5.5 Water Quality

Surface water is used for a wide range of purposes, including wildlife habitat, industrial process water, drinking water, irrigation, flood control, and recreational activities. The quality of these resources refers to the physical, chemical, biological, and aesthetic characteristics of the water body. Water quality can be degraded by contaminants introduced through domestic, industrial, and agricultural practices. Water quality impacts can occur with changes in turbidity, suspended sediment, and temperature, and the introduction of a wide variety of physical and chemical pollutants.

This section describes water quality in the On-Site Alternative and Off-Site Alternative study areas. It then describes potential impacts on water quality resulting from construction and operation of the proposed export terminal.

5.5.1 Regulatory Setting

Laws and regulations relevant to water quality are summarized in Table 5.5-1.

Table 5.5-1. Regulations, Statutes, and Guidelines for Water Quality

Regulation, Statute, Guideline	Description
Federal	
Clean Water Act (33 USC 1251 *et seq*.)	Authorizes EPA to establish the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.
Safe Drinking Water Act (42 USC 300f *et seq*.)	Requires the protection of groundwater and groundwater sources used for drinking water. Also, requires every state to develop a wellhead protection program. EPA is the responsible agency.
National Pollutant Discharge Elimination System Permit (40 CFR 122)	Controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. Authorized by the Clean Water Act. EPA is the responsible agency but typically delegates authority to state resource agencies.
National Pollutant Discharge Elimination System Vessels Program	Regulates incidental discharges from the normal operation of vessels. These incidental discharges include, but are not limited to, ballast water, bilge water, graywater (e.g., water from sinks, showers), and antifoulant paints (and their leachate). Such discharges, if not adequately controlled, may result in negative environmental impacts via the addition of traditional pollutants or, in some cases, by contributing to the spread of aquatic invasive species. Authorized by the Clean Water Act. EPA is the responsible agency.
Washington State	
Clean Water Act Section 401 Water Quality Certification	Section 401 (water quality certification) requires water quality certification from the state for activities requiring a federal permit or license to discharge pollutants into a water of the United States. Certification attests the state has reasonable assurance the proposed activity will meet state water quality standards.

Regulation, Statute, Guideline	Description
Drinking Water/Source Water Protection (RCW 43.20.050)	Ensures safe and reliable public drinking water supplies in cooperation with local health departments and water purveyors. Ecology is the responsible agency.
Model Toxics Control Act (RCW 70.105D)	Requires potentially liable persons to assume responsibility for cleaning up contaminated sites. Ecology is the responsible agency.
State Water Pollution Control Law (RCW 90.48)	Provides Ecology with the jurisdiction to control and prevent the pollution of streams, lakes, rivers, ponds, inland water, salt waters, watercourses, and other surface and groundwater in the state.
Water Resources Act of 1971 (RCW 90.54)	Sets forth fundamental policies for the state to ensure that waters of the state are protected and fully used for the greatest benefit. Ecology is the responsible agency.
Water Quality Standard for Surface Waters of the State of Washington (WAC 173-201A)	Establishes water quality standards for surface waters of the state of Washington. Ecology is the responsible agency.
Ballast Water Management (RCW 77-120)	Governs discharge of ballast water into waters of the state. Includes reporting and testing requirements. WDFW is the responsible agency.
Washington Administrative Code (WAC 173-340-300)	Requires reporting of hazardous substance releases if they may constitute a threat to human health or the environment.
Washington Administrative Code (WAC 173-204)	Establishes administrative procedural requirements and criteria to identify, screen, evaluate and prioritize, and clean up contaminated surface sediment sites.
Washington State Oil and Hazardous Substance Spill Prevention and Response (90.56 RCW)	Requires notification of releases of hazardous substances and establishes procedures for response and cleanup
Oregon State	
Treatment Requirements and Performance Standards for Surface Water, Groundwater Under Direct Influence of Surface Water, and Groundwater (OAR 333-061-0032)	Establishes water quality standards for groundwater to meet current state and federal safe drinking water standards. Oregon DEQ is the responsible agency.
Oregon Drinking Water Quality Act (ORS 448.119 to 448.285; 454.235; and 454.255) (applicable to Columbia River)	Ensures safe and reliable public drinking water supplies in cooperation with local health departments and water purveyors. Oregon DEQ is the responsible agency.
Water Quality Standards: Beneficial Uses, Policies, And Criteria for Oregon Oregon State Legislature: Turbidity Rule (OAR 340-041-0036)	Establishes the following turbidity standard: No more than a 10% cumulative increase in natural stream turbidities may be allowed, as measured relative to a control point immediately upstream of the turbidity-causing activity. However, limited-duration activities to address an emergency, essential dredging, construction, or other legitimate activities that cause the standard to be exceeded may be authorized, provided all practicable turbidity control techniques have been applied. Oregon DEQ is the responsible agency.

Regulation, Statute, Guideline	Description
Local	
Cowlitz County Stormwater Ordinance (CCC 16.22)	Establishes minimum standards to guide and advise all who make use of, contribute to, or alter the surface waters and stormwater drainage systems in the County.
Cowlitz County Critical Areas Ordinance (CCC 19.15)	Requires the County to designate critical areas such as wetlands; aquifer recharge areas; geologically hazardous areas; fish and wildlife habitat; and frequently flooded areas; and adopt development regulations to assure the protection of such areas.
Cowlitz County Phase II Municipal Stormwater Management Plan	Requires Cowlitz County to develop a SWMP and update it at least annually. The SWMP incorporates best management practices to reduce the discharge of pollutants from the regulated area to the maximum extent practicable in order to protect water quality.
City of Longview Stormwater Ordinance (LMC 17.80)	Establishes methods for controlling the introduction of runoff and pollutants into the municipal storm drain system (MS4) in order to comply with requirements of the Western Washington Phase II Municipal Stormwater NPDES Construction Stormwater General Permit process.

Notes:
USC = United States Code; CFR = Code of Federal Regulations; EPA = U.S. Environmental Protection Agency; RCW = Revised Code of Washington; Ecology = Washington State Department of Ecology; WAC = Washington Administrative Code; WDFW = Washington Department of Fish and Wildlife; OAR = Oregon Administrative Rules; Oregon DEQ = Oregon Department of Environmental Quality; ORS = Oregon Revised Statutes; CCC = Cowlitz County Code; SWMP = stormwater management plan; LMC = Longview Municipal Code

5.5.2 Study Area

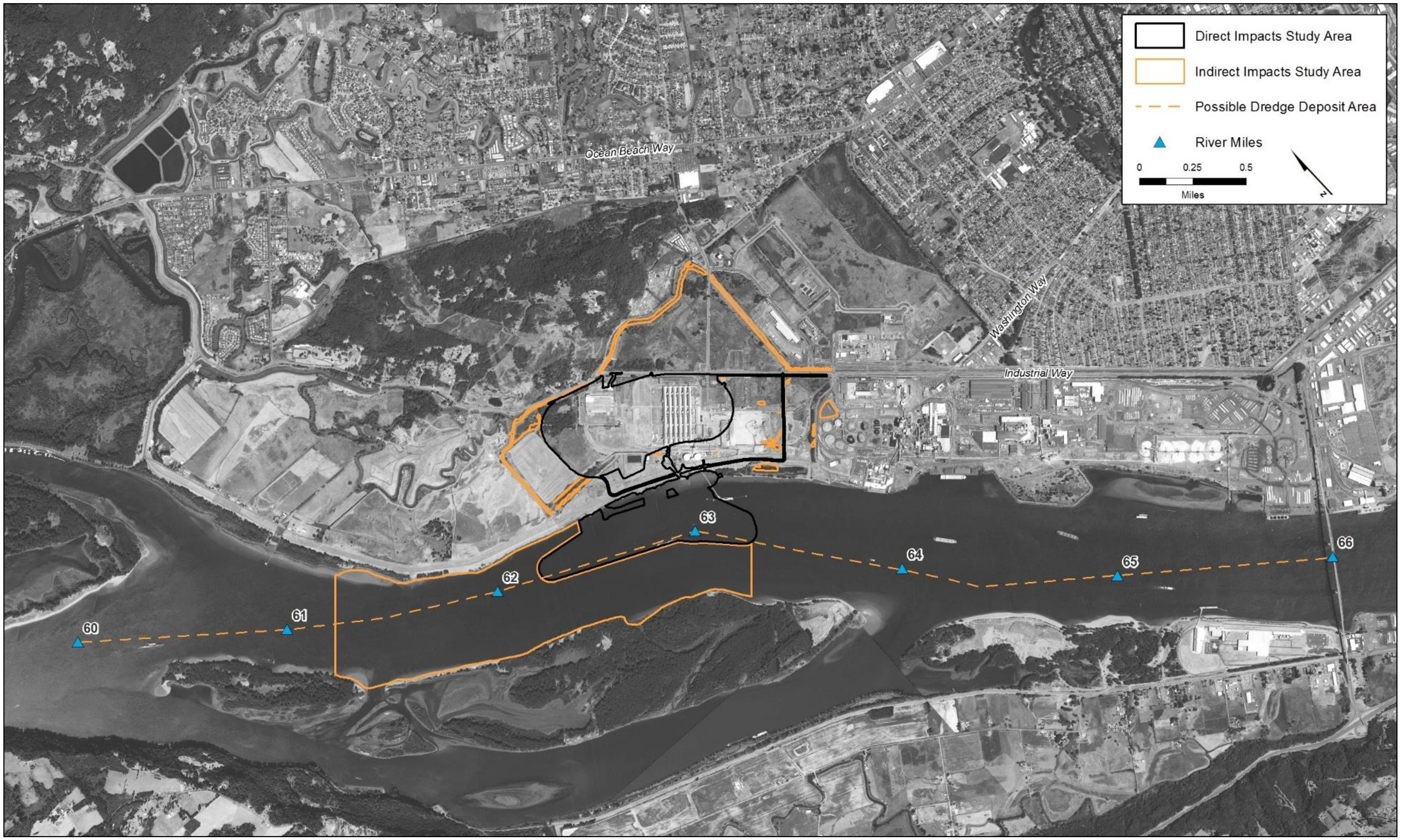
The study areas for the On-Site Alternative and Off-Site Alternative are described below. These study areas are based on the Corps' Memorandum for Record (MFR) dated February 14, 2014, and then adjusted to reflect water quality in and near the project areas.

5.5.2.1 On-Site Alternative

The study area for direct impacts on water quality is the project area and an area extending 300 feet from the project area into the Columbia River. This portion of the study area accommodates the analysis of in-water construction and dredging impacts on water quality associated with suspended sediment and elevated turbidity. The study area also incorporates potential in-river dredged material disposal sites and an area extending 300 feet downstream of each disposal site (Figure 5.5-1).

The study area for indirect impacts on water quality incorporates the project area, the Consolidated Diking Improvement District (CDID) #1 drainage ditches adjacent to the project area, the Columbia River up to 1 mile downstream of the project area, and potential in-river dredged material disposal sites plus an area extending 300 feet downstream of each disposal site.

Figure 5.5-1. Water Quality Study Area—On-Site Alternative



5.5.2.2 Off-Site Alternative

The Off-Site Alternative study area for direct impacts on water quality is the project area and the mixing zone in the Columbia River within 300 feet of the project area, as well as the dredge disposal sites, as described for the On-Site Alternative (Figure 5.5-2).

For indirect impacts, the study area includes the project area, CDID #1 drainage ditches adjacent to the project area, the Columbia River up to 1 mile downstream of the project area, and potential in-river dredged material disposal sites plus and area extending 300 feet downstream of each disposal site. This study area includes Mount Solo Slough due to its proximity to the Off-Site Alternative project area.

5.5.3 Methods

This section describes the sources of information and methods used to evaluate the potential impacts on water quality associated with the construction and operation of the proposed export terminal.

5.5.3.1 Information Sources

The following sources of information were used to identify and analyze potential impacts of the proposed export terminal on water quality.

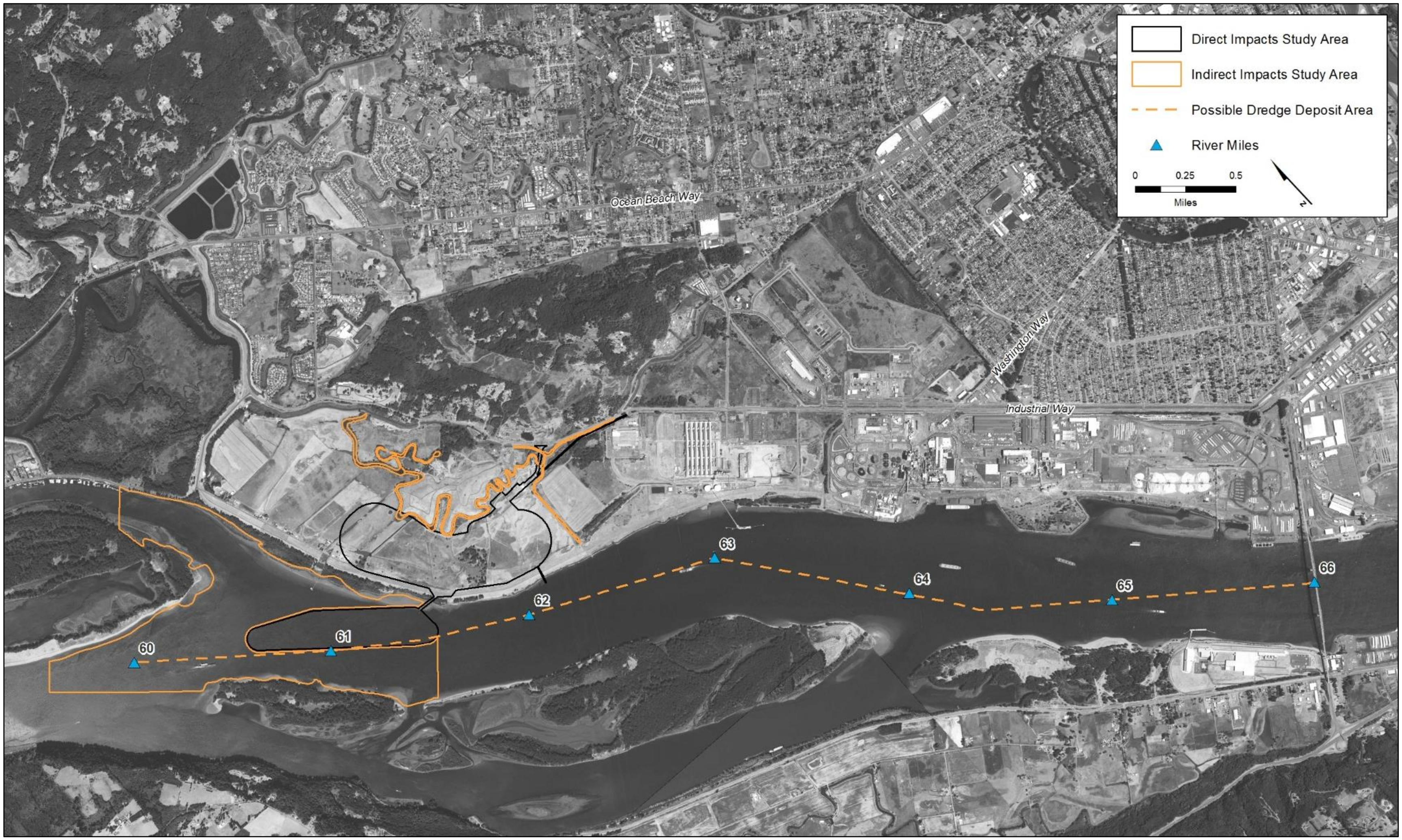
- Reports on baseline water conditions at the project area and Columbia River (Anchor QEA 2011; Oregon Department of Environmental Quality 2012; Washington State Department of Ecology 2014; Grette 2014a, 2014b, 2014c; URS Corporation 2014)
- Reports on the salmon populations in the Columbia River (Ewing 1999; National Marine Fisheries Service 2011)
- Report on toxics in the Columbia River (U.S. Environmental Protection Agency 2009)
- Reports on beneficial and recreational uses of the Columbia River (Oregon Department of Environmental Quality 2003; Oregon State Marine Board 2012)

5.5.3.2 Impact Analysis

The following methods were used to evaluate the potential impacts of the proposed export terminal on water quality.

The analysis of direct construction impacts was based on a peak construction period, while operations impacts were based on the terminal’s nominal maximum throughput capacity (up to 44 million metric tons of coal per year). Potential water quality impacts were evaluated with respect to existing water quality conditions and project-related water usage and discharge. The assessment of impacts also assumes the terminal would comply with all applicable laws and regulations regarding water quality. For direct impacts, the analysis assumes best management practices were incorporated into the design, construction, and operations of the terminal. More information about best management practices can be found in Chapter 8, *Minimization and Mitigation*, and Appendix H, *Export Terminal Design Features*.

Figure 5.5-2. Water Quality Study Area—Off-Site Alternative



5.5.4 Affected Environment

This section describes the affected environment in the study areas related to water quality that could be affected by construction and operation of the proposed export terminal.

5.5.4.1 On-Site Alternative

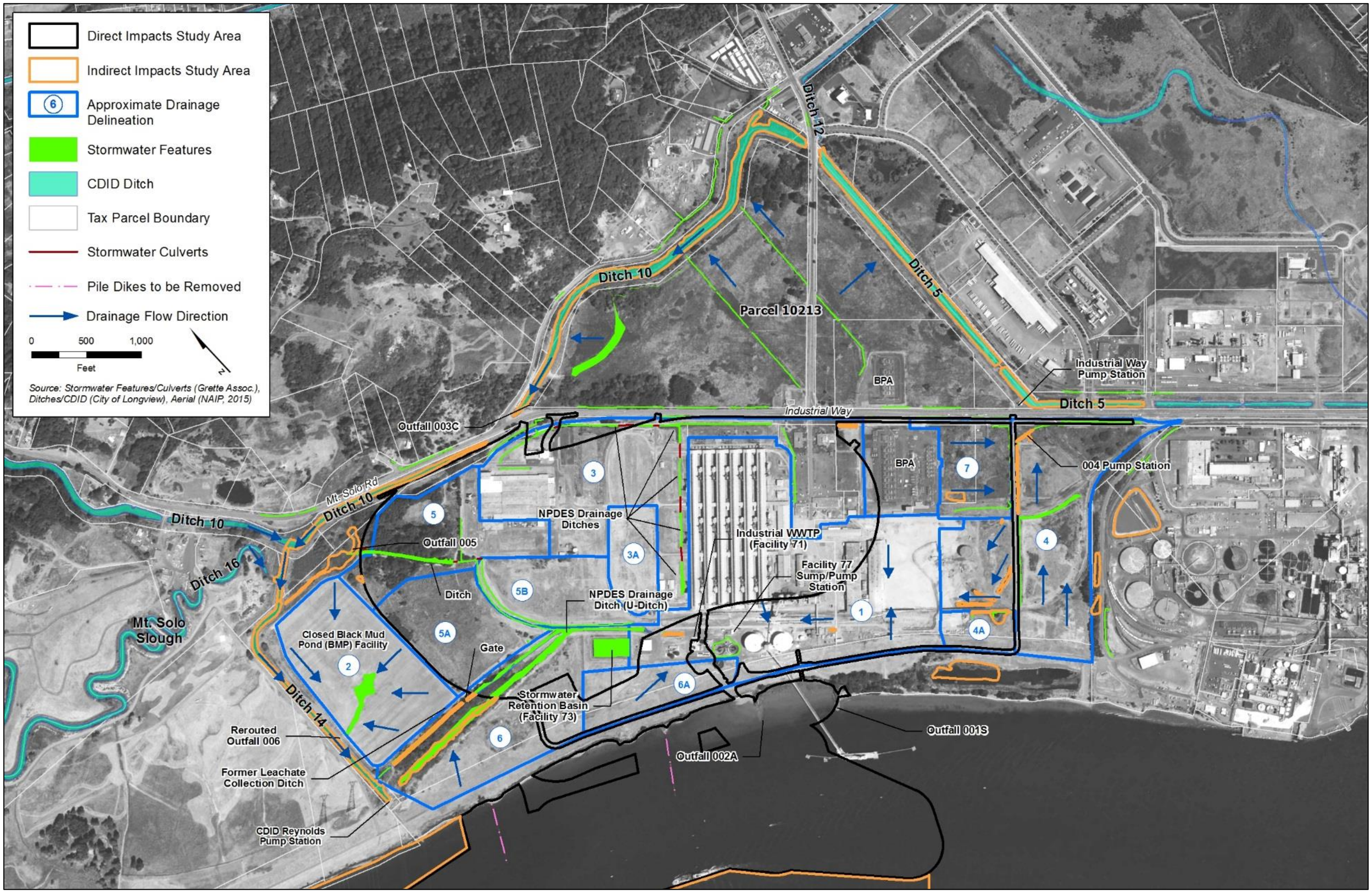
Project Area Characteristics

Drainage

Stormwater and shallow groundwater drainage for the project area are controlled by a system of ditches, pump stations, treatment facilities, and outfalls, shown in Figure 5.5-3. All of these facilities operate under a single NPDES permit. Project area drainage is either held on site until it evaporates, discharged to surrounding CDID #1 ditches (Ditches 10 and 14), or treated and discharged through Outfall 002A to the Columbia River. The following is a brief description of drainage components in the Applicant's leased area.

- **Sheet flow and infiltration.** Subbasins 4A, 5, 5A, 5B, 6A, and 7 receive sheet flow from storm events where it subsequently infiltrates or evaporates.
- **Columbia River discharge.** Subbasins 1, 2, 3A, 4, and 6 are conveyed via pumped systems or gravity to Facility 73, where they are treated and then discharged to the Columbia River via Outfall 002A.
- **CDID #1 discharge.** Subbasin 3 flows through a vegetated ditch that discharges to Ditch 10 through Outfall 003C. During larger storm events, a portion of the flows from Subbasin 2 and Subbasin 5 can discharge to the CDID #1 ditch system. Subbasin 2 overflows the rerouted 006 pump station and is discharged to Ditch14 through Outfall 006. This is a designed overflow system and it is equipped with a high flow alarm to alert staff when it is activated. Subbasin 5 flows can enter a vegetated ditch that discharges to Ditch 10 through Outfall 005. Ultimately, all CDID #1 ditch flows discharge to the Columbia River.
- **Drainage features on Parcel 10213**. These features include three vegetated ditches, two unvegetated ditches, and a shallow stormwater pond. Two of the vegetated ditches run north-south across the two larger portions of Parcel 10213. They are narrow and linear and convey stormwater to a culvert approximately 16 inches in diameter located at the north end of these ditches which then empties into Ditch 10. The third vegetated ditch consists of three segments of linear vegetated ditches adjacent to Industrial Way. These three ditches are connected by two culverts beneath the site's access roads. This feature likely collects stormwater from Industrial Way and adjacent areas and conveys it to Ditch 10.
- One unvegetated ditch runs parallel to Ditch 10 and consists of two sections of a narrow ditch likely constructed to intercept shallow groundwater that was affecting agricultural use of the site. This unvegetated ditch is several feet deep, near vertical along its sides, and is bisected by one of the vegetated ditches that runs parallel across the site; however, there is no surface hydrology connection between these two ditches. The other unvegetated ditch serves as the outlet channel for the stormwater pond. This ditch is located at the northeast end of the stormwater pond and conveys excess stormwater from the pond to Ditch 10 through a 16-inch culvert. All six features are privately owned and are not managed by CDID #1.

Figure 5.5-3. Drainage Features of the On-Site Alternative



Consolidated Diking Improvement District # 1

The project area is served by the CDID #1 system of levees and ditches, which protect the project area from flooding. Water from Ditches 5, 10 and 14 in the study area was tested in 2006, 2011, and 2012 to determine levels of cyanide and fluoride (contaminants associated with the site cleanup). Total suspended solids were also tested. The results showed that water quality standards were met and that there were no exceedances or violations of established Washington State water quality standards (Anchor QEA 2011). The entire CDID #1 ditch system discharges to the Columbia River.

Columbia River

The Columbia River flows along the southwest project area boundary. Near the project area, the river is fresh water but tidally influenced. The project area is located at river mile 63. The river's discharge rate fluctuates with precipitation, snowmelt, and reservoir releases. Flows in the river range from a low of about 63,600 cubic feet per second (cfs) to a maximum flow of about 864,000 cfs depending on conditions in the watershed (U.S. Geological Survey 2014). The Columbia River's annual cycle is driven by snowmelt and general climate of the Pacific Northwest, which produces high flows during the spring snowmelt period and low flows during the late summer and early fall. The river's flow, however, is highly managed through the operations of the many hydroelectric and irrigation dams throughout the basin. The average annual discharge ranges from about 120,000 cfs during a low water year to about 260,000 cfs during a high water year (Washington State Department of Ecology 2016a).

Water Quality Characteristics and Criteria

Designated Beneficial Uses

Designated beneficial uses for a water body, as established in the Clean Water Act, are used to design protective water quality criteria, to assess the general health of surface waters, and to establish thresholds for future permit limits. Table 5.5-2 provides a list of the beneficial uses for the Columbia River as defined by the Washington State Department of Ecology (Ecology) and the Oregon Department of Environmental Quality (Oregon DEQ). A designated beneficial use provides a waterbody's assessed function or utility, and if a waterbody fails to meet the established water quality standards (see *Water Quality Impairments* below), the waterbody's designated use can be adversely affected.

Water Quality Impairments

The Columbia River faces water quality issues that endanger the health of important habitats found throughout the basin. Portions of the Columbia River are considered impaired for a number of water quality factors according to the EPA-approved 303(d) lists for Washington and Oregon. Table 5.5-3 shows the 303(d) listed impairments for water quality factors in the study area. The State of Washington recently finalized the state's 2012 water quality assessment and 303(d) list of impaired waters. According to this 303(d) list, in the study area the Washington State portion of the Columbia River is impaired (i.e., Category 5) for water temperature and bacteria (Washington State Department of Ecology 2016a). In addition, Ditch 5 in the study area is impaired by bacteria. Oregon has listed the Columbia River in the study area as impaired for arsenic, DDE 4,4, and PCB. Arsenic, fecal coliform (indicator bacteria), and dioxin were detected during monitoring of existing outfalls that would drain the project area (Anchor QEA 2014).

Table 5.5-2. Beneficial Uses for the Columbia River

Washington State Department of Ecology[a]	Oregon Department of Environmental Quality[b]
Domestic water supply	Public domestic water supply; private domestic water supply
Industrial water supply	Industrial water supply
Agricultural water supply	Irrigation
Stock water supply	Livestock watering
Spawning/rearing uses for aquatic life	Fish and aquatic life
Harvesting	Fishing; wildlife and hunting
Boating	Boating
Primary contact for recreation uses	Water contact recreation
Commerce/navigation	Commercial navigation and transportation
Aesthetics	Aesthetic quality

Notes:
[a] Washington State Department of Ecology (2012) approved uses for the Columbia River from its mouth to river mile 309.3.
[b] Oregon Department of Environmental Quality (2003) approved uses for the Columbia River from its mouth to river mile 86 (2003).

Table 5.5-3. 303(d) Listed Impairments for Surface Waters in the Study Area

Parameter	Washington		Oregon[c]
	Columbia River	Ditch 5	Columbia River
Arsenic	-	-	5
Bacteria	5[a]	-	-
DDE 4,4	-	-	5
Dioxin (2,3,7,8-TCDD)	-	-	4A[b]
Dioxin	4A[b]	-	-
Dissolved Oxygen	-	5	-
PCB	-	-	5
Temperature	5		
Total dissolved gas	-	-	4A[b]

Notes:
[a] Category 5 waters are impaired 303(d) waters, which means water quality standards have been violated for one or more pollutants and a TMDL or other water quality improvement is required.
[b] Category 4A listing indicates a TMDL has been developed and is actively being implemented.
[c] Oregon 2012 303(d) list is pending approval from EPA. The 2010 effective list for this segment of the Columbia River is the same as the 2014 list that is pending approval by EPA.
Sources: Washington State Department of Ecology 2016b; Oregon Department of Water Quality 2012
DDE = Dichlorodiphenyldichloroethylene; TCDD = Tetrachlorodibenzo-p-dioxin; PCB = polychlorinated biphenyl

Sediment sampling from within, adjacent to, and upstream of the project area (to approximately river mile 68) has demonstrated that in deepwater areas of the Columbia River, sediments are typically composed of silty sands with a low proportion of fines (i.e., silt, mud, or fine sediment) and very low total organic carbon. Further, sediments sampled from deepwater areas in the vicinity of the project area have consistently met suitability requirements for flow lane disposal or beneficial use in the Columbia River (Grette 2014b: Appendix B). Sediment testing performed by the Applicant in the project area has revealed no exceedance of sediment-management standards at any nearshore or offshore location, except for in a localized area immediately adjacent to the existing Outfall 002A. Testing criteria were exceeded at one location downstream of the outfall, but did not exceed criteria for human health protection (Anchor QEA 2014 in Grette 2014b: Appendix B). The distribution of contamination was limited in area and depth to an isolated layer 6 inches thick, and the contamination source was identified as an historical discharge and not the result of an ongoing release (Grette 2014b: Appendix B).

The water quality impairments in the study area result from a variety of practices throughout the Columbia River basin that degrade water quality, primarily human activities. Elevated water temperatures, increased nutrient loading, reduced dissolved oxygen, and increases in toxic contaminants in the watershed pose risks to fish and wildlife, as well as to humans. Sources of these contaminants include agricultural practices, urban and industrial practices, and riparian practices (National Marine Fisheries Service 2011). Additional information on the general baseline conditions for the broader Columbia River basin as well as the lower Columbia River and Estuary can be found in the *NEPA Water Quality Technical Report* (ICF International 2016).

5.5.4.2 Off-Site Alternative

Project Area Characteristics

Drainage

Stormwater and shallow groundwater drainage for the Off-Site Alternative project area is managed by infiltration and evaporation with overflow directed to the CDID #1 ditches via a network of small excavated conveyance ditches and Mount Solo Slough (Figure 5.5-4) (see Section 5.4, *Groundwater,* for further information on groundwater). The conveyance ditches flow toward Mount Solo Slough, which discharges to Ditch 14, where water is eventually pumped to the Columbia River by the CDID #1 system. The stormwater is not managed under an NPDES permit. Surface water features on or adjacent to the project area include the Columbia River, Mount Solo Slough, and Ditches 10, 14, and 16.

Mount Solo Slough

Mount Solo Slough forms the northern boundary of the project area and is near the closed Mount Solo Landfill. It is a highly meandering drainage that connects to Ditch 14 to the east and Ditch 16 to the north, both of which connect to Ditch 10.

Consolidated Diking Improvement District #1

The project area is in CDID #1, same as described for the On-Site Alternative. The study area includes CDID Ditch 14, Ditch 10, and Ditch 16. Ditch 14 crosses a short section of the eastern portion of the project area (for the rail access extension), just south of its confluence with Ditch 10. Ditch 16 extends between the northern end of Mount Solo Slough and Ditch 10, which runs along Mt. Solo Road.

Columbia River

The Columbia River characteristics are the same as described for the On-Site Alternative.

Figure 5.5-4. Drainage Features for the Off-Site Alternative

Water Quality Characteristics and Criteria

All water quality impairments for the Columbia River in the study area are the same as described for the On-Site Alternative study area. There are no additional surface waters in the Off-Site Alternative study area listed on Washington's list of 303(d) impaired waters.

5.5.5 Impacts

This section describes the potential direct and indirect impacts related to water quality resulting from construction and operation of the proposed export terminal.

5.5.5.1 On-Site Alternative

This section describes the potential impacts on water quality as a result of construction and operation of the terminal at the On-Site Alternative location.

Construction activities potentially affecting water quality include the following.

- Ground disturbance associated with construction
- Delivering, handling, and storing construction materials and waste
- Using heavy construction equipment
- In- and above-water work and dredging activities and disposal
- Demolishing existing structures
- Preloading ground for coal stockpiles

Operational activities potentially affecting water quality include the following.

- Coal spills from rail and vessel loading and unloading
- Transport of airborne fugitive coal dust from stockpiles or rail cars
- Operating and maintaining heavy equipment and machinery
- Maintenance dredging and disposal
- Operation of 16 trains a day
- Operation of 70 ships a month

Construction—Direct Impacts

Construction projects in Washington State involving clearing, grading, and excavating activities that disturb 1 or more acres and discharge stormwater to surface waters of the state are required to obtain an NPDES Construction Stormwater General Permit from Ecology. Prior to the issuance of permits, sites with known contaminated soils or groundwater are required to provide a list of contaminants with concentrations, depths found and boring locations shown on a map with an overlay of where excavation or construction may occur. Additional alternative best management practices may be necessary based on the contaminants and how contaminated construction stormwater would be treated. The permit requires preparing a Temporary Erosion and Sediment Control Plan (TESC), a Construction Stormwater Pollution Prevention Plan (SWPPP) and best management practices to avoid and minimize the risk of erosion. Guidance for the design and implementation of these best management practices would be sourced from the Ecology *2012 Stormwater Management Manual for Western Washington* (Washington State Department of Ecology 2014) including but not limited to those developed by the Applicant. These measures were considered when evaluating the potential direct impacts associated with construction.

Surface Water

Construction would include ground-disturbing activities that expose soils and generate soil stockpiles. Rain could erode soil and carry it to adjacent waterways (e.g., Columbia River and CDID #1 ditches) and temporarily increase turbidity. However, the potential for erosion during most ground-disturbing activities is considered low because the project area is relatively level and appropriate erosion and sediment control measures would be required by regulatory agencies. Runoff from the project area would be required to meet the terms and conditions of all permits issued for the On-Site Alternative; thus, water quality conditions would be expected to be maintained and construction would not cause a measurable impact on water quality or affect designated beneficial uses.

Contaminants Associated with Equipment and Material Use

Handling construction materials and operating construction equipment have the potential to introduce pollutants such as fuel, oil, hydraulic fluid, grease, paints, solvents, and cleaning agents and could degrade water quality if improperly handled. Construction waste such as metal, welding waste, and uncured concrete can also degrade water quality and be harmful to aquatic organisms (Washington State Department of Ecology 2014).

Development and implementation of a site-specific construction SWPPP, including best management practices for material handling and construction waste management, would reduce the potential for water quality impacts from these sources. Typical SWPPP best management practices that would help prevent releases to surface waters include the following.

- All fuel and chemicals would be stored and handled properly to ensure no opportunity for entry into the water.
- No land-based construction equipment would enter any shoreline body of water except as authorized.
- Equipment would have properly functioning engine closures (i.e., hydraulic, fuel, lubricant reservoirs) according to federal standards; the contractor would inspect fuel hoses, oil or fuel transfer valves, and fittings on a regular basis for drips or leaks to prevent spills into the surface water.
- The contractor would have a spill containment kit on site, including oil-absorbent materials, to be used in the event of a spill or if any oil product is observed in the water.

If a spill were to occur during construction, the amount is likely to be relatively small (typically less than 50 gallons), and response time would be relatively quick. A fuel truck would visit the site as needed. The frequency would vary based on usage and could range from once or twice per day to once or twice per week. The trucks would have a capacity of 3,000 to 4,000 gallons. A spill could have potential impacts on water quality if the spill were to reach surface waters, which could affect aquatic species and habitats (see Sections 5.7, *Fish,* and 5.8, *Wildlife,* for additional information on this potential impact).

Construction activities would involve preloading and installing of vertical wick drains to aid in the consolidation of low consistency silt and low-density sand (i.e., unconsolidated materials). Wick drains would direct groundwater from the shallow aquifer upward toward the surface during preloading, where it would discharge. Water discharged from the wick drains would be captured, tested for contaminants, and treated prior to discharge to any surface waters. Refer to Section 5.4 *Groundwater*, for further information regarding water discharged from wick drains.

Pollutants and Turbidity

Construction of the proposed terminal would require dredging an estimated 500,000 cubic yards of sediment from the river to provide berthing at Docks 2 and 3. The work necessary to construct the approach trestle and Docks 2 and 3 would require in-water work that could resuspend pollutants and sediment and increase turbidity. Dredging would permanently deepen a 48-acre area to a target depth of -43 feet Columbia River Datum (CRD) with a 2-foot overdredge allowance. The deepening would require dredging depths of up to 16 feet (vertically) of sediment. The dredging permit would require testing of the sediment and suitability determination for flow lane disposal.

Dredging and in-water work would result in temporary increases in suspended sediments and turbidity. As described previously in Section 5.5.4, *Affected Environment*, sediments sampled from deepwater areas in the project vicinity have consistently met suitability requirements for flow lane disposal or beneficial use in the Columbia River (Grette 2014c). Thus, sediment in the dredge prism for Docks 2 and 3 would likely be deemed suitable for flow lane disposal or beneficial use in the Columbia River. However, prior to obtaining a permit for dredging, the Applicant would conduct site-specific sediment sampling to characterize the proposed dredge prism and ensure compliance with the dredged materials management plan (Grette 2014c). If flow lane disposal is approved, the disposal area for dredged materials would require approximately 80 to 110 acres. The actual acreage and specific location of the disposal site would be determined by the permitting agencies.

Standard best management practices for working in aquatic areas would be followed to maintain acceptable construction water-quality conditions, including but not limited to maintaining appropriate standards for construction-related turbidity (including during active dredging and flow lane disposal), minimizing the risks of unintended discharges of materials such as fuel or hydraulic fluid, and managing construction debris. In addition, typical construction best management practices for working over, in, and near water would be applied.

Construction of the approach trestle and Docks 2 and 3 would require both in-water and over-water work. In-water work windows would be scheduled to avoid and minimize impacts on various natural resources, most notably federally protected fish species (Section 5.7, *Fish*). In-water construction would primarily involve dredging, pile-driving, and removal of pile dikes and would use barge-based equipment and purpose-built vessels, although some work would likely be supported from land. A total of 610 of the 630 36-inch-diameter steel piles required for the trestle and docks would be placed below the ordinary high water mark, permanently removing an area equivalent to 0.10 acre (4,312 square feet) of river bottom. The construction would also remove 225 feet of the deepest portion of timber pile dikes (Grette Associates 2014a).

Some sediments disturbed during dredging activities would be expected to move down current and monitoring requirements would be identified in the dredge permit. The period of increased turbidity at the project area is anticipated to be relatively brief, as the bed material is primarily silty sands with low proportions of fines and organic material, thus reducing the potential to increase turbidity as compared to silty mud or sediments with high concentrations of organic material.

Release of creosote could occur from the removal of existing creosote-treated timber piles associated with two pile dikes. Creosote is composed of more than 300 chemicals, including polyaromatic hydrocarbons (PAHs), which have been shown to be fatal to marine life (Washington State Department of Natural Resources 2008). Creosote contamination could be exacerbated by removing piles buried in a zone generally depleted of oxygen and water, which leaves the creosote highly volatile when re-exposed to water. Droplets of previously unexposed creosote would be released from the piling into the surrounding sediments.

The removal of creosote-treated piling would result in temporary suspension of sediments and a potential long-term increase in the exposure of creosote in the project area. To minimize this impact, the contractor will follow the following standard best management practices for removal of creosote-treated wooden piles.

- **Pile removal.** If possible, the contractor will use vibratory extraction, the preferred method of pile removal. A creosote release to the environment could occur if equipment (bucket, steel cable, vibratory hammer) pinches the creosoted piling below the water line. Therefore, the contractor would keep the pile extraction equipment out of the water to the extent practicable to remove the piling. Cutting would be necessary if the pile were to break off at or near the riverbed, which means it could not be removed without excavation. Pile cutoff would be an acceptable alternative if vibratory extraction or pulling were not feasible. The piling would be cut 2 feet below the riverbed, and the subsequent hole would be capped/filled with clean sand.
- **Disposal of creosote treated piling, sediment, and construction residue.** The contractor would place the pulled pile in a containment basin to capture any adhering sediment immediately after the pile is removed. Containment basins typically have continuous sidewalls and controls as necessary (e.g., straw bails, oil absorbent boom, plastic sheeting) to contain all removed materials and prevent reentry into the water. The type and location (e.g., barge, land) of the containment basin would be determined when the contractor's work plan is developed. Cut-up piling, sediments, construction residue, and plastic sheeting from the containment basin would be packed into a container and disposed of at a facility in compliance with federal and state regulations.

Above-water work would include installing the pile-supported elements of the dock structures and coal-handling infrastructure and equipment. Some concrete components (such as the dock decking, crane rail supports, and pile caps) would need to be cast in place. Appropriate techniques and best management practices, such as the use of a bib, would minimize the potential for wet or uncured concrete to come in contact with the Columbia River.

Materials handling infrastructure and equipment, such as shiploaders and conveyors, would be delivered by barge and offloaded by crane directly to the docks and trestle. Barges would not offload materials or equipment to any area below the ordinary high water mark of the Columbia River. As much as practicable, infrastructure would be prefabricated so above-water work would consist largely of installation and assembly.

Impacts on water quality from in- and over-water work would be addressed in the Water Quality Monitoring and Protection Plan to be prepared by the Applicant. Impacts on water quality from dredging would be minimized with the preparation and implementation of a dredging plan in compliance with the dredged material management program (DMMP) as required by state agencies (Ecology and Washington State Department of Natural Resources) and federal agencies (the Corps and EPA). Adhering to a plan developed in compliance with DMMP would minimize water-quality impacts, ensuring potential impacts are temporary and localized in nature. No long-term changes in the baseline conditions in the study area would be expected to occur.

Hazardous or Toxic Materials

Demolition of the existing structures (cable plant building, potline buildings, and small ancillary structures) in the project area has the potential to affect water quality by disturbing soil or building parts and debris containing hazardous or toxic materials such as asbestos, lead, and concrete dust, which could cause harm to aquatic environments and organisms. This impact would be minimized by the collection and removal of all concrete and other structural debris and the collection and treatment of all stormwater from the site prior to discharge to surface waters. The implementation of best management practices in compliance with the NPDES Construction Stormwater General Permit would be obtained for the On-Site Alternative, which would reduce the potential for demolition-related pollutants to enter and contaminate surface waters. Overall, the demolition activities associated with the On-Site Alternative would not cause a measurable impact on water quality or biological indicators, or affect designated beneficial uses.

Construction—Indirect Impacts

Construction of the terminal at the On-Site Alternative location would not result in indirect impacts on water quality because construction impacts would be limited to the project area and would not occur later in time or be farther removed in terms of distance than the direct impacts.

Operations—Direct Impacts

Operation of the proposed export terminal at the On-Site Alternative location would result in the following direct impacts.

Contaminants

Stormwater would be managed in accordance with the requirements of a new NPDES Industrial Stormwater Permit obtained for water-management facilities of the proposed export terminal. Contaminants such as oil and grease, coal dust, and other chemicals could accumulate on the ground and surfaces and become constituents of site stormwater. All stormwater runoff would be collected for treatment before reuse or discharge to the Columbia River. Coal particulates would be removed from stormwater by allowing the coal dust to settle out in stormwater ponds. The coal dust would be removed from the stormwater ponds and placed back in the coal stockpile area during regular maintenance of the stormwater ponds. Other solids accumulated in the treatment systems not acceptable for reuse would be periodically collected and disposed of at an appropriate off-site disposal site.

As mentioned in Section 5.5.4, *Affected Environment*, arsenic, fecal coliform (indicator bacteria), and dioxin were detected during monitoring of existing outfalls that would drain the project area (Anchor QEA 2014). These pollutants may continue to be introduced as a result of the On-

Site Alternative, although maximum reported outfall concentrations for these pollutants fall below established water-quality standards. Continued discharges at existing levels would not cause a measureable increase in chemical indicators in the Columbia River and would not cause a measurable impact on water quality or biological indicators or affect designated beneficial uses. Any changes in concentrations of these pollutants that may occur during operations would be addressed under the NPDES Industrial Stormwater Permit to ensure water quality standards continue to be met post discharge to the Columbia River.

Operations—Indirect Impacts

Operation of the proposed export terminal at the On-Site Alternative location would result in the following indirect impacts.

Contaminants from Coal Spills and Coal Dust

Coal and coal dust could enter the Columbia River directly or via the surrounding drainage channels from accidental spills during loading or through airborne transport of coal dust during operations. The extent of average annual coal dust deposition was modeled and mapped (Chapter 6, Section 6.7, *Coal Dust*, Figure 6.7-3). Coal dust is anticipated to deposit a maximum of 1.45 grams per square meter per year (g/m^2/year) adjacent to the proposed export terminal, including Docks 2 and 3 in the Columbia River. This amount of deposition is well below the nuisance level, which is defined as the level of dust deposition that affects the aesthetics, look, or cleanliness of surfaces. Additional information on these deposition levels is provided in Chapter 6, Section 6.7, *Coal Dust*, and the spatial extent of the maximum annual coal dust deposition near the project area is shown in Figure 6.7-3.

At sufficient quantities, coal and coal dust in marine and estuarine environments have similar adverse effects as elevated levels of suspended sediments on water quality (Ahrens and Morrisey 2005). During periods of lower flow, a smaller amount of coal dust could have a greater impact on water quality. Impacts include increased turbidity, which can interfere with photosynthesis and increase water temperatures (Ahrens and Morrisey 2005). Coal and coal dust in the water column can also affect marine organisms through abrasion of tissue and smothering and clogging of respiratory and feeding organs (Ahrens and Morrisey 2005). However, at a maximum deposition rate of 1.45 g/m^2/year adjacent to the project area, and at the minimum flow[1] recorded over the 23-year period of record for 1 day, coal dust deposition directly into the river assumed to be an area of approximately 3 million square meters (1.16 square miles) in the study area would result in a change in suspended sediment concentration of less than 1 part per 10 billion (0.000075 milligrams per liter [mg/L]). This change would not be measureable and is not anticipated to increase turbidity or water temperature, or affect marine organisms.

Coal and coal dust captured in stormwater (e.g., from precipitation that falls on the stockpile areas, water used for dust suppression) would be collected within the stockpile pads (low permeable surfaces allowing minimal infiltration), conveyed within an enclosed stormwater system, and treated at Facility 73 in settling ponds before being discharged from the site. Some settled coal dust from the project area could discharge to the Columbia River through the CDID

[1] The minimum recorded flow at the Columbia at Beavery Army Terminal, Quincy, Oregon, is 65,600 cubic feet per second (1969 to 2014).

#1 system. If coal dust from the project area accumulated without being disturbed throughout the dry season (assumed to be 120 days), the anticipated change in suspended sediment concentration in the Columbia River within the study area for the minimum recorded flow over 1 day would be 0.0192 mg/L). This change would not be measureable and likely would not increase turbidity or water temperature, or affect marine organisms. The proposed export terminal would employ dust suppression systems throughout the terminal, including the tandem rotary dumpers, all conveyors, stockpile pads, surge bins, transfer towers, and trestle. Approximately 4,900 linear feet of the 16,100 linear feet of conveyor belts would be enclosed, as would the shiploaders, to limit the release of coal dust. The dust suppression system would employ sprayers, sprinklers and foggers to capture coal dust. Dust suppression water would be collected and conveyed through the stormwater collection, conveyance and treatment system. Once treated, the water would either be reused or, if not needed, discharged to the Columbia River. All water discharged to the Columbia River would be required to meet specific water quality standards that would be outlined in the NPDES permit, prior to discharge.

Coal contains trace amounts of toxic elements, but coal it is a naturally occurring substance that has not been identified to be toxic or hazardous. Coal has a heterogeneous chemical composition; therefore, specific impacts related to the toxic contaminants of coal are highly dependent on coal composition and source (Ahrens and Morrisey 2005). The majority of coal transloaded at the proposed terminal is expected to be mined in the Powder River Basin, with lesser amounts of coal being sourced from the Uinta Basin in Utah and Colorado. Trace elements of environmental concern (TEEC) in Powder River and Uinta Basin coal include antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, selenium, and uranium. Table 5.5-4 presents the average concentrations of each TEEC sampled in parts per million. However, at a maximum coal dust deposition rate of 1.45 g/m^2/year adjacent to the project area and at the minimum flow recorded over the 23-year period of record for 1 day, TEEC deposition directly into the Columbia River assumed to be an area of approximately 3 million square meters (1.16 square miles) in the study area would result in unmeasurable changes in concentration for each of the elements of concern on the order of 0.0000000000001 to 0.000000000000001 g/L, or 0.0000001 to 0.000000001 ppb. If coal dust from the project area accumulated without being disturbed throughout the dry season (assumed to be 120 days long), the anticipated change in TEEC concentration for the minimum recorded flow over one day would be on the order of 0.0000000001 to 0.000000000001 g/L, or 0.0001 to 0.000001 ppb. Again, this change would not be measureable and is not anticipated to affect human health or affect marine organism functions (respiration, feeding).

Table 5.5-4. Average Concentration of Trace Elements in Wyodak and Big George Coalbeds, Powder River Basin, Wyoming and Miscellaneous Uinta Basin Coalbeds in Colorado Plateau

Trace Element of Environmental Concern	Average Concentration in Sampled Coal (ppm)	
	Powder River Basin[a,b]	Uinta Basin[b]
Antimony	0.10	0.7
Arsenic	1.43	2.2
Beryllium	0.18	1.5
Cadmium	0.06	0.1
Chromium	2.63	6.1
Cobalt	1.93	2.0
Lead	1.26	13.9
Manganese	10.05	28.2
Nickel	1.58	4.5
Selenium	0.57	1.4
Uranium	0.46	1.8

Notes:
[a] U.S. Geological Survey 2007.
[b] Pierce and Dennen 2009.

Toxic constituents of coal include PAHs and trace metals, which are present in coal in variable amounts and combinations dependent on the type of coal. The coal type, along with mineral impurities in the coal and environmental conditions determine whether these compounds can be leached from the coal. Some PAHs are known to be toxic to aquatic animals and humans. Metals and PAHs could also potentially leach from coal to the pore water of sediments. One review of coal dust's chemical composition (U.S. Geological Survey 2007) suggests the risk of exposure to concentrations of toxic materials (e.g., PAHs and trace metals) from coal are low because the concentrations are low and the chemicals bound to coal are not easily leached. Furthermore, the type of coal anticipated to be exported from the proposed export terminal is alkaline, low in sulfur and trace metals and the conditions to produce concentrations in pore waters are not present in a dynamic riverine environment. This would further support the view of Ahrens and Morrisey (2005) that the bioavailability of such toxins would likely be low.

In summary, coal dust from operations of the terminal is not expected to have a demonstrable effect on water quality. Additionally, the potential risk for exposure to toxic chemicals contained in coal (e.g., PAHs and trace metals) would be relatively low as these chemicals tend to be bound in the matrix structure and not quickly or easily leached.

Coal spilling into the Columbia River could occur during vessel loading operations. Cleanup efforts would be implemented quickly and it would be expected the majority of the spilled coal would be recovered. Toxic chemicals in coal tend to be bound to the matrix structure of the coal and not quickly or easily leached and would not, therefore, be expected to result in a substantial increase in chemical indicators in the Columbia River. They would also not be expected to cause a measurable impact on water quality or biological indicators, or affect designated beneficial uses.

Contaminants from Maintenance and Operations

Potential contaminants, including diesel fuel, oils, grease, and other fluids would be required for the operation and maintenance of heavy equipment and machinery used to transport, store, move, and load coal at the proposed terminal. Normal operations and maintenance activities would not result in a direct discharge of pollutants or process water into surface water. Most operation-related impacts would result from inadvertent spills of potentially hazardous materials, such as petroleum products or industrial solvents, either directly into surface waters or in locations where they could be transported and discharged to surface water or groundwater. While a release would likely be relatively small (less than 50 gallons), locomotives have a fuel capacity of 5,000 gallons and could also release fuel during operations. Also, fuel trucks would visit the site as often as once or twice per day. Fuel trucks typically have a 3,000- to 4,000-gallon capacity. A spill that occurred in the project area would be contained, conveyed and treated within the proposed stormwater system and not be discharged to surface waters outside the project area. The Applicant would be required to manage contaminated stormwater in accordance with the requirements of the NPDES Industrial Stormwater Permit.

Maintenance dredging for Docks 2 and 3 would be expected to occur every few years. Maintenance dredging impacts on water quality would be similar to those discussed for dredging during construction, but to a lesser magnitude because maintenance dredging volumes would be considerably smaller than the initial dredging action during construction. A dredging plan, as discussed previously for construction dredging, would be prepared for each future maintenance dredging project.

Small scale maintenance dredging could be needed more frequently, especially in the early years following the initial dredging work when higher-than-normal accretion is more likely (WorleyParsons 2012). Similar to construction-related dredging, changes in study area conditions likely would not persist as a result of maintenance dredging.

Contaminants from Shipping Vessels or Rail Transport

Coal would be transported to the proposed export terminal via rail, then loaded onto vessels and transported to its final destination in Asia. Water quality could be indirectly affected as a result of transportation of coal within the study area. Details regarding vessel operations are available in Chapter 6, Section 6.4, *Vessel Transportation*. Details regarding a release of hazardous materials during rail operations and collision or derailment are discussed in Chapter 4, Section 4.6, *Hazardous Materials*.

- **Propeller wash.** Propeller wash increases the potential for scour and erosion of the sides and bottom of the navigation channel, as well as a temporary, localized increase in turbidity. While pilot vessels maneuvering near Docks 2 and 3 could cause erosion, cargo vessels would be more likely to create turbulence that could erode bottom sediments because the large propellers on these ships are closer to the river bottom as they travel the Columbia River. The propeller wash from tugboats would be nearer the surface and have less potential to result in scour or erosion of bottom sediments. The likelihood of temporary, localized increases in turbidity resulting from propeller wash is considered low based on the amount of dredging anticipated to be required to accommodate vessels at Docks 2 and 3. The dredge prism would tie into the navigation channel, thus reducing the potential for propeller wash during vessel movements at Docks 2 and 3. Vessels calling at Docks 2 and 3 would have sufficient depth to minimize propeller wash. Any increase in turbidity would be temporary and localized and not expected to be measurable beyond the study area.

- **Ballast water.** Ballast water could contain materials that degrade surface waters. Common contaminants include invasive marine plants and animals, bacteria, and pathogens that could harm or displace native aquatic species. However, the likelihood of such occurrences is considered low since state and federal regulations control the discharge and water quality of ballast water. Oversight of federal ballast water regulations is provided by the U.S. Coast Guard and EPA, while Washington State regulations are administered by the Washington Department of Fish and Wildlife. Discharge of ballast water into waters of the state is not allowed unless there has been an open sea exchange (replacing coastal water with open-ocean water to reduce the density of coastal organisms) or the vessel has treated its ballast water to meet state and federal standards set by the U.S. Coast Guard (33 USC 1251–1387).
- **Spills from vessel.** Coal and fuel spills could occur if the cargo tanks on a vessel are ruptured during such events as a grounding or collision; however, the potential for a vessel rupture incident is low. Chapter 6, Section 6.4, *Vessel Transportation*, evaluates the risk of vessel-related incidents. Chapter 4, Section 4.6, *Hazardous Materials*, also discusses actions to be taken for emergency response and cleanup. A spill from a vessel could have substantial potential impacts on water quality based on the location, quantity spilled, and response actions taken.
- **Day-to-day rail operations.** Day-to-day rail operations could release contaminants to stormwater, including coal dust, metals, hydraulic and brake fluid, oil, and grease from track lubrication. As discussed in Chapter 4, Section 4.6, *Hazardous Materials*, if a release of hazardous materials were to occur, the rail operator would implement emergency response and cleanup actions per Federal Railroad Administration requirements and state law, including Washington State regulations under Revised Code of Washington (RCW) 90.56.
- **Spill from collision or derailment of train.** Fuel or hazardous material spills could occur if trains or rail cars collide or derail. As discussed in Chapter 4, Section 4.6, *Hazardous Materials*, if a release of hazardous materials were to occur, the rail operator would implement emergency response and cleanup actions as required by the Federal Railroad Administration and state law, including Washington State regulations under RCW 90.56. Spills of coal from a rail car could affect water quality based on the location, quantity spilled, and response actions taken.

5.5.5.2 Off-Site Alternative

Potential impacts on water quality from construction and operation of the proposed export terminal at the Off-Site Alternative location are described below.

Construction—Direct Impacts

Construction-related activities associated with the Off-Site Alternative could result in direct impacts as described below. Construction of the Off-Site Alternative would be similar to the On-Site Alternative, and impacts would be expected to also be similar. Substantive differences are identified below.

Surface Water Turbidity

The Off-Site Alternative would disturb a smaller area of soil than the On-Site Alternative. The smaller area would result in lower volumes of sediment potentially being mobilized and discharged to surface waters. Like the On-Site Alternative, this potential impact would be temporary and last only for the duration of construction.

Contaminants Associated with Equipment and Material Use

Impacts on water quality associated with equipment and material use would be similar to the On-Site Alternative. Runoff from the project area during construction would be required to meet the terms and conditions of all permits issued for the Off-Site Alternative; thus, water quality conditions would be expected to be maintained and temporary release of contaminants associated with equipment and material use during construction is not be expected to cause a measurable effect on water quality or affect designated beneficial uses.

Pollutants or Turbidity

The Off-Site Alternative would involve dredging an estimated 50,000 cubic yards of material from the Columbia River compared to the 500,000 cubic yards for the On-Site Alternative. This smaller volume of dredged material would likely require less dredging time, resulting in a shorter period of temporary impact on water quality compared to the On-Site Alternative.

Hazardous or Toxic Materials

Current land use at the Off-Site Alternative location is substantially different than the On-Site Alternative and, therefore, potential for pollution related to demolition would not be the same. The Off-Site Alternative project area is primarily vegetated and does not have an existing facility that would need to be demolished like the On-Site Alternative. Further, no existing hazardous or toxic materials are known to occur at the Off-Site Alternative project area. Therefore, this potential impact is not anticipated to occur to the extent it could under the On-Site Alternative.

Construction—Indirect Impacts

The Off-Site Alternative would not result in indirect impacts on water quality because no impacts would occur later in time or farther removed in distance from the contamination site.

Operations—Direct Impacts

Direct impacts on water quality associated with introducing contaminants from coal spills and coal dust, maintenance and operations, and stormwater runoff would be similar to the impacts described for the On-Site Alternative. Contaminants in stormwater runoff could reach surface water and degrade water quality. However, stormwater would be managed in accordance with the requirements of a new NPDES Industrial Stormwater Permit obtained for water-management facilities of the proposed export terminal to ensure water quality standards are met prior to discharge to any surface water.

Operations—Indirect Impacts

Indirect operations impacts on water quality associated with introduction of contaminants from coal spills and coal dust, maintenance and operations, and shipping vessels or rail transport would be similar to the impacts described for the On-Site Alternative.

Contaminants from Coal Spills and Coal Dust

Coal dust is anticipated to deposit a maximum of 1.83 g/m^2/year in the direct and indirect impacts study areas, including the Columbia River within these study areas. This amount of deposition is still well below the nuisance level, as described in Chapter 6, Section 6.7, *Coal Dust*. Coal dust from operations of the terminal is not expected to have a measureable impact on water quality. Additionally, the potential risk for exposure to toxic chemicals contained in coal (e.g., PAHs and trace metals) would be relatively low as these chemicals tend to be bound in the matrix structure and not quickly or easily leached.

Contaminants from Maintenance and Operations

A contaminant spill during maintenance and operations could reach a surface water. However, inadvertent spills in the project area would be contained and conveyed and treated within the proposed stormwater system; they would not be discharged to surface waters outside the project area. Maintenance dredging impacts on water quality would be similar to those discussed for the On-Site Alternative.

Contaminants from Shipping Vessels or Rail Transport

Potential contaminant spills, propwash impacts, and ballast impacts related to shipping vessels and rail transport would be temporary and minimized through the appropriate state and federal regulations specific to each of these potential impacts.

5.5.5.3 No-Action Alternative

Under the No-Action Alternative, the Corps would not issue a Department of the Army permit authorizing construction and operation of the proposed export terminal. As a result, impacts resulting from constructing and operating the export terminal would not occur. In addition, not constructing the export terminal would likely lead to expansion of the adjacent bulk product business onto the export terminal project area. The following discussion assesses the likely consequences of the No-Action Alternative related to water quality.

If existing industrial activities are expanded and additional land developed, impacts on water quality could be similar to those described for the On-Site Alternative regarding potential oil and grease spills from equipment or other raw materials shipped from the terminal but the magnitude would be less compared to the On-Site Alternative. The existing NPDES permit would remain in place, maintaining the water quality of existing stormwater discharges. Maintenance dredging at Dock 1 would likely continue, with dredging occurring every 2 to 3 years. Any new or expanded industrial uses would likely trigger a new or modified NPDES permit. Buildings could be demolished and replaced for new industrial uses. Any new impervious surface area would generate stormwater, but all stormwater would be collected and treated to meet state and federal water quality requirements prior to discharge to the Columbia River. Thus, potential impacts related to water quality under the

No-Action Alternative would be similar to what is described for the On-Site Alternative, but the extent of the impact would depend on the proposed export terminal.

5.5.6 Required Permits

The following required permits are expected to reduce impacts on water quality.

- **NPDES Construction Stormwater General Permit—Washington State Department of Ecology**. Construction would result in more than 1 acre of ground disturbance and would require a construction stormwater general permit.
- **NPDES Industrial Stormwater Permit—Washington State Department of Ecology**. The On-Site Alternative and Off-Site Alternative would result in industrial activities such as the operation of a transportation facility or bulk station and terminal and would require an industrial stormwater permit.
- **Clean Water Act Section 404—U.S. Army Corps of Engineers**. Construction of the proposed terminal requires Department of the Army authorization from the Corps under Section 404 of the Clean Water Act.
- **Clean Water Act Section 401—Washington State Department of Ecology**. An Individual Water Quality Certification from Ecology under Section 401 of the Clean Water Act and an NPDES permit under Section 402 of the Clean Water Act would also be required for construction of the On-Site Alternative and Off-Site Alternative. Additional details regarding the permitting process related to the Clean Water Act can be found in the *NEPA Water Quality Technical Report*.
- **Rivers and Harbors Act—U.S. Army Corps of Engineers**. Construction of the proposed terminal would require Department of the Army authorization from the Corps under Section 10 of the Rivers and Harbors Act. The Rivers and Harbors Act authorizes the Corps to protect commerce in navigable streams and waterways of the United States by regulating various activities in such waters. Section 10 of the RHA (33 USC 403) specifically regulates construction, excavation, or deposition of materials in, over, or under navigable waters, and any work affecting the course, location, condition, or capacity of those waters.
- **Hydraulic Project Approval—Washington Department of Fish and Wildlife**. The On-Site Alternative and Off-Site Alternative would require a Hydraulic Project Approval from WDFW. The approval would consider impacts on riparian and shoreline/bank vegetation in issuance and conditions of the permit, including for the installation of the proposed docks and piles, as well as for project-related dredging activities and other project-related in-water work.