Meter	=	7.87	SU				LWA
DMC	9/30/2014	13:15	10/10/14 1:10	Phenanthrene	None	EPA 525.2	ND	0.008	ug/L	0.008	0.04		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Phenanthrene	None	EPA 525.2	ND	0.008	ug/L	0.008	0.04		Eurofins
DMC	9/30/2014	12:45	10/15/2014 22:45	Phenol	None	EPA 625	ND	0.5	ug/L	0.5	1		Caltest
DMC	10/14/2014	11:30	10/28/2014 19:20	Phenol	None	EPA 625	ND	0.58	ug/L	0.58	1.2		Caltest
DMC	9/30/2014	13:15	10/7/14 5:32	Picloram	None	EPA 515.4	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 21:51	Picloram	None	EPA 515.4	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Propachlor	None	EPA 525.2	ND	0.02	ug/L	0.02	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Propachlor	None	EPA 525.2	ND	0.02	ug/L	0.02	0.05	LE	Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Pyrene	None	EPA 525.2	ND	0.008	ug/L	0.008	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Pyrene	None	EPA 525.2	ND	0.008	ug/L	0.008	0.05		Eurofins
DMC	9/30/2014	13:15	10/10/2014 10:44	Selenium	Total	EPA 200.8	J	0.72	ug/L	0.3	1		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Selenium	Total	EPA 200.8	J	0.47	ug/L	0.4	1		Caltest

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
DMC	9/30/2014	13:15	10/7/2014 14:38	Silver	Total	EPA 200.8	ND	0.04	ug/L	0.04	0.1		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Silver	Total	EPA 200.8	ND	0.02	ug/L	0.02	0.1		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Simazine	None	EPA 525.2	ND	0.03	ug/L	0.03	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Simazine	None	EPA 525.2	ND	0.03	ug/L	0.03	0.05		Eurofins
DMC	9/30/2014	13:15	10/2/2014 21:59	Styrene	None	EPA 624	ND	0.19	ug/L	0.19	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Styrene	None	EPA 624	ND	0.19	ug/L	0.19	0.5		Caltest
DMC	9/30/2014	13:45	10/14/2014 0:32	Sulfate (as SO4)	None	EPA 300.0	=	27	mg/L	2.5	10		Caltest
DMC	10/14/2014	11:30	10/15/2014 23:35	Sulfate (as SO4)	None	EPA 300.0	=	39	mg/L	1	5		Caltest
DMC	9/30/2014	13:15	10/6/2014 10:00	Sulfide	None	SM20-4500-S D	ND	0.03	mg/L	0.03	0.1		Caltest
DMC	10/14/2014	11:30	10/21/2014 11:00	Sulfide	None	SM20-4500-S D	ND	0.03	mg/L	0.03	0.1		Caltest
DMC	9/30/2014	13:15	10/3/14 22:10	Sulfite	None	SM 4500-SO3-B	ND	1.33	mg/L	1.33	4		Eurofins
DMC	10/14/2014	11:30	10/16/14 0:00	Sulfite	None	SM 4500-SO3-B	ND	1.33	mg/L	1.33	4		Eurofins
DMC	9/30/2014	11:25	9/30/14 11:25	Temperature	None	Field Meter	=	22	Deg C				LWA
DMC	10/14/2014	11:30	10/14/14 0:00	Temperature	None	Field Meter	=	21.05	Deg C				LWA
DMC	9/30/2014	13:15	10/10/14 1:10	Terbacil	None	EPA 525.2	ND	0.07	ug/L	0.07	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Terbacil	None	EPA 525.2	ND	0.07	ug/L	0.07	0.1		Eurofins
DMC	9/30/2014	13:15	10/10/14 1:10	Terbuthylazine	None	EPA 525.2	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Terbuthylazine	None	EPA 525.2	ND	0.02	ug/L	0.02	0.1		Eurofins
DMC	9/30/2014	13:15	10/2/2014 21:59	Tetrachloroethene	None	EPA 624	ND	0.19	ug/L	0.19	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Tetrachloroethene	None	EPA 624	ND	0.19	ug/L	0.19	0.5		Caltest
DMC	9/30/2014	13:15	10/7/2014 14:38	Thallium	Total	EPA 200.8	ND	0.1	ug/L	0.1	0.1		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Thallium	Total	EPA 200.8	ND	0.05	ug/L	0.05	0.1		Caltest
DMC	9/30/2014	13:15	10/22/2014 7:54	Thiobencarb	None	EPA 614	ND	0.008	ug/L	0.008	0.05		Caltest
DMC	10/14/2014	11:30	10/21/14 0:00	Thiobencarb	None	EPA 614	ND	0.008	ug/L	0.008	0.05		Caltest
DMC	9/30/2014	13:15	10/2/2014 21:59	Toluene	None	EPA 624	ND	0.19	ug/L	0.19	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Toluene	None	EPA 624	ND	0.19	ug/L	0.19	0.5		Caltest
DMC	9/30/2014	13:15	10/7/14 5:32	Total DCPA (Dacthal) Mono & Diacid Degradate	None	EPA 515.4	J	0.058	ug/L	0.04	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 21:51	Total DCPA (Dacthal) Mono & Diacid Degradate	None	EPA 515.4	J	0.099	ug/L	0.04	0.1		Eurofins
DMC	9/30/2014	13:45	10/6/2014 14:20	Total Dissolved Solids	Dissolved	SM20-2540 C	=	350	mg/L	4	10		Caltest
DMC	10/14/2014	11:30	10/16/2014 17:24	Total Dissolved Solids	Dissolved	SM20-2540 C	=	390	mg/L	4	10		Caltest
DMC	9/30/2014	13:15	10/14/14 19:18	Total HpCDD	None	EPA 1613 D/F	J	14	pg/L				Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	Total HpCDD	None	EPA 1613 D/F	=	38.3	pg/L				Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	Total HpCDF	None	EPA 1613 D/F	ND	1.68	pg/L				Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	Total HpCDF	None	EPA 1613 D/F	ND	2.33	pg/L				Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	Total HxCDD	None	EPA 1613 D/F	ND	1.73	pg/L				Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	Total HxCDD	None	EPA 1613 D/F	ND	1.56	pg/L				Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	Total HxCDF	None	EPA 1613 D/F	ND	0.674	pg/L				Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	Total HxCDF	None	EPA 1613 D/F	ND	1.3	pg/L				Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	Total PeCDD	None	EPA 1613 D/F	ND	1.07	pg/L				Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	Total PeCDD	None	EPA 1613 D/F	ND	1.64	pg/L				Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	Total PeCDF	None	EPA 1613 D/F	ND	0.729	pg/L				Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	Total PeCDF	None	EPA 1613 D/F	ND	0.728	pg/L				Frontier
DMC	9/30/2014	13:45	10/8/2014 13:18	Total Phosphorus as P	Total	SM4500-P B/F,1999, Low Level	=	0.11	mg/L	0.007	0.01		Caltest

Monitoring Location	Sample Date	Sample Time	Analysis Date	Analyte Name	Fraction Name	Method Name	Qualifier	Result	Unit	MDL	RL	QA Code	Lab Name
DMC	10/14/2014	11:30	10/21/2014 10:19	Total Phosphorus as P	Total	SM4500-P B/F,1999, Low Level	=	0.12	mg/L	0.007	0.01		Caltest
DMC	9/30/2014	13:15	10/14/14 19:18	Total TCDD	None	EPA 1613 D/F	ND	0.455	pg/L				Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	Total TCDD	None	EPA 1613 D/F	ND	0.559	pg/L				Frontier
DMC	9/30/2014	13:15	10/14/14 19:18	Total TCDF	None	EPA 1613 D/F	ND	0.654	pg/L				Frontier
DMC	10/14/2014	11:30	10/30/14 17:22	Total TCDF	None	EPA 1613 D/F	ND	0.63	pg/L				Frontier
DMC	9/30/2014	13:15	10/3/14 17:13	Toxaphene	None	EPA 505	ND	0.08	ug/L	0.08	0.5		Eurofins
DMC	10/14/2014	11:30	10/18/14 5:36	Toxaphene	None	EPA 505	ND	0.08	ug/L	0.08	0.5		Eurofins
DMC	9/30/2014	13:15	10/2/2014 21:59	trans-1,2-Dichloroethene	None	EPA 624	ND	0.22	ug/L	0.22	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	trans-1,2-Dichloroethene	None	EPA 624	ND	0.22	ug/L	0.22	0.5		Caltest
DMC	9/30/2014	13:15	10/2/2014 21:59	trans-1,3-Dichloropropene	None	EPA 624	ND	0.16	ug/L	0.16	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	trans-1,3-Dichloropropene	None	EPA 624	ND	0.16	ug/L	0.16	0.5		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	trans-Nonachlor	None	EPA 525.2	ND	0.03	ug/L	0.03	0.05		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	trans-Nonachlor	None	EPA 525.2	ND	0.03	ug/L	0.03	0.05		Eurofins
DMC	9/30/2014	13:15	10/7/14 13:22	Tributyltin	None	Organotins, PSEP (GC/MS)	ND	0.0009	ug/L	0.0009	0.0023		TestAmerica
DMC	10/14/2014	11:30	10/23/14 13:06	Tributyltin	None	Organotins, PSEP (GC/MS)	ND	0.00088	ug/L	0.00088	0.0022		TestAmerica
DMC	9/30/2014	13:15	10/2/2014 21:59	Trichloroethene	None	EPA 624	ND	0.2	ug/L	0.2	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Trichloroethene	None	EPA 624	ND	0.2	ug/L	0.2	0.5		Caltest
DMC	9/30/2014	13:15	10/2/2014 21:59	Trichlorofluoromethane (F-11)	None	EPA 624	ND	0.29	ug/L	0.29	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Trichlorofluoromethane (F-11)	None	EPA 624	ND	0.29	ug/L	0.29	0.5		Caltest
DMC	9/30/2014	13:15	10/2/2014 21:59	Trichlorotrifluorethane (F113)	None	EPA 624	ND	0.11	ug/L	0.11	1		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Trichlorotrifluorethane (F113)	None	EPA 624	ND	0.11	ug/L	0.11	1		Caltest
DMC	9/30/2014	13:15	10/10/14 1:10	Trifluralin	None	EPA 525.2	ND	0.04	ug/L	0.04	0.1		Eurofins
DMC	10/14/2014	11:30	10/21/14 19:48	Trifluralin	None	EPA 525.2	ND	0.04	ug/L	0.04	0.1		Eurofins
DMC	9/30/2014	13:15	10/2/2014 21:59	Vinyl chloride	None	EPA 624	ND	0.25	ug/L	0.25	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Vinyl chloride	None	EPA 624	ND	0.25	ug/L	0.25	0.5		Caltest
DMC	9/30/2014	13:15	10/2/2014 21:59	Xylenes, Total	None	EPA 624	ND	0.26	ug/L	0.26	0.5		Caltest
DMC	10/14/2014	11:30	10/17/2014 23:19	Xylenes, Total	None	EPA 624	ND	0.26	ug/L	0.26	0.5		Caltest
DMC	9/30/2014	13:15	10/7/2014 14:38	Zinc	Total	EPA 200.8	=	1.2	ug/L	0.7	1		Caltest
DMC	10/14/2014	11:30	10/23/2014 15:58	Zinc	Total	EPA 200.8	=	77	ug/L	0.7	1		Caltest

QA Codes:

L3 = The associated blank spike recovery was above method acceptance limits.

LE = MRL Check recovery was above laboratory acceptance limits.

LK = The associated blank spike recovery was above method acceptance limits. This target analyte was not detected in the sample.

R7 = LFB/LFBD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.

VC = CCV is high biased, ND data are reportable as per TNI V1M4 1.7.2.(e).i.

Appendix E: Calculations for Length to Complete Mixing

Calculation of the estimated distance to "complete mixing" considering the 7Q10 and harmonic mean flows calculated in the Delta-Mendota Canal

DMC Dimensions (see Figure B-1)

	ft	m
Base a	99	30.18
Base b	48	14.63
Height	17	5.18

	ft^2	m^2
Area	1249.5	116.08

	ft	m
Channel width (W)	99	30.18
Wetted perimeter	109.3	33.31

	m/m
Hydraulic gradient	0.00005

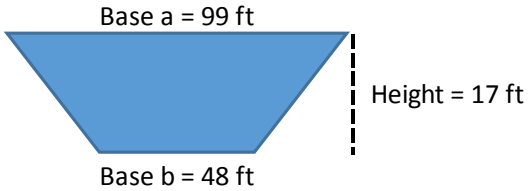

Figure B-1: DMC Dimensions

DMC Flows

	cfs	m^3/s
7Q10 flow	397	11.24
Harmonic mean (HM) flow	2153	60.97

DMC Average Advective Velocity

	m/s
7Q10 flow	0.10
Harmonic mean flow	0.53

Distance to "complete mixing" equation (after Fischer et al., 1979)

(1) $Lm = 0.1\ u(2W)^2/D_T$

where:

Lm = length complete mix

u = avg advective velocity (m/s)

W = channel width (m)

D_T = transverse dispersion coefficient (m^2/s)

Distance at 7Q10 Flow

m	miles
823.29	0.5

Distance at HM Flow

m	miles
4464.82	3

DMC Geometry and Flows
1° inputs to complete mixing eq.
2° inputs to complete mixing eq.

(2) $D_T = 0.2Hu'$ (m^2/s)	0.043
H = avg. depth of flow (m)	5.18
(3) Sheer velocity = u' = SQRT gR_HS (m/s)	0.041
where:	
g = accel. d/t gravity (m/s^2)	9.81
R_H = hydralic radius (m)	3.48
S = hydraulic gradient (m/m)	0.00005

Note: Because water movement and elevation in the DMC are controlled by a series of gates along its length, water height (or depth) does not vary much throughout a year. After consultation with San Luis & Delta-Mendota Water Authority staff, a water height of 17 ft was chosen to be representative of the canal across all water year types. To this end, the only factor that differs among the calculations for distance to complete mixing for the 7Q10 and harmonic mean flows is the average advective velocity, which is a function of flow.

Appendix F: Supplemental Discussion of Far-Field Impacts Calculations

According to the State Water Project Annual Report of Operations (DWR, 2005):

"There are two accounting procedures for calculating storage shares in O'Neill Forebay. One calculates storage shares using actual SWP/USBR deliveries from water pumped at Dos Amigos PP. The other method calculates storage shares in O'Neill using amounts pumped for each agency derived from scheduled energy at Dos Amigos only. Since scheduled pumping and water deliveries never match, there is always a difference that is carried over into subsequent months. These mismatches are used to "underschedule" or "overschedule" energy and pumping at Dos Amigos only in order to bring the mismatch back into alignment or closer to zero."

It should be noted that 66 of the 11,962 (0.55%) daily storage data provided by DWR (Smith, 2015) for the O'Neill Forebay show a negative volume due to the mismatch in deliveries versus pumping. The data were revised such that the negative share equals 0% and the total storage equals the opposing (either federal or state) project share.

The average federal share (end-of-month storage) estimated within the San Luis Reservoir (based on available monthly data from January 1980 through September 2012) and O'Neill Forebay (based on available daily data from January 1980 through September 2012) calculated by month and by year are provided in **Table C-1** and **Table C-2**, respectively. The estimated annual average federal share of water within the San Luis Joint-Use Complex from 1980 – 2012 is shown graphically **Figure C-1**.

Table C-1: Estimated Federal Share (end-of-month storage) by Month.

	San Luis Reservoir	O'Neill Forebay
January	47.46%	46.42%
February	46.83%	45.26%
March	47.05%	48.18%
April	46.86%	49.39%
May	45.30%	48.84%
June	40.53%	48.89%
July	32.88%	47.80%
August	27.70%	49.62%
September	34.01%	49.16%
October	41.10%	48.55%
November	47.91%	48.57%
December	48.83%	49.08%
Minimum Estimated	27.7%	45.26%
Maximum Estimated	48.83%	49.62%

Table C-2: Estimated Federal Share (end-of-month storage) by Year.

Year	San Luis Reservoir	O'Neill Forebay
1980	40.04%	48.65%
1981	44.31%	51.11%
1982	50.07%	47.96%
1983	44.12%	47.19%
1984	31.53%	53.32%
1985	32.08%	50.63%
1986	41.33%	48.15%
1987	43.11%	47.70%
1988	36.88%	47.75%
1989	44.58%	48.67%
1990	62.29%	50.40%
1991	57.91%	47.71%
1992	35.23%	48.64%
1993	39.10%	48.17%
1994	36.45%	43.57%
1995	39.17%	46.61%
1996	36.81%	52.86%
1997	35.61%	46.91%
1998	45.67%	46.10%
1999	35.08%	48.87%
2000	51.50%	48.95%
2001	47.52%	49.75%
2002	49.46%	48.87%
2003	46.61%	51.45%
2004	39.03%	49.79%
2005	41.89%	47.70%
2006	39.72%	47.13%
2007	37.35%	49.21%
2008	35.01%	48.81%
2009	36.97%	36.63%
2010	49.15%	46.26%
2011	47.03%	50.79%
2012	38.25%	48.45%
Minimum Estimated	31.53%	36.63%
Maximum Estimated	62.29%	53.32%

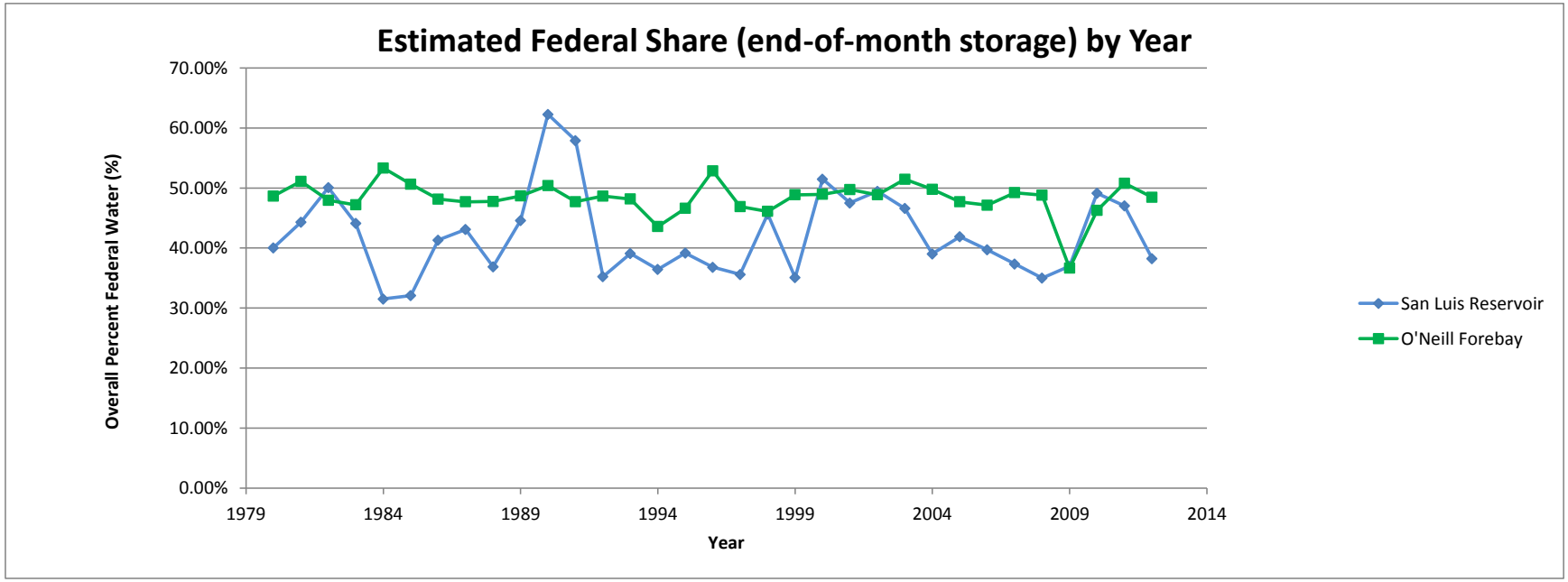

Figure C-1: Estimated Federal Share of Water within the San Luis Joint-Use Complex Storage Facilities as an Annual Average.

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Appendix J – Mitigation Monitoring and Reporting Program

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Appendix J

Mitigation Monitoring and Reporting Plan

The City of Modesto, City of Turlock and Del Puerto Water District working together as Partner Agencies are proposing to implement the North Valley Regional Recycled Water Program (NVRRWP). The City of Modesto is the CEQA lead agency for completion of the Environmental Impact Report, which was prepared in conjunction with the Bureau of Reclamation, the NEPA lead agency, as a joint Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS). After considering the environmental analysis provided in the Draft EIR/EIS and public comments submitted on the Draft EIR/EIS, the City of Modesto has determined that the project would not have a significant effect on the environment with implementation of the mitigation measures identified in the Mitigation Monitoring and Reporting Plan (MMRP). This MMRP provides a plan for implementation of mitigation measures that pertain to the Combined Alignment Alternative, which has been selected as the preferred alternative.

The MMRP contains all of the mitigation measures that were presented in the Draft EIR/EIS, with some minor modifications based on comments received from regulatory and trustee agencies during public review of the Draft EIR/EIS. Mitigation numbers are tied to the impact numbers in the Draft EIR/EIS, so mitigation is not numbered consecutively. Some impacts that were determined to be less than significant do not require mitigation, and thus some mitigation numbers are skipped. For example, Impact BIO-7 was determined to be less than significant, so there is no Mitigation BIO-7. The table is organized by Mitigation Measure and because some measures address several different impacts, multiple impacts may be listed in the Impact Statement, where applicable. To ensure consistency of mitigation numbering, some of the mitigation numbers have been revised.

While the Draft EIR/EIS was prepared by the City of Modesto and the Bureau of Reclamation as a joint document, the Final EIR has been prepared as a separate CEQA document, which will be considered for certification by the City of Modesto. Reclamation will separately circulate a Final EIS for 30 days before issuing a Record of Decision for the NVRRWP.

Mitigation measures have been included in the project to reduce or avoid potential environmental impacts associated with project construction and operation. Section 21081.6 of the California Public Resources Code requires a CEQA lead or responsible agency that approves or carries out a project where an EIR has identified measures to mitigate significant environmental effects to adopt a “reporting monitoring program for adopted or required changes to mitigate or avoid significant environmental effects.” In accordance with Section 21081.6 of the Public Resources Code, this MMRP has been prepared.

Impact Statement	Mitigation Measure (Exact Text)	Party Responsible for Implementation and Reporting	Review and Approval by:	Monitoring and Reporting Actions	Implementation Schedule -Design -Pre-construction -Construction -Operation	Verification: Status/ Date Completed/ Initials
Aesthetics						
AES-2: New sources of substantial light or glare	**AES-2: Nighttime Construction Lighting**: Nighttime construction lighting, if required, shall be shielded and oriented downward to minimize effects on any nearby receptors. Lighting shall be directed toward active construction areas only, and shall have the minimum brightness necessary to ensure worker safety.	City of Modesto	City of Modesto	1. Confirm that lighting measures are included in contract documents 2. Monitor construction activities to verify that measures are implemented during construction. Document compliance and retain in the project file.	1. Design 2. Construction	1._____ 2._____
Agriculture Resources						
AG-1: Convert farmland to non-agricultural use	**AG-1: Stockpile Soil**: Topsoil removed during project construction shall be stockpiled for later reuse. Soil shall be stored in a clear area of the construction site where it would not have the potential to affect agricultural or biological resources. Stockpiled soil shall be covered with a tarp at all times to prevent generation of fugitive dust. Following pipeline insertion, soil shall be backfilled into the trench and restored to an appropriate level of compaction.	City of Modesto	City of Modesto	1. Confirm that soils stockpiling requirements are included in contract specifications 2. Monitor construction activities to verify that measures are implemented during construction. Document compliance and retain in the project file.	1. Design 2. Construction	1._____ 2._____
Air Quality						
AIR-1: Construction emissions of criteria pollutants and precursors ENE-1: Inefficient, wasteful, or unnecessary use of energy resources	**AIR-1: Reduce NOx Emissions**: NOx emissions associated with construction activities shall be reduced to 10 tons per year through on-site equipment and hauling vehicle mitigation measures to the extent feasible. All vehicles and equipment used during construction shall be maintained and properly tuned in accordance with the manufacturer's specifications to perform at EPA certification levels and to perform at verified standards applicable to retrofit technologies. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure CCR Title 13 Section 2485). Emissions reduction methods may be chosen from any combination of the following measures**:** • Minimize the use and trips of construction equipment and trucks by consolidating trips and loads to the extent feasible • Minimize unnecessary idling by shutting off equipment and trucks when not in use to the extent feasible and comply with CARB idling regulations. • Conduct periodic unscheduled inspections to ensure equipment is maintained properly and in accordance with manufacturer's recommendations and excessive idling is not occurring. • Prepare inventory of all equipment prior to construction consistent with SJVAPCD Indirect Source Review Rule. • Develop a construction traffic and parking management plan that minimizes traffic interference and maintains traffic flow. The contractor will be encouraged to implement the following measures to the extent feasible before implementation of off-site mitigation measures and identify why the measures are infeasible if not implemented in particular due to economic infeasibility: • Use alternative fueled vehicles. • Use newer tier engines such as EPA Tier 4 exhaust emissions standards for heavy-duty nonroad compression ignition engines. • Use of newer on-highway vehicles that meet the EPA exhaust emissions standards for model year 2010 and	City of Modesto	City of Modesto, SJVAPCD	1. Confirm that air quality measures are included in contract documents 2. Review estimated emissions and, if needed implement VERA with SJVAPCD 3. Monitor construction activities to verify that measures are implemented during construction. Document compliance and retain in the project file.	1. Design 2. Pre-construction 3. Construction	1._____ 2._____ 3._____

Impact Statement	Mitigation Measure (Exact Text)	Party Responsible for Implementation and Reporting	Review and Approval by:	Monitoring and Reporting Actions	Implementation Schedule -Design -Pre-construction -Construction -Operation	Verification: Status/ Date Completed/ Initials
	newer heavy-duty on-highway compression ignition engines • Use phased material hauling trips • Use after-market pollution control devices to reduce emissions • Lengthen the construction schedule to reduce the annual intensity of construction activities If all feasible on-site measures have been implemented and annual emissions are anticipated to still be above 10 tons per year for NOx, then the project proponent shall enter into a Voluntary Emissions Reduction Agreement (VERA) with SJVAPCD. The VERA would provide pound-for-pound mitigation of air emissions increases down to a net zero emissions per year as required under general conformity through a process that develops, funds, and implements emission reduction projects. SJVAPCD would serving as role of administrator of the emissions reduction projects and verifier of the successful mitigation effort.					
Biological Resources						
BIO-1: Effects on special-status plants	**BIO-1a: Avoid or Minimize Impacts to Special-Status Plant Species**: To the extent feasible, project-related activities shall avoid habitats with the potential to support special-status plants, including alkali flats, alkali scrub, alkali pools, and freshwater wetlands. To the extent feasible, the proposed project shall minimize potential impacts to special-status plants by utilizing trenchless construction techniques within habitats with the potential to support special-status plants.	City of Modesto	City of Modesto	1. Confirm that locations of facilities avoid sensitive habitats to the extent feasible through siting and use of trenchless techniques. Document compliance and retain in the project file.	1. Design	1._____
BIO-1: Effects on special-status plants	**BIO-1b: Perform Focused Surveys for Special-Status Plant Species in Suitable Habitats**: Within one year prior to commencement of construction activities, a qualified botanist shall perform surveys for special-status plant species within potentially suitable habitat in the vicinity of open-cut construction areas (Survey areas are shown in Attachment A to the MMRP). Floristic surveys shall be performed according to the Protocols for Surveying and Evaluating Impacts to Specials Status Native Plant Populations and Natural Communities (CDFG 2009 or current version). Floristic surveys shall include the use of a reference population, as reasonably feasible, to increase the likelihood of detection, and shall be performed during the appropriate bloom period(s) for each species. If special-status plants are detected within a 100-foot radius or within the microwatershed of an open-cut construction area (including pits that would be used for trenchless construction), Mitigation Measure BIO-1c shall be implemented.	City of Modesto	City of Modesto	1. Confirm completion of surveys.	1. Pre-construction	1._____
BIO-1: Effects on special-status plants	**BIO-1c: Monitor or Compensate for Impacts to Special-Status Plant Species**: The locations of special-status plants within the microwatershed or within 100 feet of construction areas shall be marked and the size of the population shall be recorded. Locations of special-status plant populations shall be clearly identified in the field by staking, flagging, or fencing. The plants shall be monitored throughout the duration of construction to determine if the project has resulted in adverse effects (direct or indirect), as determined by a qualified botanist. If the botanist determines that special-status plants may have been adversely effected, then the Partner Agencies shall implement measures to compensate for the impact. Compensation measures may include transplanting perennial species, seed collection and dispersal for annual species, and other conservation strategies that shall restore and protect the viability of the local population. If minimization measures are implemented, monitoring of plant populations shall be conducted annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation shall be no net reduction in the size or viability of the local population.	City of Modesto	City of Modesto	1. Confirm that plant locations are marked. 2. Monitor construction activities to verify that measures are implemented during construction. 3. Document implementation of compensation plan if botanist determines plants were affected 4. Monitor success of plantings, if needed. Document compliance and retain in the project file.	1. Pre-construction 2. Construction 3. At completion of construction 4. 5 years of monitoring after plant populations are established	1._____ 2._____ 3._____ 4._____
BIO-1: Effects on special-status plants BIO-3: Effects on valley elderberry longhorn beetle BIO-4: Effects of project	**BIO-1d: Develop and Implement a Frac-out Contingency Plan for Trenchless Construction**: Prior to constructing a crossing(s) of the San Joaquin River, a Frac-out Prevention and Contingency Plan shall be developed and submitted by the City of Modesto to the California State Lands Commission for review. At minimum, the plan shall prescribe the measures to ensure protection of aquatic resources, special-status plants and wildlife, including: • Procedures to minimize the potential for a frac-out associated with horizontal directional drilling; • Procedures for timely detection of frac-outs;	City of Modesto	City of Modesto, CDFW, California State Lands Commission	1. Confirm that frac-out plan is developed and measures are included in contract documents 2. Monitor construction activities to verify that measures are implemented during construction.	1. Design 2. Construction	1._____ 2._____

Impact Statement	Mitigation Measure (Exact Text)	Party Responsible for Implementation and Reporting	Review and Approval by:	Monitoring and Reporting Actions	Implementation Schedule -Design -Pre-construction -Construction -Operation	Verification: Status/ Date Completed/ Initials
construction on special-status fishes BIO-15: Effects on riparian habitat and other sensitive natural communities BIO-16: Effects on federally protected wetlands BIO-18: Conflict with local ordinances or policies protecting biological resources HYD-1: Violation of Water Quality Standards and/or Waste Discharge Requirements (Due to Construction Activities)	• Procedures for timely response and remediation in the event a frac-out; and Monitoring of drilling and frac-out response activities by a qualified biologist.			Document compliance and retain in the project file.		
BIO-2: Effects on vernal pool fairy branchiopods BIO-15: Effects on riparian habitat and other sensitive natural communities BIO-18: Conflict with local ordinances or policies protecting biological resources	**BIO-2a: Avoid Impacts to Vernal Pool Branchiopods and their Habitat**: To the extent feasible, the project-related activities shall avoid impacts to habitat with the potential to support Conservancy fairy shrimp, longhorn fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp, including alkali pools and swales. Avoidance shall be defined as no direct or indirect effects to suitable habitat. This shall be accomplished by avoiding construction within the microwatershed of suitable habitat for vernal pool branchiopods.	City of Modesto	City of Modesto	1. Confirm that facilities are sited to avoid sensitive habitats to the extent feasible. Document compliance and retain in the project file.	1. Design	1._____
BIO-2: Effects on vernal pool fairy branchiopods	**BIO-2b: Minimize and Compensate for Impacts to Vernal Pool Fairy Shrimp and Their Habitat**: If direct or indirect impacts to habitat with the potential to support vernal pool branchiopods cannot be avoided then the following measures shall be implemented: • Implement a storm water pollution prevention plan (SWPPP) to reduce the potential for sediments and contaminants to enter pools or depressions where vernal pool branchiopods may occur; • After construction, restore surface topography and drainage to pre-construction conditions; and • Provide off-site compensation for permanent, temporary, and indirect impacts at ratios determined through consultation with USFWS. The performance standard shall be no net loss in acreage or habitat quality for vernal pool branchiopods, as determined through consultation with USFWS.	City of Modesto	City of Modesto, USFWS	1. Confirm that SWPPP addresses protection of vernal pool habitats. 2. Monitor construction activities to verify that measures are implemented during construction. 3. Document restoration to pre-construction conditions 4. Monitor success of off-site mitigation, if needed. Document compliance and retain in the project file.	1. Pre-construction 2. Construction 3. At completion of construction 4. 5 years of monitoring after plant populations are established	1._____ 2._____ 3._____ 4._____
BIO-3: Effects on valley elderberry longhorn beetle	**BIO-3a: Avoid Impacts to Valley Elderberry Longhorn Beetle**: To the extent feasible, the project shall adhere to avoidance measures outlined in USFWS' Conservation Guidelines for Valley Elderberry Longhorn Beetle (USFWS 1999). This shall include the following avoidance measures: • No less than 120 days prior to commencing construction, the locations of elderberry plants within 200 feet of open-cut construction areas shall be identified; • Fence and flag all areas to be avoided during construction activities including all established elderberry shrubs within 200 feet of open-cut construction that will not be impacted by construction activities; • No open-cut construction within 100 feet of the dripline of elderberry plants containing stems measuring 1.0 inch or greater in diameter at ground level; • Construction personnel shall participate in a Contractor Environmental Awareness Training (CEAT). The CEAT shall communicate the need to avoid damaging the elderberry plants and the possible penalties for not complying with these requirements. The CEAT will instruct work crews about the status of the beetle and the	City of Modesto	City of Modesto, USFWS	1. Confirm that measures protecting elderberry bushes are included in plans and contract documents 2. Confirm that plant locations are identified, flagged and fenced with appropriate signage in place. 3. Confirm completion of CEAT, and retain sign-in sheet in file 4. Monitor construction activities to verify that avoidance measures are implemented during construction. Document compliance and retain in	1. Design 2. Pre-construction 3. Pre-construction 4. Construction	1._____ 2._____ 3._____ 4._____

<table>
<tr><th>Impact Statement</th><th>Mitigation Measure (Exact Text)</th><th>Party Responsible for Implementation and Reporting</th><th>Review and Approval by:</th><th>Monitoring and Reporting Actions</th><th>Implementation Schedule
-Design
-Pre-construction
-Construction
-Operation</th><th>Verification: Status/ Date Completed/ Initials</th></tr>
<tr><td></td><td>need to protect its elderberry host plant;
• Erect signs every 50 feet along the edge of the avoidance area with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs will be maintained for the duration of construction; and
• No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant would be used within 100 feet of any elderberry plant.</td><td></td><td></td><td>the project file.</td><td></td><td></td></tr>
<tr><td>BIO-3: Effects on valley elderberry longhorn beetle</td><td>BIO-3b: Minimize or Compensate for Impacts to Valley Elderberry Longhorn Beetle: If elderberry plants occur within 100 feet of open-cut construction, their locations shall be reported to the USFWS. In areas where encroachment on the 100-foot buffer has been approved by USFWS, a minimum setback of at least 20 feet from the dripline of each elderberry plant shall be provided, as feasible. For any encroachment into the 100-foot buffer or removal of elderberry plants, the Partner Agencies shall implement measures to compensate for impacts to VELB. Compensation measures shall be consistent with USFWS' Conservation Guidelines for Valley Elderberry Longhorn Beetle (USFWS 1999). This shall include establishment of a project-specific VELB Conservation Area or purchase of credits at a USFWS-approved mitigation bank. If the Partner Agencies establish a project-specific Conservation Area, the population of VELBs, the general condition of the Conservation Area, and the condition of the elderberry and associated native plantings in the Conservation Area shall be monitored over a period of ten (10) years. Monitoring and reporting shall be conducted in accordance with the Conservation Guidelines for VELB (USFWS 1999). A minimum survival rate of at least 60 percent of the elderberry plants and 60 percent of the associated native plants shall be maintained throughout the monitoring period.</td><td>City of Modesto</td><td>City of Modesto
USFWS</td><td>1. Confirm that locations of elderberry plants are reported to USFWS.
2. Verify implementation of compensation measures.
3. Monitor plantings, if required.
Document compliance and retain in the project file.</td><td>1. Pre-construction
2. Pre-construction
3. 10 years of monitoring after plant populations are established</td><td>1._____
2._____
3._____</td></tr>
<tr><td>BIO-4: Effects of project construction on special-status fishes</td><td>BIO-4a: Minimize Pile Driving-related Impacts to Special Status Fish: If impact pile driving activities occur adjacent to the San Joaquin River between October 1 and May 31, the Project Proponents shall adhere to the following restrictions on the number of allowable strikes for a 24 hour period:
<table>
<tr><th>Distance from San Joaquin River (Meters)</th><th>Distance from San Joaquin River (Feet)</th><th>Maximum Number of Strikes per 24 hours[1]</th></tr>
<tr><td>75</td><td>246</td><td>130</td></tr>
<tr><td>150</td><td>492</td><td>365</td></tr>
<tr><td>225</td><td>738</td><td>672</td></tr>
<tr><td>300</td><td>984</td><td>1035</td></tr>
<tr><td>375</td><td>1230</td><td>1447</td></tr>
<tr><td>450</td><td>1476</td><td>1902</td></tr>
<tr><td>>450</td><td>>1476</td><td>no limit</td></tr>
</table></td><td>City of Modesto</td><td>City of Modesto</td><td>1. Confirm that pile driving restrictions are included in contract documents
2. Monitor construction activities to verify that measures are implemented during construction.
Document compliance and retain in the project file.</td><td>1. Design
2. Construction</td><td>1._____
2._____</td></tr>
<tr><td>BIO-6: Effects on giant garter snake
BIO-17: Effects on movement of fish and wildlife and use of breeding sites</td><td>BIO-6: Avoid and Minimize Impacts to Giant Garter Snake: The following measures shall be implemented to avoid or minimize impacts to GGS:
• Trenchless construction techniques shall be used to construct the pipeline crossing in potential aquatic habitat for GGS (applicable to Alternatives 1 and 2 only);
• Construction personnel shall participate in a Contractor Environmental Awareness Training (CEAT). Under this program, workers shall be informed about GGS and habitat, the species life history, conservation goals, identification of the snake, and procedures to follow in the event of a possible sighting;
• Within 24-hours prior to commencement of construction activities, the site shall be inspected by a qualified biologist who is approved by the USFWS. The biologist shall provide the Service with a field report form</td><td>City of Modesto</td><td>City of Modesto
USFWS</td><td>1. Confirm that locations of facilities avoid GGS habitat to the extent feasible through siting and use of trenchless techniques.
2. Confirm that erosion control measures and limitations on staging areas are included in the contract documents.
3. Confirm completion of CEAT</td><td>1. Design
2. Design
3. Pre-construction
4. Pre-construction
5. Construction
6. Construction</td><td>1._____
2._____
3._____</td></tr>
</table>

Impact Statement	Mitigation Measure (Exact Text)	Party Responsible for Implementation and Reporting	Review and Approval by:	Monitoring and Reporting Actions	Implementation Schedule -Design -Pre-construction -Construction -Operation	Verification: Status/ Date Completed/ Initials
	documenting the monitoring efforts within 24-hours of commencement of construction activities. A qualified biologist shall be on-site during all construction activity within 200 feet of potential habitat for GGS (Survey areas are shown in Attachment A to the MMRP). If a snake is encountered during construction activities, the biologist shall have the authority to stop construction activities until appropriate corrective measures have been completed or it is determined that the snake would not be harmed; • Erosion control materials including silt curtains, silt fencing, and erosion control wattles shall be regularly inspected for entanglement or entrapment of the snake. No erosion control devices containing plastic netting (including photo- or biodegradable plastic netting) shall be used; • Stockpiling of construction materials, portable equipment, vehicles, and supplies shall be restricted to the designated construction staging areas which shall be greater than 200 feet from GGS aquatic habitat; • Clearing of wetland vegetation, if any, shall be confined to the minimal area necessary to construct the pipeline or intake; and • After completion of construction activities, any temporary fill and construction debris shall be removed. Disturbed areas shall be restored to pre-project conditions. Restoration work shall include replanting native emergent vegetation, where appropriate.			and retain sign-in sheet in file. 4. Verify completion of pre-construction surveys 5. Verify submittal of field report to USFWS. 6. Monitor construction activities to verify that measures are implemented during construction. 7. Verify restoration to pre-project conditions Document compliance and retain in the project file.	7. Post-construction	4._____ 5. _____ 6. _____ 7. _____
BIO-8: Effects on western pond turtle BIO-17: Effects on movement of fish and wildlife and use of breeding sites	**BIO-8: Avoid and Minimize Impacts to Western Pond Turtle**: The following measures shall be implemented to avoid or minimize impacts to western pond turtle: • To the extent feasible, trenchless construction techniques shall be used where pipelines cross potential aquatic habitat for western pond turtle; • Construction personnel shall participate in a Contractor Environmental Awareness Training (CEAT). Under this program, workers shall be informed about western pond turtle and their habitat, conservation goals, identification, and procedures to follow in the event of a possible sighting; and • Pre-construction surveys for western pond turtle shall be conducted by a qualified biologist 14 days before and 24 hours before the start of construction activities where suitable habitat exists (Survey are shown in Attachment A to the MMRP). If western pond turtle or their nests are observed during pre-construction surveys, the following measures shall be implemented: o A qualified biologist shall be on site to monitor construction in suitable habitat. If a western pond turtle is present within 50 feet of a construction area, no vegetation clearing or ground disturbing activities shall be conducted until the turtle leaves the area on its own volition. o If western pond turtle nests are identified in the work area during pre-construction surveys, a 100-foot no-disturbance buffer shall be established between the nest and any areas of potential disturbance. Buffers shall be clearly marked with temporary fencing. Construction shall not be allowed to commence in the exclusion area until hatchlings have emerged from the nest, or the nest is deemed inactive by a qualified biologist.	City of Modesto	City of Modesto	1. Confirm that locations of facilities avoid aquatic habitat to the extent feasible through siting and use of trenchless techniques. 2. Confirm that limitations on construction in turtle habitat areas are included in the contract documents. 3. Confirm completion of CEAT and retain sign-in sheet in file. 4. Verify completion of pre-construction surveys 5. Verify buffers are established if turtles are found during surveys. 6. Monitor construction activities to verify that measures are implemented as needed during construction. Document compliance and retain in the project file.	1. Design 2. Design 3. Pre-construction 4. 14 days and 24 hours Pre-construction 5. Pre-construction 6. Construction	1._____ 2._____ 3._____ 4._____ 5. _____ 6. _____

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BIO-9: Effects on burrowing owl BIO-17: Effects on movement of fish and wildlife and use of breeding sites	**BIO-9: Avoid, Minimize, or Compensate for Impacts to Burrowing Owl**: Prior to initiating ground-disturbing activities, surveys for burrowing owls shall be conducted in accordance with protocols established in the Staff Report on Burrowing Owl Mitigation (CDFG 2012 or current version). If ground-disturbing activities are delayed or suspended for more than 30 days after the pre-construction survey, the site shall be resurveyed. If burrowing owls are detected, disturbance to burrows shall be avoided during the nesting season (February 1 through August 31). Buffers shall be established around occupied burrows in accordance with guidance provided in the Staff Report on Burrowing Owl Mitigation, and at the discretion of a qualified wildlife biologist. Buffers around occupied burrows shall be a minimum of 656 feet (200 meters) during the breeding season, and 160 feet (100 meters) during the non-breeding season. Buffer distances shall be subject to the approval of CDFW. If occupied burrows cannot be avoided, passive owl relocation techniques may be implemented outside of the nesting season (February 1 through August 31). Owls would be excluded from burrows within 160 feet of construction by installing one-way doors in burrow entrances. The work area shall be monitored daily for 1 week to confirm owl departure from burrows prior to any ground-disturbing activities. Where possible burrows shall be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe shall be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow. If occupied burrows are relocated, the Partners Agencies shall enhance or create burrows in adjacent habitat at a 1:1 ratio (burrows destroyed to burrows enhanced or created) one week prior to implementation of passive relocation techniques. If burrowing owl habitat enhancement or creation takes place, the Partners Agencies shall develop and implement a monitoring and management plan to assess the effectiveness of the mitigation. The plan shall be subject to the approval of CDFW.	City of Modesto	City of Modesto, CDFW	1. Confirm that requirements for burrowing owl protection are included in the contract documents. 2. Verify completion of pre-construction surveys and resurveys, if needed. 3. Verify buffers are established if owls are found during surveys. 4. Verify completion of passive relocation, if needed 5. Verify completion of habitat enhancement, if needed. 6. Monitor construction activities to verify that measures are implemented as needed during construction. 7. Monitor effectiveness of habitat enhancement, if needed. Document compliance and retain in the project file.	1. Design 2. Pre-construction 3. Pre-construction 4. Pre-construction 5. Pre-construction 6. Construction 7. Post-construction	1._____ 2._____ 3._____ 4._____ 5. _____ 6. _____ 7. _____
BIO-10: Effects on tricolored blackbird BIO-17: Effects on movement of fish and wildlife and use of breeding sites	**BIO-10: Avoid and Minimize Impacts to Tricolored Blackbird Nesting Colonies**: The following measures shall be implemented to avoid or minimize impacts to tricolored blackbird: • To the extent feasible, trenchless construction techniques shall be used in areas that support emergent vegetation; • During the breeding season (February 1 through August 31), pre-construction surveys for tricolored blackbird shall be conducted in suitable nesting habitat by a qualified biologist no more than 15 days prior to scheduled work. Suitable nesting habitat includes any of the following: (a) dense vegetation near open water; (b) emergent marsh vegetation, especially cattails and bulrush; (c) thickets of willow, blackberry, wild rose, or thistles; or (d) silage and other grain fields such as sorghum; and • If tricolored blackbird breeding is detected, a 500 foot no-disturbance buffer shall be established around the breeding site. The buffer shall be maintained until a qualified biologist has determined that young have fledged and are no longer reliant upon the nest or parental care for survival.	City of Modesto	City of Modesto	1. Confirm that locations of facilities avoid emergent vegetation to the extent feasible through siting and use of trenchless techniques. 2. Verify completion of pre-construction surveys. 3. Verify buffers are established if tricolored blackbirds are found during surveys. 4. Monitor construction activities to verify that measures are implemented as needed during construction. Document compliance and retain in the project file.	1. Design 2. Within 15 days Pre-construction 3. Pre-construction 4. Construction	1._____ 2._____ 3._____ 4._____

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BIO-12: Effects on raptors including special-status species BIO-17: Effects on movement of fish and wildlife and use of breeding sites	**BIO-12: Avoid, Minimize, or Compensate for Impacts to Raptors including Special-status species**: • If ground and vegetation disturbing activities occur between February 1 and September 15, a nesting raptor survey, with a focus on Swainson's hawk and white-tailed kite, shall be conducted in accordance with Recommended Timing and Methodology for Swainson's Hawk Nesting Survey's in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000, or current CDFW guidance). Surveys shall cover a minimum of a 0.5-mile radius around potentially suitable nesting habitat for Swainson's hawk and white-tailed kite (Survey areas are shown in Attachment A to the MMRP). Agricultural lands within 1,000 feet of open-cut construction areas shall be surveyed for northern harrier nests. • If nesting raptors are detected, a no-disturbance buffer shall be established around the nest. Buffers shall be established by a qualified biologist, with consultation with the California Department of Fish and Wildlife, as appropriate. No construction activities shall be initiated within the buffer until fledglings are fully mobile and no longer reliant upon the nest or parental care for survival. Construction must either be started before nests are established, or if nesting birds are already present, construction within the buffer zone would have to be delayed until nesting is done for the season. • If an active Swainson's hawk or white-tailed kite nest is located within a 0.5-mile radius of an active work area, a biologist shall be on site daily to monitor the nest. The biologist shall monitor for behavioral changes that would suggest the birds are stressed by construction activity or the nest may be abandoned. Such behaviors may include excessive vocalization, a startled response coincident with a loud noise or changes in the viewshed, or prolonged absence from the nest by adults. If the biologists determines that nest success may be adversely impacted by construction, then construction shall be discontinued within 0.5 mile of the nest. • Trees that would need to be removed for construction would be surveyed to determine if they are suitable for raptor nesting. • If potential raptor nesting trees are to be removed during construction activities, removal shall take place outside of Swainson's hawk nesting season. Suitable nest trees for raptors shall be replaced at a ratio of 3:1 with appropriate species [e.g., valley oak (Quercus lobata), coast live oak (Q. agrifolia)., Fremont cottonwood (Populus fremontii)]. The trees shall be planted within 5 miles of the removal location, in areas appropriate for raptor nesting, and on land owned or managed by one of the Partner Agencies. If replacement planting is implemented, monitoring shall be conducted annually for 5 years to assess the mitigation's effectiveness. The performance standard for the mitigation shall be 65% survival of all replacement plantings.	City of Modesto	City of Modesto CDFW	1. Confirm that requirements for raptor protection are included in the contract documents. 2. Verify completion of pre-construction surveys of habitat and trees to be removed. 3. Verify buffers are established if raptors are found during surveys. 4. Monitor construction activities to verify that measures are implemented as needed during construction. 5. Confirm replacement of nest trees, if needed. 6. Monitor plantings, if required. Document compliance and retain in the project file.	1. Design 2. Pre-construction 3. Pre-construction 4. Construction 5. Pre-construction 6. 5 years of monitoring after trees are planted	1._____ 2._____ 3._____ 4._____ 5. _____ 6. _____

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BIO-13: Effects on special-status passerine species and birds protected under the MBTA BIO-17: Effects on movement of fish and wildlife and use of breeding sites	**BIO-13: Avoid and Minimize Impacts to Special-status passerine species and other Birds Protected under the MBTA**: • If ground and vegetation disturbing activities occur between February 1 and September 15, a survey for nesting birds shall be conducted within a 500-ft radius of the construction area. If nests are detected, buffers around nests shall be established. No-disturbance buffers around special-status passerine nests shall be 500 feet and 250 feet for non-listed birds protected under the MBTA and Fish and Game Code sections 3503 and 3513, unless a qualified CDFW biologist determines that smaller buffers shall be sufficient to minimize impacts to nesting birds. Factors to be considered for determining buffer size shall include: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. Buffers shall be maintained until a qualified biologist has determined that young have fledged and are no longer reliant upon the nest or parental care for survival. • Prior to commencing a crossing(s) of the San Joaquin River the Project Partners shall conduct surveys for LBV in accordance with USFWS' Least Bell's Vireo Survey Guidelines (USFWS 2011a). If LBV are detected during the surveys, the Project Partners shall consult with the USFWS to determine appropriate avoidance measures. The performance standard for avoidance shall be no potential impacts to an established LBV nest. This shall be accomplished by establishing a no-disturbance buffer around the active nest. The no-disturbance buffer shall be a minimum of 500 feet, but may be larger depending on site specific conditions and consultation with USFWS.	City of Modesto	City of Modesto CDFW USFWS	1. Confirm that requirements for nesting bird protection are included in the contract documents. 2. Verify completion of pre-construction surveys of habitat and trees to be removed. 3. Verify buffers are established if nesting birds are found during surveys. 4. Monitor construction activities to verify that measures are implemented as needed during construction. 5. Verify completion of LBV surveys. 6. Verify consultation with USFWS, if LBV are found during surveys 7. Verify avoidance measures approved by USFWS are implemented. Document compliance and retain in the project file.	1. Design 2. Pre-construction 3. Pre-construction 4. Construction 5. Pre-construction 6. Pre-construction 7. Pre-construction	1._____ 2._____ 3._____ 4._____ 5. _____ 6. _____ 7. _____
BIO-14: Effects on special-status mammals	**BIO-14a: Avoid and Minimize Impacts to San Joaquin kit fox**: • Project-related activities will avoid affecting the alkali scrub/flat habitat in the action area. Avoidance is defined as no direct or indirect effects to habitat. • A qualified biologist will conduct preconstruction surveys no less than 14 days and no more than 30 days before the commencement of activities to identify potential dens more than 5 inches in diameter within 200 feet of ground disturbing activities. The Project Partners will implement USFWS' (2011b) Standardized Recommendations for Protection of San Joaquin Kit Fox Prior to or During Ground Disturbance. The Project Partners will notify USFWS in writing of the results of the preconstruction survey within 30 days after these activities are completed. • If potential dens are located within the proposed work area and cannot be avoided during construction activities, a USFWS-approved biologist will determine if the dens are occupied. If occupied dens are present within the proposed work, their disturbance will be avoided. Exclusion zones will be implemented following the most current USFWS procedures (currently USFWS 2011b). The Project Partners will notify USFWS immediately if a natal or pupping den is found in the survey area, and will present the results of pre-activity den searches within 5 days after these activities are completed and before the start of construction activities in the area.	City of Modesto	City of Modesto USFWS	1. Confirm that requirements for habitat avoidance and kit fox protection are included in the contract documents. 2. Verify completion of pre-construction surveys of kit fox habitat. 3. Verify notification of USFWS. 4. Verify completion of occupancy surveys 5. Verify establishment of exclusions zones if kit fox dens are found. 6. Verify consultation with USFWS, if natal or pupping den is found Document compliance and retain in the project file.	1. Design 2. 14 to 30 days Pre-construction 3. Within 30 days of completion of surveys 4. Pre-construction 5. Pre-construction 6. Within 5 days of completion of surveys	1._____ 2._____ 3._____ 4._____ 5. _____ 6. _____

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BIO-15: Effects on riparian habitat and other sensitive natural communities BIO-16: Effects on federally protected wetlands BIO-18: Conflict with local ordinances or policies protecting biological resources	**BIO-16a: Avoid and Minimize Impacts to Federally Protected Wetlands**: To the extent feasible, project-related activities shall avoid federally protected wetlands. To the extent feasible, the proposed project shall minimize potential impacts to federally protected wetlands by utilizing trenchless construction techniques. A SWPPP shall be implemented to reduce the potential for sediments and contaminants to enter wetlands and waters. After construction, surface topography and drainage shall be restored to pre-construction conditions. Where appropriate, revegetation shall be implemented with site-adapted native species.	City of Modesto	City of Modesto, USACE	1. Confirm that facilities are sited to avoid wetlands 2. Confirm that SWPPP addresses protection of wetlands and waters. 3. Confirm restoration of drainages to pre-construction conditions	1. Design 2. Pre-construction 3. Construction	1._____ 2._____ 3._____
BIO-15: Effects on riparian habitat and other sensitive natural communities BIO-16: Effects on federally protected wetlands	**BIO-16b: Obtain Regulatory Permits for Work Activities Taking Place in Wetlands and Waters of the United States and the State**: Work within areas defined as waters of the U.S. that includes placement of fill will require a CWA Section 404 permit and Section 401 Water Quality Certification. All work proposed in jurisdictional waters of the U.S. shall be authorized under these permits, and the work shall comply with the general and regional conditions of the permits. In areas where disturbance to jurisdictional waters or wetlands occurs, the Partner Agencies shall implement mitigation consistent with the terms of a CWA Nationwide Permit and/or the Final Rule on Compensatory Mitigation for Losses of Aquatic Resources (73 C.F.R. 19594). Compensatory mitigation may include creation, re-establishment, or enhancement of wetlands in the Project Area or at an off-site location. Compensatory mitigation may also include purchase of credits at an approved mitigation bank or contribution to an approved in-lieu fee program.	City of Modesto	City of Modesto USACE	1. Confirm permit requirements are included in the contract documents 2. Confirm permit has been obtained. 3. Confirm mitigation required by permit has been implemented.	1. Design 2. Pre-construction 3. Pre-construction	1._____ 2._____ 3._____
BIO-CUM-2: Effects on fish species and their habitats	**BIOCUM-1: Assistance with Salmonid Recovery Plan Actions**: The NVRRWP Project Partners would work with Reclamation and with resource agencies, including NMFS, USFWS, and CDFW to assist in implementation the following recovery actions from the Recovery Plan for Central Valley Chinook Salmon and Steelhead. • Implement projects that improve wastewater treatment in the San Joaquin River watershed. The NVRRWP as designed would reduce the input of nutrients and salinity to the San Joaquin River, and as such the proposed project already addresses this recovery action. • Develop and implement a spawning gravel augmentation plan in the San Joaquin River. The NVRRWP Project Partners would make a cash contribution to an existing restoration program or organization working to augment spawning gravels. The funding could assist in programs being implemented as part of Reclamation's San Joaquin River Restoration Program, the USFWS Anadromous Fish Restoration Program, or other relevant restoration program.	City of Modesto	City of Modesto USFWS NMFS CDFW	1. Confirm funding has been provided to recovery program.	1. Pre-construction	1._____
Cultural Resources						
CUL-1: Substantial adverse change in the significance of a unique archaeological resource or disturb any human remains, including those interred outside of formal cemeteries. CUL-2: Cause a substantial adverse change in the significance of a historical resource	**CUL-1a: Discovery of previously unknown archaeological resources during construction**: The following measures shall be implemented in the event of unexpected discovery of archaeological resources: • The project proponent shall note on any construction plans that require ground disturbing excavation that there is a potential for exposing buried cultural resources. • The Partner Agencies shall retain a Professional Archaeologist to provide a pre-construction briefing to supervisory personnel of any excavation contractor to alert them to the possibility of exposing significant prehistoric archaeological resources within the study area. The briefing shall discuss any archaeological objects that could be exposed, the need to stop excavation at the discovery, and the procedures to follow regarding discovery protection and notification of the project proponent and archaeological team. • The project proponent shall retain a Professional Archaeologist on an "on-call" basis during ground disturbing construction for the project to review, identify and evaluate cultural resources that may be inadvertently exposed during construction. The archaeologist shall review and evaluate any discoveries to determine if they are historical resource(s) and/or unique archaeological resources under CEQA. • If cultural resources are encountered during the project, construction personnel shall avoid altering these materials and their context until a Professional Archaeologist has evaluated the situation. Project personnel	City of Modesto	City of Modesto Reclamation	1. Confirm that the contract documents include measures requiring appropriate handling of inadvertent discoveries 2. Confirm that construction personnel have attended training. Retain sign-in sheet in project file 3. Confirm that on-call archaeologist has been retained. 4. If cultural resources are discovered, confirm that construction is halted and appropriate measures are taken.	1. Design 2. Pre-construction 3. Pre-construction 4. Construction	1._____ 2._____ 3._____ 4._____

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	shall not collect or retain cultural resources. Prehistoric resources include, but are not limited to, chert or obsidian flakes, projectile points, mortars, and pestles; and dark, friable soil containing shell and bone, dietary debris, heat-affected rock, or human burials. Historical resources include stone or adobe foundations or walls, structures and remains with square nails, and refuse deposits, often in old wells and privies. • If the Professional Archaeologist determines that any cultural resources exposed during construction constitute a historical resource and/or unique archaeological resource, he/she shall notify the Partner Agencies and other appropriate parties of the evaluation and recommended measures to mitigate effects to a less-than significant impact. Mitigation measures may include avoidance, preservation in-place, recordation, additional archaeological testing and data recovery, among other options. Treatment of any significant cultural resources shall be undertaken with the approval of the U.S. Bureau of Reclamation and other lead agencies. • Any identified cultural resources shall be recorded on forms DPR 422 (archaeological sites) and/or DPR 523 (historic properties) or similar forms by a Professional Archaeologist.					
CUL-1: Substantial adverse change in the significance of a unique archaeological resource or disturb any human remains, including those interred outside of formal cemeteries.	**CUL-1b: Discovery of human burials during construction**: The treatment of human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity within the project shall comply with applicable State laws. This shall include immediate notification of the Stanislaus County Coroner (Stanislaus County Sherriff's Office). In the event of the coroner's determination that the human remains are Native American, notification of the Native American Heritage Commission (NAHC) is required. The NAHC shall be notified by phone within 24 hours of the discovery and shall be afforded the opportunity to appoint a Most Likely Descendant (MLD) (PRC Section 5097.98). The archaeological consultant, project sponsor, and MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. California Public Resources Code allows 48 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the reburial method, the project will follow PRC Section 5097.98(b) which states that "the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."	City of Modesto	City of Modesto County Coroner NAHC	1. Confirm appropriate notifications have occurred if human burials are encountered. 2. Confirm human remains have been accorded appropriate treatment	1. Construction 2. Construction.	1._____ 2._____
CUL-3: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature	**CUL-3: Discovery of paleontological resources during construction**: If paleontological resources are discovered during earthmoving activities, the construction crew would immediately cease work near the find. In accordance with Society of Vertebrate Paleontology guidelines (Society of Vertebrate Paleontology 2010), a qualified paleontologist would assess the nature and importance of the find and recommend appropriate salvage, treatment, and future monitoring and mitigation.	City of Modesto	City of Modesto	1. If resources are found confirm work is stopped and appropriate measures are taken.	1. Construction .	1._____
Geology, Soils, and Seismicity						
GEO-1: Facility damage and exposure of people to hazards from strong seismic groundshaking	**GEO-1: Perform Design-Level Geotechnical Evaluations for Seismic Hazards**: During the design phase for the proposed project, perform site-specific, design-level geotechnical evaluations to identify potential secondary ground failure hazards (i.e., seismically-induced settlement) associated with the expected level of seismic ground shaking. A geotechnical memorandum shall be prepared to detail the findings of the evaluations. The geotechnical analysis will provide recommendations to mitigate those hazards in the final design and, if necessary, during construction. The design-level geotechnical evaluations, based on the site conditions, location, and professional opinion of the geotechnical engineer, may include subsurface drilling, soil testing, and analysis of site seismic response to determine appropriate feasible measures to be incorporated into the project design. The performance standard to be used in the geotechnical evaluations will be minimization of the hazards associated with liquefaction and seismic groundshaking. The geotechnical engineer will review the seismic design criteria of facilities to ensure that facilities are designed to withstand the highest expected peak acceleration, set forth by the California Building Code for each site, and ensure that secondary ground failures, such as liquefaction, are minimized. Recommendations resulting from findings of the geotechnical study will be incorporated into the design and construction of proposed facilities.	City of Modesto	City of Modesto	1. Confirm geotechnical evaluations have been completed 2. Confirm that contract documents include recommendations of geotechnical study.	1. Design 2. Design.	1._____ 2._____

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GEO-2: Facility damage and exposure of people to hazards from liquefaction and lateral spreading	**GEO-2: Perform Design-Level Geotechnical Evaluations for Soil Expansion**: During the design phase for all components of the project, a design-level geotechnical evaluation to determine the presence and characteristics of potentially compressible and expansive soils, the engineering properties of the foundation material, and the depth and thickness of soil layers will be completed. The results of the investigations will include measures that would reduce soil expansion to a less-than-significant level. Feasible mitigation measures could include removal and replacement of soil, deep foundations, or deep mixing of compressible or expansive soils with stabilizing agents. All mitigation measures included in the geotechnical evaluation will be incorporated into the project design specifications.	City of Modesto	City of Modesto	1. Confirm geotechnical evaluations have been completed 2. Confirm that contract documents include recommendations of geotechnical study.	1. Design 2. Design.	1._____ 2._____
Hazards and Hazardous Materials						
HAZ-1: Create a Hazard through Reasonably Foreseeable Upset and Accident Conditions Involving Release of Hazardous Materials into the Environment HAZ-3: Conflict with Any Adopted Emergency Response Plan or Emergency Evacuation Plan	**HAZ-1a: Hazardous Materials Management and Spill Prevention Control Plan**: Prior to the start of construction, the construction contractor shall be required to prepare a Hazardous Materials Management Spill Prevention and Control Plan that includes a project-specific contingency plan for hazardous materials and waste operations. The Plan shall be applicable to construction activities, and shall establish policies and procedures according to applicable codes and regulations, including but not limited to the California Building and Fire Codes, and federal and California Occupational Safety and Health Administration (OSHA) regulations. Elements of the Plan shall include, but not be limited to, the following: • A discussion of hazardous materials management, including delineation of hazardous material storage areas, access and egress routes, waterways, emergency assembly areas, and temporary hazardous waste storage areas; • Notification and documentation of procedures; and • Spill control and countermeasures, including employee spill prevention/response training.	City of Modesto	City of Modesto	1. Confirm requirement for Hazardous Materials Management Spill Prevention and Control Plan is included in the contract documents 2. Confirm contractor has prepared Plan 3. Confirm that plan is implemented	1. Design 2. Pre-construction 3. Construction	1._____ 2._____ 3._____
HAZ-2: Expose People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires HAZ-3: Conflict with Any Adopted Emergency Response Plan or Emergency Evacuation Plan	**HAZ-2: Prevention of Fire Hazards**: During construction of the proposed project, the construction contractor shall require staging areas, welding areas, or areas slated for construction be cleared of dried vegetation or other materials that could ignite. Construction equipment that includes a spark arrestor shall be maintained in good working order. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, such as accidental sparks. Other construction equipment shall be kept in good working order and used only within cleared construction zones. During construction of the proposed project, contractors shall require vehicles and crews working at the project site to have access to functional fire extinguishers.	City of Modesto	City of Modesto	1. Confirm requirements for fire prevention are included in the contract documents 2. Confirm that measures are implemented	1. Design 2. Construction	1._____ 2._____
Hydrology and Water Quality						
HYD-1: Violation of Water Quality Standards and/or Waste Discharge Requirements (Due to Construction Activities)	**HYD-1a: Comply with the Construction General Permit**: To minimize the impacts to water quality from construction activities, the proposed project shall implement measures contained in the Construction General Permit including the development of a SWPPP.	City of Modesto	City of Modesto	1. Confirm requirement for SWPPP is included in the contract documents 2. Confirm preparation of SWPPP	1. Design 2. Pre-construction	1._____ 2._____

Impact Statement	Mitigation Measure (Exact Text)	Party Responsible for Implementation and Reporting	Review and Approval by:	Monitoring and Reporting Actions	Implementation Schedule -Design -Pre-construction -Construction -Operation	Verification: Status/ Date Completed/ Initials
HYD-1: Violation of Water Quality Standards and/or Waste Discharge Requirements (Due to Construction Activities)	**HYD-1b: Implement BMPs to Control Erosion and Sediment During Construction**: The SWPPP shall specify that all construction activities shall implement multiple BMPs to provide effective erosion and sediment control. These BMPs shall be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable. BMPs to be implemented as part of this mitigation measure shall include, but are not limited to, the following measures: • Temporary erosion control measures, such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover, shall be employed for disturbed areas; • Dirt and debris shall be swept from paved streets in the construction zone on a regular basis, particularly before predicted rainfall events; • Grass or other vegetative cover will be re-established on unpaved areas of the construction site as soon as possible after disturbance. In paved areas, any removed paving will be replaced as soon as possible; and • Soil stockpiling sites will be located such that they do not drain directly into the San Joaquin River or irrigation canals. Multiple BMPs used in combination, properly installed and maintained, can achieve significant sediment removal. BMPs proposed by the project contractor shall be subject to approval by the project proponent, and the project proponent shall require that all parties performing construction under the proposed project incorporate into contract specifications the requirement that the contractor(s) comply with and implement these provisions. The contractor shall also include provisions for monitoring during and after construction activities to verify that these standards are met.	City of Modesto	City of Modesto	1. Review and approve SWPPP 2. Confirm implementation of BMPs	1. Pre-construction 2. Construction	1._____ 2._____
HYD-1: Violation of Water Quality Standards and/or Waste Discharge Requirements (Due to Construction Activities)	**HYD-1c: Comply with the General Order for Dewatering or Other Appropriate NPDES Permit**: To minimize the impacts to water quality from dewatering activities, the proposed project shall implement measures contained in the General Order for Dewatering or other appropriate NPDES permit or Waste Discharge Requirement.	City of Modesto	City of Modesto	1. Confirm requirement for permit is included in the contract documents 2. Confirm permit obtained	1. Design 2. Pre-construction	1._____ 2._____
Noise						
NOI-1: Temporary Construction-Related Noise Increases	**NOISE-1: Noise Reduction Measures**: To reduce the impact of noise from construction activities the following measures shall be implemented to the extent feasible: • Construction activities shall be limited to the hours of 7:00 am to 7:00 pm, Monday to Friday. • Construction staging areas shall be as far as possible from existing residences. • Construction equipment noise shall be minimized during project construction by muffling and shielding intakes and exhaust on construction equipment per the manufacturers' specifications and by shrouding or shielding impact tools. All equipment shall have sound-control devices no less effective than those provided by the manufacturer. • All stationary noise generating construction equipment shall be placed as far away as possible from sensitive receptors on in an orientation minimizing noise impacts (e.g. behind barriers or storage piles).	City of Modesto	City of Modesto	1. Confirm noise reduction measures are included in the contract documents 2. Confirm measures are implemented during construction	1. Design 2. Construction	1._____ 2._____
Public Services and Utilities						
PUB-4: Temporary disruption of utilities or services due to construction-related activities	**PUB-4: Coordinate Relocation and Interruptions of Service with Utility Providers during Construction**: The construction contractor shall be required to verify the nature and location of underground utilities before the start of any construction that would require excavation. The contractor shall be required to notify and coordinate with public and private utility providers at least 48 hours before the commencement of work adjacent to any utility. The contractor shall be required to notify the service provider in advance of service interruptions to allow the service provider sufficient time to notify customers. The contractor shall be required to coordinate timing of interruptions with the service providers to minimize the frequency and duration of interruptions.	City of Modesto	City of Modesto	1. Confirm noise utility measures are included in the contract documents 2. Confirm utilities are located 3. Confirm contractor coordination with utility providers.	1. Design 2. Pre-construction 3. Construction	1._____ 2._____ 3._____

Impact Statement	Mitigation Measure (Exact Text)	Party Responsible for Implementation and Reporting	Review and Approval by:	Monitoring and Reporting Actions	Implementation Schedule -Design -Pre-construction -Construction -Operation	Verification: Status/ Date Completed/ Initials
Transportation						
TR-1: Temporary Lane and Road Closures and Potential for LOS Degradation TR-2: Potential Impacts on Public Transit, Bicycle, and Pedestrian Uses of Affected Roadways TR-3: Interference with Emergency Access and Circulation TR-4: Impacts to Traffic and Circulation from Trip Generation TR-5: Damage to Driveways from Open Trench Excavation	**TR-1: Implement a Construction Management Plan to Minimize Interference with Traffic and Emergency Response Hazards**: The Partner Agencies (DPWD, the City of Modesto, and the City of Turlock) or the construction contractor, in consultation with the County, will prepare and implement a Traffic Management Plan (TMP). The Partner Agencies will be responsible for ensuring that the plan is adequately developed and implemented. The Partner Agencies will provide the TMP to the Stanislaus County Department of Public Works and Caltrans. The TMP will include recommended traffic-control and traffic-reduction measures as identified in the Transportation Management Plan Guidelines issued by the Division of Traffic Operations Office of System Management Operations (Caltrans 2009). The Partner Agencies will require all traffic-control or traffic-reduction measures described in the TMP to be implemented. In addition, to the extent feasible, construction-related traffic and any temporary road closures shall be scheduled during non-peak traffic periods. The measures included in the TMP shall be consistent with any applicable guidelines outlined in the Standard Specifications for Public Works Construction, the U.S. Department of Transportation's Manual on Uniform Traffic Control Devices, and the Work Area Traffic Control Handbook. The plan will include the following items: • Definition of location and timing of any temporary lane or roadway closures; • Identification and provision for circumstances requiring the use of temporary traffic control measures, such as flag persons, warning signs, lights, barricades, and cones to provide safe work areas in the vicinity of the project site or along the haul routes, including for narrow roadway segments, and to warn, control, protect, and expedite vehicular, bicycle, and pedestrian traffic and access by emergency responders; • Implementation of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak-hour traffic, placement of detour signs (if required), lane closure procedures (if required), flaggers (if required), placement of cones for drivers, and designated construction access routes and access points; • Notification to adjacent property owners, transit agencies and public safety personnel regarding when major deliveries, detours, and lane closures will occur; • Measures to address the potential for construction-related traffic to impede emergency response vehicles and a specific training and information program for construction workers to ensure awareness of emergency procedures for project-related accidents; • Identification of haul routes for movement of construction vehicles that will minimize impacts on vehicular and pedestrian traffic and circulation and safety, and provision for monitoring surface streets used for haul routes so that any damage and debris attributable to the haul trucks can be identified and corrected by the Partner Agencies in coordination with the construction contractor; • Consideration of other projects in the vicinity that could also affect the same roadways as the project; • Development of a process for responding to and tracking complaints pertaining to construction activity, including identification of an onsite complaint manager; and • Documentation of road pavement conditions for all routes that would be used by construction vehicles both before and after project construction. Roads damaged by construction vehicles will be repaired to the level at which they existed before project construction.	City of Modesto	City of Modesto, Stanislaus County Department of Public Works, Caltrans	1. Confirm requirement for TMP is included in the contract documents 2. Review and approve TMP, and confirm submittal to Stanislaus County Department of Public Works and Caltrans 3. Confirm measures are implemented during construction	1. Design 2. Pre-construction 3. Construction	1._____ 2._____ 3._____
TR-5: Damage to Driveways from Open Trench Excavation BIO-17: Effects on movement of fish and wildlife and use of breeding sites	**TR-2: Install Temporary Trench Plates Over Open Trenches**: During construction of the pipeline, temporary trench plates will be installed over open trenches at the end of each work day.	City of Modesto	City of Modesto	1. Confirm requirement for temporary trench plating is included in the contract documents 2. Confirm plating is installed at the end of each work day.	1. Design 2.. Construction	1._____ 2._____

Agency Abbreviations: CDFW=California Department of Fish and Wilidfe, NAHC=Native American Heritage Commission, NMFS=National Marine Fisheries Services, SJCVAPCD=San Joaquin Valley Air Pollution Control District, USFWS=U.S. Fish and Wildlife Services, USACE=U.S. Army Corps of Engineers