17.0 WATER RESOURCES

This chapter describes existing water resources and analyzes potential effects on these resources, should the proposed project be implemented. Additional related discussion is presented in Chapter 6.0: Aquatic Resources; Chapter 7.0: Terrestrial Resources; Chapter 9.0: Geology, Soils, and Seismicity; Chapter 10.0: Hazards and Hazardous Materials; and Chapter 11.0: Public Services and Utilities.

Guidelines and key sources of data used in the preparation of this chapter include the following:

- San Francisco Regional Water Quality Control Board, *San Francisco Bay Basin Water Quality Control Plan*
- Contra Costa Clean Water Program, *Contra Costa Creeks Inventory and Watershed Characterization Report*
- San Francisco Estuary Institute, Regional Monitoring Program – 2009 Annual Monitoring Results
- Pacific EcoRisk, *Characterization of WesPac Energy Pittsburg LLC Marine Terminal Dredging Project Sediments: Dredge Materials Sampling and Analysis Results*

17.1 ENVIRONMENTAL SETTING

17.1.1 Regulatory Context

17.1.1.1 Federal Regulations

Clean Water Act of 1972

The Clean Water Act (CWA), codified in United States Code (USC) Title 33, Chapter 26, Section 1251, *et seq*., is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Permit issuance and review is the CWA's primary regulatory tool.

The sections of the CWA that are potentially relevant to this project are listed below and discussed in the following sections:

- Section 303(d)
- Sections 401/404
- Section 402

Clean Water Act, Section 303(d)

Under USC Title 33, Chapter 26, Subchapter III, Section 1313(d) (CWA Section 303(d)), states are required to establish beneficial uses of waters and to adopt protective water quality standards. Some examples of beneficial uses include (but are not limited to) municipal (drinking water) supply, agricultural supply, industrial service supply, aquatic habitats, groundwater recharge, and recreation. States are also required to develop lists of impaired waters (waters adversely affected by contaminants) and establish total maximum daily loads of contaminants for the identified waters based on the beneficial uses and extent of contamination present.

Clean Water Act, Sections 401/404

USC Title 33, Chapter 26, Subchapter III, Section 1344 (CWA Section 404) regulates the discharge of dredged and fill materials into the waters of the United States. Authorization to dispose of such materials is required by the U.S. Army Corps of Engineers (USACE), which is mandated to protect and maintain the navigable capacity of the waters of the United States. The USACE’s primary enforcement tool is the review and issuance of permits for dredging and placement of dredged or fill material. The permit process encourages avoiding and minimizing impacts, and requires the implementation of mitigation measures when necessary. Under USC Title 33, Chapter 26, Subchapter III, Section 1341 (CWA Section 401), applicants receiving a Section 404 permit must also obtain certification from the state that the proposed activity will comply with state water quality standards.

Clean Water Act, Section 402

USC Title 33, Chapter 26, Subchapter III, Section 1342 (CWA Section 402) regulates discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program, administered by the U.S. Environmental Protection Agency (EPA). In California, the State Water Resources Control Board (SWRCB) is authorized by the EPA to implement the NPDES program through the Regional Water Quality Control Boards (RWQCB), as discussed in Section 17.1.1.2. A NPDES permit sets specific limits on point sources (i.e., from a specific facility) discharging pollutants into waters of the United States and establishes monitoring and reporting requirements.

Marine Protection, Research, and Sanctuaries Act of 1972

USC Title 33, Chapter 27, Subchapter I, Section 1412 *et seq*. (Section 102 of the Marine Protection, Research, and Sanctuaries Act) requires authorization from the Secretary of the Army, acting through the USACE, for the transportation of dredged material for the purpose of ocean disposal. The EPA is charged with providing oversight of the USACE's regulatory program and has responsibility for designating and approving ocean disposal sites.

The Coastal Zone Management Act of 1972

USC Title 16, Chapter 33, Section 1455 *et seq*., known as the Coastal Zone Management Act, regulates development and use of the nation's coastal zone by encouraging states to develop and implement coastal zone management programs. Coastal states with federally approved coastal zone management plans must develop and submit coastal non-point source pollution control programs for approval by the National Oceanic and Atmospheric Administration and the EPA. Long-range planning and management of California's coastal zone were conferred to the State with implementation of the California Coastal Act of 1976.

National Flood Insurance Act of 1968

Under USC Title 42, Chapter 50, Subchapter I, Section 4011 *et seq*., the Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development on floodplains.

Oil Pollution Act of 1990

USC Title 33, Chapter 40, Subchapter I, Section 2701 *et seq*., known as the Oil Pollution Act of 1990 (OPA), was enacted to expand prevention and preparedness activities, improve response capabilities, ensure that shippers and oil companies pay the costs of spills that do occur, and establish an expanded research and development program. It also established a $1 billion Oil Spill Liability Trust Fund, funded by a tax on crude oil received at refineries. All facilities and vessels that have the potential to release oil into navigable waters are required by OPA to have up-to-date oil spill response plans and to have submitted them to the appropriate federal agency for review and approval. Of particular importance in OPA is the requirement for facilities and vessels to demonstrate that they have sufficient response equipment under contract to respond to and clean up a worst-case spill.

17.1.1.2 State Regulations

Porter-Cologne Water Quality Control Act of 1969

In 1969, the California Legislature enacted the Porter-Cologne Water Quality Control Act (Act) (California Water Code Section 1300 *et seq*.; California Code of Regulations Title 23, Chapter 3, Subchapter 15) to preserve, enhance, and restore the quality of the State's water resources. The Act established the SWRCB and the nine RWQCBs as the principal State agencies with the responsibility for controlling water quality in California. Suisun Bay is under the jurisdiction of the San Francisco Regional Water Quality Control Board (SFRWQCB).

Under the Act, water quality policy is established, water quality standards are enforced for both surface water and groundwater, and the discharges of pollutants from point and non-point sources are regulated. The Act authorizes the SWRCB to establish water quality principles and guidelines for long-range resource planning, including groundwater and surface water management programs and control and use of recycled water. The Act's jurisdiction also includes groundwater, isolated wetlands, and other waters that are not subject to Clean Water Act Section 401/404. Section 13050 specifically includes the regulation of "biological" pollutants; ballast water and hull fouling constitute "waste" as defined by this section. Aquatic invasive species would be considered biological pollutants if they were discharged to receiving waters from, for example, ballast water or hull fouling.

The SWRCB has adopted two statewide NPDES general permits addressing stormwater discharges associated with industrial activities and from construction activities. Dischargers are required to eliminate most non-stormwater discharges, develop a Stormwater Pollution Prevention Plan (SWPPP) to identify and implement control measures, and monitor their discharges.

NPDES Industrial Stormwater General Permit

The Industrial Stormwater General Permit (NPDES General Permit No. CAS000001, Order No. 97-03-DWQ) regulates discharges associated with specific industrial activities. It requires the implementation of management measures that will achieve the performance standard of the best available technology economically achievable, and the best conventional pollutant control technology. It also requires the development of a SWPPP and a monitoring plan.

NPDES Construction Stormwater General Permit

Projects that disturb 1 or more acres of soil, or projects disturbing less than 1 acre but that are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the Construction Stormwater General Permit (NPDES General Permit No. CAS000002, Order No. 2009-0009-DWQ). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation, but does not include regular maintenance activities such as maintaining original line and grade, hydraulic capacity, or the original purpose of the facility.

The Construction Stormwater General Permit requires the development and implementation of a SWPPP, which must list best management practices (BMPs) the discharger would use to control stormwater runoff and outline placement of those BMPs. SWPPP monitoring and reporting requirements are based on a site-specific calculated risk level based on soil erodability potential, beneficial uses of the receiving water, and whether the receiving water is on the CWA 303(d) list of impaired waters.

<u>Bay Protection and Toxic Cleanup Program Legislation of 1989</u>

The Bay Protection and Toxic Cleanup Program (BPTCP) was established by the California State Legislature in 1989 with four major goals: (1) provide protection of present and future beneficial uses of the bay and estuarine waters of California, (2) identify and characterize toxic hot spots, (3) plan for toxic hot spot cleanup or other remedial actions, and (4) develop prevention and control strategies for toxic pollutants that will prevent creation of new toxic hot spots or the perpetuation of existing ones within the State's bays and estuaries.

Under the BPTCP in 1999, the SFRWQCB completed a detailed assessment of the levels of pollutants in sediment throughout the San Francisco Bay (Bay), and the risks and benefits of cleaning or otherwise managing existing toxic hot spots. The BPTCP has identified sediment "toxic hot spots" where sediment dredging could result in the degradation of water quality in the Bay. The Final Regional Toxic Hot Spot Cleanup Plan summarizes the conditions in the Bay, and identifies sites of concern and candidate toxic hot spots (SFRWQCB, 1998).

The SWRCB, guided by the BPTCP, adopted the Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1, Sediment Quality (Water Quality Control Plan) in 2009. Part 1 includes narrative sediment quality objectives (SQOs) intended to protect aquatic life and human health and identify beneficial uses. The SQOs incorporate multiple lines of evidence to assess the health of sediment; the evaluation is based on sediment chemistry, benthos, and sediment toxicity. SQOs apply only to sub-tidal sediments. The SWRCB is proposing amendments to the Water Quality Control Plan that would incorporate additional SQOs for the protection of wildlife and finfish, and establish implementation policy. Currently, there are no quantitative sediment objectives established for the project area; however, regulatory agencies are working toward implementing numeric objectives.

<u>Lempert-Keene-Seastrand Oil Spill Prevention and Response Act of 1990</u>

California Government Code, Title 2, Division I, Chapter 7.4, Section 8670.1 *et seq*. established a comprehensive approach to prevention of and response to oil spills. Regulations are carried out primarily by the California State Lands

Commission (CSLC) Marine Facilities Division, with the Oil Spill Prevention and Response, created within the California Department of Fish and Wildlife, providing related oversight. These various agencies have authority to direct spill response, cleanup, and natural resource damage assessment activities. Within this regulation, marine facilities are required to prepare and submit oil spill contingency plans.

Marine Invasive Species Act of 2003

The Marine Invasive Species Act (MISA) is charged with preventing or minimizing the introduction of non-indigenous species to California waters from vessels over 300 gross registered tons capable of carrying ballast water. In general, regulations prohibit the discharge or exchange of ballast water unless the water is treated or is discharged and/or exchanged at the same port/place that it originated. Compliance with MISA is the responsibility of the vessel owners/operators and not the responsibility of marine terminals. Amendments to MISA have been made since 2003 with additional requirements related to ballast water and vessel biofouling management.

McAteer-Petris Act

The McAteer-Petris Act (California Government Code Title 7.2, Section 66600 *et seq*.) established the San Francisco Bay Conservation and Development Commission (BCDC) as the agency responsible for protection of San Francisco Bay's critical and sensitive shoreline areas. The BCDC regulates San Francisco Bay Area dredging and filling to protect marshes, wetlands, and other resources. Its jurisdiction includes the San Francisco Bay, 100 feet inland from the line of highest tidal action, salt ponds, managed wetlands, and certain other waterways and marshes.

17.1.1.3 Local Regulations

San Francisco Bay Basin Water Quality Control Plan

The Porter-Cologne Water Quality Control Act (refer to Section 17.1.1.2) requires the development and periodic review of Water Quality Control Plans (Basin Plans) that designate beneficial uses of California's major rivers and groundwater basins and establish numerical water quality objectives (WQOs) for those waters. As discussed in Section 7.1.1.2, various agencies, including the SFRWQCB, are actively working toward developing numerical sediment objectives.

Basin Plans are implemented primarily within the NPDES permitting system to regulate waste discharges. The *San Francisco Bay Basin Water Quality Control Plan* (2011) includes the San Francisco Bay region and portions of the San Joaquin Delta. The 2011 version of the Basin Plan and associated amendments were approved by the SWRCB, the Office of Administrative Law, and the EPA on December 31, 2011. Resolution R2-2007-0042 amended the Basin Plan to adopt a site-specific objective for copper for the San Francisco Bay Basin. This amendment contained non-regulatory provisions for control of copper-based marine antifouling coatings. The RWQCB relies on the authority of the California Department of Pesticide Regulation to regulate the pesticidal use of copper in antifouling paints to attain WQOs (SFRWQCB, 2008).

Municipal Regional Stormwater NPDES Permit

The RWQCB's Municipal Stormwater Permitting Program regulates stormwater discharges from municipal separate storm sewer systems, known as MS4. Under the program, the RWQCBs have adopted NPDES stormwater permits for municipalities; most of these permits are issued to a group of co-permittees encompassing an entire metropolitan area.

The City of Pittsburg (City) is covered under the San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (Order No. R2-2009-0074), which was adopted by the RWQCB in 2009. The City has joined together with multiple other municipalities to form the Contra Costa Clean Water Program, which operates as the Contra Costa Permittees entity under the MS4 permit. The MS4 permit outlines stormwater effluent prohibitions and BMPs to be implemented during specific public works operations (e.g., road repair). A regional water quality monitoring program is also part of the permit.

Provision C.3 of the permit applies specifically to projects undergoing development. Certain projects creating and/or replacing at least 10,000 square feet of impervious surface are required to implement stormwater management facilities that are designed and sized to provide treatment to remove pollutants from stormwater runoff. Projects creating and/or replacing at least 1 acre of impervious surface must design stormwater management facilities to provide both stormwater treatment and flow-control functions.

Long-term Management Strategy for Dredging

The San Francisco Bay Long-term Management Strategy (LTMS) is a cooperative effort of the EPA, USACE, RWQCB, and BCDC to develop an economically and environmentally sound approach to dredging and dredged material disposal in the San Francisco Bay Area. The LTMS established an interagency Dredged Material Management Office (DMMO), which serves as a central regulatory location for dredging permit applications. The purpose of the DMMO is to review sediment quality sampling plans, analyze the results of sediment quality sampling, and make suitability determinations for material proposed for disposal in the San Francisco Bay Area.

San Francisco Bay Plan

The *San Francisco Bay Plan* (BCDC, 2008) addresses the expected impacts of climate change in San Francisco Bay. Sea-level rise risk assessments are required when planning shoreline areas or designing larger shoreline projects. If sea-level rises and storms that are expected to occur during the life of the project would result in public safety risks, the project must be designed to address flood levels expected by mid-century. If it is likely that the project would remain in place longer than mid-century, the applicant must have a plan to address the flood risks expected at the end of the century. Risk assessments are not required for repairs of existing facilities, interim projects, small projects that do not increase risks to public safety, and infill projects within existing urbanized areas. Risk assessments are only required within BCDC's jurisdiction, which includes San Francisco Bay, the 100-foot shoreline band, salt ponds, managed wetlands, and certain other waterways and marshes.

City of Pittsburg General Plan

The *City of Pittsburg General Plan* (adopted in 2001, most recently amended in 2010) Resource Conservation Element outlines several goals and policies related to the preservation of natural drainage systems and erosion control. These include but are not limited to: (1) minimizing runoff and erosion during earthmoving activities by requiring the use of BMPs, (2) evaluating and implementing appropriate measures for creek-bank stabilization to reduce erosion and sedimentation, (3) assessing downstream drainage and stormwater facilities impacted by potential runoff, and (4) ensuring that soil and groundwater pollution is addressed during redevelopment and reuse projects.

Pittsburg Municipal Code

Title 13, Chapter 13.28 (Stormwater Management and Control) of the Municipal Code is designed to protect and enhance water quality in the City's watercourses by compliance with the Porter-Cologne Water Quality Control Act, federal CWA, and MS4 NPDES permit. Subsection 13.28.050 requires a Stormwater Control Plan with every application for a development project that is subject to Provision C.3 in the MS4 permit. Subsection 13.28.060 prohibits the release of non-stormwater discharges into the City stormwater system, and Subsection 13.28.090 requires the implementation of BMPs and compliance with State and federal stormwater runoff requirements.

Title 15, Chapter 15.80 (Floodplain Management) protects against flood damage. Development and construction sites within floodplains must comply with specific building codes to prevent and minimize losses due to flooding.

17.1.2 Existing Conditions

17.1.2.1 Climate, Climate Change, and Precipitation

The climate in the City of Pittsburg is generally characterized by warm, dry summers and mild, wet winters. Based on Contra Costa County Flood Control District (CCCFCD) *Mean Seasonal Isohyets Compiled from Precipitation Records 1879 to 1973* (1977b), average annual precipitation in the proposed project area is approximately 12.4 inches, with over 80 percent occurring between November and March. Based on CCCFCD *Precipitation Duration Frequency*

Depth Curves (1977a), the 25-year, 24-hour storm event and the 100-year, 24-hour storm event precipitation levels in the vicinity of the project site are approximately 3.09 inches and 3.89 inches, respectively. A detailed discussion of regional meteorological conditions is included in Chapter 4.0: Air Quality.

The impacts of climate change are expected to alter the San Francisco Bay ecosystem by inundating or eroding shoreline areas. Long-duration tide gauges indicate that sea level in the San Francisco Bay has risen at a rate of approximately 7 inches over a century (CEC, 2003). Recent projections by Rahmstorf (2007) and Chao *et al.* (2008) indicate that sea levels could rise quickly. By 2050, sea level could be between 11 and 18 inches higher than in 2000, and by 2100, sea level could be between 23 and 55 inches higher than in 2000 (California EPA, 2010). The BCDC has published a series of informational maps that indicate that the project area could be exposed to sea level rise (BCDC, 2008).

17.1.2.2 Watersheds and Drainage

Suisun Bay

The WesPac Energy–Pittsburg Terminal (Terminal) is situated along the southern shore of Suisun Bay downstream of New York Slough (see Figures 17-1: Regional Hydrologic Setting and 17-2: Surface Water Features). Suisun Bay is a shallow embayment between Chipps Island, at the western boundary of the Sacramento River Delta, and the Benicia-Martinez Bridge. It covers approximately 36 square miles, has a mean depth of 14 feet, and a mean salinity of approximately 7 parts per thousand (USACE *et al.*, 2001a). The bottom of Suisun Bay is predominantly fine silt and clay, crossed by channels scoured by tidal and riverine flows (Schoellhamer, 2001).

Tides in Suisun Bay are semi-diurnal with two flood and two ebb phases per day. This tidal action produces a turbulent, well-mixed body of water. Suisun Bay is strongly influenced by freshwater flows from the Sacramento and San Joaquin rivers through the Delta, which drains about 40 percent of California's rainwater (Thompson *et al*., 2000). This freshwater inflow produces a longitudinally stratified, seasonal variation in salinity (Schoellhamer, 2001).

Willow Creek Watershed

The Terminal, Rail Transload Operations Facility (Rail Transload Facility), and a 7-mile section of the existing, buried San Pablo Bay Pipeline are located within the Willow Creek watershed (see Figure 17-1). The Willow Creek watershed contains many small streams, the largest of which is Willow Creek. Willow Creek is 6 miles long with approximately 10 miles of unnamed tributaries joining it in its lower reaches. Willow Creek was altered to install canals for the cooling towers located at the northwestern side of the NRG Energy Inc., (NRG) Pittsburg

Generating Station (URS, 2008). The canals can be seen, just south of the east-west reach of Willow Creek along Suisun Bay, in the inset of Figure 17-2.

The estimated mean daily flow for Willow Creek and its tributaries, when flowing, is 11.17 cubic feet per second (cfs) (CCWF, 2011). Willow Creek and its tributaries are ephemeral streams and flow from south to north, draining to Suisun Bay during winter storm events. Portions of these creeks have been channelized or culverted (Jones and Stokes, 2006); most of the lower reaches are underground in culverts, passing through the single-family residential neighborhoods of Bay Point and Pittsburg. These drainages receive diverted runoff from streets, houses, and parking lots in urbanized areas. Impervious surfaces make up approximately 25 percent of the land area in the watershed (CCCWP, 2004).

Mount Diablo Creek Watershed

An approximate 3.5-mile section of the San Pablo Bay Pipeline traverses through the Mount Diablo Creek watershed. The Mount Diablo Creek watershed drains over 37 square miles of land (NHI, 2006). Mount Diablo Creek, which flows from the north slope of Mount Diablo into Suisun Bay, is the largest waterway within the watershed. In its upstream reaches it is known as Mount Diablo Creek, and in its downstream reaches it is known by its historical name, Seal Creek (see Figure 17-2).

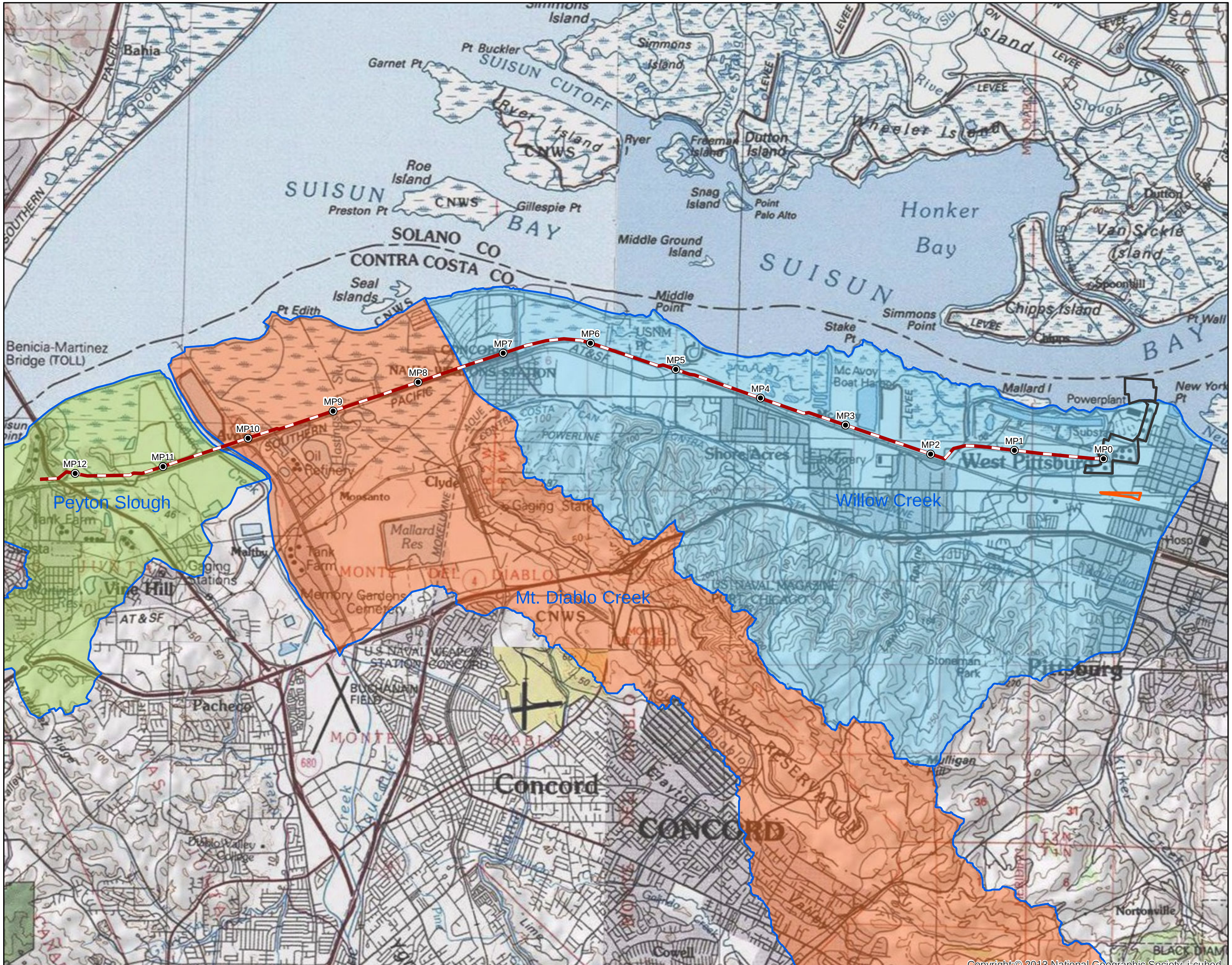
Pacheco Creek is located on the western edge of the Mount Diablo Creek watershed. Pacheco Creek is also known as the Lower Walnut Creek Channel and drains a total of 146 square miles. The lower Walnut Creek Channel was constructed by the USACE in 1965 as a trapezoidal earth-bottom channel designed to accommodate flood flows resulting from a 100-year storm event (estimated at 25,000 cfs) with 3 feet of freeboard (CCCFCWCD, 2007). Walnut Creek drains into Pacheco Creek and eventually into the Carquinez Strait and Suisun Bay.

The San Pablo Bay Pipeline intersects several wetlands within the Mount Diablo Creek watershed, including Belloma Slough and Hastings Slough, which comprise estuarine wetlands. These tidally influenced marshes are in varying degrees of ecological health due to past and ongoing human activities such as diking, diversions, and construction of roads and railroads (NHI, 2006).

Peyton Slough Watershed

Approximately 2 miles of the buried San Pablo Bay Pipeline traverse the Peyton Slough watershed (see Figure 17-1). The Peyton Slough watershed occupies an area of 3,914 acres. Peyton Creek, just over 1 mile long, is culverted underground for over a third of its length, primarily through upland residential and industrial areas. The lower watershed retains some of its historical marshland east of the Benicia-Martinez Bridge. Mean daily flow for Peyton Creek is approximately 3.7 cfs (CCCWP, 2004).

Figure 17-1
Regional Hydrologic Setting
City of Pittsburg
WesPac Pittsburg Energy Infrastructure Project



- Mileposts
- Existing San Pablo Bay Pipeline
- Terminal Boundary
- Rail Transload Facility

Watersheds

- Mt. Diablo Creek
- Peyton Slough
- Willow Creek

6/20/2013

1 inch = 1 miles

1:66,000

0 0.75 1.5 mi

N

TRC

CH X:\WesPac\DEIR Reissue\17 Water Resources\mxd\Figure 17-1 Regional Hydrologic Setting.mxd

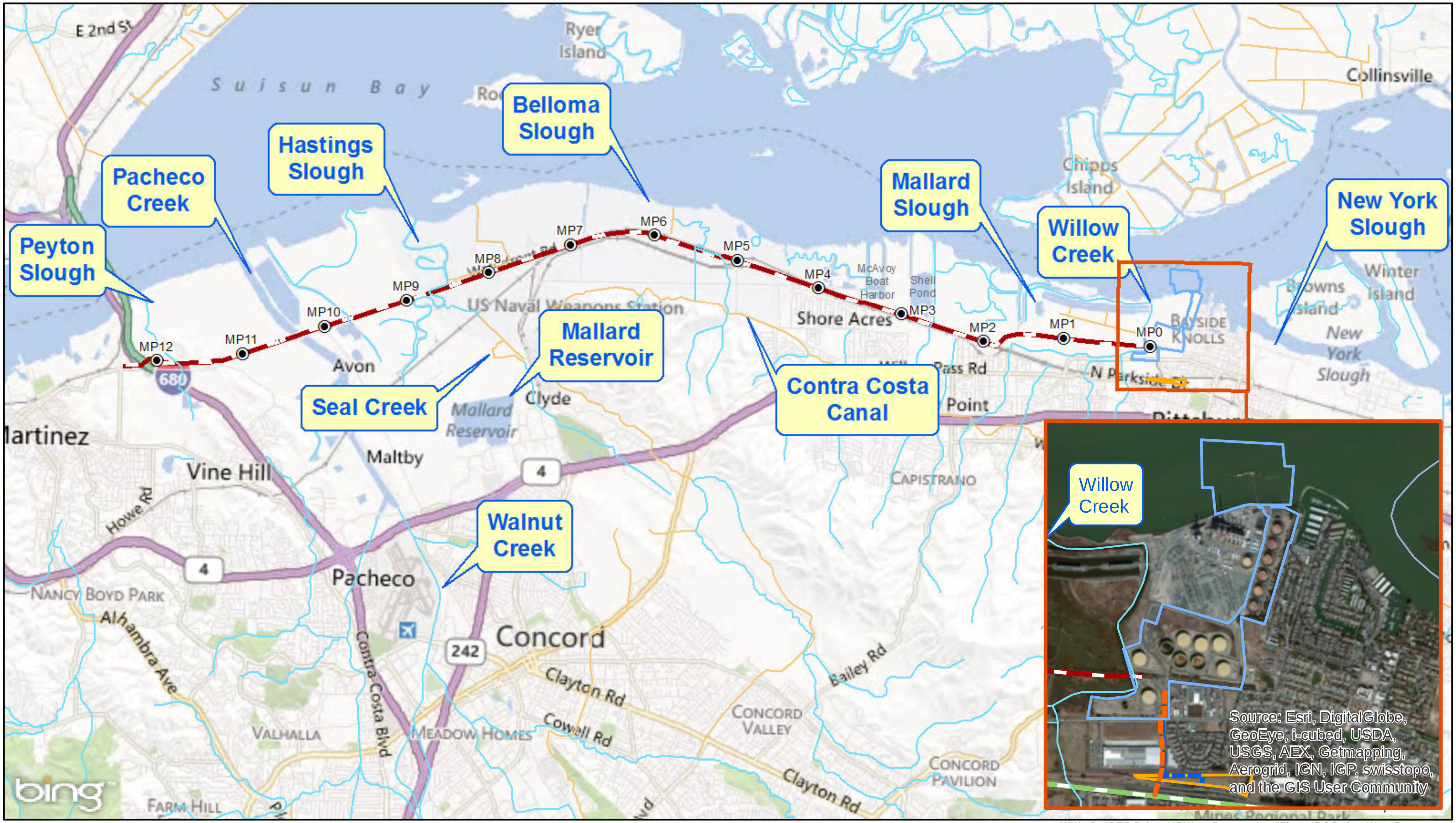


Figure 17-2
Surface Water Features
City of Pittsburg
WesPac Pittsburg Energy Infrastructure Project

TRC

6/20/2013

- Mileposts
- Terminal Boundary
- Rail Transload Facility
- Existing San Pablo Bay Pipeline
- Proposed Pipeline from Rail Transload Facility
- Proposed KLM Pipeline Connection
- Stream / River
- Canal / Ditch

1:100,000

N

1 inch = 8,333 feet

0 0.5 1 mi

17.1.2.3 Contained Surface Water Features

Mallard Reservoir

Mallard Reservoir is a manmade, bermed containment located approximately 1 mile south of the San Pablo Bay Pipeline in the City of Concord (refer to Figure 17-2). The U.S. Bureau of Reclamation (USBR) owns Mallard Reservoir; however, the Contra Costa Water District (CCWD) is responsible for operation and maintenance. The reservoir was designed and constructed to serve solely as the forebay to the CCWD's Ralph D. Bollman Water Treatment Plant (CCWD, 2007). The reservoir does not impound natural drainage, but receives water through a pipeline from Suisun Bay (SFRWQCB, 2011). The Mallard Reservoir storage capacity is 3,000 acre-feet (CCWD, 2011), which serves as storage for flow regulation and emergency use.

Contra Costa Canal

The Contra Costa Canal is approximately 2 miles south of the Terminal. The 48-mile-long, concrete-lined canal is owned by the USBR, but operated and maintained by the CCWD (CCWD, 2011). The canal begins at Rock Slough, near Oakley, and ends at the Martinez Reservoir. The primary purpose of the canal is to deliver drinking water from the Delta to treatment plants for distribution to customers.

17.1.2.4 Surface Water Beneficial Uses

Table 17-1 lists the beneficial uses identified in the Basin Plan for waterbodies within and around the proposed project area.

17.1.2.5 Surface Water Quality

San Francisco Bay is a highly industrialized and urbanized estuary with a long history of human impacts. Many contaminants in the water, sediments, and biota in various parts of the estuary have been detected at concentrations exceeding guidelines. The various embayments of the San Francisco Estuary have been listed as impaired pursuant to Section 303(d) of the CWA. Suisun Bay is identified as impaired for multiple contaminants, including pesticides, dioxins/furans, nickel, polychlorinated biphenyls (PCBs), and selenium (SFRWQCB, 2010). Suisun Bay receives contaminant inputs from upstream agricultural, urban, industrial, and current and historical mining sources (SFEI, 2010).

Table 17-1: Beneficial Uses of Surface Waterbodies near the Project

Waterbody	Existing or Potential Beneficial Uses
Suisun Bay	Industrial service supply Industrial process supply Ocean commercial and sport fishing Estuarine habitat Fish migration Preservation of rare and endangered species Fish spawning Wildlife habitat Water-contact recreation Non-water-contact recreation Navigation
Willow Creek	Not listed
Mallard Slough	Ocean commercial and sport fishing Estuarine habitat Fish migration Preservation of rare and endangered species Wildlife habitat Water-contact recreation Non-water-contact recreation
Hastings Slough	Estuarine habitat Preservation of rare and endangered species Wildlife habitat Water-contact recreation Non-water-contact recreation
Mount Diablo Creek	Coldwater freshwater habitat Fish migration Preservation of rare and endangered species Fish spawning Warm freshwater habitat Wildlife habitat Water-contact recreation Non-water-contact recreation
Pacheco Creek	Warm freshwater habitat Wildlife habitat Water-contact recreation Non-water-contact recreation

Waterbody	Existing or Potential Beneficial Uses
Peyton Slough	Industrial service supply Ocean commercial and sport fishing Estuarine habitat Fish migration Preservation of rare and endangered species Wildlife habitat Water-contact recreation Non-water-contact recreation

The San Francisco Estuary Institute Regional Monitoring Program for Trace Substances (RMP) began in 1993 to monitor pollutants in the estuary. The RMP is funded by 74 local, State, and federal agencies and companies through their discharge or bay use permits to monitor water and sediment quality at sites located throughout San Francisco Bay (Thompson *et al*., 2000). Table 17-2 shows the most recent RMP water quality sampling results available for Sampling Station SU040W located in Suisun Bay, the nearest sampling point relative to the Terminal. The table includes only constituents that have a marine water quality objective identified in the Basin Plan.

17.1.2.6 Groundwater Hydrology

Regional Groundwater

The Terminal and Rail Transload Facility are located within the Pittsburg Plain groundwater basin, along the south shore of Suisun Bay (DWR, 2004a). The Pittsburg Plain basin lies within the two major drainage basins of Kirker Creek and Willow Creek, both of which discharge into Suisun Bay. The water-bearing units in the basin are Pleistocene to Quaternary alluvium deposits that have a maximum thickness of 400 feet. Aquifers in the basin area are hydrologically connected to the San Joaquin and Sacramento rivers (DWR, 2004a).

The San Pablo Bay Pipeline alignment is underlain by several groundwater basins, including Pittsburg Plain, Clayton Valley, Ygnacio Valley, and Arroyo Del Hambre Valley (DWR, 2004a). Similar to the Pittsburg Plain basin, the Clayton Valley and Ygnacio Valley groundwater basins are underlain by thick, water-bearing alluvial deposits. These deposits cover a faulted and folded complex of consolidated Cretaceous and Tertiary rocks (DWR, 2004b; DWR, 2004c). Aquifers are hydrologically connected to Suisun Bay (DWR, 1975).

The Arroyo Del Hambre Valley groundwater basin is a small coastal basin, located beneath and east of the Peyton Slough, that covers 1.3 square miles. The deposits are characterized by soft, water-saturated muds, peat, and loose sand (DWR, 2004d).

Table 17-2: Suisun Bay Water Quality

Constituent	2010 Regional Monitoring Program Data[1]		Marine Water Quality Objectives[2]	
	Result (Total)	Result (Dissolved)	4-day Average	1-hour Average
	Concentration in Micrograms per Liter			
Arsenic	2.06	1.77	36	69
Cadmium	0.049	0.044	9.3	42
Copper	2.72	1.94	6.0[3]	9.4
Lead	0.132	ND[4]	8.1	210
Mercury	0.002	0.0	0.03[5]	2.1
Nickel	1.6	0.86	8.2	74
Selenium	0.083	0.077	5.0	20
Silver	0.002	0.002	-	1.9
Zinc	1.08	0.19	81	90

[1] Source: RMP data from Sampling Station SU040W in Suisun Bay (SFEI, 2010)
[2]Source: Water Quality Control Plan (SFRWQCB, 2011). Water quality objectives (WQOs) are dissolved concentrations. For waters with salinity between 1 part per thousand (ppt) and 10 ppt, the more stringent of the freshwater and marine water objectives are used.
[3]Copper objectives are applicable specifically to Suisun Bay.
[4]ND = Not detected.
[5]Marine WQOs for mercury in San Francisco Bay apply. The WQO for the protection of aquatic organisms and wildlife is shown.

Local Groundwater

Groundwater investigations have been performed at the NRG Pittsburg Generating Station in a limited area just south of Suisun Bay, near the oil water separator and repurposed stormwater collection pond (ERM, 2010; SFRWQCB, 2006b). Three groundwater aquifers were identified in this area. The first aquifer is a perched zone that occurs within a 35-foot-thick peat and clay deposit. The areal extent of the perched zone appears to be limited. The depth to water for the perched groundwater ranges from 6.5 to 10 feet below grade. The second zone is the upper aquifer, a semi-confined aquifer that occurs with a sand and gravel deposit that ranges in thickness from approximately 23 to 38 feet. The third is a deep, confined aquifer. Previous site investigations concluded that the three water-bearing zones are not hydraulically connected (CDM, 1997; SFRWQCB, 2006b).

The groundwater flow direction is generally north, from the topographic highs in the south toward the low-lying regions along Suisun Bay. A portion of the upper aquifer along the edge of Suisun Bay is tidally influenced. Previous site investigations of the perched aquifer show little or no response to Suisun Bay tidal fluctuations. Investigations have concluded that the perched water zone is most likely recharged by surface water infiltration (SFRWQCB, 2006b).

17.1.2.7 Groundwater Beneficial Uses

The Basin Plan lists the potential beneficial uses of the Pittsburg Plain, Clayton Valley, Ygnacio Valley, and Arroyo del Habre Valley groundwater basins as municipal and domestic supply, industrial process water supply, industrial service water supply, and agricultural water supply. The only exception is for the Clayton Valley basin, which has municipal and domestic water supply listed as an existing beneficial use.

17.1.2.8 Groundwater Quality

Several groundwater-monitoring wells have been installed in the perched zone near NRG's existing oil water separator and stormwater collection pond (ERM, 2010; SFRWQCB, 2006b), which can be seen on Figure 2-3 in Chapter 2.0: Proposed Project and Alternatives, immediately south of the marine terminal access trestle. Limited groundwater quality data have been collected from monitoring well ML-7 since 1994 as part of RWQCB Waste Discharge Requirements associated with NRG's existing stormwater collection pond (SFRWQCB, 2006b). A summary of recent groundwater-monitoring data is provided in Table 17-3.

Table 17-3: Groundwater Quality, Perched Zone

Date (2010)	TPH-d (µg/L)[1]	pH	EC (µmhos/cm)[2]	Temperature (Degrees Fahrenheit)	Turbidity (NTU)[3]
February	ND[4]	6.29	855	56.84	2.37
May	ND[4]	6.49	977	62.28	2.14
August	ND[4]	6.76	799	67.6	2.83

[1]TPH-d = total petroleum hydrocarbons as diesel; µg/L = micrograms per liter
[2]EC = electrical conductivity; µmhos/cm = micromhos per centimeter
[3]NTU = nephelometric turbidity units
[4]ND = Not detected
Source: ERM, 2010

17.1.2.9 Sediment Quality

San Francisco Bay sediments have been influenced by natural and anthropogenic influxes of toxic chemicals over time. Sediments in the Bay are both sources and sinks of pollutants. The overall influx of pollutants can cause increases in sediment pollutant levels. These pollutants are not distributed evenly in the Bay, and localized areas are highly contaminated. The proposed project dredging area, as described in Chapter 2.0: Proposed Project and Alternatives, is not within any known toxic hot spots identified by the SFRWQCB.

To evaluate whether sediments have elevated levels of toxic chemicals, the SFRWQCB performed a statistical analysis of available sediment analytical data. The results of this study are reported in *Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments* (SFRWQCB, 1998). The objective of the study was to determine what the SFRWQCB should consider as ambient levels of polycyclic aromatic hydrocarbons (PAHs), PCBs, metals, and pesticides in the San Francisco Bay. Table 17-4 shows the most recent RMP sediment quality results collected from RMP sampling in Suisun Bay compared to San Francisco Bay ambient sediment concentrations from the 1998 SFRWQCB study. The table shows the results collected from Sampling Station SU024S, which is the closest sampling point in relation to the project site.

Sediment samples have been collected within the proposed dredging area for the purpose of determining appropriate disposal sites for the dredged material. Sediment sampling activities at the marine terminal were performed on November 2 and 3, 2011 (Pacific EcoRisk, 2012). A total of 16 sediment cores were collected from the proposed dredging area. Per DMMO guidance (USACE, 1998; USACE *et al*., 2001b), the results of the physical and chemical analyses of the sediments from the proposed dredging area were compared to Bay ambient sediment concentrations (SFRWQCB, 1998) to assess suitability for placement at

Table 17-4: Suisun Bay Sediment Quality

Constituent	2011 Regional Monitoring Program Data[1]	San Francisco Bay Ambient Sediment Concentrations (SFRWQCB, 1998)	
	Result (total)	<40% Fines	<100% Fines)
	Concentration in milligrams per kilogram (dry weight)		
Arsenic	7.43	13.5	15.3
Cadmium	0.13	0.25	0.33
Copper	23.443	31.7	68.1
Lead	9.282	20.3	43.2
Mercury	0.077	0.25	0.43(0.47[2])
Nickel	73.509	92.9	112
Selenium	0.116	0.59	0.64
Silver	0.063	0.31	0.58
Zinc	80.052	54.4	158

[1]Source: Regional Monitoring Program data from Sampling Station SU024S in Suisun Bay (SFEI, 2010)
[2]San Francisco Bay 99^{th} percentile mercury concentration (SFRWQCB, 2011)

Winter Island or the Montezuma Wetlands Project (MWP); analytical results are summarized in Tables 17-5 and 17-6.

Analytical results from the 2011 sediment sampling event indicate that sediments would be suitable for placement at Winter Island or the MWP. The full Sampling Analysis Report is included as Appendix A: Characterization of WesPac Energy Pittsburg LLC Marine Terminal Dredging Project Sediments: Dredge Materials Sampling and Analysis Results. All sediment analytical chemistry results from the 2011 sampling event were similar to or below Bay ambient concentrations (SFRWQCB, 1998); toxicity test results indicated that the sediments were not toxic. On February 23, 2012, the DMMO approved the placement of dredged materials at the proposed locations.

Table 17-5: WesPac Marine Terminal Sediment Metals Concentrations

Metals[1]	TR-DU1	TR-DU2	TR-DU3	TR-DU4	San Francisco Bay Ambient Sediment Concentrations[1] (SFRWQCB, 1998)	
					<40% Fines	<100% Fines
	Concentration in milligrams per kilogram (dry weight)					
Arsenic	4.09	4.37	4.40	6.78	13.5	15.3
Cadmium	0.269	0.358	0.255	0.299	0.25	0.33
Chromium	31.4	36.3	34.0	40.1	91.4	112
Copper	13.1	16.6	13.4	17.9	31.7	68.1
Lead	4.56	6.36	5.71	6.91	20.3	43.2
Mercury	0.0280	0.0543	0.0349	<0.0201	0.25	0.43 (0.47[2])
Nickel	53.7	53.1	51.8	56.7	92.9	112
Selenium	<0.0649	<0.0722	<0.0729	<0.0784	0.59	0.64
Silver	0.0430 J[3]	0.0628 J[3]	0.0448 J	0.0427 J	0.31	0.58
Zinc	47.3	58.4	52.4	54.4	54.4	158

[1]All results below laboratory method detection limit (MDL) are reported as < the MDL
[2]San Francisco Bay 99th percentile mercury concentration (SFRWQCB, 2011)
[3]J =Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit; the reported value is, therefore, an estimate.
Source: Pacific EcoRisk, 2012

Table 17-6: WesPac Marine Terminal Sediment Pesticide, PAH[1] and PCB[2] Concentrations

Constituent	TR-DU1	TR-DU2	TR-DU3	TR-DU4	Bay Ambient (SFRWQCB, 1998)	
					<40% fines	<100% fines
	Concentration in micrograms per kilogram (dry weight)					
Aldrin	<0.4	<0.44	<0.45	<0.48	0.42	1.1
Total BHCs[3]	0.0	0.0	0.0	0.0	0.31	0.78
Chlordane	<5.1	<5.7	<5.8	<6.2	0.42	1.1
Dieldrin	<0.29	<0.32	<0.33	<0.35	0.18	0.44
Endosulfan I	<0.46	<0.51	<0.51	<0.55	—[4]	—[4]
Endosulfan II	<0.22	<0.25	<0.25	<0.27	—[4]	—[4]
Endosulfan Sulfate	<0.34	<0.38	<0.38	<0.41	—[4]	—[4]
Endrin	<0.26	<0.29	<0.29	0.33 J	0.31	0.78
Endrin Aldehyde	<0.25	<0.28	<0.28	<0.30	—[4]	—[4]
Heptachlor	<0.29	<0.32	<0.32	<0.35	—[4]	—[4]
Heptachlor Epoxide	<0.24	<0.26	<0.26	<0.28	—[4]	—[4]
Toxaphene	<11	<12	<12	<13	—[4]	—[4]
Total DDT	0.0	1.24 J[5]	0.0	0.61 J	2.8	7.0
Total PCBs[2]	5.31 J[5]	6.16	2.21 J	0.0	8.6	21.6 (26.4[6])
Total PAHs[1]	91.9	223.1	172.5	235.8	211	3,390

All results below laboratory method detection limit (MDL) are reported as < the MDL
[1]Polycyclic aromatic hydrocarbon
[2]Polychlorinated biphenyl
[3]Benzene hexachloride
[4]Not available
[5]J =Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit; the reported value is, therefore, an estimate.
[6]San Francisco Bay 99th percentile Polychlorinated biphenyl concentration (SFRWQCB, 2011)
Source: Pacific EcoRisk, 2012

17.1.2.10 Water Supply and Use

Surface Water

The CCWD serves a population of approximately 550,000 people in central and east Contra Costa County. Approximately 265,000 people receive treated water directly from the CCWD, and the other 285,000 receive water the CCWD delivers to six local agencies. The CCWD draws its water from the Sacramento-San Joaquin Delta under a contract with the federal Central Valley Project (CCWD, 2011). The CCWD manages several water intake facilities within east Contra Costa County, including Mallard Slough, Rock Slough, Old River Pump Station, and Middle River Pump Station (see Figure 17-3: Water Supply Facilities).

The Mallard Slough intake, located approximately 2 miles west of the proposed project site, is an emergency water supply source. The CCWD has water rights at Mallard Slough for a maximum diversion of up to 26,700 acre-feet of water per year (CCWD, 2011). This water is only used intermittently, typically during winter and spring months when significant fresh water flows through the Sacramento River and abates salt water intrusion from San Francisco Bay. Water quality conditions have restricted diversions from Mallard Slough to approximately 3,100 acre-feet per year on average, with none available in dry years.

The Rock Slough Intake, located east of the City of Oakley and south of Bethel Island, has a capacity of 350 cfs. The pump station at the Old River intake near Discovery Bay has an installed capacity of 250 cfs (CCWD, 2011). The Middle River pump station, located on Victoria Canal near Middle River, also has an installed capacity of 250 cfs.

Municipalities such as the City of Antioch also operate water intake facilities along the Delta. The City of Antioch owns and operates the Fulton Shipyard intake (see Figure 17-3), which has a capacity to pump up to 16 million gallons per day (City of Antioch, 2011). The City of Antioch has rights to water from the San Joaquin River and can currently divert water at a rate of up to 25 cfs; actual diversions are limited due to poor water quality, and Antioch relies on water deliveries from the CCWD to meet most of its water demand (CCWD, 2011). Between 2005 and 2010, the City of Antioch pumped an average of 6,050 acre-feet per year from the Delta.

Figure 17-3
Water Supply Facilities
City of Pittsburg
WesPac Pittsburg Energy Infrastructure Project

- Intakes
- Contra Costa Canal
- Existing San Pablo Bay Pipeline
- Terminal Boundary
- Rail Transload Facility

N

6/20/2013

1 inch = 2 miles

1:110,000

0 1.5 3 mi

TRC

CH X:\WesPac\DEIR Reissue\17 Water Resources\mxd\Figure 17-3 Water Supply Facilities.mxd

Groundwater

The two municipal wells owned by the City of Pittsburg (Rossmoor and Bodega) together are currently producing approximately 1,500 acre-feet of groundwater per year (City of Pittsburg, 2011b). These relatively shallow wells (approximately 200 feet deep) deliver approximately 600 (Rossmoor) and 1,200 (Bodega) gallons per minute. Due to high total dissolved solids levels in the groundwater, the City blends the groundwater with water from the Contra Costa Canal.

17.1.2.11 Stormwater Management and Discharge

The topography of the existing Terminal is essentially flat, but drainage is maintained to Suisun Bay through storm drains. Stormwater runoff from the northern portion of the Terminal currently collects and drains via a storm drain system and then is treated through the oil water separator prior to discharging to Suisun Bay via existing discharge outfall E-001 (see Figure 17-4: Current Site Drainage for Onshore and Marine Terminals). Stormwater runoff from the southern portion of the Terminal is collected in the stormwater retention basin and discharged via existing Outfall E-003, a manned operation that includes visual inspections. This water discharges into Willow Creek and ultimately into Suisun Bay. A detailed description of the existing drainage system is provided in the *Stormwater Management Plan Pittsburg Power Plant* (Mirant, 2005).

The proposed location of the Rail Transload Facility is vacant and comprises primarily pervious surface area. Stormwater runoff from this area is currently being conveyed to Willow Creek via two vegetated stormwater drainage ditches, which flow east to west. These drainage ditches are located to the north and south of the existing rail yard (see Figure 17-5: Current Site Drainage for Rail Transload Facility). The northern drainage channel is adjacent and runs parallel to the BNSF Railway Company and Union Pacific Railroad rail lines, and the southern drainage ditch runs parallel and adjacent to North Parkside Drive.

17.1.2.12 Drainage and Flooding

FEMA is responsible for administering the NFIP that provides flood insurance for properties located within floodplains. The NFIP requires properties located within mapped 100-year floodplains to purchase flood insurance (FEMA, 2009). A 100-year flood refers to a flood level with a one percent or greater chance of being equaled or exceeded in any given year. FEMA Flood Insurance Rate Maps, Community Panel Numbers 06013C0118F, 06013C0119F, and 06013C0120F (FEMA, 2009) show that the Terminal and sections of the San Pablo Bay Pipeline route are within the designated 100-year floodplain (see Figure 17-6: Floodplain Map). The elevation of the 100-year floodplain in the vicinity of the Terminal is 10 feet above mean seal level (reference to National Geodetic Vertical Datum 1929). The Rail Transload Facility is not located within the 100-year floodplain.

17.2 IMPACT ANALYSIS

17.2.1 Methodology for Impact Analysis

Impacts of the proposed project on water quality and quantity were considered. With regard to water quality, impacts to groundwater and surface water were assessed by comparing existing conditions to potential changes from proposed project construction and operation. Where existing site-specific or nearby water quality data were available or modeled, and where published WQOs were available, impacts were quantified to the extent feasible. With regard to water quantity, the effects of construction and operation stormwater runoff to streams and Suisun Bay were quantified; conversely, the impacts of flood events on the project site were evaluated.

17.2.2 Significance Criteria

For the purposes of this analysis, an impact was considered to be significant and to require mitigation if it would result in any of the following:

- Alter the quantity or quality of shared runoff
- Degrade water quality or violate any water quality standards or waste discharge requirements
- Substantially alter the existing drainage patterns of the site or area such that flood risk and/or erosion and siltation potential increase
- Place structures in a way that would impede or redirect flood flows within a 100-year flood plain
- Expose people, structures, or facilities to significant risk from flooding
- Create or contribute to runoff that would exceed the capacity of an existing or planned stormwater management system
- Reduce groundwater quantity or quality
- Create long-term chemical or physical changes in the receiving waters of the site, area, or region, so as to impair beneficial uses

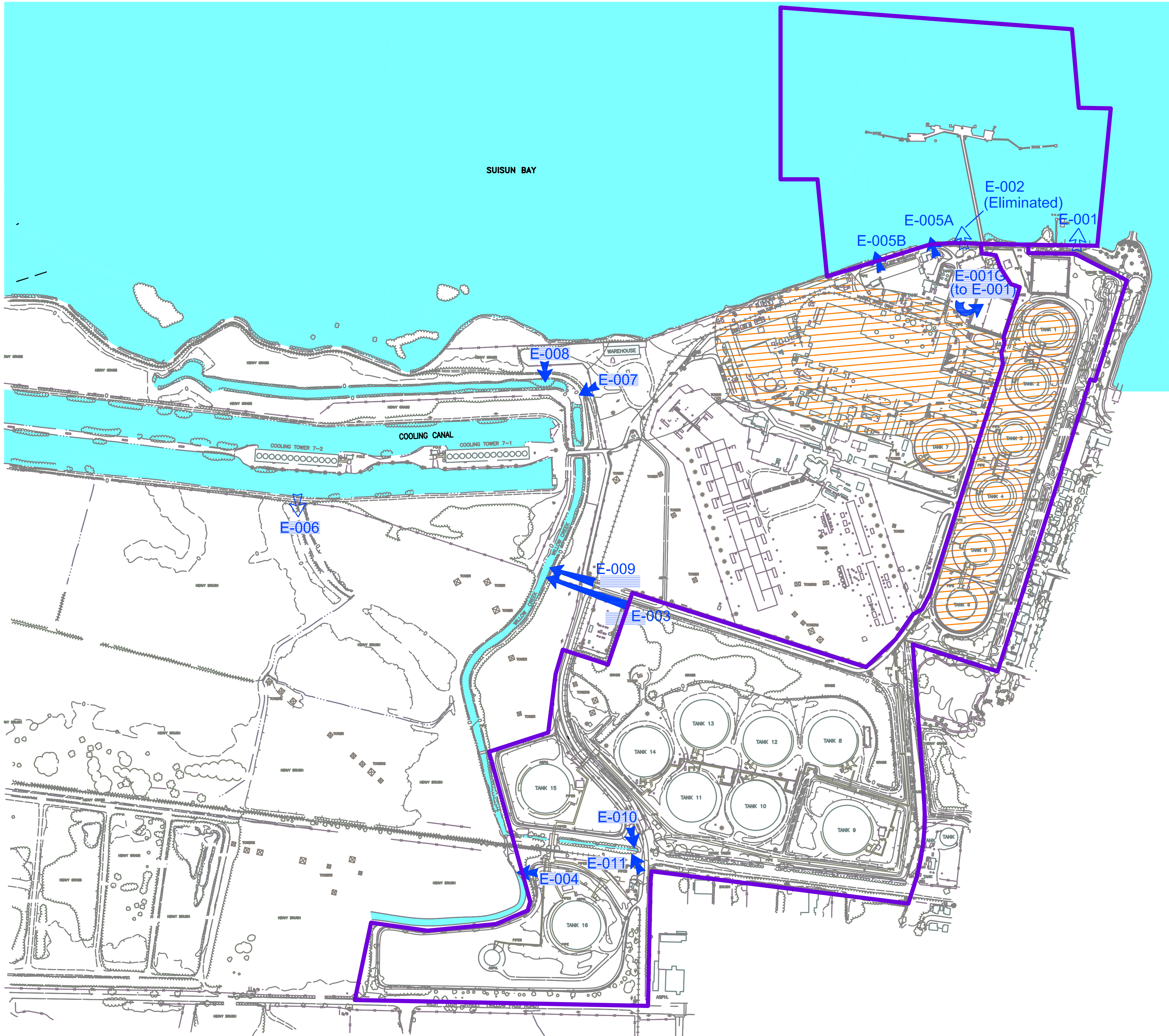
17.2.3 Impacts and Mitigation Measures

17.2.3.1 Proposed Project

<u>Construction-related Impacts</u>

Impact Water Resources (WR)-1: Degrade surface water quality as a result of storage terminal, **Rail Transload Facility, bridge structures, and pipeline construction activities. (Less than significant.)** During project construction, lubricants, fuels, and other chemicals used for construction machinery could be spilled during normal usage or during refueling. Spilled material could run off into nearby watercourses or storm drains. Project construction activities would involve trenching, grading, and excavation. Such soil-disturbing activities could cause erosion. If eroded soil were to come in contact with stormwater, runoff may have increased levels of turbidity, and subsequently, additional sedimentation could potentially occur in Willow Creek and Suisun Bay. Additionally, as

Figure 17-4
Current Site Drainage for Onshore and Marine Terminals
City of Pittsburg
WesPac Pittsburg Energy Infrastructure Project



LEGEND

E-004 — STORMWATER OUTFALL AND CORRESPONDING DRAINAGE AREA (APPROXIMATE)

E-001 — NONSTORMWATER OUTFALL

STORMWATER ROUTED THROUGH OIL-WATER SEPARATOR (E-001G) TO E-001

APPROXIMATE DRAINAGE ACREAGES

OUTFALL	TOTAL	TO OIL-WATER SEPARATOR
E-001G	42	42
E-003*	105	0
E-004*	14	0
E-005A	0.5	0
E-005B	0.5	0
E-007	7	0
E-008	1	0
E-009	7	0
E-010	1	0
E-011	0.5	0
TOTAL	**178.5**	**42**

SOURCE: Mirant Stormwater Management Plan, November 2005.

* WHEN NECESSARY, STORMWATER GENERATED IN THE DRAINAGE AREAS ASSOCIATED WITH THESE OUTFALLS CAN BE TRANSFERRED TO THE OIL-WATER SEPARATOR FOR TREATMENT BEFORE DISCHARGE.

N

1 inch = 600 feet

0 600 1200 ft

TRC

FILE NAME: N:\PROJECTS\CAD\WesPac_Pittsburg Terminal\Environmental Impact Report_June13\Fig 17-4_Current Site Drainage.dwg | Layout Tab: 11x17

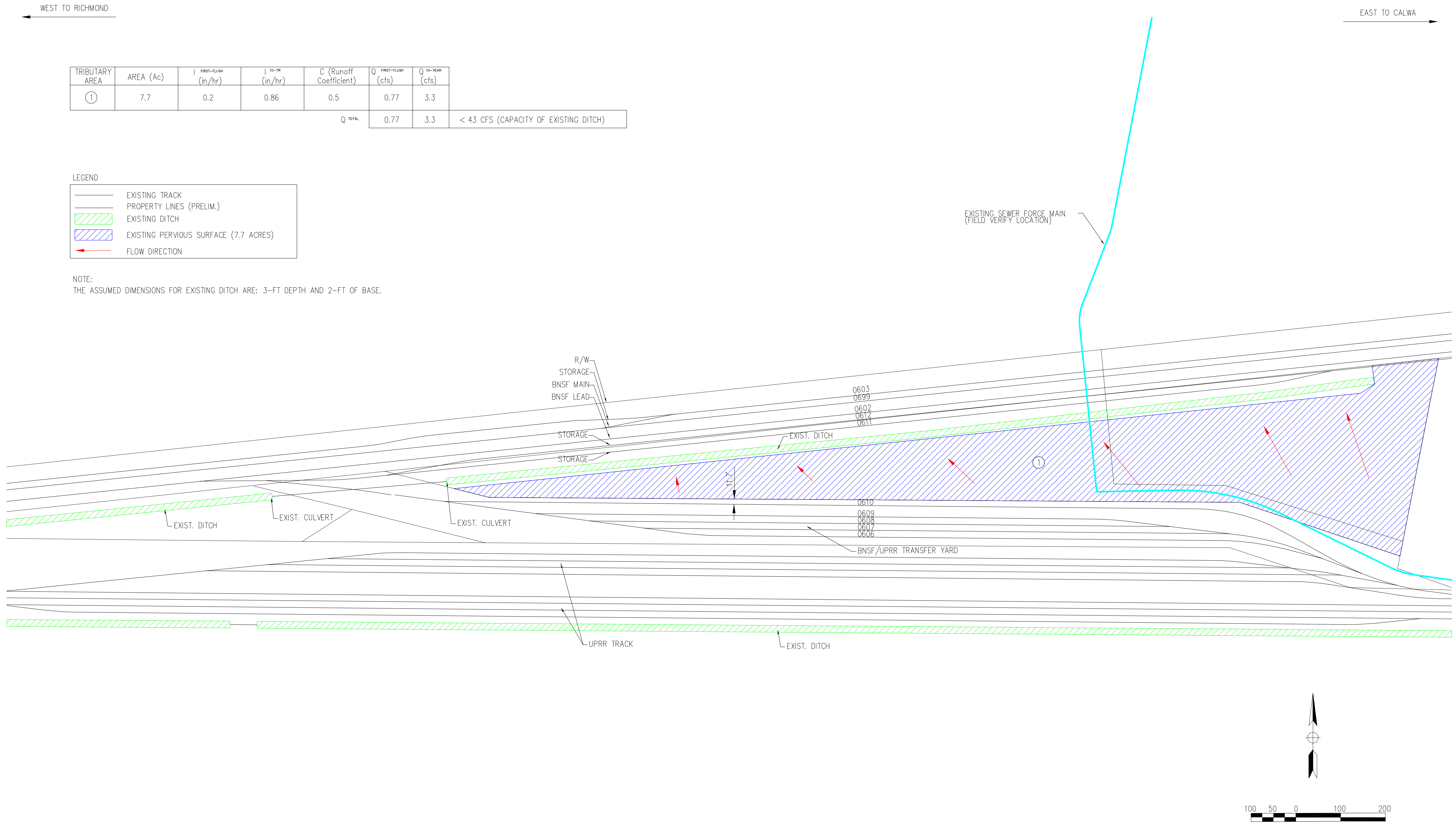
Preliminary and subject to change based on final engineering and other factors.

TRIBUTARY AREA	AREA (Ac)	I FIRST-FLUSH (in/hr)	I 10-YR (in/hr)	C (Runoff Coefficient)	Q FIRST-FLUSH (cfs)	Q 10-YEAR (cfs)	
(1)	7.7	0.2	0.86	0.5	0.77	3.3	
				Q TOTAL	0.77	3.3	< 43 CFS (CAPACITY OF EXISTING DITCH)

LEGEND

- EXISTING TRACK
- PROPERTY LINES (PRELIM.)
- EXISTING DITCH
- EXISTING PERVIOUS SURFACE (7.7 ACRES)
- FLOW DIRECTION

NOTE:
THE ASSUMED DIMENSIONS FOR EXISTING DITCH ARE: 3-FT DEPTH AND 2-FT OF BASE.



X:\WesPac\DEIR Reissue\17 Water Resources\mxd\Figure 17-5 Current Site Drainage for Rail Transload Facility.mxd

Figure 17-5
Current Site Drainage for Rail Transload Facility
City of Pittsburg
WesPac Pittsburg Energy Infrastructure Project

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Figure 17-6
Floodplain Map
City of Pittsburg
WesPac Pittsburg Energy Infrastructure Project

Mileposts
Existing San Pablo Bay Pipeline
Terminal Boundary
Rail Transload Facility
100 Year Flood Zones

6/26/2013

1 inch = 1 miles

1:66,000

0 0.75 1.5 mi

TRC

CH X:\WesPac\DEIR Reissue\17 Water Resources\mxd\Figure 17-6 Floodplain Map.mxd

discussed in Chapter 10.0: Hazards and Hazardous Materials, contaminated soils may be present on the proposed project site. Degradation of water quality could potentially occur if contaminated soils were disturbed during construction and then exposed to stormwater flow.

Runoff of sediment and contaminants during construction activities would be minimized through compliance with the State General Permit for Discharges of Stormwater Associated with Construction Activity (Water Quality Order 2009-0009-DWQ) and a project-specific SWPPP. The SWPPP would comply with current SFRWQCB guidelines and would incorporate acceptable BMPs for control of sediment and stabilization of erosion in the project area. BMP provisions may include:

- implementation of hazardous or contaminated soil-handling procedures such as placing materials into lined bins and covering soils with plastic sheeting;
- designation of parking and fueling areas;
- deploying applicable sediment and runoff-control measures such as wattle;
- minimizing new land disturbance during the rainy season, and avoiding disturbance of sensitive areas (e.g., natural watercourses) where site improvements would not be constructed;
- providing temporary stabilization of disturbed soils whenever active construction is not occurring on a portion of the site;
- delineating a site perimeter to prevent disturbing areas outside the project limits;
- implementing handling and storage procedures for water generated during construction dewatering;
- implementing hazardous materials storage, containment, and control measures such as secondary containment berms; and
- diverting upstream run-on safely around or through the construction project.

Additionally, elements of the existing onshore and marine terminal Stormwater Management Plan (Mirant, 2005) (refer to Section 17.1.2.11) would be incorporated into the construction SWPPP, including stormwater collection, treatment through an oil water separator, and/or visual inspection for oily sheen prior to discharge.

These BMPs are listed as Environmental Commitment WR-1 in Chapter 2.0: Proposed Project and Alternatives.

Dewatering during construction would potentially be required if excavation occurs below the groundwater table. If groundwater were encountered during excavation, the water would be evacuated using submersible pumps, transferred into water storage tanks, and profiled for proper disposal. Should dewatering be necessary, handling and storage procedures would be incorporated into the SWPPP to help prevent leaks or spills.

Groundwater generated during construction dewatering would potentially be discharged to the City of Pittsburg or the Delta Diablo Sanitation District under a batch or temporary permit. Water used for hydrotesting of pipes and tanks would be similarly disposed. It is not anticipated that these waters would be discharged to Willow Creek or Suisun Bay. These dewatering practices are listed as Environmental Commitment WR-2 in Chapter 2.0: Proposed Project and Alternatives.

As a result of BMP implementation, stormwater management, and dewatering management, construction of the proposed project would not be expected to notably degrade stormwater quality or receiving water quality in Willow Creek or Suisun Bay, and potential impacts would be less than significant.

Mitigation Measure: No mitigation required.

Impact WR-2: Degrade groundwater quality as a result of onshore storage terminal, Rail Transload Facility, bridge, and pipeline construction activities. (Less than significant.) During project construction, lubricants, fuels, and other chemicals used for construction machinery could be spilled during normal usage or during refueling. Spilled material in unpaved areas could infiltrate the soil column and percolate to groundwater, as the perched zone is relatively shallow at approximately 6.5 feet to 10.5 feet below grade (refer to Section 17.1.2.6). Measures to avoid and mitigate releases such as requirements for secondary containment, spill kits, and regular equipment inspections would be outlined in the Hazardous Materials Business Plan and the Spill Prevention, Control, and Countermeasures Plan, which would be prepared specifically for site construction conditions, as applicable per regulations (refer to Chapter 10.0: Hazards and Hazardous Materials, Impact HM-1).

Most of the contaminants expected to be involved in construction would be heavier-grade fuels and oils that are not very mobile in the subsurface; they tend to sorb onto the soil matrix and are slow to infiltrate. Additionally, past site investigations indicate that the shallow, perched groundwater zone is not hydraulically connected to the deeper zones, and as such, impacts to groundwater from construction, if any, would remain localized in the perched zone.

Construction of below-grade facilities and pipelines could potentially result in damage to existing underground facilities, pipelines, or other utilities, which could result in subsurface releases that could percolate to groundwater. The

Underground Service Alert (USA) or a similar service would be contacted to help workers avoid impacts to other underground facilities during digging or trenching activities. The USA clearly marks the location of all known underground public utilities and pipelines and also provides detailed information such as burial depth and potential hazards. A geophysical survey would also be performed prior to subsurface work to identify non-public utility-related subsurface structures and pipelines that may have been installed historically at the site. Use of USA and conducting a geophysical survey are listed as Environmental Commitments WR-3 and WR-4, respectively, in Chapter 2.0: Proposed Project and Alternatives.

Mitigation Measure: No mitigation required.

Impact WR-3: Degrade surface water quality as a result of marine terminal construction activities. (Less than significant.) During construction, there is a potential for spills of construction-related chemicals (e.g., lubricants, solvents) and fuel from construction vessels operating in Suisun Bay. As discussed in Chapter 16.0: Marine Transportation and Marine Terminal Operations (refer to Impact MT-3), lubricants and solvents would be stored in approved containers, and the potential for fuel spills would be minimized because refueling would normally take place at approved dockside facilities.

During dock construction, creosote-treated timber piles comprising the unloading platform, west access platform, west walkway, and one mooring dolphin would be removed by direct pull. In some cases the entire pile may be readily removed, and in other cases the pile may need to be torqued at an angle and may break at or near the mudline. During this process, there is a potential for chips or shavings of creosote-treated wood to be released into Suisun Bay, either from friction from the direct pull equipment or as a result of the pile breaking. Additionally, as discussed in Chapter 6.0: Aquatic Resources, Impact AR-8, direct pull to remove piles may suspend sediment clinging to the pile as it is raised through the water column.

Marine terminal construction activities would include installation of new piles to support the upgraded dock, and dredging to restore vessel access to the berth from the main ship channel. This work would take place over an approximate six-month period. The new piles would be steel pipe piles, and because they are hollow they would be expected to displace/disturb relatively minor amounts of sediment. No removal or disposal of sediment associated with pile driving is anticipated.

During construction dredging activities, bottom sediments would be temporarily suspended in the water column, potentially causing increases in turbidity. As discussed in detail in Chapter 6.0: Aquatic Resources, Impact AR-7, turbidity and suspended sediment concentration (SSC) can be much greater than ambient conditions in the immediate vicinity of dredging activities. However, natural physical processes alone can cause the SSC to vary over the course of a day by over 100 milligrams per liter. Additionally, estimates of the amount of material that is re-suspended during dredging range from 0 to 5 percent (Suedel *et al*., 2008), and the majority of sediment re-suspended during dredging activities resettles within 50 meters of the dredge site within one hour (Anchor Environmental, 2003).

During pile removal and construction dredging, particulate-bound pollutants could become remobilized, dissolved in the water column, and result in potential water quality degradation. However, the contaminants present in sediment in the proposed dredging area (metals, PAHs, PCBs, and pesticides) (see Appendix A) tend to sorb strongly onto sediment/soil and are not readily mobilized. Additionally, as illustrated in Tables 17-4, 17-5 and 17-6, and in Appendix A, chemical concentrations in sediment in Suisun Bay and in the proposed dredging area are generally lower than ambient San Francisco Bay sediment concentrations.

Overall, because the effects of dredging on water quality are expected to be localized and transitory, and because sediment composition has been evaluated and deemed suitable by the DMMO for dredging and disposal at either Winter Island or Montezuma Wetlands, the impacts of construction dredging on water quality would be less than significant.

Similarly, the effects of sediment suspension during pile removal are expected to have little effect on water quality due to the low mobility and low concentrations of contaminants. Mitigation Measure AR-5 (refer to Chapter 6.0: Aquatic Resources) would be implemented to protect aquatic species during pile removal, and this measure would also protect water quality (although the measure would not be required for this reason alone).

Mitigation Measure: No mitigation required.

Operational Impacts

Impact WR-4: Cause insufficient capacity of the proposed stormwater management system. (Less than significant.) Current site drainage for the onshore and marine terminals is shown on Figure 17-4. Existing stormwater collection consists of the marine terminal, East Tank Farm, and NRG operational area, all of which drain to Suisun Bay via discharge point E-001 (and can be treated through the oil water separator as needed); and the South Tank Farm and Pacific Gas and Electric Company (PG&E) Switchyard, which collect in the stormwater retention basin and drain to Willow Creek, following visual observations and sampling, via manned discharge point E-003.

Proposed site drainage is shown on Figure 17-7: Proposed Site Drainage for Onshore and Marine Terminals. Proposed stormwater collection would consist of the marine terminal, East Tank Farm, South Tank Farm, and PG&E Switchyard (runoff would continue to be collected at the stormwater retention pond, per landowner agreement). All of this flow would ultimately be collected in the stormwater retention basin and drain to Willow Creek via manned discharge point E-003 (and could be treated through the oil water separator as needed) following visual observations and sampling.

The stormwater retention basin has a capacity of 2.87 million cubic feet. The proposed combined runoff from the marine terminal, East Tank Farm, South Tank Farm, and PG&E Switchyard during a 100-year, one-day storm event would be approximately 1.57 million cubic feet, which is approximately 55 percent of the stormwater retention basin's total capacity (see Appendix P: Runoff Calculations for the 100-year Storm). Thus, the existing stormwater management system is more than capable of accommodating the proposed stormwater runoff.

The stormwater control systems for the Rail Transload Facility would be designed to accommodate runoff from a 10-year storm per Contra Costa County Flood Control and Water Conservation District guidance. The transloading area would be constructed within a concrete containment slab, which would direct runoff to two underground storage tanks with a combined capacity of 100,000 gallons. The aboveground concrete slab containment area may also serve as additional storage with a total capacity of 450,000 gallons. Contained stormwater from the transloading area would be directed to an oil water separator for treatment. Once treated, runoff would be discharged via a control valve to a bioswale. During storm events with a return period of greater than 10 years, the capacity of the storage tanks and the oil water separator may become overwhelmed. If this occurs, stormwater runoff would circumvent the storage tanks and be routed directly to the bioswale.

Proposed runoff from the Rail Transload Facility, including stormwater discussed above and runoff from the administration building parking lot and access roads, would be conveyed through the bioswale to Willow Creek for final discharge. The existing northern stormwater drainage ditch would be engineered as the bioswale and would be sized and designed in accordance with the MS4 C.3 guidelines. The existing northern drainage ditch has an estimated capacity of 43 cfs based on the ditch's current configuration and dimensions (approximately 3 feet deep with a 2-foot base). The projected peak runoff during a 10-year storm event from the proposed Rail Transload Facility is 11.2 cfs, approximately 26 percent of the northern drainage ditch's existing total capacity (see Appendix P). This runoff estimate is conservative, as the actual runoff volume would likely be reduced due the increased stormwater infiltration as a result of the bioswale. As such, the proposed stormwater management would be sufficiently designed for the increased runoff from the proposed structures.

Mitigation Measure No mitigation required.

Impact WR-5: Re-direct flood flows within the 100-year flood plain, or expose people, structures, or facilities to significant risk from flooding. (Less than significant.) Per the FEMA Flood Insurance Maps (refer to Figure 17-6), the Rail Transload Facility site is not in an area designated as a 100-year flood zone. As described under Impact WR-4, the stormwater management systems for the Rail Transload Facility are adequate to contain the increased runoff from new impervious areas. Therefore, the flood flow impacts from the Rail Transload Facility would be less than significant.

The onshore storage terminal office and control building and substation are proposed for construction within the 100-year flood plain, and could result in a minor alteration of on-site surface water drainage patterns. Proposed onshore terminal facilities would create approximately 5,640 square feet of new impervious surfaces, an area that comprises approximately 0.1 percent of the project's approximately 125 total acres. As such, the new facilities would not impede or redirect flood flows off-site, compromise the use of the stormwater management system, or notably increase the risk of flooding at the proposed project site or on surrounding properties. All surface drainage would remain on-site, and flood flows would be controlled by the stormwater management system and discharged to Willow Creek as described under Impact WR-4. As discussed under Impact WR-4, the proposed stormwater facilities would be more than adequate to contain the runoff from a 100-year flood.

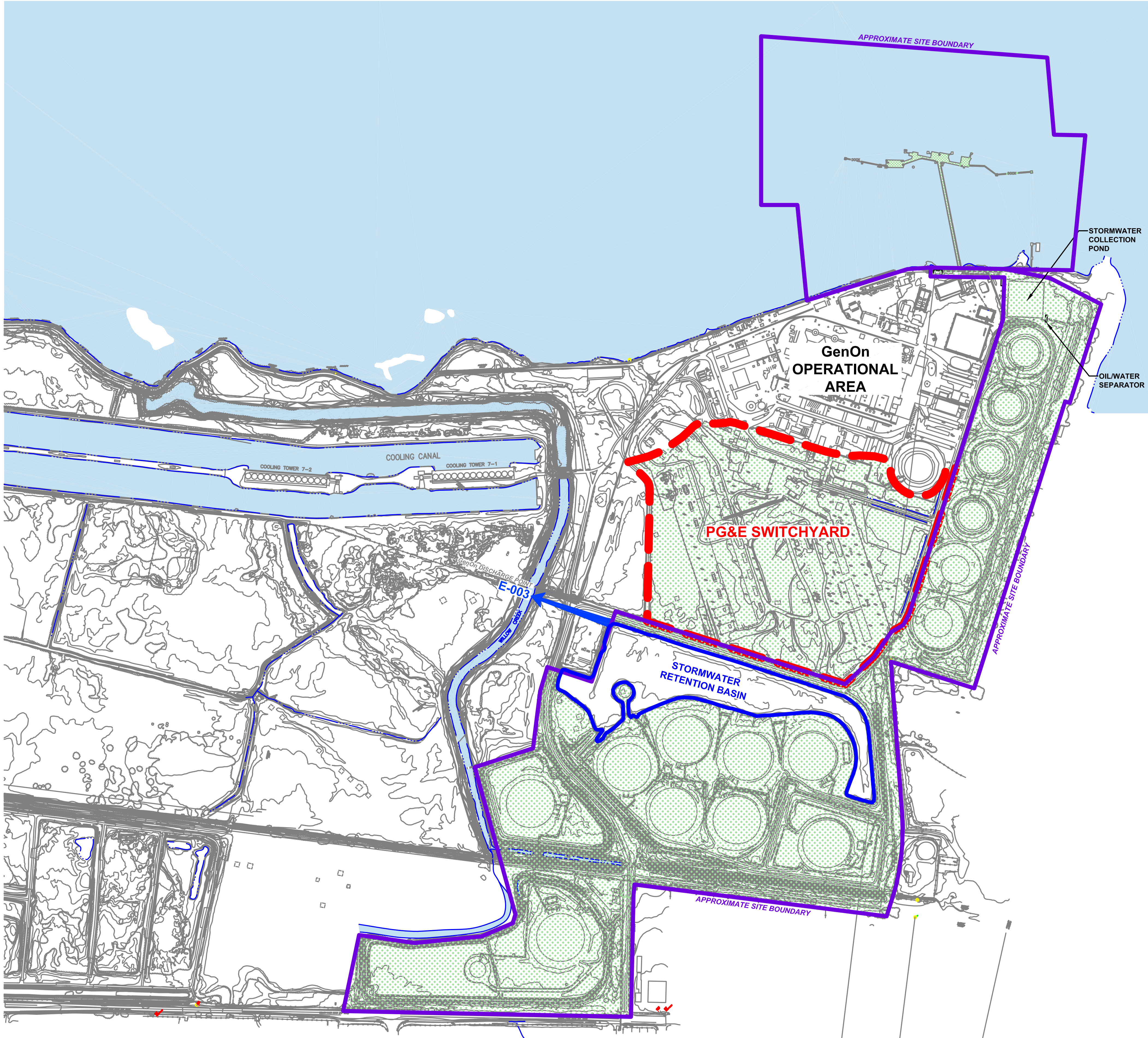
The potential for flood impacts to project facilities is very minor. Flooding of proposed structures such as the office and control building could result in property damage; however, it is highly unlikely that the structural integrity of the building would be compromised, as structures would be constructed per building code standards. Construction within the floodplain would be in accordance with City of Pittsburg Municipal Code 15.80.050, which has provisions for flood hazard reduction, including, but not limited to, anchoring, construction with flood-resistant materials, adequate drainage paths to guide waters away from proposed structures, electrical equipment designed and/or located to prevent water accumulation within components, and elevated flooring. The safety of site personnel would be addressed through site-specific flood safety protocols, which would be detailed in the site's Facility Response Plan (FRP), per regulations. Development of the FRP is included as Environmental Commitment WR-5 in Chapter 2.0: Proposed Project and Alternatives. The FRP is discussed in detail in Chapter 10.0: Hazards and Hazardous Materials.

Mitigation Measure: No mitigation required.

Figure 17-7
Proposed Site Drainage for Onshore and Marine Terminals

City of Pittsburg

WesPac Pittsburg Energy Infrastructure Project



LEGEND

- APPROXIMATE SITE BOUNDARY
- E-003 STORMWATER DISCHARGE POINT
- PROJECT DRAINAGE AREA
- ADDITIONAL DRAINAGE AREA

APPROXIMATE DRAINAGE ACRES	
AREA	TOTAL
East Tank Farm	28.66
South Tank Farm	96.35
Marine Terminal	0.25
PG&E Switchyard*	42.9
TOTAL	168.16

NOTE:
** = PG&E switchyard drains to E-003, but is not included in the project.*

N

1 inch = 600 feet

0 600 1200 ft

TRC

FILE NAME: N:\PROJECTS\CAD\WesPac_Pittsburg Terminal\Environmental Impact Report_June13\Fig 17-7_Proposed Site Drainage.dwg | Layout Tab: 11x17

Impact WR-6: Degrade water quality due to runoff from the onshore terminal. (Less than significant.) In general, increasing impervious areas could result in the degradation of water quality due to increased runoff and sedimentation. Potential adverse impacts to water quality due to increased imperviousness include: increased turbidity, increased temperature, and increased contact with point source contaminants (e.g., vehicle oils in parking areas). Proposed project facilities would create approximately 5,640 square feet of new impervious surfaces at the onshore terminal, an area that comprises approximately 0.1 percent of the Terminal's approximately 125 total acres. Stormwater management of the marine and onshore storage terminals is described in Chapter 2.0: Proposed Project and Alternatives. Figure 17-7: Proposed Site Drainage for Onshore and Marine Terminal shows the proposed drainage plan.

Changes in runoff water quality are expected to be insignificant as a result of this minor addition of impervious surfaces. The proposed new impervious area is minimal, due in part to the proposed use of permeable asphalt for the proposed office and control building parking lot area. The use of permeable asphalt is considered a BMP for stormwater management, as it decreases runoff, promotes infiltration, reduces pollution carried to storm drains or waterways, and aids with reducing peak runoff velocity and volume.

The proposed project includes one direct drainage outfall, E-003, which is an existing, manned NRG outfall that discharges directly into Willow Creek. Currently, for the 100-year, one-day storm, approximately 1.28 million cubic feet would drain to the stormwater retention basin and discharge through E-003 (see Appendix P). For the proposed project, approximately 1.57 million cubic feet would ultimately drain to the stormwater retention basin and discharge through E-003, an increase of approximately 22 percent. The discharge is a manned operation, whereby significant runoff from the 100-year storm can be readily contained in the stormwater retention basin and discharged under controlled conditions, which would minimize runoff impacts to Willow Creek. Willow Creek does not have any beneficial uses designated in the Basin Plan.

The increased impervious areas may affect the percolation of precipitation and have the potential to reduce groundwater recharge. Impervious surfaces seal the soil, eliminating rainwater infiltration and natural groundwater recharge. However, any changes to groundwater recharge would be aerially localized, limited to the perched zone, and negligible because the amount of impervious ground surface would not be substantially increased. The Willow Creek groundwater basin, which underlies the project, has potential beneficial uses, but no existing beneficial uses.

Discharge of stormwater runoff from certain industrial facilities is regulated by the NPDES General Industrial Stormwater Permit. However, the project would be exempt from this regulatory authority per Attachment 1, Paragraph 8 of the General Industrial Stormwater Permit, because it falls under Standard Industrial

Classification (SIC) code 4226 for Special Warehousing and Storage. This SIC code includes establishments primarily engaged in the warehousing and storage of special products, including petroleum and chemical bulk stations and terminals for hire (OSHA, 2013). One exception is for such facilities that have a vehicle maintenance yard; in those cases, only the portion of the facility comprising the yard needs to be permitted. As described in Chapter 2.0: Proposed Project and Alternative, no vehicle maintenance shops or equipment-cleaning operations are included in this project, nor are there any existing vehicle maintenance shops at the Terminal.

The Terminal project activities are located on previously developed land and would result in less than a 50 percent change of new impervious areas; therefore the "50% rule" would apply for the Terminal portion of the project. The 50 percent exclusion in the MS4 C.3 guidelines indicates that if the new project results in the alteration of less than 50 percent of the impervious surface of a previously existing development, and existing development was not subject to stormwater treatment measures, then only the new impervious surface areas must adhere to regulatory requirements.

Additionally, because the proposed additional impervious surface is less than 10,000 square feet, the proposed project would be exempt from the MS4 C.3 requirements. The total impervious threshold is based on impervious area created or replaced in connection with a project. According to the Contra Costa Clean Water Program's *Stormwater C.3 Guidebook, 6th Edition* (2012), maintenance or repair activities (such as replacement of a roof or exterior wall surface), pavement resurfacing within the existing footprint, and pervious pavements are excluded when calculating the total impervious areas created or replaced.

The proposed project is designed to minimize the creation of new impervious areas by utilizing pervious pavements. Use of pervious pavements is included as Environmental Commitment WR-6 in Chapter 2.0: Proposed Project and Alternatives. For C.3 compliance purposes, pervious pavements are considered not to produce increased runoff. Pervious pavements are designed to infiltrate runoff and include pervious concrete, pervious asphalt, porous pavers, and granular materials.

Furthermore, new project structures would be constructed on existing impervious areas whenever possible to further limit the creation of new impervious areas. The project would result in the elimination of many impervious areas (e.g., concrete slabs) and the replacement of impervious surfaces with more permeable surfaces (e.g., gravel). The footprints of the new proposed 200,000 barrel (BBL) tanks would be less than the footprints of the existing 500,000 BBL tanks. Previously impervious areas occupied by the larger tanks would be replaced with gravel, a more permeable surface. Maintenance and repair activities such as the tank retrofitting, which would remain within the existing impervious footprint, and structures built on existing impervious areas, are not included in the total impervious area in accordance with the C.3 guidelines.

However, as a matter of best practice and to manage stormwater in an environmentally protective and responsible manner, a site-specific Stormwater Management Plan would be prepared and maintained. The Stormwater Management Plan would include structural controls such as visual inspection of stormwater prior to discharge, stormwater BMPs, and routine monitoring and water-testing procedures to ensure that pollutants are not present in stormwater discharged from the facility. The water testing would include periodic sampling and analysis of stormwater for typical General Industrial Stormwater Permit analytes (e.g., pH, total suspended solids, electrical conductivity, oil, and grease). These controls and procedures would be similar to the existing SWRCB-approved plan for the Terminal (Mirant, 2005), and would be adopted as an Environmental Commitment (refer to Environmental Commitment WR-7 in Chapter 2.0: Proposed Project and Alternatives).

Mitigation Measure: No mitigation required.

Impact WR-7: Degrade water quality due to runoff from the Rail Transload Facility, including associated bridge structures. (Less than significant.) The additional stormwater runoff created from the bridge structures is expected to be negligible. The total impervious footprint for each of the bridge structures is approximately 2,000 square feet. It is expected that existing stormwater drainage ditches would be adequate to accommodate additional runoff from the new bridge structures.

Proposed transload facility installations would create approximately 3.7 acres of new impervious surfaces, which is approximately 38 percent of the 9.8-acre proposed Rail Transload Facility area. Figure 17-8: Proposed Site Drainage for Rail Transload Facility shows the proposed site drainage for the Rail Transload Facility. The area of new impervious surfaces exceeds the 10,000 square foot regulatory threshold; therefore, unlike the onshore and marine terminals, the Rail Transload Facility would not be exempt from C.3 compliance. A Stormwater Control Plan would be prepared for the Rail Transload Facility, which would be regulated under MS4.

To reduce or eliminate sediment runoff and pollutant discharge from the Rail Transload Facility, Integrated Management Practices, would be incorporated into the stormwater management design. A bioswale, designed and sized in accordance with MS4 NPDES permit requirements and C.3 guidelines, would be integrated into the existing northern stormwater drainage ditch. The bioswale would be constructed of permeable soils, which would allow infiltration of stormwater, and this in turn would reduce surface runoff from the new facility structures. The vegetation within the bioswale would also lessen the runoff velocity and provide stormwater treatment by way of filtration.

All stormwater from the Rail Transload Facility, including the administration building, parking lot, and access roads, would be diverted to the bioswale and ultimately discharged to Willow Creek. Stormwater runoff from the transloading area would be contained within a concrete bermed containment area and directed into on-site underground storage tanks. Stormwater contained in the storage tanks would be directed to an aboveground oil water separator system where it would be treated prior to discharge to the bioswale. Discharges to the bioswale would be visually inspected periodically for evidence of contamination. See Impact WR-11 for a discussion on emergency or upset conditions.

Mitigation Measure: No mitigation required.

Impact WR-8: Degrade water quality due to biofouling, vessel hull paints, or maintenance dredging. (Less than significant.) As discussed in Chapter 16.0: Marine Transportation and Marine Terminal Operations (refer to Impact MT-4), the increase in commercial vessel traffic in Suisun Bay due to the tank vessels that would call at the proposed marine terminal is expected to increase by approximately 26 percent over 2010 levels, on average, in Suisun Bay. Commercial vessel traffic in Suisun Bay has historically been much higher, almost triple in 2005 what it was in 2010. Per Impact MT-4, impacts from vessel congestion are less than significant.

As discussed in Chapter 6.0: Aquatic Resources, vessel biofouling occurs when organisms attach to the hull and other wetted surfaces of a vessel. When vessels move from port to port, biofouling communities are transported along with their "host" structure. Biofouling organisms can be introduced into these new areas when they reproduce, drop off, or are knocked off of the vessel. Within California, up to 60 percent of the established coastal invasive species are considered to have been introduced through vessel biofouling (Ruiz *et al*., 2011). Vessels that may be well-maintained and that have little to no biofouling present on the hull can still represent a potential for invasive species impact through biofouling of certain protected areas of the vessel. The effects of vessel biofouling are further discussed in Chapter 6.0: Aquatic Resources, Impact AR-18.

The proposed project would have no control over, ownership of, or authority to direct vessels that would dock at its marine terminal; therefore, specific details of how vessels manage biofouling cannot be provided as part of the proposed project. The CSLC, which regulates biofouling under the Marine Invasive Species Act of 2003, states that all vessels pose some level of risk from biofouling (Takata *et al*., 2011). Beginning in 2008, the CSLC required vessels operating in State waters to submit an annual Hull Husbandry Reporting Form. The project would ensure that vessels seeking to call at the marine terminal are advised of California's MISA and are submitting forms as required by the CSLC.

Preliminary and subject to change based on final engineering and other factors.

WEST TO RICHMOND

EAST TO CALWA

TRIBUTARY AREA	AREA (Ac)	$I_{FIRST-FLUSH}$ (in/hr)	I_{10-YR} (in/hr)	C (Runoff Coefficient)	$Q_{FIRST-FLUSH}$ (cfs)	$Q_{10-YEAR}$ (cfs)
(1)	0.5	0.2	1.6	0.5	0.05	0.36
(2)	3.7	0.2	2.5	1.0	0.70	9.3
(3)	3.5	0.2	0.86	0.5	0.35	1.5
				Q_{TOTAL}	1.10	11.2 < 43 CFS (CAPACITY OF PROPOSED BIOSWALE)

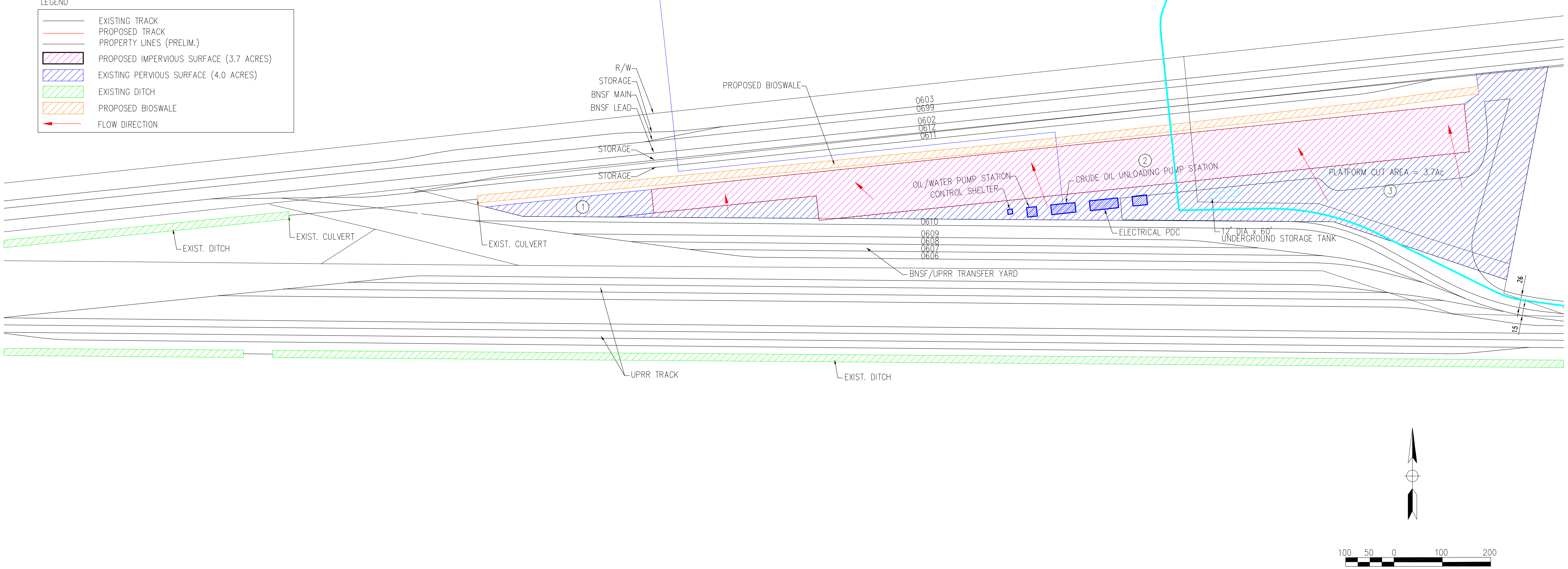
NOTES:

1. THE RATIO OF IMPERVIOUS AREA TO TOTAL PROJECT SITE IS LESS THAT 1:2. THEREFORE, WE ARE ADDING LESS THAN 50% OF IMPERVIOUS SURFACE TO TOTAL PROJECT SITE.

2. THE ASSUMED DIMENSIONS FOR PROPOSED BIOSWALE ARE: 3-FT DEPTH AND 2-FT OF BASE.

3. PER THE CONTRA COSTA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT (THE COUNTY TITLE 9:911-2.010), A TEN YEAR STORM FREQUENCY DESIGN APPLIES TO AREAS SMALLER THAN 1 SQUARE MILE.

4. TYPICAL SECTION OF PROPOSED BIOSWALE PER EXHIBIT STORMWATER HANDLING.



X:\WesPac\DEIR Reissue\17 Water Resources\mxd\Figure 17-8 Proposed Site Drainage for Rail Transload Facility.mxd

Figure 17-8
Proposed Site Drainage for Rail Transload Facility
City of Pittsburg
WesPac Pittsburg Energy Infrastructure Project

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6/26/2013

Marine antifouling paints or coatings are used to reduce nuisance algal and marine growth on ships. Biofouling can significantly affect the drag of the vessel through the water, reducing its fuel economy. Antifouling coatings are biocides that contain copper, sodium, and zinc as the active ingredients. Increases in tanker vessel traffic could result in higher mass loadings of copper and other contaminants, which could be released from vessel hull antifouling paints through chipping/degradation and/or dissolution. Ninety percent of biocide-based coatings on oil tankers entering California's waters are copper-based, and approximately 8 percent use biocide-free coatings (CLSC, 2009). Biocide-free coatings generally contain silicon, which increases the slickness of the hull, so fouling organisms fall off as the vessel travels at speed. Chapter 6.0: Aquatic Resources, Impact AR-23, further discusses the environmental impacts to aquatic life from copper-based and biocide-free antifouling coatings.

The EPA has established two levels for determining harm for aquatic life: the criteria maximum concentration (CMC) and the criteria continuous concentration (CCC). The CMC is an acute threshold, which identifies the highest average contaminant concentration over the course of one hour to which an aquatic community can be exposed without resulting in adverse effects. The CCC is a chronic threshold, which identifies the highest average contaminant concentration over four days that an aquatic community can be exposed to without resulting in adverse effects.

The SFRWQCB has adopted site-specific objectives for dissolved copper in Suisun Bay due to the increased organic carbon levels in the water as a result of heavy sediment loading from the Delta. The site-specific CMC threshold for copper has been established at 9.4 micrograms per liter (µg/L) and the site-specific CCC threshold has been established at 6.0 µg/L. If the project degrades water quality such that these thresholds are exceeded, this would be considered a significant impact. Currently, there are no regulatory criteria limits established for copper in sediment; however, ambient sediment concentrations are often used as a comparison to assess ecological effects.

Studies of in-situ copper releases from antifouling coatings in seawater show rates that vary from 3.2 to 4.7 micrograms per square centimeter per day, depending on the type of epoxy used in the coating, with commercial vessel coatings having higher release rates (Valkirs *et al*., 2003; Ytreberg *et al*., 2010). Under the worst-case scenario (where there is no diluting water flow through the marine terminal), as described in Impact AE-23, the hourly concentration of copper released from antifouling coatings expected to increase by approximately 1.95 µg/L. This estimate is conservative, as the actual concentration would be diluted due to water flow. The copper concentration in surrounding waters is 2.72 µg/L, as indicated in Table 17-2, thus the increase in concentration of copper at the marine terminal would not cause the surrounding waters to exceed the site-specific CCC threshold of 9.4 µg/L.

Utilizing the methodology presented in Impact AR-23, the maximum concentration of dissolved copper released from antifouling coatings due to increased vessel traffic is expected to increase by less than 0.04 µg/L. As described under Impact AR-23, the continual flow of water past the vessel hulls dilutes the copper concentration released from antifouling paints, causing the copper levels to remain below the site-specific CMC.

The theoretical daily maximum increase in copper sediment concentration, as determined using the conservative approach presented in Impact AR-23, is expected to be 1.84 mg/kg, well below the ambient sediment copper concentrations as shown in Tables 17-4 and 17-5.

Concentrations of copper in waters adjacent to the marine terminal and in surrounding waters of Suisun Bay are below both the WQOs and ambient sediment concentrations (refer to Tables 17-2, 17-4 and 17-5) Suisun Bay is listed as an impaired waterbody on the CWA 303(d) list; however, copper is not one of the identified contaminants of impairment. The projected increase in vessel traffic in Suisun Bay is unlikely to increase copper concentrations above WQOs or ambient sediment levels, and therefore would be considered less than significant.

The effects of maintenance dredging activities on water quality would be similar to those during construction dredging, discussed in Impact WR-3. During marine terminal operations, bottom sediments could also be temporarily disturbed by turbulence from propeller wash. Impacts from dredging and propeller wash are expected to be less than significant; refer to Impact WR-3.

Mitigation Measure: No mitigation required.

Impact WR-9: Degrade water quality as a result of a crude oil release from an aboveground storage tank. (Less than significant.) Accidental releases of crude oil could occur from an aboveground storage tank as described in Chapter 10.0: Hazards and Hazardous Materials. This is expected to be a very rare event that would be readily controlled by use of the leak-detection systems that would be installed in each tank. If a crude oil release were to occur in the East Tank Farm, it would be contained by the secondary containment features that surround each tank, and would not be able to reach receiving waters. In accordance with federal, state, and local regulations, oil storage tanks in both the East Tank Farm and South Tank Farm are surrounded by secondary containment systems that can accommodate at least 110 percent of the contents of the largest tank within each containment area, plus an allowance for stormwater accumulation. In the South Tank Farm, crude oil releases would flow into the stormwater retention pond, where they would be contained for removal and/or treatment through the oil water separator. Oily water would not be discharged to Willow Creek.

The stormwater retention pond and the annular space of the individual containment features comprise low-permeability soil. This, coupled with the viscous nature of crude oil, would significantly limit infiltration to groundwater. Additionally, as discussed under Impact WR-6, impacts to groundwater would be limited to the perched zone, and the Willow Creek groundwater basin, which underlies the project, has no existing beneficial uses per the Basin Plan.

Mitigation Measure: No mitigation required.

Impact WR-10: Degrade water quality as a result of a crude oil pipeline release. (Significant and unavoidable.) The possibility of an accidental release of crude oil from the San Pablo Bay Pipeline, the proposed pipeline from the Rail Transload Facility, and the proposed KLM Pipeline connection is described in Chapter 10.0: Hazards and Hazardous Materials. Movement of crude oil in the subsurface is generally slow due to its viscous nature and tendency to sorb onto the soil matrix. If released into the subsurface environment, crude oil could infiltrate the soil column and come in contact with groundwater, where it would accumulate and float on the surface of the water. Compounds present in crude oil that are soluble in water, which may include refining products such as benzene, could form a larger, dissolved plume, which would tend to migrate laterally in the direction of groundwater flow and may eventually reach surface waters. Pipeline corridors may also act as preferential pathways serving as the route of least resistance for crude oil flow.

A subsurface pipeline release of crude oil could also migrate upward through preferential soil pathways and appear at the surface, where it would pool and eventually flow downgradient in the direction of drainage channels and Suisun Bay. In areas where the San Pablo Bay Pipeline traverses shallow-groundwater sloughs (refer to Figure 17-2), crude oil floating on the water table could also reach surface waters. Crude oil present in bay waters would likely exceed the Basin Plan water quality objective for oil and grease, which comprises a visible film or coating on the surface of the water, or on objects in the water, that causes nuisance or that otherwise adversely affects beneficial uses.

Contingency planning and response measures for oil releases discussed in Chapter 10.0: Hazards and Hazardous Materials (refer to Impacts HM-3, HM-4, and HM-5) would be implemented, per regulations, to minimize this impact to the extent feasible and practicable.

Mitigation Measure: No additional mitigation measures available.

Impact WR-11: Degrade water quality as a result of a crude oil release from the Rail Transload Facility (Less than significant). A subsurface release of crude oil could occur at the Rail Transload Facility during the course of loading and unloading operations. As discussed under WR-7, the transloading area would be constructed on a concrete containment slab. In addition to this, drip pans would be placed beneath areas with high potential for leaks such as hose and pipe connections. Drip pans would be cleaned periodically, and collected materials would be disposed in accordance with regulations. All exposed piping, valves, and flanges would be inspected for leaks during loading/unloading operations. Incidental spills and leaks, even within the containment area, would be cleaned up using absorbent pads, which would be temporarily stored on-site in containment drums pending proper disposal. Containment drums would be stored within secondary containment.

In the event of a major spill, all released material would be contained on-site. As described under Impact WR-7, the transloading area would be constructed on a concrete containment slab sloped to divert any releases to two underground storage tanks with a total capacity of 100,000 gallons. The sloped slab area itself would provide 450,000 gallons of containment storage. The combined storage capacity of the storage tank and the concrete containment area would be more than sufficient to contain a release under the worst-case scenario, which would consist of approximately 30,000 gallons of crude oil released (the entire contents of one rail tank car) and approximately 100,000 gallons of fire water released to suppress a fire.

Released materials stored in the storage tank and containment slab would be conveyed to an on-site oil water separator system for treatment prior to being discharged into the bioswale. The oil water separator would be located within secondary containment. During large storm events (greater than 10-year return period) storage tanks and the oil water separator system capacities could be exceeded. In the event this occurs, stormwater runoff would bypass the storage tanks and be diverted directly to the bioswale. All discharges to the bioswale would be controlled by a valve, and visually monitored. Additionally, contingency planning and response measures for oil releases, discussed in Chapter 10.0: Hazards and Hazardous Materials, would be implemented for the project, per regulations.

Mitigation Measure: No mitigation required.

Impact WR-12: Degrade water quality due to a crude oil release at the marine terminal. (Significant and unavoidable.) Oil spill trajectory modeling has been performed to evaluate the extent of impacts from a reasonable worst-case discharge of 1,267 BBLs from the marine terminal pipeline during crude oil transfer from vessels. As discussed in Chapter 16.0: Marine Transportation and Marine Terminal Operations (refer to Impact MT-7), the probability of a release greater than 1,000 BBLs at the marine terminal is approximately 0.04, or one release approximately every 23 years.

Modeling results are provided in Appendix O: Oil Spill Analysis for WesPac Pittsburg Infrastructure Project EIR, Pittsburg, California, and summarized in detail in Impact MT-7 in Chapter 16.0: Marine Transportation and Marine Terminal Operations. During the winter months, the probability of spilled oil impacting the southern shore of Suisun Bay between the Terminal and Port

Chicago is essentially 100 percent, dropping to approximately 60 percent between Port Chicago and the Benicia-Martinez Bridge. There is less than a 30 percent probability that the spilled oil would reach San Pablo Bay. During the summer months, the probability of spilled oil impacting the southern shore of Suisun Bay between the Terminal and Port Chicago is also essentially 100 percent, dropping to below 30 percent west of Port Chicago. There is very little chance that the oil would reach west of the Benicia-Martinez area. However, during the summer the river flow to the ocean is less than in the winter, and there is over a 90 percent chance that the spilled oil would reach the shoreline east of the Terminal, including Sherman Island. These descriptions are shown graphically on Figures 5 and 6 on Appendix O).

Crude oil present in bay waters would exceed the Basin Plan water quality objective for oil and grease, which comprises a visible film or coating on the surface of the water, or on objects in the water, that causes nuisance or that otherwise adversely affects beneficial uses. Additionally, based on visual inspection of modeling-result figures provided in Appendix O, a reasonable worst-case release of oil would have approximately a 90 percent to 100 percent chance of reaching the Mallard Slough intake and a 10 percent to 20 percent chance of reaching the Fulton Shipyard intake in the summer months, and a 50 percent to 60 percent chance of reaching the Mallard Sough intake in the winter months. A spill occurring during the winter would not be expected to reach the Fulton Shipyard intake. No other water supply intakes are expected to be affected.

Although modeling indicates that oil from a spill is unlikely to reach most water intakes, there is still a possibility that this event could occur. This could affect water supply to the region, especially during periods of drought. The project would be required to obtain a Certificate of Financial Responsibility from the Office of Spill Protection and Response to demonstrate that it has adequate financial resources to pay cleanup and damage costs arising from an oil spill. Impacts to public utilities and water service providers are further discussed in Chapter 11.0: Public Services and Utilities, Impact PSU-14.

Contingency planning and response measures for oil releases, discussed in Chapter 10.0: Hazards and Hazardous Materials (refer to Impacts HM-3, HM-4, and HM-5), and Chapter 16.0: Marine Transportation and Marine Terminal Operations (refer to Impacts MT-6 and MT-7) would be implemented for the project, per regulations. Even with the implementation of contingency planning and response measures for oil spills, a spill could spread over a large area and impact water quality and water intakes. In such a case, impacts to water quality, albeit temporary, would be significant and unavoidable.

Mitigation Measure: No additional mitigation measures available.

17.2.3.2 Alternative 1: Reduced Onshore Capacity

Construction-related Impacts

Impact WR-13: Degrade surface water quality as a result of marine terminal, storage terminal, Rail Transload Facility, bridge structures, and pipeline construction activities. (Less than significant.) Construction activities potentially affecting surface water quality would be the same for Alternative 1 as for the proposed project. Refer to Impact WR-1.

Mitigation Measure: No mitigation required.

Impact WR-14: Degrade groundwater quality as a result of onshore storage terminal, Rail Transload Facility, bridge, and pipeline construction activities. (Less than significant.) Construction activities potentially affecting groundwater quality would be the same for Alternative 1 as for the proposed project. Refer to Impact WR-2.

Mitigation Measure: No mitigation required.

Impact WR-15: Degrade surface water quality as a result of marine terminal construction activities. (Less than significant.) Marine terminal construction activities would be the same for Alternative 1 as for the proposed project. Refer to Impact WR-3.

Mitigation Measure: No mitigation required.

Operational Impacts

Impact WR-16: Cause insufficient capacity of the proposed stormwater management system. (Less than significant.) Stormwater management would be the same for Alternative 1 as for the proposed project. Although the East Tank Farm would not be used for crude oil storage, collection of stormwater from this area would continue. Refer to Impact WR-4.

Mitigation Measure: No mitigation required.

Impact WR-17: Re-direct flood flows within the 100-year flood plain, or expose people, structures, or facilities to significant risk from flooding. (Less than significant.) Construction and drainage for Alternative 1 would be the same as for the proposed project. Refer to Impact WR-5.

Mitigation Measure: No mitigation required.

Impact WR-18: Degrade water quality due to runoff from the onshore terminal. (Less than significant.) Construction and drainage for Alternative 1 would be the same as for the proposed project. Refer to Impact WR-6.

Mitigation Measure: No mitigation required.

Impact WR-19: Degrade water quality due to runoff from the Rail Transload Facility, including associated bridge structures. (Less than significant.) Construction and drainage for Alternative 1 would be the same as for the proposed project. Refer to Impact WR-7.

Mitigation Measure: No mitigation required.

Impact WR-20: Degrade water quality due to biofueling, vessel transit, and maintenance dredging. (Less than significant.) For the proposed project, as discussed in Chapter 16.0: Marine Transportation and Marine Terminal Operations (refer to Impact MT-4), the increase in commercial vessel traffic in Suisun Bay due to the tank vessels that would call at the proposed marine terminal is expected to increase by approximately 26 percent over 2010 levels, on average, in Suisun Bay. Under Alternative 1, the increase is expected to be even less on average, approximately 12 percent (refer to Impact MT-13 in Chapter 16.0: Marine Transportation and Marine Terminal Operations). Similar to the proposed project (refer to Impact WR-7), the projected increase in vessel traffic in Suisun Bay, which would remain well below historical levels, is unlikely to cause a measurable increase in copper concentrations from antifouling paints, in water or sediment. Maintenance dredging activities for Alternative 1 would be the same as for the proposed project and would be less than significant, as discussed under Impact WR-8.

Mitigation Measure: No mitigation required.

Impact WR-21: Degrade water quality due to a crude oil release from an aboveground storage tank. (Less than significant.) Because the East Tank Farm would not be used for oil storage under Alternative 1, the chance of a crude oil release from a tank would be even less likely than for the proposed project, and is expected to be less than significant. Leak-detection systems for the South Tank Farm and containment within the stormwater retention pond would be the same as for the proposed project. Refer to Impact WR-9.

Mitigation Measure: No mitigation required.

Impact WR-22: Degrade water quality as a result of a crude oil pipeline release. (Significant and unavoidable.) Pipeline operations would be the same for Alternative 1 as for the proposed project. Refer to Impact WR-10 for a discussion of potential impacts to groundwater and surface water quality, and beneficial uses.

Contingency planning and response measures for oil releases, discussed in Chapter 10.0: Hazards and Hazardous Materials (refer to Impacts HM-3, HM-4, and HM-5) would be implemented under Alternative 1, per regulations.

Mitigation Measure: No additional mitigation measures available.

Impact WR-23: Degrade water quality as a result of a crude oil release from the Rail Transload Facility. (Less than significant). Rail Transload Facility operations would be the same for Alternative 1 as for the proposed project. Contingency planning and response measures for oil releases, discussed in Chapter 10.0: Hazards and Hazardous Materials, would be implemented for the project, per regulations.

Mitigation Measure: No mitigation required.

Impact WR-24: Degrade water quality due to a crude oil release at the marine terminal. (Significant and unavoidable.) As discussed in Chapter 16.0: Marine Transportation and Marine Terminal Operations (refer to Impact MT-16), the probability of a release greater than 1,000 BBLs at the marine terminal under Alternative 1 is approximately 0.038, or one release approximately every 27 years, which is slightly less than for the proposed project because fewer vessels are expected to call. Refer to Impact WR-12 for a discussion of potential impacts to groundwater and surface water quality, beneficial uses, and water supply intakes.

Contingency planning and response measures for oil releases, discussed in Chapter 10.0: Hazards and Hazardous Materials (refer to Impacts HM-3, HM-4, and HM-5), and Chapter 16.0: Marine Transportation and Marine Terminal Operations (refer to Impacts MT-6 and MT-7), would be implemented under Alternative 1, per regulations.

Mitigation Measure: No additional mitigation measures available.

17.2.3.3 Alternative 2: No Project

Impact WR-25: Adversely affect surface water, stormwater, and groundwater quality during construction of the proposed project. (No Impact). Under Alternative 2, impacts associated with project construction would be avoided.

Mitigation Measure: No mitigation required.

Impact WR-26: Cause insufficient capacity of the proposed stormwater management system. (Less than significant.) Under Alternative 2, stormwater would continue to be managed as it is currently. The stormwater system is more than adequate to contain the 100-year, one-day event.

Mitigation Measure: No mitigation required.

Impact WR-27: Re-direct flood flows within the 100-year flood plain, or expose people, structures, or facilities to significant risk from flooding. (Less than significant.) Under Alternative 2, no construction would occur, and no flood flows would be re-directed. Drainage for Alternative 2 would not change from current conditions. Currently, project facilities are located within the 100-year floodplain (refer to Figure 17-5), but given the stormwater system, potential for flood impacts is very minor. Flooding of existing structures could result in property damage, but would be unlikely to affect the structural integrity of buildings. Refer to Impact WR-5.

Mitigation Measure: No mitigation required.

Impact WR-28: Degrade water quality due to runoff. (Less than significant.) Construction and drainage for Alternative 2 would not change from existing conditions. Refer to Impacts WR-6 and WR-7.

Mitigation Measure: No mitigation required.

Impact WR-29: Degrade water quality due to vessel transit and maintenance dredging. (Less than significant.) Under Alternative 2, maintenance dredging would not occur. Increased vessel traffic due to calls at the proposed project would also not occur; however, depending on the increased future demand for oil in the San Francisco Bay Area, increased vessel traffic from calls at existing terminals could potentially occur. Similar to the proposed project (refer to Impact WR-8), this would be unlikely to cause a measurable increase in copper concentrations from antifouling paints, in water or sediment.

Mitigation Measure: No mitigation required.

Impact WR-30: Degrade water quality due to a crude oil release from an aboveground storage tank. (No impact.) Under Alternative 2, crude oil would not be stored in tanks at the facility.

Mitigation Measure: No mitigation required.

Impact WR-31: Degrade water quality due to a crude oil release from a pipeline, from the Rail Transload Facility, or from the marine terminal. (No impact.) Under Alternative 2, the proposed project would not be operated, and crude oil would not be transported to or from the facility.

Mitigation Measure: No mitigation required.

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