Section 3.13

Water Quality, Sediments, and Oceanography

SECTION SUMMARY

This section identifies the existing water quality, oceanographic conditions, and sediment conditions in the area of the proposed Project and addresses potential impacts on those parameters that could result from implementing the proposed Project. The primary features of the proposed Project that could affect these resources include: modernization of the ALBS facility to comply with the NPDES permit and WDR including storm drains and an oil/water separator consistent with Standard Urban Stormwater Mitigation Plan (SUSMP) provisions; dredging of approximately 19,000 cy of sediments, including historically contaminated sediments; construction of two CDFs to beneficially reuse contaminated dredge materials and create approximately 0.9 acre of new land; and operation of ALBS until 2042. In addition, landside improvements, including the demolition and reconstruction of a number of existing buildings and improvement of the facility's ability to repair ships and vessels, could potentially impact water quality. An analysis of potential impacts on water quality, sediments, and oceanography associated with the alternatives is detailed in Chapter 6, Analysis of Alternatives.

Section 3.13, Water Quality, Sediments, and Oceanography, provides the following:

- A description of the existing water and sediment quality in Los Angeles-Long Beach Harbor (Port Complex);
- A description of the existing oceanographic parameters in the Port Complex;
- A description of applicable local, state, and federal regulations and policies regarding water quality and sediment quality that could be affected by construction or operation of the proposed Project;
- A discussion on the methodology used to determine whether the proposed Project adversely affects water quality or sediment quality in the Project area;
- An impact analysis of the proposed Project; and,
- A description of any mitigation measures proposed to reduce any potential impacts.

Key Points of Section 3.13:

The proposed Project would expand an existing boat repair shop, and future operations would be consistent with those currently performed at the site, as well as adjacent uses in the Project area. The modernization of the ALBS facility to comply with the NPDES permit and WDR including storm drains and an oil/water separator consistent with provisions, and the removal of soil contaminants beneath the Project site and within the sediments in Fish Harbor, would result in a beneficial effect of the proposed Project. With compliance with regulations governing water quality, including those related to oil spills, all potential impacts to water quality, sediments, and oceanography are considered less than significant. Further, implementation of proposed Project would have water quality benefits.

3.13.1 Introduction

This section addresses the potential impacts to water quality, sediments, and oceanography resulting from the proposed Project. This section also addresses surface water hydrology and potential for flooding impacts. The environmental setting, applicable regulations, and impacts and mitigation measures are discussed in Sections 3.13.2 through 3.13.4. Potential impacts to groundwater are discussed in Section 3.6, Groundwater and Soils. The primary features of the proposed Project that could affect these resources include:

- Demolition of existing wharf and creosote-treated piles;
- Removal of finger piers;
- Installation of two finger piers and 126 concrete piles;
- Dredging of approximately 19,000 cy;
- Construction of sheet pile walls and two CDFs;
- Landside demolition and improvements; and
- Operation of ALBS until 2042.

3.13.2 Environmental Setting

3.13.2.1 Regional Setting

Los Angeles Harbor (the Harbor) has been physically modified through previous dredging and filling projects, as well as construction of breakwaters and other structures. The Harbor consists of the Inner Harbor (channels, basins, and slips north of the Vincent Thomas Bridge), Outer Harbor (south of Reservation Point to the San Pedro and Middle breakwaters), and Main Channel (between the Vincent Thomas Bridge and Reservation Point) (refer to Figures 2-1 and 2-2). Located on Terminal Island, ALBS is located along on the southwestern edge of inner Fish Harbor at Berth 258. Circulation in Fish Harbor is restricted by breakwater-type structures located mid-way into Fish Harbor, separating the inner and outer areas. Because of the restricted circulation and historic discharges of untreated cannery wastes and other contaminants from adjacent land uses, Fish Harbor is considered a subunit of the Harbor for water and sediment quality regulatory purposes, including the 303(d) list of impaired water bodies (POLA and POLB, 2009)

The Los Angeles Harbor is adjacent to Long Beach Harbor. The Port Complex functions oceanographically as one unit due to a connection via Cerritos Channel and because they share Outer Harbors behind the San Pedro and Middle breakwaters. In addition, there is an opening in the Pier 400 causeway designed to enhance tidal circulation. The combined Los Angeles/Long Beach Harbor oceanographic unit has two major hydrologic divisions: marine and freshwater. The marine hydrologic division is primarily influenced by the southern California coastal marine environment known as the Southern California Bight.

The proposed Project site is within the Dominguez Watershed (Hydrologic Unit 405.12), which covers approximately 132 square miles (342 square kilometers) of land and water. Approximately 81 percent of the watershed is developed, and 62 percent of the land is covered by impervious surfaces. At about 11.6 square miles (30 square kilometers), the combined land area of the Los Angeles/Long Beach Port Complex comprises less than 10 percent of the total area of the watershed (POLA and POLB, 2009). Drainage within the watershed is primarily through an extensive network of underground storm drains. This system of storm drains defines the boundaries of the watershed. Within the Port Complex, the Port of Los Angeles alone has more than 1,000 catch basins that drain into the Harbor. More than half of this watershed drains to Dominguez Channel, which constitutes the main freshwater influx into the Los Angeles Harbor, and the remaining portions of the watershed drains to retention basins for groundwater recharge, into the Wilmington Drain/Lake Machado system, which in turn has an outlet that discharges to the Los Angeles Harbor, or through local drains directly to the Los Angeles and Long Beach Harbors (MEC, 2004).[1] Another freshwater contributor to the Harbor is the discharge of effluent from the Terminal Island Water Reclamation Plant (TIWRP) into the Outer Harbor.

The existing beneficial uses of coastal and tidal waters of the Los Angeles Harbor, as identified in the Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan), includes: industrial service supply, navigation, water contact recreation, noncontact water recreation, commercial and sport fishing, marine habitat, preservation of rare and endangered species, and shellfish harvesting (RWQCB, 1994b). Water quality data for the Dominguez Channel and Los Angeles/Long Beach Harbor have been evaluated by the Los Angeles RWQCB and USEPA as part of the assessment of impaired water bodies of the nation under Section 303(d) of the Clean Water Act. The Act requires that "Each State shall identify those waters within its boundaries for which the effluent limitations…are not stringent enough to implement any water quality standard applicable to such waters." [2]

Waters in the Harbor that are 303(d)-listed for impairment include: Consolidated Slip, Cabrillo Marina, Fish Harbor, Inner Cabrillo Beach Area, Los Angeles/Long Beach Outer Harbor (inside breakwater), and Los Angeles/Long Beach Inner Harbor (SWRCB, 2010). Dominguez Channel, which drains into Consolidated Slip, is also on the 2008 Section 303(d) list. The reasons for impairment of these water bodies are summarized in Table 3.13-1. For those Los Angeles Harbor waters listed on the 303(d) list, the Clean Water Act (CWA) requires the establishment of Total Maximum Daily Loads (TMDLs). A TMDL is defined as "the sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background"(40 CFR Section 130.2) such that the capacity of the water body to assimilate pollutant loadings is not exceeded. Upon establishment of TMDLs, the state is required to incorporate the TMDLs along with appropriate implementation measures into the state Water Quality Management Plan (40 CFR Sections 130.6[c][1], 130.7). Load allocations are apportioned among existing (and potentially future) loading sources through an allocation process. Point sources regulated under the NPDES program receive wasteload allocations; nonpoint sources receive load allocations. The sum of wasteload and load allocations may not exceed the TMDL. On May 5, 2011, the Los Angeles RWQCB passed a TMDL resolution for toxic pollutants in Dominguez Channel and Greater Los Angeles and Long Beach Harbors

[1] Sheet runoff, storm drain discharges from several City and County stormwater outfalls, and spillover from the Lake Machado weir also add freshwater to the Harbor during and after storm events.

[2] These waters do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for water on the lists and develop action plans, called TMDL to improve water quality.

(RWQCB and USEPA, 2011). This TMDL is awaiting review and approval by the State Board, the State Office of Administrative Law, and pursuant to CWA Section 303(d) and Section 303(c) as appropriate, by the USEPA. Finalization is expected by March 2012. All of the impairments are being addressed at once (referred to as the Los Angeles/Long Beach Harbor "toxics" TMDL). The Los Angeles RWQCB previously developed a TMDL for bacteria at Los Angeles Harbor, including Inner Cabrillo Beach and the Main Ship Channel (effective 2005), and the remaining impairments identified in the various Harbor water bodies are being addressed collectively in the toxics TMDL.

Table 3.13-1: Final 2008/2010 Section 303(d) Listed Waters in Los Angeles Harbor

Listed Waters/Reaches	2010 303(d) List Impairments
Los Angeles Harbor, Cabrillo Marina (77 acres)	Tissue: DDT, PCBs Benzo(a)pyrene (3,4-Benzopyrene -7-d)
Los Angeles Harbor, Inner Cabrillo Beach Area (82 acres)	Indicator Bacteria Tissue: DDT*, PCBs*
Los Angeles/Long Beach Outer Harbor, inside breakwater (4042 acres)	Tissue: DDT, PCBs Sediment: Toxicity
Los Angeles Harbor, Fish Harbor (91 acres)	Tissue: DDT, PAHs[3] Sediment: Toxicity Benzo(a)pyrene (3,4-Benzopyrene -7-d), Benzo(a)anthracene, Chlordane, Chrysene (C1-C4), Copper, DDT, Dibenz(a,h)anthracene, Lead, Mercury, PAHs[3], PCBs, Phenanthrene, Pyrene, Zinc
Los Angeles/Long Beach Inner Harbor (3003 acres)	Beach Closures, Tissue: DDT, PCBs Sediment: Benthic Community Effects, Toxicity Benzo(a)pyrene (3,4-Benzopyrene -7d), Chrysene (C1-C4), Copper, Zinc Toxicity
Los Angeles Harbor, Consolidated Slip (36 acres)	Tissue: Chlordane, Dieldrin, DDT*, PCBs*, toxaphene Sediment: Cadmium, Chlordane, Chromium, Copper, DDT, Lead, Mercury, PCBs, Zinc, Benthic Community Effects, 2-Methylnaphthalene, Benzo(a)pyrene (3,4-benzopyrene -7-d), Benzo[a]anthracene, Chrysene (C1-C4) Dieldrin, Phenanthrene, Pyrene
Domínguez Channel, (unlined portion below Vermont Ave.) (140 acres)	Tissue: Chlordane, DDT, dieldrin, Lead Sediment: DDT, PCBs, Zinc, Benthic Community Effects, Coliform Bacteria, Sediment Toxicity Ammonia, Benzo(a)pyrene (3,4-Benzopyrene -7-d, Benzo[a] anthracene, Chrysene (C1-C4), PCBs, Phenanthrene, Pyrene Toxicity

Source: RWQCB, 2011

1. Dichlorodiphenyltrichloroethane
2. Polychlorinated biphenyls
3. Polynuclear (or Polycyclic) aromatic hydrocarbons *Fish consumption advisory

The water and sediment quality parameters that could be affected directly by the proposed Project include dissolved oxygen (DO), hydrogen ion concentration (pH), turbidity/transparency, and contaminants. Water and sediment quality parameters that could be indirectly affected by the proposed Project include nutrients and contaminants (dredging both releases and distributes nutrients and contaminants in the sediments during dredging operations, and dredging also removes nutrients and contaminants from the system when sediments are dredged). Other parameters commonly used to describe marine water quality include salinity and temperature. While the proposed Project would not directly affect salinity and temperature, they are addressed because stormwater runoff from the proposed Project site could affect these conditions in the receiving waters of Fish Harbor. Circulation (current patterns) could be affected by the proposed Project because the proposed Project could potentially affect water exchange between Fish Harbor and adjacent waters of the Harbor.

3.13.2.2 Water Quality

Water quality conditions in the Harbor and proposed Project area have been summarized from the Water Resources Action Plan (WRAP) (POLA and POLB, 2009), results of monthly water quality sampling conducted by the LAHD (LAHD, 2011), the 2008 San Pedro Bay biological study (SAIC, 2010) and other sources as cited below. NPDES permit holders discharging to the Harbor conduct required sampling as specified in each permit; however, these monitoring programs are normally limited to receiving waters adjacent to the areas of discharge. Aside from dredging projects, the vast majority of sampling done by the LAHD is voluntary. The Port conducted 25 water quality surveys at several stations in the Harbor approximately monthly from January 2009 to March 2011, including in the proposed Project area. These surveys included two stations in Fish Harbor (Stations LA 14 in inner Fish Harbor and LA 11A in outer Fish Harbor) and one (Station LA 10) in the shallow Outer Harbor area directly south of the opening of Fish Harbor (Figure 3.13-1).

Figure 3.13-1: Water Quality Monitoring Stations, January 2009 to March 2011 (POLA, 2011)

No natural freshwater surface features occur at the proposed Project site or the remainder of Terminal Island. Surface freshwater generated at or near the proposed Project site is from storm water runoff. The quality of the runoff water may reflect loadings from oils, grease, hydrocarbons, and particulate matter associated with the operation of vessel repair facilities, industrial land uses, and runoff from roadways, which accumulate on the land surfaces during periods of dry weather.

Marine water quality in the Harbor is primarily affected by climate, circulation (including tidal currents), and biological activity. Parameters such as salinity, pH, temperature, and transparency/turbidity are influenced primarily by large-scale oceanographic and meteorological conditions, while DO and nutrients are related to local processes in addition to regional conditions. Surface runoff, effluent discharges, and historical and recent watershed inputs also affect water and sediment quality within the Harbor. Results from the 2008 Biological Baseline Study indicated that water quality characteristics within the Harbor did not exhibit large spatial trends, and the variability for individual water quality parameters appeared to be related to water temperature rather than habitat types (SAIC, 2010).

Discharge permits for point sources (e.g., Publically-Owned Treatment Works and Industrial Wastewater Discharges) typically specify maximum allowable concentrations and mass emission rates for effluent constituents. Numeric criteria for priority pollutants in discharge permits may be based on limits contained in the California Ocean Plan or the California Toxics Rule (CTR) (USEPA, 2000). Discharge requirements for municipal stormwater runoff are typically based on achievement of Maximum Extent Practical reduction of pollutants. For Industrial and Construction site runoff, control of pollutant discharges is required to utilize best available technology economically achievable (BAT) for toxic pollutants and non conventional pollutants, while best conventional pollutant control technology (BCT) is required to minimize conventional pollutants. Additionally, these discharge permits require controls of pollutant discharges to reduce pollutants and any more stringent controls necessary to meet water quality standards. The USEPA has already established such limitations, known as effluent limitation guidelines (ELGs), for certain industrial categories. In addition, the State Water Resources Control Board (SWRCB) recently adopted (2009) the General Permit for Construction Activities which contains both narrative effluent limitations and new numeric effluent limitations (NELs) for pH and turbidity, set using the best professional judgment (BPJ) equivalent to BAT and BCT (respectively). These limits apply to runoff from construction sites that result in land disturbance of one acre or more. The NEL for pH is between 6.0 and 9.0, and the NEL for turbidity is 500 nephelometric turbidity units (NTUs). As detailed in subsection 3.13.3.2, discharges of wastes to waters of the U.S. (e.g., surface waters) are authorized through NPDES permits (under Section 402 of the CWA). In California, the SWRCB and the nine RWQCBs have authority delegated by USEPA to issue NPDES permits. Also in conjunction with permitting under Section 404 of the CWA by the USACE, the RWQCBs (under authority of the USEPA) can issue CWA Section 401 Water Quality Certifications to certify that actions being considered by the USACE for granting Section 404 permits will not have adverse water quality impacts.

However, where impaired water bodies have been identified, waterbody-specific TMDLs are developed and incorporated into the Basin Plan to address the impairment. An adopted TMDL will contain quantified reductions in the pollutant(s) of concern that can be translated into additional permit requirements for municipal, industrial, and construction permits. As discussed in Section 3.13.2.1, a TMDL for the assessment for toxic pollutants in Dominguez Channel and Greater Los Angeles and Long Beach Harbors for the Harbor was approved by the Los Angeles RWQCB on May 5, 2011 (RWQCB and USEPA, 2011).

3.13.2.2.1 Dissolved Oxygen

Dissolved oxygen (DO) is a principal indicator of marine water quality. DO concentrations vary in response to a variety of processes and conditions, such as:

- Respiration of plants and other organisms
- Oxygen demand from waste discharges
- Surface water mixing through wave action
- Diffusion rates at the water surface
- Water depth
- Disturbance of anaerobic bottom sediments

Algal (dinoflagellate) blooms (red tides) occur occasionally in the Harbor, typically associated with high solar radiation and nutrient levels, such as on sunny days following storm events. These blooms can reduce DO levels, but the effects are usually localized and short-lived. Disturbances of anaerobic sediments by dredging activities can also result in short-term, localized DO reductions due to resuspension of materials with a high oxygen demand.

The Basin Plan (RWQCB, 1994b) specifies that the mean annual DO concentration of waters shall be 7 milligrams per liter (mg/L) or greater with no event less than 5 mg/L, except that the mean annual DO concentration in the Outer Harbor area shall be 6 mg/L or higher. As recently as the late 1960s, DO levels at some locations in Los Angeles Harbor were so low that little or no marine life could survive. Since that time, regulations have reduced direct waste discharges into the Harbor, resulting in improved DO levels throughout the Harbor (MEC and Associates, 2002; POLA and POLB, 2009; SAIC, 2010). Current DO concentrations throughout the Port Complex generally exceed the 5 mg/L standard (i.e., average values in the 6 to 8 mg/L range), with values just under 7 mg/L typical at Inner Harbor stations, and just over 7 mg/L at Outer Harbor stations (POLA and POLB, 2009).

Results of more than 240 water quality surveys conducted between 1999 and 2008 indicated that surface DO in Fish Harbor ranged from 1.1 mg/L to 10.8 mg/L, and averaged 7.2 mg/L (POLA and POLB, 2009). Near bottom over the same period, DO ranged from 2.9 mg/L to 10.4 mg/L, and averaged 7.1 mg/L. Between January 2009 and March 2011, water quality at three stations near the proposed Project site (in inner and outer Fish Harbor and in the Pier 300 channel) was sampled approximately monthly. At Station LA 14, in inner Fish Harbor, DO averaged 6.4 mg/L at the surface and 7.0 mg/L near the bottom, ranging from 3.8 mg/L to 7.8 mg/L at the surface and 3.7 mg/L and 10.6 mg/L near bottom (Figure 3.13-2; LAHD, 2011). In outer Fish Harbor (Station LA 11A) surface DO averaged 6.3 mg/L over the 25 sampling events and ranged from 3.9 mg/L to 7.9 mg/L. Near bottom, DO in outer Fish Harbor averaged 7.0 mg/L, ranging from 4.2 mg/L to 10.1 mg/L. Outside of Fish Harbor in the Pier 300 channel (LA 10), surface DO ranged from 3.6 mg/L to 8.4 mg/L, and averaged 6.6 mg/L, while near bottom DO ranged from 3.6 mg/L to 9.0 mg/L and averaged 6.3 mg/L.

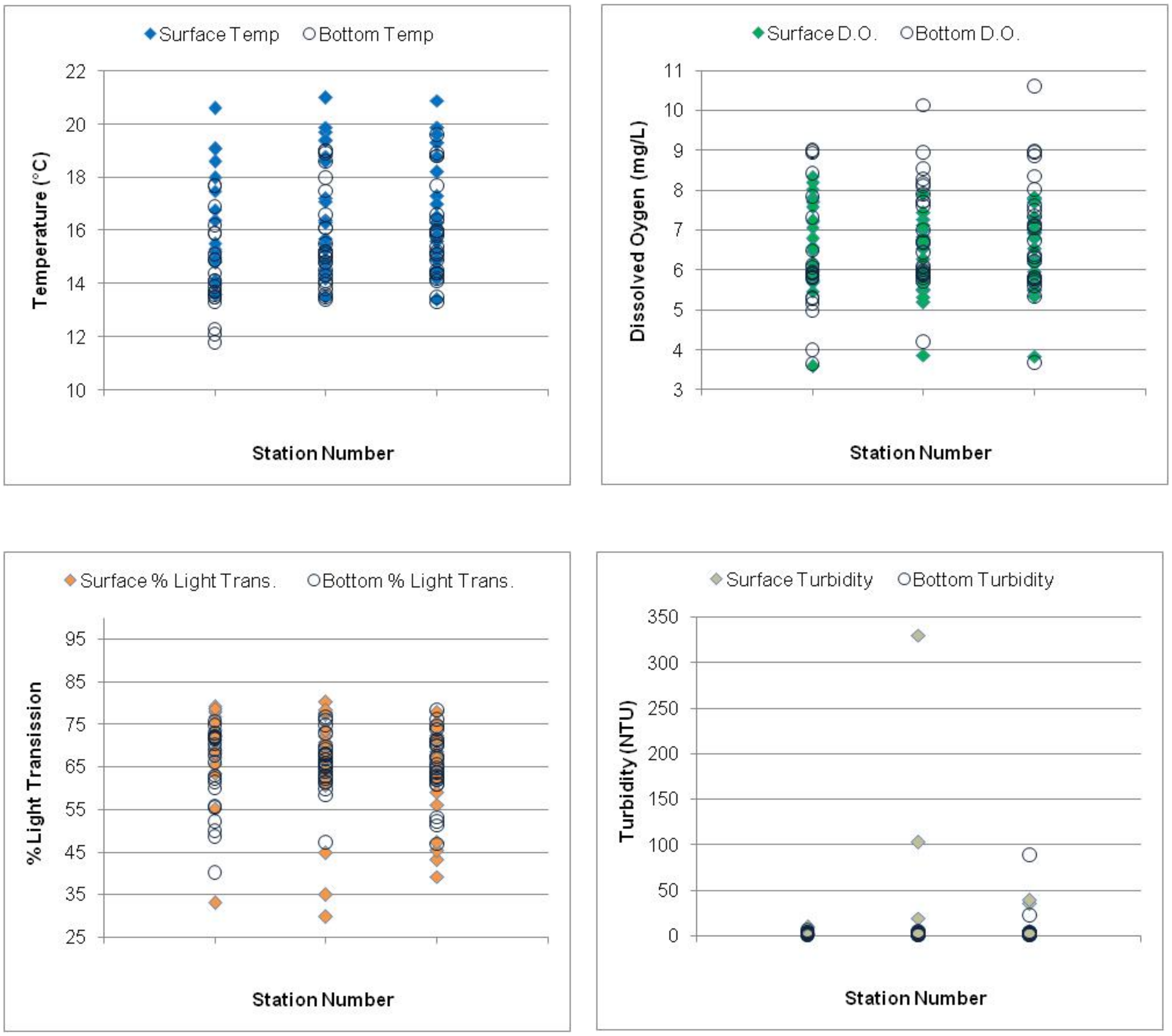

Figure 3.13-2: Examples of Water Quality in the Proposed Project area, January 2009 to March 2011 (LAHD, 2011)

During the 25-month sampling period DO levels of less than 5 mg/L were recorded at Station LA 10 (Pier 300 channel, the deepest of the stations) in the lower one-third of the water column in April 2009 and near bottom in May of 2009 (Figure 3.13-2; LAHD, 2011. DO values below 5 mg/L [as low as 3.6 mg/L] were reported throughout the water column at all Harbor stations in August 2009. Other than these low values, DO in the Project area usually ranged from about 6 to 9 mg/L.

3.13.2.2.2 pH

Hydrogen ion concentrations (pH) in the open ocean typically remain fairly constant due to the buffering capacity of seawater (Sverdrup et al., 1942). It is affected by plant and animal metabolism, mixing with water with different pH values from external sources and, on a small scale, by disturbances in the water column that cause redistribution of waters with varying pH levels or the resuspension of bottom sediments. In the open ocean, pH levels typically range from 8.0 to 8.3.

The pH and buffering capacity at the proposed Project site are similar to that of the open ocean because the Harbor is directly connected to and exchanges with the Pacific Ocean. In monthly (approximately) water quality sampling conducted throughout the Harbor from 2009 to 2011, surface pH in the inner Fish Harbor (Station LA 14) averaged 8.18 units, ranging from 7.79 to 8.77 units (LAHD, 2011). Near bottom at the same station, pH ranged from 7.79 to 8.65 units and averaged 8.11 for the 25 surveys. In outer Fish Harbor (LA 11A), surface pH ranged from 7.78 to 8.80 and averaged 8.21 units, while near bottom pH ranged from 7.81 to 8.69 and averaged 8.15 units. Outside of Fish Harbor in the Pier 300 channel (LA 10), pH ranged 7.85 to 8.70 units with an average of 8.20 at the surface, and ranged from 7.85 to 8.61 with an average of 8.12 units at the bottom (LAHD, 2011). The Basin Plan specifies an acceptable pH range of 6.5 to 8.5 with a change in tolerance level of no more than 0.2 due to discharges (proposed Project impacts) in bays or estuaries (RWQCB, 1994b).

3.13.2.2.3 Transparency

Transparency is a measure of water clarity or the ability of light to pass through water. Transparency can be measured as the depth in the water column that a black and white (secchi) disk can be seen from the surface or by a transmissometer, an electronic instrument that measures light attenuation by water as a percent of light transmission. Higher values (up to 100 percent) indicate increased water clarity (i.e., more light penetrates through the water column). Transparency can also be assessed indirectly by measuring turbidity, or the muddiness or cloudiness of water expressed as a standard unit of measure (NTUs), which quantifies the diffraction of light by particles suspended in the water. Higher NTU values indicate greater turbidity, which results in decreased light levels in the water column. The amount (mass) of suspended material, including sediments and organic solids, such as algae and detritus in water is expressed as total suspended solids (TSS), and is measured in mg/L.

Increased turbidity usually results in decreased transparency. Turbidity generally increases because of one or a combination of the following conditions: fine sediment from terrestrial runoff or resuspension of fine bottom sediments by currents or disturbance; algal blooms; and dredging activities. Propeller wash from ships moving in and out of the Harbor is a source of mixing in the water column and may disturb bottom sediments (which can affect transparency), especially in narrower channels in the Inner Harbor. Algal blooms can be triggered by storm runoff or upwelling events, which typically provide high nutrient loadings that are efficiently utilized by plankton.

Historically, water clarity in the Harbor has varied tremendously, with secchi disk readings ranging from 0 to 40 feet. Water clarity generally increased from 1967 to 1986-1987 (USACE and LAHD, 1992), although individual readings still vary greatly. Suspended solids concentrations in surface waters of the Outer Harbor range from less than 1.0 to 22.4 mg/L (USACE and LAHD 1992). During approximately monthly sampling between January 2009 and March 2011, surface light transmission in inner Fish Harbor (Station LA 14) averaged 63.9 percent, ranging from 39.2 to 78.2 percent (Figure 3.13-2; LAHD, 2011). Near bottom at the same station, light transmission ranged from 46.8 to 76.1 percent and averaged 64.4 percent for the 25 surveys. In outer Fish Harbor (LA 11A), surface light transmission ranged from 29.7 to 80.3 percent and averaged 66.5 percent, while near bottom light transmission ranged from 47.3 to 76.0 percent and averaged 65.2 percent. Outside of Fish Harbor in the Pier 300 channel (LA 10), light transmission ranged from 33.1 to 79.2 percent with an average of 69.9 percent at the surface, and ranged from 40.2 to 75.3 percent with an average of 64.1 percent at the bottom.

Turbidity was measured off ALBS between January 2009 and March 2011. Mean turbidity at the three stations ranged between 2.0 and 19.0 NTUs, with a range throughout the water column between 0.1 and 329.7 NTUs (Figure 3.13-2; LAHD, 2011). Only about 1.0 percent of the turbidity values reported between January 2009 and March 2011 exceeded 10 NTUs. The highest values, 329.7 and 88.3 NTUs, were recorded at the surface in outer Fish Harbor (Station LA 11A) in April 2010 and near bottom at inner Fish Harbor (LA 14) in August 2009, respectively. Both of these values were single occurrences among otherwise normally low values at those stations. Overall, turbidity was highest at Station LA 14 (inner Fish Harbor) in February 2009 with values that ranged from 19 .0 to 35.1 NTUs throughout the water column.

3.13.2.2.4 Chemical and Biological Contaminants

Contaminants in Harbor waters can originate from a number of sources in and outside the Harbor. Potential sources of trace metals and organics include: municipal and industrial wastewater discharges, stormwater runoff from drainage channels (e.g., Dominguez Channel), as well as local surface and storm drain runoff from within the Port Complex, and municipal wastewater treatment effluents (i.e., TIWRP), dry weather flows, leaching from ship hull antifouling paints, petroleum or waste spills, atmospheric deposition, and resuspension of bottom sediments containing legacy (i.e., historically deposited) contaminants such as DDT and PCBs. Most of the metal, pesticide, and PAH contaminants that enter the Harbor have a low solubility in water and adsorb onto particulate matter that eventually settles to the bottom and accumulates in bottom sediments. Channel deepening projects in both the Inner and Outer Harbor areas, including the Deep Draft Navigation Improvement program and the Port of Los Angeles Channel Deepening Project, have removed contaminated sediments from the Harbor (USACE and LAHD, 1992; POLA and POLB, 2009). In addition, some areas of contaminated sediments have been covered by construction of landfills or shallow water habitat (e.g., Cabrillo Shallow Water Habitat), thereby isolating contaminated sediments from exchange with the overlying water. In general, operational controls required of dischargers and both non-structural and structural controls of stormwater runoff and discharge sources have reduced the input of contaminants into harbor waters over time.

Concentrations of metals, PAHs, and legacy contaminants, such as DDTs and PCBs, are expected to vary spatially and temporally in response to the magnitude of the numerous source inputs. However, trace-level contaminants in Harbor waters are not monitored routinely. Therefore, there is limited information available to characterize the spatial and temporal patterns in baseline concentrations of individual chemical contaminants in Harbor waters. A Harbor-wide water quality monitoring study was performed beginning in 2005. For metals, with the exception of copper in 5 of 253 samples from throughout the Port Complex, concentrations of dissolved metals did not exceed regulatory criteria for continuous or maximum exposure (POLA and POLB, 2009). Copper was detected above CTR criteria in water samples from two locations in Los Angeles Harbor, two in the Cabrillo Marina complex (including one sample that exceeded the higher maximum exposure criteria), and one in Fish Harbor.

Concentrations of organic chemicals (including chlorinated pesticides, PCBs, PAHs, phenols, and phthalates) were consistently very low, and usually below detection limits (POLA and POLB, 2009). During the Harbor-wide water quality monitoring, tributyltin (TBT) was detected in 9 of 205 samples collected in Los Angeles Harbor, with concentrations of TBT in seven of those samples that exceeded the published National Ambient Water Quality Criteria chronic exposure limit (7.4 ng/L); there are no California standards for TBT. Those seven locations, primarily within the Inner Harbor, were in areas typified by limited water circulation, and three of those seven samples were in or near Fish Harbor. Concentrations of other organic chemicals were low, when detected, and concentrations of these contaminants were not a concern in the waters of the Harbor (POLA and POLB, 2009).

In seven sampling events conducted throughout the Los Angeles Harbor between May 2005 and September 2008, PAHs were reported only during January 2008 at three stations in the Project area (LAHD, 2011). PAHs in outer Fish Harbor (Station LA 11A) were reported at a level of 81 µg/L and at inner Fish Harbor (Station LA 14) at a level of 158.3 µg/L. Outside of Fish Harbor (Station LA 10) PAHs were reported at a level of at a level of 30.2 µg/L.

Concentrations of metals and PAHs in Harbor waters are expected to be considerably higher following a storm event due to the higher mass loadings associated with storm water runoff. Following a large storm event, contaminant concentrations decrease as loadings decline, storm water mixes with harbor waters, and contaminants associated with particles settle out of the water column to the bottom sediments. The Port has developed hydrodynamic and water quality models that predict the effects of storm flows from selected watersheds, such as the Dominguez Channel watershed, on inputs and fate of chemical contaminants to the Harbor (POLA and POLB, 2009). Water quality regulations have identified indicator bacteria intended to be protective of human health; these include total and fecal coliform bacteria, and enterococcus. Health and Safety Code provisions (Sections 115880, 115885, 115915) established by Assembly Bill 411 (AB 411) in 1997 established minimum protective bacteriological standards for waters adjacent to public beaches and water-contact recreational areas. The Basin Plan also includes bacteria standards for water contact recreation with geometric mean limits for each indicator bacterium. Bacteria sampling is conducted to determine whether water-contact activities are safe for humans, because people who swim in waters with elevated levels of indicator bacteria are more likely to be exposed to human pathogens (bacteria, virus) that could result in increased risk of illness (POLA and POLB, 2009). In tests conducted during seven Port-wide sampling events (three wet and four dry season events) between 2006 and 2008, and during a special study in the East Basin/Consolidated Slip area in 2009, the vast majority of samples had non-detectable levels of indicator bacteria. However, bacterial concentrations in excess of AB 411 and Basin Plan criteria were recorded in these areas following storm events. Inner Harbor areas are more susceptible to elevated bacteria levels than the Outer Harbor, indicating that Dominguez Channel and other Inner Harbor storm drains are the likely primary source of high bacteria levels (POLA and POLB, 2009). None of the samples collected in Fish Harbor during the study and tested for enterococcus, fecal coliform or total coliform, exceeded AB 411 standards.[3]

Concentrations of trace-level contaminants in ambient Harbor waters are not monitored routinely. Therefore, information to characterize the spatial and temporal patterns in baseline concentrations of individual chemical contaminants in Harbor waters is limited (AMEC, 2007). Nevertheless, concentrations of metals, PAHs, and legacy contaminants, such as DDTs and PCBs, are expected to vary spatially and temporally in response to the magnitude of the numerous source inputs. In particular, concentrations of metals and PAHs in Harbor water are expected to be considerably higher following a storm event due to the higher mass loadings associated with stormwater runoff. Following a large storm event, contaminant concentrations decrease as loadings decline, stormwater mixes with Harbor waters, and contaminants associated with particles settle out of the water column to the bottom sediments. The Port has developed numerical models that predict the effects of storm flows from selected watersheds, such as the Dominguez Channel watershed, on inputs and fate of chemical contaminants to the Harbor (POLA and POLB, 2009).

3.13.2.2.4.1 Atmospheric Deposition of Metals

Indirect dry deposition of metals on land within a watershed can substantially influence stormwater quality in urban areas, and can subsequently affect the water quality in downstream water bodies. Sabin et al. (2004) determined trace metal loads from indirect dry deposition to land (not directly to the water surface) of the Los Angeles River, Dominguez Channel, and Ballona Creek watersheds were far larger than the estimated trace metal loads found in stormwater emanating from the same watersheds, which agreed with results from previous studies. Heavy metals from road dust, tire wear, and construction dust adsorb on particulates that are greater than 10 microns in diameter that settle in the watershed and then are washed into bodies of water in storm runoff (Bishop, 2006; Stolzenbach, 2006; Sabin et al., 2006). Atmospheric deposition of vanadium and nickel as a result of marine vessels burning crude oil has been linked to concentrations observed in air and rainwater (Poor, 2002). In contrast to indirect aerial deposition, direct aerial deposition of metals onto the water surface is a minor source of pollutants in the water (Bishop, 2006).

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[3] AB 411 Bacteriological Standards **(**17 CCR § 7958) are as follows**:**
(a) The minimum protective bacteriological standards for waters adjacent to public beaches and public water-contact sports areas shall be as follows:
(1) Based on a single sample, the density of bacteria in water from each sampling station at a public beach or public water contact sports area shall not exceed:
(A) 1,000 total coliform bacteria per 100 milliliters, if the ratio of fecal/total coliform bacteria exceeds 0.1; or
(B) 10,000 total coliform bacteria per 100 milliliters; or
(C) 400 fecal coliform bacteria per 100 milliliters; or
(D) 104 enterococcus baacteria per 100 milliliters.
(2) Based on the mean of the logarithms of the results of at least five weekly samples during any 30-day sampling period, the density of bacteria in water from any sampling station at a public beach or public water contact sports area, shall not exceed:
(A) 1,000 total coliform bacteria per 100 milliliters; or
(B) 200 fecal coliform bacteria per 100 milliliters; or
(C) 35 enterococcus bacteria per 100 milliliters.
(b) Water samples shall be submitted for bacteriological analyses to a laboratory certified by the Environmental Laboratory Accreditation Program, California Department of Health Services in microbiology for methods for the analysis of the sample type.

Regionally, major transportation corridors, including those utilized for Port goods movement purposes, contribute to the atmospheric deposition of metals in the watershed. Port-wide atmospheric deposition of metals associated with container terminals presents a potentially larger, localized impact to the watershed in the immediate vicinity of the Project. However, the contributions from area-wide and regional transportation sources likely dominate the metal containing particulate matter that enters the storm drain systems because traffic volumes from freeways, commercial roads, and surface streets far exceed the transportation volumes from the Port or container terminal operations alone. As previously mentioned, larger diameter, mechanically generated particles >10 µm (e.g., from grinding, braking, resuspended dust, and maintenance operations) have a greater tendency to deposit in the immediate vicinity of the emission source. Finer particle fractions likely will travel greater distances and may not settle out in the immediate watershed area.

Emission factors developed for copper by the Brake Pad Partnership (BPP) resulting from brake wear demonstrated that passenger vehicles and medium-duty vehicles represent the largest portion of copper generated from brake wear (Process Profiles, 2005). Passenger vehicles were determined to have a composition/wear emission factor of 0.5 mg of copper per kilometer traveled. Medium-duty vehicles were determined to have a composition/wear emission factor of 0.7 mg of copper per kilometer traveled. In comparison, heavy-duty vehicles (such as those used in shipping terminal industries) were determined to have a composition/wear emission factor of 0.3 mg of copper per kilometer traveled. The Process Profile Report further stated (emphasis added):

> *… more than 95% of heavy-duty vehicle brakes are drum brakes (Lawrence, 2004) and much of the brake lining material that is worn during braking remains trapped in the drum. Also, the reported copper concentration of lining material in drum brakes in heavy-duty vehicles is lower than the copper concentration in disc brake linings.*

Based on evidence presented by the BPP, copper from passenger vehicles represents the largest contribution of copper to the atmosphere and subsequently to surfaces in watershed areas. Copper from brake wear is primarily found in the fine particle fraction from 1 to 5 µm. This particle fraction is likely to be dispersed over a much broader area than the coarse fraction >10 µm.

Atmospheric deposition of lead is primarily related to resuspended dust in urban environments. Lead is often a function of roadway soils containing residual, historical concentrations from leaded gasoline during the 1970s. Lead can also be found in paints from older homes and facilities in the surrounding vicinity. As paint chips wear from these facilities, they may become re-entrained in surrounding soils and subsequently may be found in urban stormwater runoff.

Atmospheric deposition of zinc is primarily related to tire wear in urban environments (Councell et al., 2004). Tire wear is predominately associated with larger particle fractions >10 µm and presents a larger potential for localized impacts to water quality. Terminal-related industries likely represent a larger contribution of zinc because heavy-duty vehicles tend to have more tires (e.g., 18 wheels), larger diameter tires with greater surface areas, more frequent cornering, and higher payloads. Typical wear rates for passenger vehicles under mild conditions vary but are estimated at 0.01 grams tread per kilometer per tire. Typical wear rates for heavy-duty vehicles under mild conditions vary but are estimated at 0.034 grams of tread per kilometer per tire. However, tire wear rates are greatly increased during fast cornering and under severe conditions with values as high as 0.49 and 24.9 grams tread per kilometer per tire, respectively. Literature values of zinc content found in tires (Councell et al., 2004) were reported as 0.04 to 1.55 percentage of weight (or wt%).

Although emission factors are provided for both copper and zinc, it is inherently difficult to accurately quantify the contribution that actually deposits on a watershed. Particulate deposition is controlled by wind speed, direction, and particle size. Additionally, build-up/wash-off rates and their contribution to stormwater concentrations are not well understood.

3.13.2.2.4.2 Aqueous Sources of Contaminants

Potential contaminants in the Harbor might be derived from sources such as permitted discharges, nonpoint source runoff, atmospheric deposition from nearby industries, illicit dumping of wastes, and flux into the overlying water from sediment-associated contaminants. Data from the Los Angeles RWQCB indicate that permitted discharges to the Harbor include: major NPDES discharge sources (industrial sources with a yearly average flow of 0.1 million gallons per day or more); a publicly owned treatment works (TIWRP); refineries; minor discharges (discharges other than major discharges); general discharges (covered by general permits); discharges covered under an industrial stormwater permit; discharges under the construction stormwater permit; and discharges from municipal storm drains covered under the Los Angeles County MS4 Permit.

Runoff

Surface water discharges at the site include stormwater flow, process water (low-pressure water blasting wastewater), and retained harbor water. ALBS discharges process water and harbor water to Fish Harbor through Discharge Serial No. 001. ALBS discharges storm water through an on-site storm drain (Discharge Serial No. 002), located on a concrete platform outside the machine shop, and into Fish Harbor. Storm water runoff from Seaside Avenue is directed to Fish Harbor through a man-made trough located about 30 feet from the machine shop. Additionally, harbor water washing over the surfaces during tidal flooding flows into Fish Harbor. Stormwater runoff at the site may be contaminated with residual spent sandblast grit/dry paint chips.

In 2007, ALBS was issued a new NPDES permit[4] with associated waste discharge requirements for discharges from their operation (RWQCB, 2007). To address water quality concerns, the order from the Los Angeles RWQCB included provisions for ALBS to update and continue to implement its SWPPP, which was completed in May 2007 and revised in May 2009. The SWPPP outlines site-specific management processes for minimizing storm water runoff containing pollutants. The NPDES permit requires that the SWPPP specify Best Management Practices (BMPs) that would be implemented to reduce the discharge of pollutants in storm water. Further, ALBS would be required to assure that the stormwater discharges from the facility would neither cause, nor contribute to, the exceedance of water quality standards and objectives, nor create conditions of nuisance in the receiving water.

[4] Regional Water Quality Control Board, Los Angeles Region, Order No. R4-2007-0030, NPDES Permit No. CA0061051, August 9, 2007.

The ALBS has already completed some improvements needed to comply with the NDPES permit requirements. Operational improvements have included training of facility staff to clean drains, and regular sweeping of the facility. Structural controls included modification of Marine Railways No. 1, No. 2, and No. 3 to include a totally enclosed steel floor with sumps to restrict any wastewater and debris from falling in the Harbor. At Marine Way 4, the concrete flooring was extended with containment berms to allow material that does enter the water to be trapped at the end of the marine way by a berm, and material retrieved after the maintenance activities is retained for later recycling. The upgrades described above are complete. Wastewater generated during the low-pressure water blasting operations at Marine Railways No. 1, No. 2, and No. 3 is captured using tarps and discharged to the City of Los Angeles sewer system. When the NPDES permit was issued in 2007, wastewater generated during the low-pressure water blasting operations at Marine Railway No. 4 flowed into Fish Harbor in violation of the Clean Water Act (RWQCB, 2007). However, as part of 2007 NPDES permit requirements, ALBS modified Marine Railway No. 4 to extend further inland allowing larger vessels to be pulled completely out of the water. As described above, the railway was also modified to include a waterside barrier to prevent sandblast, water and other discharges from entering the harbor. Additionally, a media filtration system (MFS) was installed at the storm drain that drains water from Seaside Avenue into Fish Harbor to trap particles and prevent them from entering Harbor waters. Marine Way 4 is now anticipated to be in compliance with the NPDES discharge requirements, although final certification from the Los Angeles RWQCB is pending (Wall, pers. comm., 2010).

As part of on-going monitoring required by the 2007 NPDES Permit, a stormwater sample was collected at ALBS on December 21, 2010 and was analyzed for the presence of various materials (petroleum hydrocarbons, oil and grease, phenols, metals including mercury and hexavalent chromium, conductivity, settleable solids, tributyltin, total sulfide, total organic carbon, ammonia, pH, turbidity, and biological oxygen demand). Analytical results indicated that only pH, at a value of 8.7 units, exceeded the limits set for these constituents in the ALBS NPDES Permit.

3.13.2.2.4.2.1 Tributyltin

Antifouling coatings used on vessel hulls are another source of metals, especially copper and zinc, to Harbor waters. Antifouling paints are designed to slowly release biocides that prevent settling and growth of fouling organisms on ship hulls, which otherwise would reduce vessel speeds and increase fuel consumption. Antifouling paints containing TBT were first manufactured and used in the U.S. in the late 1960s, and were found to prevent fouling on ships for approximately five years (International Maritime Organization, 2002). Consequently, TBT has been entering the marine system for more than 40 years, through the leaching of TBT from paint, and because of paint removal and ship repair activities. Tributyltin is also introduced to the aquatic environment through atmospheric deposition, but actual deposition rates have not been quantified (Mearns et al., 1991).

By the 1980s, numerous studies had demonstrated toxic effects of TBT at extremely low concentrations (part per trillion levels) to non-target species (Huggett et al., 1992). Because of these studies, regulatory actions were adopted in France (1982), followed by the United Kingdom (1985), and then the U.S. Congress, who passed the Organotin Antifouling Paint Control Act (OAPCA) in 1988. To address this issue on an international scale, the International Maritime Organization (IMO) adopted the

International Convention on the Control of Harmful Antifouling Systems on Ships (AFS Convention;October 5, 2001). This convention prohibits or restricts the use of antifouling systems on all ships that are parties to the convention, those above 400 gross tonnage that are engaged in international voyages, or those greater than 24 meters in length. This convention was ratified in 2007 and became binding upon governments who ratified it on September 17, 2008. The AFS Convention was signed by the U.S. on December 12, 2002 (NOAA, 2011a).

As discussed in Section 3.13.2.2.4, above, TBT was detected in 9 of 205 ambient samples collected in Los Angeles Harbor beginning in 2005, with concentrations of TBT in seven of those samples exceeding the National Ambient Water Quality Criteria chronic exposure limit of 7.4 ng/L. Three samples collected in Fish Harbor exceeded this value (levels between 10.2 and 71.1 ng/L at Stations LA11A and LA14) (POLA and POLB, 2009; LAHD, 2011). However, due to the relative low solubility of TBT in water (half life of several months), the numerous potential sources in the Port Complex, and the circulation patterns in the Project vicinity, there is no way to determine the source of the TBT.

3.13.2.2.4.2.2 Leachate of Metals from Vessel Hulls

In addition to TBT, there are a variety of other compounds found in antifouling coatings on vessels (USEPA, 1999) that may enter and dock at terminals throughout the Port Complex. The paint coatings used are dependent on the type of material comprising the hull. Tributyltin or biocide-free silicone-based coatings are used on aluminum hulls, while copper-based coatings are typically applied to steel, fiberglass, glass-reinforced plastic composites (GRP), and wood hulls.

Copper-based coatings contain small amounts of zinc, also used as a biocide in antifouling paints, and as such, both metals will leach from copper coatings of some vessels. Similarly, TBT-based paints often also contain small amounts of copper and zinc, and thus in addition to TBT, these paints will also leach zinc and copper into surrounding waterways. Elevated concentrations of dissolved copper are a particular concern in enclosed marinas with high densities of recreational vessels and limited water circulation (Schiff et al., 2006). Water sampling near Pier 400 conducted in 2005-2006 as part of the Port’s Enhanced Water Quality Monitoring measured copper concentrations below 1 microgram per liter (µg/l), which is below the chronic toxicity standard of 3.1 µg/l. As noted above in Section 3.13.2.2.4, with the exception of copper in five samples from throughout the Harbor, including one sample from Fish Harbor, concentrations of dissolved metals did not exceed regulatory limits (POLA and POLB, 2009).

Leachate rates and loadings of copper and zinc from copper-based ship coatings have been determined by previous U.S. Navy studies (USEPA, 2003). These studies predicted copper and zinc release rates from copper antifouling paint coatings using dynamic and static tests. Results indicated that release rates during simulated vessel operations were 17 ($\mu g/cm^2$)/day and 6.7 ($\mu g/cm^2$)/day for copper and zinc, respectively, and under static conditions release rates were 8.9 ($\mu g/cm^2$)/day and 3.6 ($\mu g/cm^2$)/day for copper and zinc, respectively. Similar release rates for copper (1.0 to 22 [$\mu g/cm^2$]/day) have been reported in other studies (Johnson et al., 1998; Valkirs et al., 2003). Using release rates derived from the U.S. Navy study published in 1997, copper and zinc loadings per vessel and annually in San Diego Harbor, Pearl Harbor, and Mayport Harbor, were calculated based on the equation described above for TBT loading estimates. Copper loadings were estimated at concentrations of 1,975 kg/yr in Mayport Harbor to 7,171 kg/yr in San Diego Harbor, while zinc loadings were estimated at concentrations of 778 kg/yr in Mayport Harbor to 2,826 kg/yr in San Diego Harbor. These release rates for copper and zinc are likely similar to those of large commercial vessels of similar size, that dock at terminals throughout the Port Complex; however, copper and zinc loadings from commercial vessels would vary depending on number of ship calls, duration of exposure, surface area, and type, as well as paint coating variety.

3.13.2.2.4.3 Nutrients

Nutrients are necessary for primary production of organic matter by phytoplankton. Low nutrient concentrations can limit the photosynthetic process, whereas excess nutrient concentrations can cause eutrophication and promote harmful algal blooms. Major nutrients that may limit phytoplankton photosynthesis are phosphates and nitrates. Spatial and temporal variations in phosphates and nitrates change from day-to-day and are influenced by the local environment. Sources of nutrients to Harbor waters include wastewater discharges, such as the TIWRP in the Outer Harbor, industrial discharges, and stormwater runoff, as well as naturally occurring seasonal upwelling events. While dredging can physically remove nutrient-laden sediments, those nutrients can also potentially be released into the water column during dredging, (Jones and Lee, 1981). The enclosed nature of the Harbor has created seasonal and spatial levels of nutrient concentrations that vary from the so-called “normal” levels found in areas outside the breakwaters.

Depending on location, depth, and season, nutrients in the Harbor may vary in concentration by several orders of magnitude. The following ranges were measured in 1978 by Harbors Environmental Projects (HEP, 1980): phosphate, 0.172 to 12.39 parts per million (ppm); ammonia, 0.12 to 119.28 ppm; nitrate, 0.00 to 82.97 ppm; and nitrite, 0.00 to 5.38 ppm. Nutrient concentrations were high during periods of high stormwater runoff. Compared to these nutrient concentrations measured in the 1970s, current baseline concentrations may be relatively lower due to greater restrictions on the wastewater discharges to the Harbor and operational and structural controls designed to reduce levels in stormwater runoff. However, data from long-term monitoring efforts do not exist to verify this. During three surveys in 2008 at three stations in and near Fish Harbor (Stations LA 10, LA 11A, and LA 14), nitrate concentrations ranged from 0 to 0.14 ppm, nitrite concentrations were 0.01 ppm or less, and ammonia was 0.09 ppm or less (LAHD, 2011).

3.13.2.2.5 Temperature

Temperature of waters in the Harbor shows seasonal and spatial variation that reflects the influence of the ocean, local climate, physical configuration of the Harbor, and circulation patterns. General seasonal trends in water temperature consist of uniform, cooler temperatures throughout the water column in the winter and spring, and of stratified, warmer temperatures with cooler waters at the bottom in the summer and fall. The stratified summer and fall conditions may be attributed to warmer ocean currents, local warming of surface waters through insolation, and reduced runoff into nearshore waters. Inter-annual or longer-term patterns in water temperatures reflect the influences of oceanographic conditions, such as those associated with El Niño/La Niña cycles (MEC and Associates, 2002).

During approximately monthly sampling between January 2009 and March 2011, surface temperatures in inner Fish Harbor (Station LA 14) averaged 16.7°C (62. 1 °F), ranging from 13.4 to 20.9°C (56.1 to 69.6°F) (Figure 3.13-2; LAHD, 2011). Near bottom at the same station, temperatures ranged from 13.3 to 19.6°C (55.9 to 67.3°F) and averaged 15.7 °C (60.3°F) over the 25 surveys. In outer Fish Harbor (Station LA 11A), surface temperature ranged from 13.5 to 21.0°C (56.3 to 69.8°F) and averaged 16.7°C (62. 1°F), while near-bottom temperatures ranged from 13.4 to 19.0°C (56.1 to 66.2°F) averaged 15.7°C (60. 3 °F). Outside of Fish Harbor in the Pier 300 channel (Station LA 10), temperatures ranged from 13.6 to 20.6°C (56.5 to 69.1°F) with an average of 16.°C (61.2°F) at the surface, and ranged from 11.8 to 17.7°C (53.2 to 63.9°F) with an average of 14.5°C (58.1°F) at the bottom.

3.13.2.2.6 Salinity

Salinity variations occur in the Harbor due to the effects of rainfall, stormwater and urban runoff, waste discharges, and evaporation. Harbor salinities usually range from 30.0 to 34.2 parts per thousand (ppt), but salinities ranging from less than 10.0 ppt to greater than 39.0 ppt have been reported (USACE and LAHD, 1984). Typical salinity for southern California coastal waters is around 33 ppt. Higher salinity values in the Port Complex are generally associated with evaporation in warm months in the farther recesses of the harbor (areas with a reduced rate of exchange with offshore waters), while lower values are generally found near surface as a result of freshwater input. Freshwater mixes with seawater as a result of wind, vessel traffic, tidal currents, and diffusion, resulting in increasing salinity with distance from the source of the freshwater plume (AMEC, 2007).

During approximately monthly sampling between January 2009 and March 2011, surface salinity in inner Fish Harbor (Station LA 14) averaged 33.2 psu (practical salinity units = ppt) ranging from 30.4 to 35.1 psu (LAHD, 2011). Near bottom at the same station, salinity ranged from 32.8 to 34.2 psu and averaged 33.4 psu over the 25 surveys. In outer Fish Harbor (Station LA 11A), surface salinity ranged from 31.6 to 33.7 psu and averaged 33.2 psu, while near-bottom salinity ranged from 32.8 to 34.1 psu and averaged 33.4 psu. Outside of Fish Harbor in the Pier 300 channel (Station LA 10), salinity ranged from 32.6 to 33.7 psu with an average of 33.3 psu at the surface, and ranged from 33.0 to 33.9 psu with an average of 33.4 psu at the bottom.

3.13.2.3 Marine Sediments

Sediment quality in the Harbor has been investigated during numerous focused studies and monitoring efforts since the 1960s (POLA and POLB, 2009). Studies were conducted to identify contamination hotspots and for the characterization of dredged material, during regional monitoring programs. Recent studies include: randomized sampling studies conducted in 1998, 1998, 2003, 2005 and 2006; hotspot characterizations reported in 2005, 2006 and 2007; the Bay Protection and Toxic Cleanup Program conducted from 1992 to 1997; and a data gap study reported in 2008 (POLA and POLB, 2009). Data from these studies was summarized in the WRAP and are used to characterize current conditions in Los Angeles Harbor. In addition, a sediment characterization study was performed in 2005 to provide the Port with the information necessary for the management of potentially contaminated sediments off ALBS (Weston, 2007; Appendix SED-1).

Sediment quality in the Port Complex varies widely, and there are localized areas of sediment contamination “hotspots”, which appear to be driving the 303(d) listings and creation of TMDLs for the Harbor (POLB and POLA, 2009). Sediments with contaminant concentrations above relevant TMDL listing criteria are often limited to back channels, along wharf faces, and near storm drains. Much of the sediment contamination in the Port Complex is "legacy contamination" from historic Port activities and upstream watershed inputs (POLA and POLB, 2009). As discussed above, current activities can also contribute pollutants to Harbor sediments. Stormwater runoff in the Harbor and the upstream watershed can bring contaminants that settle into Harbor sediments. Potential sources of sediment contamination include municipal storm drains, the Dominguez Channel, industrial outfalls, stormwater runoff from Port facilities, commercial vessels (ocean going vessels and harbor craft), recreational vessels, aerial deposition and the redistribution into the harbors, by ocean currents, of sediments from outside the harbors (POLA and POLB, 2009).

Although the Inner Harbor is significantly cleaner than it was 25 years ago, localized areas of contaminated sediments remain, particularly in areas of historic deposits of pollution in the sediments and from existing point and nonpoint discharges (POLA and POLB, 2009). Marine biological communities in part of the Inner Harbor have shown contamination from PCBs and DDT, and toxicity to larval kelp bass has been demonstrated for the surface water microlayer from the Inner Harbor (Southern California Coastal Water Research Project [SCCWRP], 1998 and 2002). Results from regional sampling efforts in 2003 and 2008 indicated areas of low to high toxicity in the Harbor, including Inner and Outer Harbor areas (Bay et al., 2005; Bay et al., 2010). Although toxicity was not found in sediments from Fish Harbor during the Bight'98 program, moderate toxicity was found during a special study during the Bight '03 study. The 2000 biological baseline study results first indicated, and subsequent studies have supported, that the removal of contaminated sediments during the Channel Deepening Project and other dredging has led to a significant improvement in the environmental quality of the Harbor (MEC and Associates, 2002; POLA and POLB, 2009), although hot spots still exist.

The State of California recently developed Statewide Sediment Quality Objectives (SQOs), and Phase 1 (Direct Effects) became effective in August 2009. These objectives are based on multiple lines of evidence, including sediment chemistry, sediment toxicity, and benthic community health. The resulting conclusion after evaluating the three lines of evidence is a set of narrative categories. SQOs were not intended to be applied to dredged material evaluation studies, which are already subject to different testing requirements and regulations. Therefore, dredged material testing results used to characterize sediment quality are compared to published screening guidelines and exceedance criteria presented in the USEPA and USACE's *Evaluation of Dredged Material Proposed for Ocean Disposal Testing Manual* (1991);USEPA's *Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California* (2000), and Long et al.'s *Incidence of Adverse Biological Effects within the Ranges of Chemical Concentrations in Marine and Estuarine Sediments* (1995) as follows:[5]

- Effect Range Low (ERL) = concentrations in bulk sediment above which adverse biological effects could potentially occur
- Effect Range Medium (ERM) = concentrations in bulk sediment above which adverse biological effects are expected

[5] The listed criteria are guidelines as opposed to established remediation requirements.

- Water Quality Standards (WQS): 1-hour and 4-day averages (elutriate test)
- Limiting Permissible Concentration (LPC) (bioassay)

Copper, lead, mercury, and zinc are metals of concern within the Port Complex, and several areas in the Harbor are listed as impaired for one or more of these metals, including Fish Harbor (Table 3-13.1). A site-specific sediment evaluation study was conducted for ALBS in Fish Harbor that evaluated sediment metal levels in 32 samples (Figure 3.13-3; Weston, 2007). Copper levels in surface sediments in Fish Harbor ranged from slightly lower than, to more than 330 times the ERL value of 34 µg/g, while more than one-half (18) exceeded the ERM level of 270 µg/g, and two exceeded the total threshold limit concentration (TTLC) of 2,500 µg/g, the level above which material must be managed as hazardous waste upon removal, in accordance with Title 22 of the California Code of Regulations (CCR) (Table 3.13-2). Both stations that exceeded the TTLC value for copper were found inside one of the ALBS marine railways, within an area proposed for conversion to confined aquatic disposal (CAD) (Figure 3.13-4; Weston, 2007). In general, copper levels in surface sediments in the proposed Project footprint exceeded the ERM for copper of 270 µg/g. At a depth of two to three feet, sediment copper levels above the TTCL level were reported in the area proposed for creation of the 0.7-acre Phase 2 CDF, although values above the ERM were more restricted to the vicinity of the marine railways.

Lead values in surface sediments in Fish Harbor ranged from about one-eighth to 16 times the ERL value of 46.7 µg/g (Table 3.13-2). Five of the 32 samples in Fish Harbor exceeded the ERM value of 218 µg/g, although none exceeded the TTLC level of 1,000 µg/g. At ALBS, lead values in surface sediments were highest in the marine ways, particularly in the area of the proposed Phase 2 CDF, while lead levels in the area of the proposed dredge footprint generally exceeded the ERL level (Weston, 2007). At a depth of two to three feet, sediment lead levels above the ERM were found in a larger area than in the surface sediments, associated with the marine ways in the area proposed for the Phase 2 CDF, but values were generally lower outside of the immediate vicinity of the marine ways than found in the surface sediments.

Figure 3.13-3: Sediment Sampling Stations in Fish Harbor (POLA and POLB, 2009).

Table 3.13-2: Range of Concentrations and Total Exceedances of Sediment Quality Screening Guidelines for Surface Sediments Collected as Part of Site-Specific Studies in the Fish Harbor Area

Analyte	Sediment Quality Guideline			Sample Size	Range		No. of ERM Exceedances	No. of TTLC Exceedances
	ERL	ERM	TTLC		Min.	Max.		
Metals (µg/g)								
Copper	34	270	2500	32	30.0	11300	18	2
Lead	46.7	218	1000	32	6.22	740	5	0
Mercury	0.15	0.71	20	32	0.07	6.79	24	0
Zinc	150	410	5000	32	93.0	3480	15	0
Organics (ng/g)								
Chlordane	0.5	6	2500	32	ND	2.80	0	0
DDTs	1.58	46.1	1000	32	ND	578	20	0
PCBs	22.7	180	50000	11	ND	1015	3	0
PAHs	4022	44792	-	33	ND	61300	1	-

Source: POLA and POLA, 2009

ERL = Effects Range Low
ERM = Effects Range Median
TTLC = Total Threshold Limit Concentration

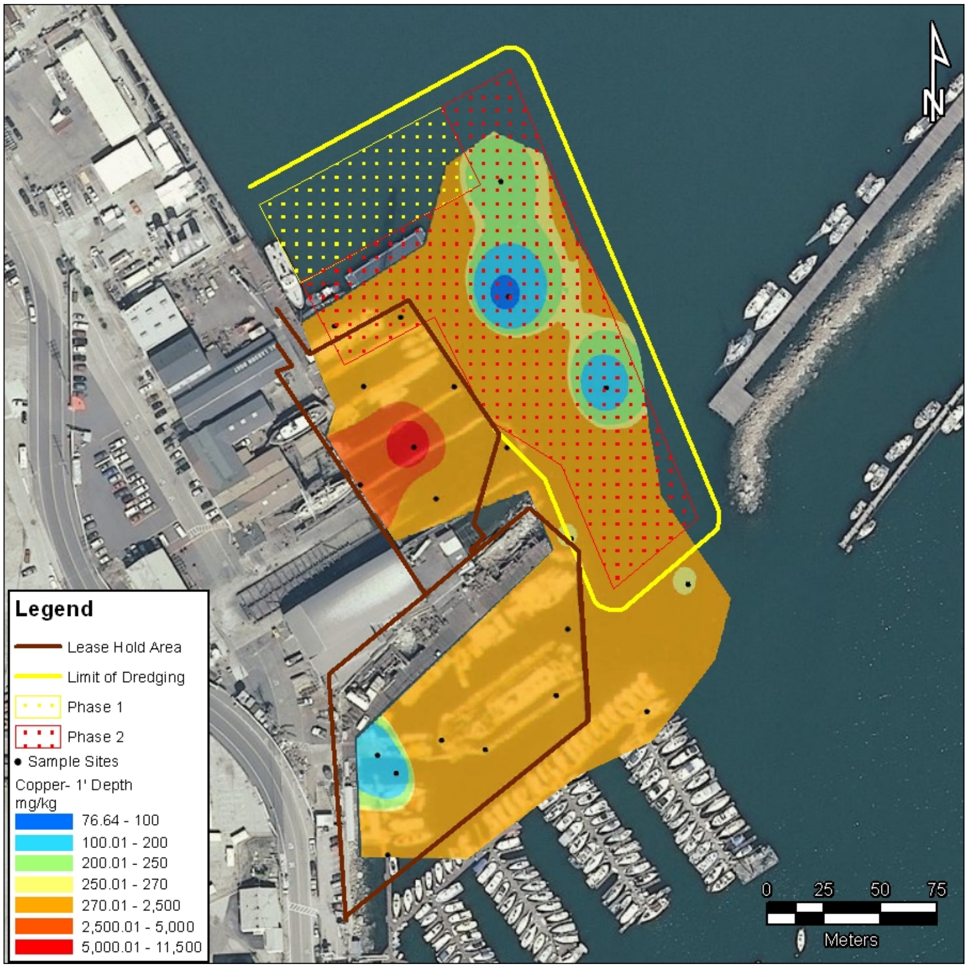

Figure 3.13-4: Copper concentrations (mg/kg) in surface sediment (upper 0-1 feet) off Project Site (Weston, 2007).

Mercury concentrations reported in surface sediments in Fish Harbor ranged from about one-half of the ERL level of 0.15 µg/g to nearly ten times the ERM value of 0.71 µg/g, which 24 of the 32 samples in Fish Harbor exceeded (Table 3.13-2). No surface samples exceeded the TTLC level of 20 µg/g in the study. Near ALBS, mercury levels in surface sediments exceeded the ERM value through most of the area of the proposed dredge footprint (Weston, 2007). At a depth of two to three feet, mercury levels above the TTLC were associated with sediments in the marine ways area proposed for the Phase 2 CDF, and values above the ERM were still found throughout much of the proposed dredge footprint.

Zinc in surface sediments from Fish Harbor was reported at levels slightly below the ERL value of 150 µg/g to levels 23 times higher than the ERL. Zinc levels in 15 of the 32 samples exceeded the ERM value of 410 µg/g, although none exceeded the TTLC values of 5,000 µg/g (Table 3.13-2). At ALBS, zinc values in surface sediments were highest in the vicinity of the marine railways, and were generally elevated in the area of the proposed dredge footprint (Weston, 2007). A similar pattern was found in the deeper sediments, although values above the ERM for zinc were found in a smaller area than reported for surface sediments.

Organic compounds on the Section 303(d) list, such as chlordane, DDT, and PCBs, are widespread in the Harbor at concentrations above the ERL, while specific PAHs, including total PAHs, benzo[a]anthracene, and phenanthrene, are present in a few locations at concentrations that exceed both the ERL and ERM (POLA and POLB, 2009). Studies of organic contaminants in the Fish Harbor area described above found chlordane in concentrations above the ERL concentration of 0.5 ng/g, but still below the ERM level of 6 ng/g (Table 3.13-2). Concentrations of DDT in surface sediments from Fish Harbor ranged from not detected to nearly 13 times the ERM value of 46.1 ng/g, with 20 of the 32 samples exceeding the ERM (Table 3.13-2). In the Project area, DDT levels in surface sediments exceeding the ERM were found near the marine ways in the area of the proposed Phase 2 CDF, and at the northern and southwestern corners of the dredge footprint (near the outer docks of the Al Larson Marina) (Weston, 2007). In deeper sediments, DDT levels above the ERM were found over a larger area in and offshore of the Phase 2 CDF, as well as some smaller areas in the southernmost slip and again near the outer dock of the marina.

Polychlorinated biphenyls (PCBs) in surface sediments from Fish Harbor were reported in a range from undetected to about six times the ERM level of 180 ng/g (Table 3.13-2). Three of the eleven samples exceeded the ERM value. At ALBS, elevated PCBs were found in surface and subsurface sediments near the marine ways, especially in the area of a proposed CDF (Weston, 2007). For PAHs, only one of 33 surface sediment samples from Fish Harbor exceeded the ERM level of 44,792 ng/g (Table 3.13-2). At ALBS, PAHs were highest in surface and subsurface sediments from and near the Phase 2 CDF site, and near the shoreline near the base of the outer Fish Harbor marine ways (Weston, 2007).

3.13.2.4 Oceanography

The Port Complex is a southern extension of the relatively flat coastal plain, bounded on the west by the Palos Verdes Hills. The Palos Verdes Hills offers protection to the bay from prevailing westerly winds and ocean currents. The Harbor was originally an estuary that received freshwater from the Los Angeles and San Gabriel rivers. During the past 80 to 100 years, development of the Port Complex, through dredging, filling, and channelization, has completely altered the local estuarine physiography.

3.13.2.4.1 Tides

Tides are sea level variations that result from astronomical and meteorological forces. Tidal variations along the coast of southern California are influenced primarily by the passage of two harmonic tide waves, one with a period of 12.5 hours and the other with a period of 25 hours. This combination of two harmonic tide waves usually produces two high and two low tides each day. The twice daily (semidiurnal) tide of 12.5 hours predominates over the daily (diurnal) tide of 25 hours in the Harbor, generating a diurnal inequality, or mixed semidiurnal tides. This causes a difference in height between successive high and low waters (“water” is commonly used in this context instead of “tide”). The result is two high waters and two low waters each day, consisting of a higher-high water (HHW) and a lower-high water (LHW), and a higher-low water (HLW) and a lower-low water (LLW).

A greater-than-average range between HHW and LLW occurs when the moon, sun, and earth are aligned with each other to create a large gravitational effect. This spring tide corresponds to the phenomenon of a new or full moon. Neap tides, which occur during the first and third quarters of the moon, have a narrower range between HHW and LLW. In this situation, the moon, sun, and earth are perpendicular to each other, thereby reducing the gravitational effect on the water levels.

The mean tidal range for Los Angeles Harbor, calculated by averaging the difference between all high and low waters, is 3.8 feet; and the mean diurnal range, calculated by averaging the difference between all the HHW and LLW, is approximately 5.5 feet (NOAA, 2010). Mean lower-low water (MLLW), the datum to which southern California tides are referenced is the mean of all LLWs, equal to 2.8 feet below mean sea level (MSL) in the Port. . The extreme tidal range (between maximum high and maximum low waters) is about 10.5 feet. The highest and lowest tides reported are 7.96 feet above MLLW and -2.56 feet below MLLW, respectively (USACE and LAHD, 1992). Since 2000, the highest tide measured at the Los Angeles Harbor tide station (NOAA No. 9410660) is +7.92 feet MLLW (measured in January 2005), and the lowest was -2.35 feet MLLW, measured in January 2009 (NOAA, 2011b).

Available Los Angeles Harbor tide data from 1923 to 1984 indicate that the highest water elevations usually occur during November through March. This is the same period in which the more severe offshore storms usually occur along the California coast. These higher water elevations typically exceed +7 feet MLLW.

3.13.2.4.2 Waves

Waves impinging on the southern California coast can be divided into three primary categories according to origin: southern hemisphere swell, northern hemisphere swell, and seas generated by local winds (USACE, 1986). The Harbor is directly exposed to ocean swells entering from two main exposure windows to the south and southeast, regardless of swell origin. The more severe waves from extratropical storms (Hawaiian storms) enter from a southerly direction. The Channel Islands and Santa Catalina Island provide some sheltering from these larger waves, depending on the direction of approach. The other major exposure window opens to the south, allowing swells to enter from storms in the southern hemisphere, tropical storms, and southerly waves from extratropical storms. Waves and seas entering the Harbor are greatly diminished by the time they reach the Inner Harbor. Most swells from the southern hemisphere arrive at Los Angeles from May through October. Southern hemisphere swells characteristically have low heights and long periods. Typical swells rarely exceed 4 feet in height in deep water. However, with periods as long as 18 to 21 seconds, they can break at over twice their deep-water wave height. Northern hemisphere swells occur primarily from November through April. Significant, deepwater wave heights have ranged up to 20 feet (6.1m), but are typically less than 12 feet (3.7 meters). Northern hemisphere wave periods generally range from 12 to 18 seconds.

Local wind-generated seas are predominantly from the west and southwest. However, they can occur from all offshore directions throughout the year, as can waves generated by diurnal sea breezes. Local seas are usually less than 6 feet in height, with wave periods of less than 10 seconds.

From January 2000 through December 2010, mean wave height at the Coastal Data Information Program's Buoy 92, located 5.5 nm south of Point Fermin, was 3.3 feet (1.0 meter) (CDIP, 2011a). The highest significant wave heights, measured as the mean height of the largest one-third of the waves in a specified sampling period, during that same time period ranged between 14.0 feet (4.3 meters) and 15.9 feet (4.9 meters), all recorded in the months of December, January, and April (CDIP, 2011b).

3.13.2.4.3 Circulation

To better understand circulation patterns and watershed inputs into Los Angeles and Long Beach Harbor, the Ports undertook a program to develop a hydrodynamic and water quality model (the WRAP model) for the harbor to improve their predictions of the effectiveness of current and future control measures (POLA and POLB, 2009).

Circulation patterns are established and maintained by tidal currents. Flood tides in the Harbor flow into the Harbor and up the channels, while ebb tides flow down the channels and out of the Harbor (POLA and POLB, 2009). The Port Complex is protected from incoming waves by the Federal Breakwater, which is comprised of three separate breakwaters: the San Pedro, Middle, and Long Beach Breakwaters. In addition to protecting the ports from waves, the breakwaters reduce the exchange of the water between the Harbor and the rest of San Pedro Bay, hence creating unique tidal circulation patterns. Modeled current direction and velocity throughout the Port Complex during ebb and flood tides are summarized in Figure 3.13-3. The currents enter Los Angeles Harbor through Angel’s Gate and separate at Pier 400. Part of the flow moves east into the Long Beach Outer Harbor, while the remaining current flows northwest into the Port of Los Angeles, flooding the channel to Pier 300 and Fish Harbor, the Cabrillo Beach and Marina area, and into the Main Channel to flood the Inner Harbor. On the Long Beach side nearest Alamitos Bay, flood currents enter the Port Complex through the Queen’s Gate, as well as the opening near the eastern tip of the Federal Breakwater. Flood currents passing through Queen’s Gate flow to either side of Pier J, primarily to the west and into the Long Beach Main Channel.

On ebb tide, the flow in the Harbor is drawn from all directions toward the exits through the gaps in the breakwaters (Figure 3.13-3) (POLA and POLB, 2009). On the Long Beach side, ebb currents exit through the Queen’s Gate, while water exiting east of the Federal Breakwater comes from eastern San Pedro Bay and Alamitos Bay. Significant offshore flows from flood control channels can also occur during winter storms.

Tidal currents in the Harbor are generally not strong, with maximum velocities of less than 3 feet per second [fps] (0.08 meters per second [m/s]) (POLA and POLB, 2009). Near Angel’s and Queen’s gates, however, maximum surface tidal velocities reach approximately 0.7 fps (0.2 m/s).

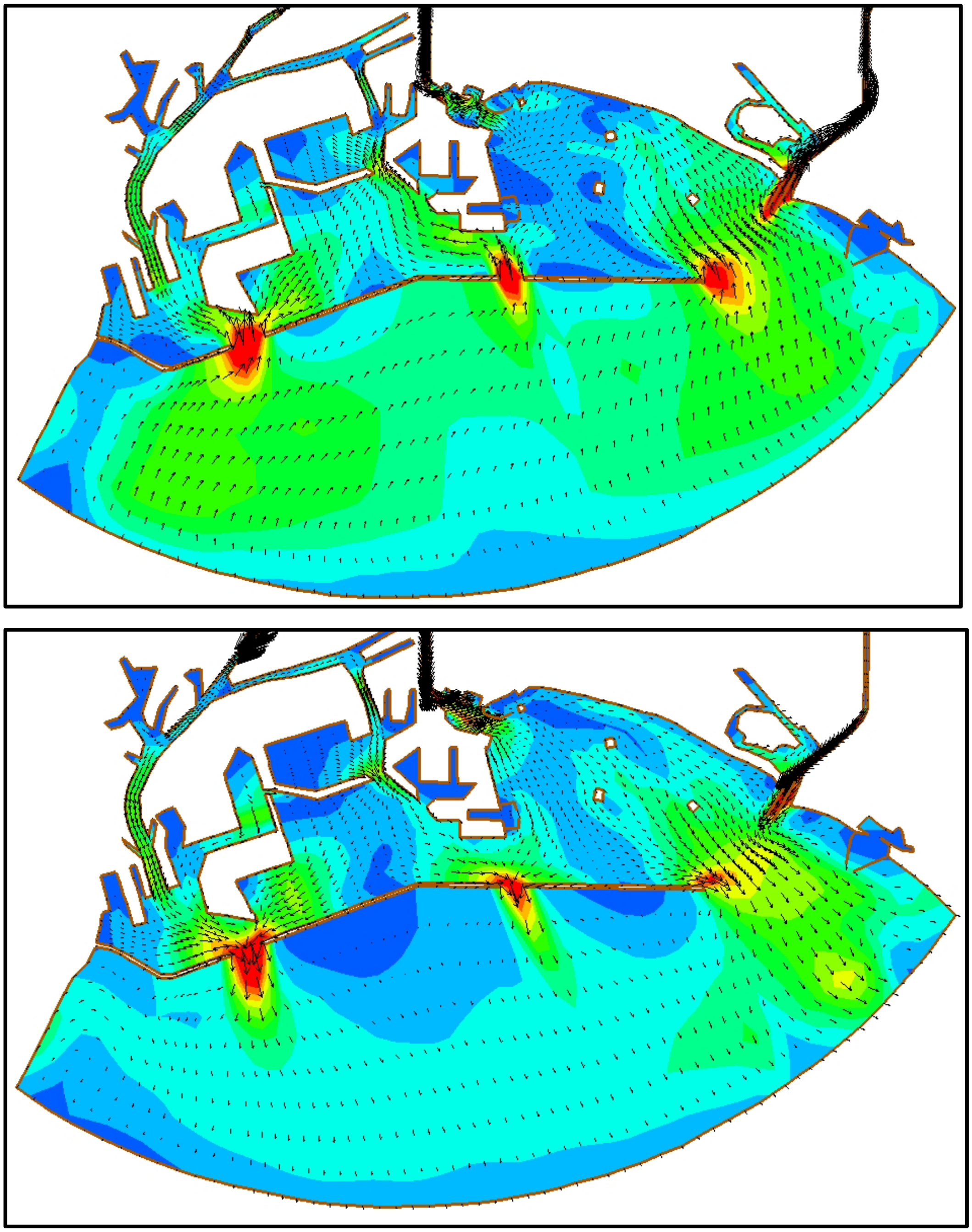

Figure 3.13-3: Current patterns in Los Angeles and Long Beach Harbors predicted by the WRAP Model

Top: Flood tide. Bottom: Ebb tide. (POLA and POLB, 2009).

3.13.2.4.4 Flooding

The Federal Emergency Management Agency (FEMA) has identified and mapped flood hazards to support the National Flood Insurance Program. The 100-year flood zone is defined as the land that would be inundated by a flood having a one percent chance of occurring in a given year. The ALBS site is mapped by the Federal Emergency Management Agency (FEMA) as Flood Zone X (defined as areas of 0.2 percent annual chance flood; areas of one percent annual chance flood with average depths of less than one foot or with drainage areas less than one square mile; and, areas protected by levees from one percent annual chance flood) (FEMA 2008; map panel ID 06037C2032F).

The only sources of flooding at the proposed Project site would be due to tsunami, which is discussed in Section 3.5, Geology. The potential for future sea level rise to affect the proposed Project site is also addressed in Section 3.5, Geology.

Presently, rainfall events that result in runoff volumes exceeding the capacity of the storm drains could also cause temporary, localized ponding until the runoff drains away. However, the installation of new drainage facilities and stormwater system on the site would reduce the likelihood of flooding on the site due to a rainfall event.

3.13.3 Applicable Regulations

3.13.3.1 Clean Water Act of 1972 (PL 92-500, as amended)

This Act provides for the restoration and maintenance of the physical, chemical, and biological integrity of the nation’s waters. Discharges of wastes to waters of the U.S. (e.g., surface waters) must be authorized through NPDES permits (under Section 402 of the CWA). In California, the SWRCB and the nine RWQCBs have authority delegated by USEPA to issue NPDES permits. California permits are also issued as WDRs as required under California law by the Porter-Cologne Water Quality Control Act (see below). Section 301(a) prohibits discharges without a permit, and is the basis of the NPDES permit program. Discharges from vessels were previously exempted from the CWA, but in December 2008 the USEPA issued the Vessel General Permit (described below).

Section 303 of the Act requires states to develop water quality standards for all waters and submit to the USEPA for approval all new or revised standards established for inland surface waters, estuaries, and ocean waters. Under Section 303(d), the state is required to list water segments that do not meet water quality standards and to develop action plans, called TMDLs, to improve water quality. The SWRCB and the RWQCBs implement sections of the Act through the Ocean Plan, the Enclosed Bays and Estuaries Plan, the nine Water Quality Control Plans, one for each region, and permits for waste discharges.

Also in conjunction with permitting under Section 404 of the CWA by the USACE, as discussed below, the RWQCBs can issue Clean Water Act Section 401 Water Quality Certifications to certify that actions being considered by the USACE for granting Section 404 permits will not have adverse water quality impacts.

Dredge/fill permits are issued by the USACE under Section 404 of the Clean Water Act. Permits typically include the following conditions to minimize water quality effects:

- USACE review and approval of sediment quality analysis prior to dredging. Sediments are tested using approved USEPA protocols.
- Detailed pre- and post-construction monitoring plan that includes disposal site monitoring.
- Flow-back of dredged water at the dredging site is limited to a maximum of 60 minutes for suitable material and 15 minutes for unsuitable material per barge. Time limit is 15 minutes at the disposal site. Flow-back water must meet RWQCB Waste Water Discharge and Receiving Water Monitoring Program requirements.
- Flow-back water shall be free of solid dredged material.
- No flow-back of water or solid dredged material shall occur during transit to the disposal site.
- Compensation for loss of waters of the U.S.

3.13.3.2 Rivers and Harbors Appropriations Act of 1899

The Rivers and Harbors Appropriations Act of 1899 authorizes the USACE to exercise control over all construction projects in U.S. navigable waters. The Rivers and Harbors Act was originally designed with the intent to protect navigation and navigable capacity. These objectives were later expanded to include environmental protection. The key provision to this Act is Section 13, which makes it a crime to discharge refuse into any navigable water without the permission of the USACE. Sections 9 and 10 of the Act (33 U.S.C. Section 401 *et seq*.) regulate work and structures in navigable waters of the U.S., including dredging, filling, and bridges. Section 9 relates to bridges and causeways and is administered by the U.S. Coast Guard. Under Section 10, the USACE issues permits for construction, dumping, and dredging in navigable waters, as well as construction of piers, wharves, weirs, jetties, outfalls, aids to navigation, docks, and other structures. In coastal areas, it is typical for permits issued by the USACE to reference their Section 10 and Section 404 authorities.

In southern California, dredging is usually not regulated under Section 404 of the Clean Water Act, but instead under Section 10 of the Rivers and Harbors Appropriations Act. Exceptions to this could include permitting for return water from upland disposal of dredged material and/or CDFs, both of which would require a Section 404 permit. All dredged material would be handled in accordance with protocols per the Los Angeles Regional Contaminated Sediments Task Force – Long Term Management Strategy (May 2005).

3.13.3.3 Porter-Cologne Act of 1972

The Porter-Cologne Water Quality Control Act (California Water Code Section 13000 *et seq*.), which is the principal law governing receiving water quality regulation in California, establishes a comprehensive program to protect water quality and the beneficial uses of state waters. Unlike the CWA, Porter-Cologne covers both surface water and groundwater.[6] Since 1973, the SWRCB and the nine RWQCBs were established by the Act and have been delegated the responsibility for implementing its

[6] Groundwater is discussed in Section 3.6 – Groundwater and Soils.

provisions and administering permitted waste discharge into the coastal marine waters of California.

The Porter-Cologne Act also implements many provisions of the federal CWA, such as the NPDES permitting program. Under the Act "any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the state" must file a report of the discharge with the appropriate RWQCB. Pursuant to the Act, the RWQCB may then prescribe "waste discharge requirements" (WDRs) that specify conditions related to control of the discharge. Porter-Cologne defines "waste" broadly, and the term has been applied to a diverse array of materials, including non-point source pollution. When regulating discharges that are covered under the Federal CWA, the SWRCB and RWQCBs issue WDRs and NPDES permits as a single permitting vehicle. In April 1991, the SWRCB and other state environmental agencies were incorporated into the California EPA. Section 401 of the CWA gives the SWRCB the authority to review any proposed federally permitted or federally licensed activity that may impact water quality and to certify, condition, or deny the activity if it does not comply with state water quality standards. If the SWRCB imposes a condition on its certification, those conditions (including WDRs) must be included in the federal permit or license.

Standard WDRs would include conditions and requirements addressing potential impacts to the existing surface water and groundwater and sediment quality. These conditions would be addressed by complying with the requirements of the applicable permit and implementing management programs. The assessment of impacts for dredging and filling is based on these regulatory controls for dredging and filling activities that contain conditions including standard WDRs. Discharges of fill regulated under Section 404 of the CWA, including the placement of dredged material in confined fills within waters of the U.S., as well as the placement of quarry rock, and in more recent times pilings, and other associated wharf work, would require a Section 401 water quality certification from the RWQCB to certify that those discharges would not violate state water quality standards.

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) was amended in 1999 to require the SWRCB to develop guidance to enforce the state's NPS pollution control program. The SWRCB complied by adopting the NPS Implementation and Enforcement Policy on May 20, 2004. The Office of Administrative Law approved the policy on August 26, 2004. The RWQCBs must regulate all nonpoint sources of pollution, using the administrative permitting authorities provided by the Porter-Cologne Act, and are implementing a Nonpoint Source Pollution Control Program. Under this program, dischargers must comply with the administrative permits issued by the RWQCBs by participating in the development and implementation of NPS pollution control programs, either individually or collectively as participants in third-party coalitions.

3.13.3.4 Bays and Estuaries Plan

Under the California Bay Protection and Toxic Cleanup Act, the SWRCB is required to develop sediment quality objectives for toxic pollutants to protect the condition of enclosed bays and estuaries. The SWRCB issued Part 1 (Sediment Quality) of the *Water Quality Control Plan for Enclosed Bays and Estuaries* in August 2009. Part I of this document represents the first phase of the SWRCB's development of Sediment Quality Objectives (SQOs). This first phase is focused on the protection of benthic communities in enclosed bays and estuaries as based on chemical and biological measures to determine if the sediment-dependent biota are protected or degraded from exposure to toxic substances in the sediment (SWRCB and CalEPA, 2009). Part 2 (indirect effects) of this plan is currently under development and includes a tool for assessing whether sediment contamination at a site results in an unacceptable health risk to humans because of the consumption of contaminated fish and shellfish. This program is applicable to all enclosed bays and estuaries in the state, including Los Angeles Harbor.

3.13.3.5 Water Quality Control Plan, Los Angeles Region (Basin Plan)

The Basin Plan (*Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* [RWQCB, 1994b]) is designed to preserve and enhance water quality and to protect beneficial uses of regional waters (inland surface waters, groundwater, and coastal waters such as bays and estuaries). The Basin Plan designates beneficial uses of surface water and groundwater, such as contact recreation or municipal drinking water supply. The Basin Plan also establishes water quality objectives, which are defined as "the allowable limits or levels of water quality constituents or characteristics that are established for the reasonable protection of beneficial uses of water or the prevention of nuisance in a specific area."

The Basin Plan specifies water quality objectives for a number of constituents/ characteristics that could be affected by the proposed Project or alternatives. These constituents include: bioaccumulation, biostimulatory substances, chemical constituents, DO, oil and grease, pesticides, pH, PCBs, suspended solids, toxicity, and turbidity. With the exceptions of DO and pH, water quality objectives for most of these constituents are expressed as descriptive rather than numerical limits. For example, the Basin Plan defines limits for chemical contaminants in terms of bioaccumulation, chemical constituents, pesticides, PCBs, and toxicity as follows:

- Toxic pollutants shall not be present at levels that bioaccumulate in aquatic life to levels that are harmful to aquatic life or human health;
- Surface waters shall not contain concentrations of chemical constituents in amounts that adversely affect any designated beneficial use;
- No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. There shall be no increase in pesticide concentrations found in bottom sediments or aquatic life;
- All waters shall be maintained free of toxic substances in concentrations that are toxic to, or produce detrimental physiological responses in human, plant, animal, or aquatic life. There shall be no chronic toxicity in ambient waters outside mixing zones.

The Basin Plan also specifies water quality objectives for other constituents, including ammonia, bacteria, total chlorine residual, and radioactive substances. These are not evaluated in this Draft EIR because the proposed Project and alternatives do not include any discharges or activities that would affect the water quality objectives for these parameters.

3.13.3.6 State Water Resources Control Board Stormwater Permits

The SWRCB has issued and periodically renews a statewide General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities and a statewide General Industrial Activity Stormwater Permit for projects that do not require an individual permit for these activities. The General Permit for Construction Activities was significantly updated and revised in 2009 and the new permit became effective July 10, 2010. All construction activities that disturb one acre or more must prepare and implement a construction SWPPP that specifies BMPs to prevent pollutants from contacting stormwater. The intent of the SWPPP and BMPs is to keep all products of erosion from moving off-site into receiving waters, eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the United States, and perform sampling and analytical monitoring to determine the effectiveness of BMPs in reducing or preventing pollutants (even if not visually detectable) in stormwater discharges from causing or contributing to violations of water quality objectives.

The General Industrial Activities Stormwater Permit requires dischargers to develop and implement an SWPPP to reduce or prevent industrial pollutants in stormwater discharges, eliminate unauthorized non-storm discharges, and conduct visual and analytical stormwater discharge monitoring to verify the effectiveness of the SWPPP and submit an annual report. The General Industrial Permit was last issued in 1997; however, as of June 2011, a draft revised permit is currently under review.

3.13.3.7 Los Angeles Municipal Separate Storm Sewer System (MS4) NPDES Permit

The agencies that discharge stormwater and urban runoff to municipal separate storm sewers system (MS4) in Los Angeles County are required to obtain and comply with an NPDES Permit/Waste Discharge Requirements to meet the NPDES requirements. In Los Angeles County, all of the MS4 agencies are permitted under a single permit issued to Los Angeles County and 84 incorporated cities (this includes all cities in the Los Angeles RWQCB's jurisdiction, which excludes the high desert and does not include the City of Long Beach, which has its own MS4 Permit), referred to as the Permittees.

The intent of the MS4 NPDES permit, as stated in the permit, is to "develop, achieve, and implement a timely, comprehensive, cost-effective storm water pollution control program to reduce the discharge of pollutants in storm water to the Maximum Extent Practicable (MEP) from the permitted areas in the County of Los Angeles to the waters of the U.S. subject to the Permittee's jurisdiction."

The current permit was issued on December 13, 2001. The permit was amended on September 14, 2006, August 9, 2007, December 10, 2009, October 19, 2010, and April 14, 2011, and incorporated the MS4 provisions contained in the Los Angeles River Trash TMDL, the Santa Monica Bay Beaches Bacteria Dry Weather TMDL, and the Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL. Although the current permit was originally set to expire on December 12, 2006, the Los Angeles RWQCB has delayed the reissuance of the permit: therefore, all provisions remain in effect as stated in the Permit until such time that the Permit is renewed. On April 14, 2011, the Los Angeles RWQCB amended the Permit to set aside previous requirements adopted in 2006 to implement the Santa Monica Bay Beaches Dry Weather Bacteria TMDL. A comprehensive revision and renewal of the permit is currently projected by the Los Angeles RWQCB to occur in April 2012.

The following subsections summarize the components of the existing permit that are relevant to new and redevelopments:

3.13.3.7.1 Development Planning Program

The section of the MS4 permit that sets forth requirements for New Development and Significant Redevelopment projects is the Development Planning Program. This section of the permit covers a number of requirements including:

- Peak Flow Control (not applicable in Port area)
- Standard Urban Stormwater Mitigation Plans (SUSMP)
- Numerical Design Criteria
- Site specific Mitigation
- Redevelopment Requirements
- Maintenance Agreement and Transfer
- Regional Stormwater Mitigation Program and Funding
- Employee Training and Technical Guidance and Information

The Development Planning Program requirements apply equally to similar private development projects and public agency capital improvement projects that are covered under the requirements.

Of particular relevance for the proposed Project are the SUSMP requirements of the existing MS4 permit apply to new and redevelopment projects. The NPDES Permit required that by August 1, 2002, each Permittee amend their own codes and ordinances to legally require that the SUSMP requirements listed in the permit be enforced.

The SUSMP requirements state that if a new development or redevelopment project is over a certain minimum size, then BMPs must be installed on-site to mitigate the negative impacts that the proposed Project could have on water quality. The BMPs installed on-site must be able to infiltrate, capture and reuse, or treat all of the runoff from the design storm (see design requirements below).

The City of Los Angeles requires specific categories of new development or redevelopment to meet SUSMP requirements (City of Los Angeles, 2002). The categories include industrial/commercial developments of one acre or more of impervious area, such as the proposed Project site.

A redevelopment project is defined as a "... land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site within one of categories requiring a SUSMP. If a redevelopment results in an alteration to more than 50 percent of impervious surfaces of an existing development, then the entire project must be mitigated. If a redevelopment results in an alteration to less than 50 percent of the impervious surface of an existing development, and the existing development was not subject to storm water quality control requirements, then only the alteration must be mitigated."

New guidelines approved by the City on July 9, 2008 require developers to give top priority to BMPs that infiltrate stormwater and lowest priority to mechanical/hydrodynamic units. The order in which BMPs should be prioritized per SUSMP is therefore:

1) Infiltration Systems;

2) Biofiltration/Retention Systems;

3) Storm Water Capture and Re-Use;

4) Mechanical/Hydrodynamic Units; or

5) Combination of Any of the Above.

Design Requirements

The volume of runoff that needs to be managed is determined from one of the following methods.

Volumetric Treatment Control BMP

- The 85^{th} percentile 24-hour runoff event determined as the maximum capture stormwater volume for the area using a 48 to 72 hour draw down time [using formula found in WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87 (1998)];
- The volume of annual runoff based on unit basin storage water quality volume, to achieve 80 percent or more volume treatment [method recommended in the CA Stormwater BMP Handbook – Industrial/Commercial (1993)].
- The volume of runoff produced from a 0.75 inch storm event, prior to its discharge to a storm water conveyance system; or
- The volume of runoff produced from a historical-record based reference 24-hour rainfall criteria for “treatment” (0.75 inch average for the Los Angeles County area) that achieves approximately the same reduction in pollutant loads achieved by the 85th percentile 24-hour runoff event.

Flow Based Treatment Control BMP

- The flow of runoff produced from a rain event equal to at least 0.2 inches per hour intensity; or
- The flow of runoff produced from a rain event equal to at least two times the 85th percentile hourly rainfall intensity for Los Angeles County; or
- The flow of runoff produced from a rain event that will result in treatment of the same portion of runoff as treated using volumetric standards above.

3.13.3.7.2 Low Impact Development Ordinance

Although the Los Angeles County MS4 Permit has not yet been renewed, it is expected that the Permit will significantly revise the requirements for the Development Planning Program based on a number of other stormwater permits that have recently been renewed in California, including the Ventura County MS4 permit adopted by the Los Angeles RWQCB. All of the recent permits place much greater emphasis and priority on the incorporation of Low Impact Development (LID) practices in new development and redevelopment projects. LID refers to the method of developing or redeveloping urban areas that serves to both reduce the quantity and improve the quality of stormwater that discharges from the development, essentially seeking to maintain or restore the natural pre-development hydrologic characteristics of the site. By doing so, the negative impact that the development will have on the environment is reduced.

In anticipation of the expected Permit changes and in support of the benefits of LID practices, the City of Los Angeles has developed an ordinance that amended the Los Angeles Municipal Code (LAMC) to include LID requirements. On September 27, 2011, the City Council Adopted the LID Ordinance, subject to reconsideration. The intention of the LID ordinance is to:

- Require the use of LID standards and practices in future developments and redevelopments to encourage use of rainwater and urban runoff;
- Reduce stormwater/urban runoff while improving water quality;
- Promote rainwater harvesting;
- Reduce off-site runoff and provide increased groundwater recharge;
- Reduce erosion and hydrologic impacts downstream; and
- Enhance the recreational and aesthetic values in our communities.

The LID ordinance expanded the SUSMP requirements by increasing the number of new and redevelopment conditions under which stormwater mitigation measures must be implemented. As with SUSMP, the LID requirements would need to be met for a grading or building permit to be issued.

The requirement to incorporate SUSMP standards into a new or redevelopment project is triggered if a project is of a certain size and falls in one of eight land use categories defined by SUSMP. The requirement to incorporate LID into the design of a new or redevelopment is triggered for any new or redevelopment project that creates, adds, or replaces over 500 sq ft of impervious surface, irrespective of development type.

In the LID ordinance, there are exceptions where LID is not required. This includes any new or redevelopment project involving emergency construction, infrastructure projects in the public right-of-way, interior building alteration or addition that does not expand the building footprint, land permits that do not require an addition or alteration of existing impervious areas, restriping of permitted parking lots or any new or redevelopment project that does not require a building permit.

LID Requirements

New or redevelopment projects that need to implement LID requirements are divided into two categories in the LID ordinance. The first is for residential developments of four units or less, and the second is for residential developments of five units or more as well as nonresidential developments. Because the Port has only nonresidential developments, the following are the two conditions that are relevant to nonresidential projects:

- For new development or where redevelopment results in an alteration of at least 50 percent or more of the impervious surfaces of an existing developed site, the entire site shall comply with the standards and requirements of this ordinance and of the LID section of the Development BMP Handbook; or
- Where the redevelopment results in an alteration of less than 50 percent of the impervious surfaces of an existing developed site, only such incremental development shall comply with the standards and requirements of this ordinance and the LID section of the Development BMP Handbook.

In the LID ordinance, development and redevelopment projects are defined as follows:

- Development is defined as "any construction, rehabilitation, redevelopment or reconstruction of any public or private residential project, industrial, commercial, retail and other non-residential project, including public agency project; or mass grading for future construction."
- Redevelopment is defined as a project where "there are land disturbing activities that result in the creation, addition, or replacement of 500 square feet or more of impervious surface area on an already developed site." This includes "expansion of building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of a routine maintenance activity; and land disturbing activities related to structural or impervious surfaces."

Note that SUSMP defined a redevelopment as a site where "…there are land disturbing activities that result in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site within the categories listed," as opposed to the 500 sq ft, regardless of category, defined in the LID ordinance.

The proposed Project would meet the definition of redevelopment under the SUSMP requirements and LID ordinance.

BMP Categories

The LID ordinance states that if a project requires LID to be incorporated in the design, then the site needs to implement BMPs that will manage stormwater runoff in accordance with one more of the methods described below. The BMP categories are to be evaluated in the following priority order:

1) Infiltration;

2) Evapotranspiration;

3) Capture and use; and/or

4) Treatment through high removal efficiency biofiltration/biotreatment systems.

Note that this order of preference varies from the SUSMP order of preference where biofiltration/bioretention was listed second, and mechanical/hydrodynamic units were listed fourth.

The LID ordinance states that if stormwater is managed through high removal efficiency biofiltration systems that are designed as required, credit will be given as equivalent to 100 percent infiltration regardless of the runoff leaving the site. Also, multi-phased projects can either be designed as one system that complies with the LID requirements for the all phases of the project, or separately implementing BMPs during each phase.

The LID ordinance recognizes that there are on-site constraints where LID requirements are technically infeasible, either partially or fully. Where these conditions exist, they should be described in the submitted LID plan. Scenarios could include the following:

- Locations where seasonal high groundwater is within 10 feet of the surface grade;
- Locations within 100 feet of a groundwater well used for drinking water;
- Brownfield development sites or other locations where pollutant immobilization is a documented concern;
- Locations with potential geotechnical hazards
- Locations with impermeable soil types as indicated in applicable soils and geotechnical reports; and
- Other site implementation constraints identified in the LID section of the Development BMP Handbook.

The ordinance further states that where LID requirements cannot be met, at a minimum SUSMP requirements would instead need to be met on-site. For the remaining runoff that cannot be managed on-site (the difference between the amount of runoff that is managed by SUSMP requirements and the amount that was required to have been managed to meet LID requirements), either the runoff would need to be managed somewhere else in the same subwatershed, or a fee would need to be paid to the City of Los Angeles Stormwater Pollution Abatement Fund, whereby the City would allocate that fee toward stormwater mitigation projects within that subwatershed.

3.13.3.8 California Toxics Rule

This rule establishes numeric criteria for priority toxic pollutants in inland waters, as well as enclosed bays and estuaries, to protect ambient aquatic life (23 priority toxics) and human health (57 priority toxics). The numeric criteria are the same as those recommended by the USEPA in its Clean Water Act Section 304(a) guidance. The CTR also includes provisions for compliance schedules to be issued for new or revised NPDES permit limits when certain conditions are met.

3.13.3.9 Spill Prevention, Control, and Countermeasure

The Oil Spill Prevention, Control, and Countermeasure (SPCC) regulations require that certain facilities have in place measures that help ensure oil spills do not occur, but if they do, that there are protocols in place to contain the spill, and neutralize the potential harmful impacts. These plans ensure that facilities include containment and other countermeasures that would prevent oil spills that could reach navigable waters. In addition, oil spill contingency plans are required to address spill cleanup measures after a spill has occurred. A SPCC is required for facilities with aboveground oil storage capacity greater than 1,320 gallons or belowground storage capacity greater than 42,000 gallons. The ALBS facility only stores about 800 gallons of oil; therefore, an SPCC plan is not required. However, ALBS maintains a Spill Prevention Plan that addresses site-specific procedures for spill prevention, containment and countermeasures for all activities within the confines of their facility (ALBS, 2009).

3.13.3.10 Oil Spill Prevention and Response

The California Office of Spill Prevention and Response (OSPR) is a multi-agency effort including the U.S. Coast Guard, the California State Lands Commission, and the California Department of Fish and Game's Marine Safety Branch (MSB) is the lead agency. OSPR requires all marine facilities and tank vessels carrying petroleum products as cargo, and all non-tank vessels over 300 gross tons, to have a California approved oil spill contingency plan. Among OSPR's many responsibilities are: conducting spill drills for contingency plan holders and response organizations, licensing of spill cleanup agents in California, and assisting local governments in preparing local Oil Spill Contingency Plans (OSCPs). The OSPR is also assisting in funding and implementing the Vessel Traffic System (VTS) for the Port Complex.

3.13.3.11 Water Resources Action Plan

The Water Resources Action Plan (WRAP) was prepared by the Ports of Los Angeles and Long Beach, in coordination with their cities, the USEPA, and the Los Angeles RWQCB (POLA and POLB, 2009). The WRAP's purpose is to provide the framework and mechanisms for the Ports to achieve the goals and targets that will be established in the relevant TMDLs and to comply with the Industrial Activities, Construction Activities, and Municipal permits issued to the Ports and their respective Cities and tenants through the NPDES program. The WRAP identifies multiple current and potential control measures to minimize effects to water and sediment quality. These include Land Use Control Measures, On-Water Source Control Measures, Sediment Control Measures, and Watershed Control Measures. The WRAP is considered a living document, and the Ports will modify it as circumstances warrant. At present, the Port is preparing several documents in support of the WRAP objectives, including a Vessel Guidance Manual, and a SUSMP/LID Guidance Manual.

3.13.4 Impacts and Mitigation Measures

3.13.4.1 Methodology

Potential impacts of the proposed Project to water and sediment quality will be assessed through a combination of literature data (including applicable water quality criteria), results from past dredge and fill projects in Los Angeles Harbor, results from previous testing of Harbor sediments, results from current testing of sediment chemistry and water quality, and scientific expertise of the preparers. For oceanographic resources and flooding, potential impacts will be assessed using results from previous modeling studies for the Harbor and preparer expertise. Impacts would be considered significant if any of the significance criteria listed below occur in association with construction or operation of the proposed Project.

Results from sediment chemistry, toxicity and bioaccumulation testing as well as water quality testing in accordance with the Ocean Testing Manual (USEPA and USACE, 1991) was used as the basis for determining the suitability of material for re-use of dredged material (creation of CDFs) and potential for impacts to biota. Sediment testing in the vicinity of the ALBS facility was performed in 2005 (Weston, 2007, Appendix SED-1), which included focused sampling within the ALBS leasehold, and limited sampling in other areas of Fish Harbor.

The assessment of impacts is based on the assumption that the proposed Project would include the following:

- Coverage under the General Construction Activities Storm Water Permit for the onshore portions of the proposed Project will be obtained by ALBS as the “Legally Responsible Person” and delegate responsibilities to the tenant. The associated SWPPP would contain the following measures:
  - Equipment shall be inspected regularly (daily) during construction, and any leaks found shall be repaired immediately.
  - Refueling of vehicles and equipment shall be in a designated, contained area.
  - Drip pans shall be used under stationary equipment (e.g., diesel fuel generators), during refueling, and when equipment is maintained.
  - Drip pans that are in use shall be covered during rainfall to prevent washout of pollutants.
  - Construction and maintenance of appropriate containment structures to prevent off-site transport of pollutants from spills and construction debris.
  - Monitoring to verify that the BMPs are implemented and kept in good working order.
- Other standard operating procedures and BMPs for Port construction projects would be followed, such as: basic site materials and methods; earthworks; excavating, stockpiling, and disposing of chemically impacted soils; temporary sediment basin; material delivery and storage; material use; spill prevention and control; solid waste management; contaminated soil management; concrete waste management; sanitary-septic waste management; and employee-subcontractor training.

- ALBS will prepare and submit to the Bureau of Sanitation, Watershed Protection Division, for approval a SUSMP for the stormwater BMPs to be incorporated into the Project and implement the construction and operation and maintenance of the approved BMPs into the Project.
- All onshore contaminated upland soils would be characterized and remediated in accordance with LAHD, RWQCB, DTSC, and Los Angeles County Fire Department protocol and cleanup standards.
- The tenant will obtain and implement the appropriate stormwater discharge permits for operations.
- A CWA Section 404/Rivers and Harbors Act Section 10 permit from the USACE for dredging and finger pier construction activities in waters of the U.S., and for construction of the CDFs within Fish Harbor.
- A CWA Section 401 Water Quality Certification from the RWQCB related to construction dredging and any in-water disposal activities that contains conditions including standard WDRs.
- As applicable, a Debris Management Plan and OSCP would be prepared and implemented prior to the start of demolition, dredging, and construction activities associated with the proposed Project. The plan(s) would specifically identify in-water containment and spill management in the event of an accidental spill. The plans shall require that emergency clean-up equipment is available on-site to respond to such accidental spills. All pollutants shall be managed in accordance with all applicable laws and regulations.
- The Water Quality Certification will define a "mixing zone" around the dredging and construction operations. The mixing zone will be equivalent to a zone of dilution and, per the Basin Plan (RWQCB, 1994b) "[a]llowable zones of dilution within which high concentrations may be tolerated may be defined for each discharge in specific Waste Discharge Requirements."
- A silt curtain would be installed and maintained in area that completely encompasses dredging operations. If turbid water from dredging is observed beyond the silt curtain, the dredging contractor will adjust its operations to comply with water quality standards. Examples of possible adjustments include reducing the speed of dredging, or pausing until water quality exceedances have dissipated.
- During dredge and fill operations, an integrated multi-parameter monitoring program would be implemented by the LAHD in conjunction with both USACE and RWQCB permit requirements, wherein dredging performance would be measured in situ. The objective of the monitoring program would be adaptive management of the dredging operation, whereby potential exceedances of water quality objectives can be measured and dredging operations subsequently modified. If exceedance levels are approached, the LAHD would immediately meet with the construction manager to discuss modifications of dredging operations to reduce turbidity to acceptable levels as described above.
- Although BMPs, SWPPP, NPDES Permit compliance, and Spill Prevention Plan/OSCP are requirements that must be implemented and that would prevent significant water quality impacts, compliance with these requirements will be included as conditions of approval to facilitate their tracking and implementation.

3.13.4.2 Thresholds of Significance

The following criteria are based on the *L.A. CEQA Thresholds Guide* (City of Los Angeles, 2006) and are the basis for determining the significance of impacts associated with water quality, sediment quality, hydrology, and oceanography resulting from Project development.

The effects of a project on water and sediment quality, hydrology, and oceanography are considered to be significant if the project would result in any of the following:

WQ-1 Discharges that create pollution, contamination or a nuisance as defined in Section 13050 of the California Water Code (CWC) or that cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permits or Water Quality Control Plan for the receiving water body.

WQ-2 Flooding during the projected 50-year developed storm event, which would have the potential to harm people or damage property or sensitive biological resources.

WQ-3 Permanent, adverse changes to the movement of surface water sufficient to produce a substantial change in the current or direction of water flow.

WQ-4 Accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition that would not be contained or controlled on-site.

3.13.4.3 Impact Determination

Impact WQ-1: Proposed Project construction and operation would not create pollution, contamination, or a nuisance as defined in Section 13050 of the CWC or cause regulatory standards to be violated in Harbor waters.

Construction

The types of water quality impacts that could occur during dredging, filling, and pile driving include short-term increases in suspended sediments and turbidity levels, decreases in DO concentrations, increases in nutrient concentrations, and increases in dissolved and particulate contaminant concentrations in areas where contaminated sediments would be disturbed. These changes to water quality would be temporary and would be expected to be confined to the immediate vicinity (e.g., within 300 feet) of in-water construction and dredging activities (USACE and LAHD, 1992) in the waters off the Project site and in the mixing zone defined by the water quality certification issued by the Los Angeles RWQCB (also included by reference in the dredge permit issued by the USACE). Pile-installation activities at the proposed finger piers would also suspend bottom sediments into the water column, causing localized and temporary turbidity.

The dredging permit issued by the USACE would require the dredger to minimize the amount of water in the disposal vessel that flows back to the dredging site and prohibit the flow back of dredged water from containing any solid dredged material. A silt curtain would be used by the contractor, which would limit the dispersion of turbid waters.

Dredging would suspend some bottom sediments and create localized and temporary turbidity plumes. For continuous dredging operations, elevated turbidity conditions would occur in the immediate vicinity of the dredge for periods of days to several weeks. Following completion or interruption of dredging, the size and persistence of the turbidity plume would be determined by the time it takes for suspended materials to settle out combined with the current velocity. Settling rates are largely determined by the grain size of the suspended material, with fine sediments remaining in suspension longer than coarse sediments (USACE and LAHD, 1992). Settling rates are also affected by the mineralogy and organic content of the sediments, as well as pH, salinity, and temperature and turbulence of the receiving water. Dredging sediments adjacent to the Project site would likely generate a relatively small turbidity plume (i.e., within the mixing zone defined in the WDR) because the material is mostly coarse-grained and would settle fairly rapidly (Weston Solutions, 2007). Previous studies have shown that concentrations of suspended solids return to background levels within 1 to 24 hours after dredging stops (USACE and LAHD, 1992; Anchor Environmental, 2003).

Water quality parameters in West Basin (Los Angeles Harbor) were monitored in the vicinity of clamshell and suction dredges during the Los Angeles Channel Deepening Project in June 2003 and Berth 100 construction in 2002. Concentrations of TSS within the clamshell and suction dredge areas ranged from 11 mg/L to 46 mg/L and from 5 mg/L to 77 mg/L, respectively, but the corresponding reduction in light transmittance did not exceed the 40 percent reduction criterion listed in the monitoring work plan for uncontaminated sediments. Dredging using a clamshell was monitored for a period of five weeks between July and August 2002 at Berth 100 at the entrance to the West Basin (MBC, 2002). Results indicated that turbidity (TSS) at Station C (the designated USACE compliance station), 300 feet downcurrent of dredging operations, averaged 36.3 mg/L during dredging surveys and 20.5 mg/L during the pre- and post-dredge surveys. There was an average of a 23.5 percent change in light transmission between Station C and Station D, the control station, during dredge operations, and a 7.8 percent difference during nondredge operations. The mean values for dissolved oxygen and hydrogen ion concentration were both slightly higher during dredge operations than during nondredge operations. In general, the results showed that the plume persisted during dredging operations (although light transmission was typically well below the 40 percent decrease threshold in the regulations) and transmissivity returned to normal background (60 to 70 percent) within one week of dredging cessation (MBC, 2002). During clamshell dredging off Berths 145-147 from July to October 2010, mean TSS during dredging at Station C (11.0 mg/l) was slightly higher than the mean recorded at Station D (6.6 mg/l) (POLA, 2009a-i; 2010a-d). The mean TSS during dredging at Station C was also similar to the TSS value at Station D during the post-dredge survey. The mean percent reduction in light transmittance (water column averaged) between Stations C and D during dredging was about 20 percent. As with TSS, the mean light transmittance at Station C during 11 dredge surveys (43 percent) was similar to that at Station D during the post-dredge survey (46 percent). Based on the results of these studies, turbidity plumes generated during dredging operations in the proposed Project area are expected to affect only a limited area within Fish Harbor and be short-term in nature. The use of a silt curtain will also limit the spread of turbid waters beyond the immediate work zone.

Turbidity may also be temporarily increased during installation of piles or other subtidal construction activities that take place near the seafloor. However, the extent would generally be much less than the area affected by dredging, probably affecting a radius of no more than about 100 feet from the activity. Dissolved oxygen levels in Harbor waters could be reduced in the immediate vicinity of dredging and pile-driving activities by the introduction of suspended sediments and associated oxygen demand on the surrounding waters. Reductions in DO concentrations, however, would be brief. Previous monitoring conducted 90 feet and 300 feet from dredging operations at Southwest Slip did not exhibit any reductions in DO concentrations (USACE and LAHD, 2008). During clamshell dredging off Berth 100 (near the base of the Vincent Thomas Bridge) in 2002, there was no effect on DO from dredging detected outside the immediate area of dredge operations (MBC, 2002). During clamshell dredging off Berths 145-147 from July 2009 to October 2010, lowest DO levels were recorded during the post-dredge survey (mean of 4.3 mg/l at Station C and 4.6 mg/l at Station D), which was conducted eight days after completion of dredging (POLA, 2009a-i; 2010a-d). Mean DO levels during dredging operations were 6.5 mg/l at Station C and 6.4 mg/l at Station D. Based on results from the studies described above, reductions in DO levels below 5 mg/L associated with proposed Project construction and dredging activities are not expected to persist.

Changes in pH may occur in the immediate vicinity of dredging operations due to reducing conditions in sediments resuspended into the water column. Seawater, however, is a buffer solution (Sverdrup et al., 1942) that acts to repress any change in pH. Therefore, any measurable change in pH would likely be highly localized and temporary, and would not result in persistent changes to ambient pH levels of more than 0.2 units. As discussed for the Berth 100 project in 2002, mean pH levels at the compliance station remained within 0.02 units and slightly higher than found at the control site (MBC, 2002). During clamshell dredging off Berths 145-147 from July 2009 to October 2010, average differences in pH (throughout the water column) between Stations C and D were 0.02 units during the pre-dredge survey, while average pH values during dredge and post-dredge surveys were identical (POLA, 2009a-i; 2010a-d). Based on the results from the studies described above, the water quality objective for pH would not be exceeded outside the mixing zone during proposed Project construction.

Contaminants, including metals and organics, could be released into the water column during the dredging and pile-driving operations. However, like pH and turbidity, any increase in contaminant levels in the water is expected to be localized in the mixing zone and of short duration. The magnitude of contaminant releases would be related to the bulk contaminant concentrations of the disturbed sediments, as well as the organic content and grain size that affect the binding capacity of sediments for contaminants.

Because the sediment characteristics vary across the proposed Project site, the magnitude of contaminant releases, and water quality effects, would also vary. Sediment testing performed in 2005 in the proposed dredge footprint recorded elevated concentrations of copper, lead, mercury, zinc, DDTs, PCBs, and TBT in the upper four to six feet of sediments. However, the contamination was not as widespread with deeper sediments, suggesting that the highest concentrations were limited to the upper five feet of sediments (Weston, 2007). Results suggested there could still be some effects during dredging, but these would be limited to the immediate area of dredging.

Sediments containing contaminants that are suspended by the dredging and pile installations would settle back to the bottom in a period of hours to days. Transport of suspended particles by tidal currents would result in some redistribution of sediment contaminants; however, use of a silt curtain would limit sediment dispersal. Monitoring efforts associated with previous dredging projects in the Harbor have shown that resuspension followed by settling of sediments is low (generally 2 percent or less). Consequently, the existing concentrations of contaminants in sediments of the Harbor waters adjacent to the dredged area would not be measurably increased by dredging activities and other in-water activities. As discussed in Section 3.13.3.5, the Basin Plan defines limits for chemical contaminants in terms of bioaccumulation, chemical constituents, pesticides, PCBs, and toxicity (RWQCB, 1994b). Results from sediment testing (Weston, 2007) demonstrated that sediments in the proposed Project area would not be suitable for unconfined aquatic disposal; therefore, sediments are being beneficially reused, and would be sequestered from the marine environment (Halcrow and Anchor QEA, 2009). This would improve habitat conditions within Fish Harbor.

During the dredging and pile driving, nutrients could be released into the water column. Release of nutrients could promote nuisance growths of phytoplankton if operations occur during warm water conditions. Phytoplankton blooms have occurred during previous dredging projects, including the Deep Draft Navigation Improvement Project (USACE and LAHD, 1992). However, there is no evidence that the plankton blooms observed were not a natural occurrence or that they were exacerbated by dredging activities. The Basin Plan (RWQCB, 1994b) limits on biostimulatory substances are defined as "…concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses." Given the limited spatial and temporal extent of Project activities with the potential for releasing nutrients from bottom sediments, effects on beneficial uses of Harbor waters are not anticipated to occur in response to the proposed Project. Dredging and in-water construction operations are not expected to affect the temperature or salinity of waters off the Project site because these activities would not involve any wastewater discharges or processes that would affect the baseline conditions.

Dredging for the proposed Project would require a permit from the USACE and a Section 401 (of the CWA) Water Quality Certification from the RWQCB. The Water Quality Certification would specify receiving water monitoring requirements. Monitoring requirements typically include measurements of water quality parameters such as DO, light transmittance (turbidity), pH, and suspended solids at varying distances from the dredging operations.

Analyses of contaminant concentrations (such as metals, DDT, PCBs, and PAHs) in waters near the dredging operations may also be required if the turbidity levels in the water are found to be above a certain transmittance threshold. Monitoring data would be used by the dredger to demonstrate that water quality limits specified in the permit are not exceeded. The dredging permit would identify corrective or adaptive actions which would be implemented if the monitoring data indicate that water quality conditions outside the mixing zone are outside the range of the permit-specified limits.

Creation of the CDFs at the Project site would increase the land surface area of the proposed Project site, which would result in proportional but small increases in volumes of stormwater runoff from the Project facilities. As discussed for "Operation", below, while runoff from the proposed Project site would contribute to contaminant mass loadings to the Harbor, the contribution would be negligible because the volume would be small and soil and runoff control would be used during construction to prevent impacts to surface water quality. BMPs would be implemented in compliance with the General Construction Activity Storm Water Permit and SWPPP.

The contaminated sediment represents an on-going source of contamination to the water column via direct exchange and/or resuspension of the sediment and contaminants). The CDFs would be created by the removal and sequestration of contaminated sediments from Fish Harbor; therefore, the proposed Project would have a beneficial effect by eliminating a continual source of legacy contamination that affects water quality in Fish Harbor.

Accidents resulting in spills of fuel, lubricants, or hydraulic fluid from equipment used during dredging, beneficial reuse of sediments, pier demolition/construction, and sheetpile installation could occur during proposed Project construction. Based on the history for this type of work in the Harbor, accidental leaks and spills of large volumes of hazardous materials or wastes containing contaminants during onshore construction activities have a very low probability of occurring because large volumes of these materials are not typically used or stored at construction sites (see Section 3.7 Hazards and Hazardous Materials). Spills associated with construction equipment, such as oil/fluid drips or gasoline/diesel spills during fueling, typically involve small volumes that can be effectively contained in the work area and cleaned up immediately. Construction and industrial SWPPPs and standard Port BMPs listed in Section 3.13.4.1 (e.g., use of drip pans, contained refueling areas, regular inspections of equipment and vehicles, and immediate repairs of leaks) would reduce potentials for materials from onshore construction activities to be transported off-site and/or enter storm drains. A surface boom would be deployed during removal of the creosote-treated timber wharf, which would also serve to contain any spills in that work area.

Accidents or spills from in-water construction equipment could result in direct releases of petroleum materials or other contaminants to Harbor waters. The magnitude of impacts to water quality would depend on the spill volume, characteristics of the spilled materials, and effectiveness of containment and cleanup measures. Dredging contractors are responsible and liable for any accidental spills (hydraulic fluid leaks, fuel spills, or such) during dredging operations, including spills from the dredge, chase boats, the barge, and tugs. Equipment is generally available on-site to respond to such accidental spills, and the general spill response practice is to deploy floating booms (by chase boats) made of material that would contain and absorb the spill. Vacuums/pumps may be required to assist in the cleanup depending on the size of the spill.

The Basin Plan (RWQCB, 1994b) water quality objective for oil and grease states that "[w]aters shall not contain oils, greases, waxes or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect beneficial uses." Spill prevention and cleanup procedures for the proposed Project would be addressed in a plan prepared in accordance with Port guidelines and implemented by the construction contractor prior to the notice to proceed with construction operations. The plan would define actions to minimize potentials for spills and provide efficient responses to spill events to minimize the magnitude of the spill and extent of impacts.

Operation

Runoff

Operation of the proposed Project facilities would not involve any untreated point source discharges of wastes or wastewaters to the Harbor. The proposed Project would allow ALBS to comply with their NPDES permit requirements by re-grading the site and installing a new storm drain that directs stormwater and process water flow away from harbor waters into a collection system for treatment in an oil water/separator unit(s) before discharge. Further, compliance with the NPDES permit requires that the SWPPP specify BMPs that would be implemented to reduce the discharge of pollutants in storm water, and assure that the storm water discharges from the facility would neither cause, nor contribute to, the exceedance of water quality standards and objectives, nor create conditions of nuisance in the receiving water.

All applicable Source Control BMPs would be incorporated in the Project design. Currently, stormwater flows through the existing stormwater conveyance system or over the wharf and into the waters of Fish Harbor during a storm event. As part of the proposed Project, a new storm drain system would be installed in conjunction with the installation of a new oil/water separator. The pavement would be replaced with high-strength pavement designed to drain stormwater away from Fish Harbor and to convey the stormwater to the storm drain system for treatment by the oil/water separator. Dikes would be used to direct the flow of stormwater around the remaining buildings. A raised curb/step would be constructed around Buildings C2 and A1, a combination of either trench drains and/or catch basins to capture storm flow would be introduced, and the flow would be directed to the new oil/grease separator(s) to comply with BMP requirements for NPDES and WDR permitted discharge into Harbor waters. In addition, ALBS would continue to protect water quality by wrapping its vessels in a plastic tarp in order to reduce contaminated runoff as a result of residual spent sandblast grit.

The increase in surface area at the site (from construction of CDFs) could result in an increase in accumulation of contaminants, and the transport of these materials by runoff from the Project site could contribute incrementally to changes in receiving water quality. However, as noted above, runoff would be collected by the storm drain system and directed into an oil/water separator prior to being discharged into Fish Harbor. The facilities associated with the proposed Project and all day-to-day operations and maintenance activities would be operated and conducted in accordance with the industrial SWPPP to minimize the generation of particulate and other pollutants, and the structural BMPs would provide significant treatment of the pollutants prior to discharge. In addition, monitoring would be conducted under the SWPPP to observe the quality of the stormwater runoff discharged to the Harbor. This would allow ALBS to ensure that the quality of any runoff would comply with the permit conditions and verify that the BMPs are performing as anticipated.

Atmospheric Deposition

Direct atmospheric deposition refers to air pollutants that settle directly on water bodies, whereas indirect atmospheric deposition occurs on upland areas where the pollutants collect and are later conveyed to water bodies during storm events. Atmospheric deposition related to Port operations emissions may provide an increased localized impact to the local watersheds. These impacts are primarily related to resuspended dust from vehicular traffic and coarse-sized, mechanically-derived particles, such as zinc from tire wear and copper from brake pad wear. Fine particulates from vehicle exhaust may also contribute to the local watersheds but to a lesser degree.

However, the contribution of particulates from area-wide and regional transportation sources likely dominate the metal-containing particulate matter that enters the storm drain systems because traffic volumes from freeways, commercial roads, and surface streets far outweigh the transportation volumes from the Port operations alone. These particles likely accumulate during dry weather conditions and are later washed off during storm events. For suspended zinc and copper pollutants from the proposed Project site (tire and brake wear from equipment and trucks), aerial deposition impacts would not significantly affect water quality due to the limited and dispersed nature of direct deposition on Harbor waters. Because direct aerial disposition would not allow for a significant build-up of these pollutants before entering Harbor waters, and due to the proposed Project features to improve water quality at the ALBS.

Ambient monitoring and stormwater monitoring in Long Beach Harbor in 2008-9 (MBC, 2009) showed that pollutants, such as metals and semivolatile organic compounds, were present in Harbor waters during both dry-weather surveys and storm surveys. However, only copper and mercury occurred in samples at concentrations that exceeded the standards for marine waters at a few locations; copper exceeded regulatory standards during one dry-weather and one wet-weather survey, while mercury exceeded regulatory standards during one wet-weather survey. Mixing with the Harbor receiving waters dilutes the pollutants so that the receiving water standards are usually not exceeded. Stormwater runoff from the proposed Project site is not anticipated to cause violations of receiving water quality objectives, given compliance with Non-Point Source Pollution Control Program requirements, as well as SWPPP and SUSMP requirements.

Ballast Water

The proposed Project does not include large container or cargo vessels that conduct ballast water exchanges. Thus, the proposed Project would not result in increased contaminated ballast water discharges from vessels.

Contaminants from Vessels

The leaching of metals from vessel hull coatings may occur as a result of additional vessels docking at the terminal facility. Studies by the U.S. Navy have demonstrated that these metals may contribute to overall concentrations in the water column in harbors such as Mayport, Florida, Pearl Harbor, Hawaii, and San Diego, California; however, estimated concentrations of metals resulting from hull vessel leachates were in most cases below federal and state water quality criteria. As described in Section 3.13.2.2.4., above, after years of declining use of TBT hull coatings, in September 2008 TBT was removed from use by International Convention. The highest reported TBT value in a 2006 Harbor-wide study (17.1 ng/L) was recorded at Station LA62, adjacent to Pier 300 (POLA and POLB, 2009). However, due to the relative low solubility of TBT in water (half life of several months), the numerous potential sources in the Port Complex, and the circulation patterns in the vicinity of Pier 300, there is no way to determine the source of the TBT.

The proposed Project is expected to result in increased vessel traffic. ALBS currently services between 120 and 130 vessels per year. Under the proposed Project, ALBS would be able to serve between 240 and 304 vessels per year. Despite this increase in traffic, this would not translate to an increase in contaminants leaching from hull coatings because these vessels would already be waterborne regardless of the operation of the proposed Project. Additionally, the new boat hoists would increase the ability of ALBS to remove vessels from the water while repairs are taking place.

Accidents

Other potential operational sources of pollutants that could affect water quality in the waters off Fish Harbor include accidental spills on land that enter storm drains, as well as accidental spills or illegal discharges from vessels at the proposed Project site. If spilled material in upland areas was not captured prior to reaching the storm drain system, such materials could reach Fish Harbor (in the waters adjacent to ALBS). Impacts to water and sediment quality would depend on the characteristics of the material spilled, such as volatility, solubility in water, and sedimentation rate, and the speed and effectiveness of the spill response and cleanup efforts. Potential releases of pollutants from a large spill on land to Harbor waters and sediments would be minimized through existing regulatory controls and are unlikely to occur during the life of the proposed Project.

As described in Section 3.7, Hazards and Hazardous Materials, activities that involve hazardous liquid bulk cargoes at the Port are governed by the Los Angeles Harbor District Risk Management Plan (RMP) (LAHD, 1983). This plan provides for a methodology for assessing and considering risk during the siting process for facilities that handle substantial amounts of dangerous cargo, such as liquid bulk facilities. The Release Response Plan prepared in accordance with the Hazardous Material Release Response Plans and Inventory Law (California Health and Safety Code, Chapter 6.95), which is administered by the City of Los Angeles Fire Department (LAFD), also regulates hazardous material activities within the Port. These activities are conducted under the review of a number of agencies and regulations including the RMP, U.S. Coast Guard (USCG), fire department, and state and federal departments of transportation (49 CFR Part 176). In addition, plans such as the site-specific Spill Prevention Plan (that addresses site-specific procedures for spill prevention, containment and countermeasures for all activities within the confines of the facility) ensure that the facility include containment and other countermeasures that would prevent oil spills that could reach navigable waters. In addition, OSCPs are required to address spill cleanup measures after a spill has occurred.

For the proposed Project, ALBS would update, as necessary, its current Spill Prevention Plan (ALBS, 2009) and prepare an OSCP, which would be reviewed and approved by OSPR, in consultation with other responsible agencies. The OSCP would identify and plan as necessary for contingency measures that would minimize damage to water quality and provide for restoration to pre-spill conditions.

Because vessel traffic to and from the shipyard would likely increase at ALBS due to the proposed Project improvements, the proposed Project could contribute to a comparatively higher number of spills compared to baseline conditions. Spills could occur with vessels in the water, out of the water, or being transferred in or out of the water. Accidental spills of petroleum hydrocarbons, hazardous materials, and other pollutants from proposed Project-related upland operations are expected to be limited to small volume releases, because large quantities of those substances are unlikely to be used, transported, or stored on the site.

Illegal Discharges from Vessels

The number or severity of illegal discharges, and corresponding changes to water and sediment quality, from vessel traffic cannot be quantified because the rate and chemical composition of illegal discharges from commercial vessels are unknown. It is reasonable to assume that increases in the frequency of illegal discharges would be proportional to the change in numbers of ship visits. Even though the proposed Project would result in increased vessel transits to and from the shipyard, it is not expected to increase the number of vessels within the Port Complex, so loadings from illegal discharges from the proposed Project operations would therefore not increase over baseline conditions. There is no evidence that illegal discharges from ships presently are causing widespread problems in the Harbor. Over several decades, there has been an improvement in water quality despite an overall increase in ship traffic. In addition, the Port Police are authorized to cite any vessel that is in violation of Port tariffs, including illegal discharges.

Summary

Dredging and construction activities (such as pile driving and sheetpile wall installation) during the construction phases of the proposed Project would not entail any direct or intentional discharges of wastes to waters off ALBS. However, proposed Project-related in-water activities would disturb and resuspend bottom sediments, which would result in temporary and localized changes to some water quality indicators in the mixing zone defined by the Water Quality Certification. Results from previous water quality monitoring during dredge activities in Los Angeles Harbor indicate that turbidity would rapidly drop to background levels within a few hundred meters of the dredge once dredging ceases.

Water quality standards are established for constituents outside the mixing zone (at specified distances from the in-water construction). Dredging in Fish Harbor may reduce DO concentrations in the immediate vicinity of the dredge, but these changes would generally not extend beyond the mixing zone or persist following the completion of the dredging operation. Changes in pH, nutrient, and contaminant levels could also occur as a result of construction activities for the proposed Project. Sediment testing demonstrated that sediments disturbed by proposed Project activities could cause releases of contaminants to surface waters near dredging operations (Weston, 2007). The extent of sediment dispersal would depend on the dredge method, specific sediment characteristics, and current speed and direction during dredging. However, due to the limited extent of the dredge footprint, and use of a silt curtain, dispersal of sediments unsuitable for ocean disposal is anticipated to be limited to the vicinity of dredge operations.

Potential aquatic impacts from disposal of dredged sediments into the CDFs could include: increased turbidity, reduced DO concentrations, and introduction of contaminants. Such physical effects could affect aquatic resources, such as algae, fishes, and invertebrates. However, these impacts would be limited due to features of the proposed Project, including (1) use of cement stabilization, and (2) installation of the sheetpile wall around the CDFs, which would limit any exchange of potentially contaminated sediments with surrounding waters.

During dredge and pile-driving operations, an integrated multi-parameter monitoring program would be implemented in accordance with USACE and RWQCB permit requirements, wherein dredging performance would be measured in situ. The objective of the monitoring program is adaptive management of the dredging operations, including dredging modifications, so that potential violations of water quality objectives do not occur. If permit conditions are triggered, the ALBS would immediately meet with the construction manager to discuss modifications of dredging operations to keep turbidity to acceptable levels. This could include alteration of dredging methods, and/or implementation of additional BMPs to limit the size and extent of the dredge plume. Thus, proposed Project-related changes during construction are not expected to result in pollution, contamination, a nuisance, or result in violations of water quality standards or permit conditions; therefore, impacts to water quality from in-water construction activities would be less than significant.

Normal dry-weather upland operations associated with the proposed Project would not result in direct discharges of pollutants to Harbor waters. As with existing operations, stormwater runoff from the proposed Project site could contain particulate debris from operation of the Project facilities, including aerially deposited pollutants. However, the proposed Project would implement BMPs and other improvements such as site grading that would bring ALBS in compliance with the site-specific NPDES discharge permit limits and industrial SWPPP requirements. This includes increasing the amount of storm drain runoff from the site that is captured and treated via SUSMP devices prior to discharge to Harbor waters. As a consequence, water quality impacts from site runoff would be less than significant, and in fact, the proposed Project would reduce the amount of untreated runoff entering the Harbor and thereby provide a water quality benefit. Additionally, the removal and sequestering of contaminated sediments through dredging and creation of the CDFs would have a beneficial effect on water quality by eliminating a continual source of legacy contamination that affects Fish Harbor.

Despite an increase in vessel traffic over time to ALBS, this would not translate to an increase in contaminants (such as copper) leaching from hull coatings. Potential impacts from illegal discharges and pollutant leaching from vessel coatings are not expected to increase above the baseline and would be less than significant.

Accidental or incidental spills or leaks that occur on land are expected to be contained and cleaned up before any impacts to surface water quality can occur. Accidental spills from dredges or barges could directly affect water quality in the waters of Fish Harbor; however, the probability of an accidental spill from a construction vessel to the Harbor is low. In addition, if an accidental spill does occur, implementation of ALBS' Spill Prevention Plan would addresses site-specific procedures for spill containment and countermeasures, as well as the OSCP, which would identify contingency measures that would minimize damage to water quality and provide for restoration to pre-spill conditions. Because of these procedures and measures, significant water quality impacts are not expected to occur as a result of accidental spills of pollutants during in-water construction. Impacts would be less than significant.

There is potential for accidental spills to Harbor waters due to shipyard operations at the facility. Shipyard operations are expected to result in increased vessel activity near the proposed Project site because of the additional capacity that would occur due to Project improvements, and thus, operations could contribute to a comparatively higher number of spills compared to baseline conditions. Spills could occur with vessels in the water, out of the water, or being transferred in or out of the water. The potential for impacts to water quality from in-water vessel spills would increase above the baseline and would be potentially significant. However, given compliance with existing regulations and Project requirements discussed above (i.e., preparation of an OSCP, and update, if necessary of the existing facilities Spill Prevention Plan) that require the implementation of spill prevention measures and control and cleanup measures to prevent oil spills from reaching navigable waters, the impacts would be less than significant. Once the vessels are repaired, there is less potential for spills and when the vessels are back in operation, they are no longer under the control of ALBS.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact WQ-2: Proposed Project construction and operation would not result in increased flooding that would have the potential to harm people or damage property or sensitive biological resources.

The proposed Project site is designated by FEMA as Flood Zone X (defined as areas of 0.2 percent annual chance flood; areas of one percent annual chance flood with average depths of less than one foot or with drainage areas less than one square mile; and, areas protected by levees from one percent annual chance flood). The proposed Project site is not in a 100-year flood zone and implementation of the proposed Project would not result in increased flooding.

Construction activities and proposed Project operations would not increase the potential for flooding on-site because site elevations would remain generally the same as the baseline conditions. Some limited grading would occur on the site in conjunction with the demolition of several buildings and asphalt areas, and the subsequent removal of soil. During construction, BMPs would be employed to control site runoff, and an on-site storm drain system would be installed to meet NPDES requirements during project operation.

Summary

Because construction of the proposed Project would not increase the potential for flooding at the site, it would not substantially increase the potential for people or property to be adversely affected by flooding. Therefore, construction of the proposed Project would not result in significant impacts from flooding.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact WQ-3: Construction and operation of the proposed Project would not result in a permanent adverse change in movement of surface water in the Harbor.

This impact threshold addresses changes (hydromodifications) to the water body that would inhibit circulation or water mass exchanges with adjacent water bodies, thereby promoting stagnation and adverse effects to water quality. Potential marine habitat impacts from pile installation and creation of CDFs are discussed in Section 3.3, Biological Resources.

Construction

Dredging activity for the proposed Project would alter the existing bathymetry. Dredging of accumulated sediments would slightly increase the depth of the approach channel to ALBS. These sediments would be used as fill in two CDFs. Placement of 126 concrete pilings for the finger piers would slightly reduce water movement beneath the piers, but due to the distance between pilings and the continual tidal action in the Harbor, this would not result in stagnation or cause adverse impacts to marine water quality within the Project area or vicinity.

Operation

Once construction of facilities for the proposed Project is completed, proposed Project operations would not cause a permanent adverse change to the movement of surface water because the proposed Project would not install barriers to prevent or impede water movement in and out of Fish Harbor. Therefore, impacts to surface water flow would be less than significant.

Summary

Construction and operation of the proposed Project would not result in a permanent adverse change in surface water movement because these activities would not impose barriers to water movement into and out of the waters of Fish Harbor, and impacts to surface water movement would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact WQ-4: Construction and operation of the proposed Project would not accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition that would not be contained or controlled on-site.

Construction

Ground disturbances and construction activities related to demolition and construction on land have the potential to increase erosion and deposition of soils in the Harbor. The baseline potential for erosion of soils in the proposed Project site is low due to the flat terrain, infrequent rainfall events, and moderate wind velocities. Therefore, the natural processes that could accelerate erosion can be controlled effectively by the use of temporary berms, barriers, and grading. As discussed above under Impact WQ-1, the tenant would obtain covereage under the General Construction Activities NPDES permit and have in place a SWPPP, which would include standard Port BMPs listed in Section 3.13.4.1 (e.g., use of drip pans, contained refueling areas, regular inspections of equipment and vehicles, and immediate repairs of leaks) to reduce the potential for materials from onshore construction activities to be transported off-site and enter storm drains.

ALBS would be responsible for the updating and implementation of its SWPPP that would specify logistics and schedule for construction activities that would minimize the potential for erosion and standard practices that include monitoring and maintenance of control measures. This would include measures to minimize wind or water erosion from the site during construction and minimize any potential for eroded sediment to be transported to the Harbor receiving waters. Standard practices would follow guidance developed by the Port for soil management (e.g., temporary sediment basin [ESC 56], solid waste management [CA 020], and contaminated soil management [CA 022]) to minimize potentials for soil erosion and off-site transport. Additionally, runoff of soils from the proposed Project site would be controlled by implementation of BMPs, as required by the construction SWPPP for the proposed Project. Thus, construction activities would not be expected to accelerate erosion or increase loadings to the Harbor of soils carried by stormwater runoff.

Operation

The modernized ALBS facility would occupy a slightly larger footprint (approximately 0.9 acres larger) than the current baseline due to the creation of two CDFs. Although the proposed Project would operate on a slightly larger area than baseline conditions, the Project site would be completely paved, which would prevent erosion from occurring during shipyard operations. As described above under Impact WQ-1, standard Port BMPs would be implemented and site runoff would be directed to the proposed new treatment system prior to discharge, which would prevent or minimize the impacts from sediment in runoff to Fish Harbor from the proposed Project site. As a consequence, proposed Project operation would not result in significant impacts related to erosion or sedimentation.

Summary

Construction and operation of the proposed Project would not accelerate natural processes of wind and water erosion because all applicable BMPs and other standard soil management procedures would be implemented to minimize erosion from the Project site. Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

3.13.4.4 Summary of Impact Determinations

Table 3.13-3 summarizes the impact determinations for the proposed Project related to Water Quality, Sediments, Hydrology, and Oceanography, as described in the detailed discussion above. Identified potential impacts are based on federal, state, or City of Los Angeles significance criteria, Port criteria, and the scientific judgment of the report preparers, as applicable.

Table 3.13-3: Summary Matrix of Potential Impacts and Mitigation Measures for Water Quality, Sediments, and Oceanography Associated with the Proposed Project

Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
WQ-1: Proposed Project construction and operation would not create pollution, contamination, or a nuisance as defined in Section 13050 of the CWC or cause regulatory standards to be violated in Harbor waters.	Less than significant	No mitigation is required	Less than significant
WQ-2: Proposed Project construction and operation would not result in increased flooding that would have the potential to harm people or damage property or sensitive biological resources.	Less than significant	No mitigation is required	Less than significant
WQ-3: Construction and operation of the proposed Project would not result in a permanent adverse change in movement of surface water in the Harbor.	Less than significant	No mitigation is required	Less than significant
WQ-4: Construction and operation of the proposed Project would not accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition that would not be contained or controlled on-site.	Less than significant	No mitigation is required	Less than significant

3.13.4.5 Mitigation Monitoring

No mitigation measures are required due to the implementation of existing regulations or measures included as part of the proposed Project.

3.13.5 Significant Unavoidable Impacts

There would be no significant unavoidable impact on Water Quality, Sediments, and Oceanography from the construction and operation of the proposed Project.

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