

4.7 HYDROLOGY AND WATER QUALITY

INTRODUCTION

This section describes the environmental and regulatory setting of the project site and vicinity with respect to surface water hydrology and quality. This analysis addresses potential impacts to hydrology and water quality resulting from implementation of the proposed project. This project is required to meet drainage and water quality requirements for surface water runoff.

4.7.1 EXISTING SETTING

4.7.1.1 Regional Watershed

The project site is located in the San Gabriel River watershed. The watershed drains 689 square miles from Los Angeles, Orange, and San Bernardino Counties and is bounded by the San Gabriel Mountains to the north, a large portion of San Bernardino and Orange Counties to the east, the Los Angeles River watershed to the west, and the Pacific Ocean to the south. The San Gabriel River's headwaters originate in the San Gabriel Mountains, while the lower part of the river flows through a concrete-lined channel before becoming a soft-bottom channel near its termination at the Pacific Ocean. The project site is located within the Los Cerritos Channel and Alamitos Bay Water Management Area (WMA) of the San Gabriel River watershed. The WMA is located between the Los Angeles and San Gabriel Rivers and drains to the same general area as the San Gabriel River. The Los Cerritos Channel and Alamitos Bay represent the main water bodies of the WMA.¹

4.7.1.2 Project Watershed

The proposed project is located within the Alamitos Bay Watershed. Alamitos Bay, located in the southeastern portion of the City of Long Beach (City) near the Los Angeles County/Orange County border, is connected directly to the Pacific Ocean. Alamitos Bay is composed of Marine Stadium, a recreation facility used for boating, water skiing, and jet skiing; Long Beach Marina, which contains seven smaller basins for recreational craft and a boatyard; a variety of public and private berths; and the Bay proper, which includes several small canals, a bathing beach, and several popular clamming areas.

¹ County of Los Angeles, Department of Public Works, San Gabriel River Watershed, <http://dpw.lacounty.gov/wmd/watershed/sg/> accessed January 30, 2007.

4.7.1.3 Project Site Drainage Pattern

There are no streams or rivers located on site; however, the San Gabriel River runs east of the project site, and the Los Cerritos Channel drains into the project site.

There are several storm drain lines running through and surrounding the project site. Several of the lines run under the parking lot and discharge directly into Alamitos Bay. In 2007, the City, working in partnership with Los Angeles County, arranged for three of the four main storm drain pump stations that empty low-flow effluent into Alamitos Bay from the surrounding areas to be diverted into the sewer system. This diverted approximately one million gallons of contaminated water per month from the storm drain system into the sewer system.

4.7.1.4 Surface Water Quality

The Long Beach storm water monitoring program for Alamitos Bay was initiated during the 2001/2002 annual program review with Regional Board staff. A pilot-receiving water program was first conducted during the 2002/2003 season. Since the initial pilot program, the receiving water study in Alamitos Bay has been included as a part of the storm water monitoring program. The primary objectives of the receiving water program are to (1) define the general vertical and horizontal extent of storm water in Alamitos Bay, Marine Stadium, and Los Cerritos Channel, and (2) evaluate toxicity and associated water quality characteristics of the storm water plume. The program was intended to be conducted once during the early portion of the wet weather season. The study area included all of Alamitos Bay, Marine Stadium, and the Los Cerritos Channel up to the first upstream bridge. Initiation of field sampling is intended to occur 12 to 24 hours following the end of rainfall.

A total of five storm water plume tracking studies have been conducted in Alamitos Bay receiving waters since the initial pilot program in 2002. These studies are typically conducted in association with an early season storm event. Since the first study, monitored events have ranged from relatively small events (0.3–0.5 inches [in] of rain), where the storm water plume was limited mostly to the Los Cerritos Channel, to very large events (1.6–1.8 in) that impacted all of Alamitos Bay and extended out into San Pedro Bay. In contrast to similar studies conducted to monitor storm water plumes in Santa Monica Bay and San Diego Bay, none of these surveys, including the most recent, has shown evidence of widespread toxicity within Alamitos Bay as a result of the storm water plumes. Based on the plume characteristics, the Los Cerritos Channel was determined to be the major source of storm water entering Alamitos Bay. Measured surface salinity within Alamitos Bay ranged from 3.88 to 35.3 parts per thousand (ppt). The lowest salinities were found within the lower reaches of the Los Cerritos Channel near the Pacific Coast Highway (PCH) Bridge. The higher surface salinities occurred nearer the Bay entrance and the western half of Alamitos

Bay. The upper reaches of Marine Stadium had near open coast salinities, indicating that there was no significant plume from this portion of the watershed during this moderate event.

Total metal concentrations generally increased with decreasing salinity (or increasing storm water influence) for each of the metals tested. Total zinc concentrations exceeded the California Ocean Plan 2002 daily maximum concentration of 80 micrograms per liter ($\mu\text{g/L}$) for the two stations most influenced by the storm water plume. With the exception of cadmium, dissolved metals also showed a clear pattern of storm water influence. Dissolved metal concentrations increased as the salinity decreased. Dissolved copper concentrations exceeded the California Toxics Rule for Saltwater Criterion Maximum Concentration (CMC) of $4.8 \mu\text{g/L}$ at two stations and the Criterion Continuous Concentration (CCC) of $3.1 \mu\text{g/L}$ at all receiving water stations. The sea urchin fertilization test was used to evaluate potential toxic effects of the storm water plume. Tests conducted on plume samples from each of the four receiving water stations showed no evidence of a toxic response.

4.7.1.5 Basin Sediment Quality/Characterization¹

The analytical chemistry results showed that metals associated with urban runoff (i.e., copper, lead, mercury, and zinc) were detected at nominally elevated concentrations across all basins. The only metal detected at a level significantly different from other sample areas was mercury measured in Basin 1. Organic constituents, with the exception of dichloro-diphenyl-trichloroethane (DDT) and a few polycyclic aromatic hydrocarbon (PAH) compounds, were below acceptable levels of detection. DDT was detected at concentrations consistent throughout all basins, but at relatively low levels. The total PAH concentrations were substantially lower than levels of ecological concern. The sediments proposed for dredging in Basins 2 through 7 are suitable for disposal at the United States Environmental Protection Agency's (EPA) designated Ocean Dredged Material Disposal Site (ODMDS) (known as LA-2, located off the coast of San Pedro, California). However, supplemental testing indicates that portions of Basin 1 dredge materials contain elevated levels of mercury and would not be acceptable at LA-2. Therefore, approximately 25,504 cubic yards (cy) of dredge materials from Basin 1 would need to be trucked off site and disposed of at an approved landfill, confined aquatic disposal site, or upland confined disposal facility.

¹ Discussion based on the Results of a Tier III Sediment Characterization Performed with Samples from Alamitos Bay Marina, prepared by Weston Solutions, July 2007.

4.7.1.6 Alamitos Bay Tidal Circulation/Flushing Characteristics¹

Water quality in a marina basin depends largely on how well the basin is flushed, which depends in turn on how well water circulates within the marina. Studies have shown that adequate flushing improves water quality in marina basins, reduces or eliminates water stagnation, and helps maintain biological productivity and aesthetic appeal. Flushing can reduce pollutant concentrations in a marina basin by anywhere from 70 percent to almost 90 percent over a 24-hour period.²

An important variable in circulation of Alamitos Bay is the operational condition and related pumping intake rates of the two local power plants (the AES and Haynes plants) that draw water from the Bay for use in cooling. Pumping by the power plants affects water movement throughout the Bay, but their effects had not previously been clearly defined or quantified until the City recently conducted a study of water circulation throughout the Bay to identify potential causes of stagnation or other conditions that could lead to poor flushing and poor water quality. In summary, the study showed that higher pumping rates by each plant dramatically increased the flushing within Alamitos Bay.

In general, the residence times (i.e., the average time a particle resides in a hydraulic system) are shorter for locations relatively close to the ocean entrance and longer for areas farther upstream and into the Bay such as Colorado Lagoon and Spinnaker Bay. Under high pumping rate conditions, the residence times are relatively short and are approximately less than one day at the Mother's Beach area and throughout lower Alamitos Bay. Under low pumping rate conditions, the residence times are approximately five days, compared to one day under the high pumping rate condition. This comparison indicates that power plant pumping, especially at the AES plant, plays a very important role in moving and replacing water within Alamitos Bay. The pumping rate of the Haynes plant is relatively stable, while that of the AES plant varies more over the year. The data from 2006 on pumping rates for the AES plant showed a pumping rate peak in the summer months.

4.7.1.7 Groundwater

The County of Los Angeles overlies 15 groundwater basins, as established by the Los Angeles Regional Water Quality Control Board (RWQCB) Water Quality Control Plan (WQCP) for the Los Angeles region (1994). The project site is situated within the Los Angeles-San Gabriel Hydrologic Unit, which covers most areas of the County as well as some small areas of southeastern Ventura County. Within this hydrologic unit, the project

¹ Discussion based on the Alamitos Bay Circulation Study, prepared by Moffatt & Nichol, August 2007.

² National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating, United States Environmental Protection Agency, November 2001.

site is located in the Coastal Plain of Los Angeles Groundwater Basin and overlies the West Coast Subbasin (Basin No. 4-11.03).¹ The West Coast Subbasin covers an area of 142 square miles and is bound by the Ballona Escarpment to the north, the Newport-Inglewood Fault Zone to the east, and the Pacific Ocean and Palos Verdes Hills to the south and west. Groundwater recharge occurs primarily as a result of underflow from the Central Subbasin. Water spread in the Central Subbasin percolates into aquifers and eventually crosses through and over the Newport-Inglewood Fault Zone, supplementing the groundwater supply in the West Coast Subbasin. The general regional groundwater flow pattern is southward and westward from the Central Coastal Plain toward the ocean.²

According to the California Department of Mines and Geology, historic high water groundwater is estimated to be approximately 8 feet (ft) below the existing ground surface. However, fluctuations in groundwater levels may occur due to tidal fluctuations, variations in precipitation, ground surface topography, subsurface stratification, irrigation, and other factors that may not be easily identified.

4.7.1.8 Potential Pollutants Associated with Marinas³

Because marinas are located right along the water's edge, pollutants created by marina activities are released directly into the water. Although it is not one of the leading sources of polluted runoff, pollution from marinas can have a significant impact on local water quality. The pollutants that might be generated at a marina and enter a marina basin include:

- **Petroleum Contaminates.** Fuel can be easily spilled into surface waters from the fuel tank air vent while fueling a boat, and oil can be easily discharged during bilge pumping.
- **Boat Sewage.** Sewage from boats is more concentrated than that from either combined sewer overflows or sewage treatment plants because marine sanitation systems use little water for flushing. Use of marine sanitation holding tanks in an improper manner can result in sewage entering the water. Both improperly installed marine sanitation devices and improper disposal practices (pumping overboard within 3 nautical miles of the nearest land) are illegal.

¹ California Department of Water Resources, Groundwater Bulletin 118, Coastal Plain of Los Angeles County Groundwater Basin, West Coast Subbasin, February 27, 2004.

² Ibid.

³ National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating, United States Environmental Protection Agency, November 2001.

- **Trash and Marine Debris.** Solid waste can collect at marinas and boat ramp sites if litter is not continuously picked up, if trash receptacles are not provided or conveniently located, and/or insufficient attention is given to controlling waste produced during boat cleaning, maintenance, and repair activities.
- **Hazardous Waste.** In-water vessel cleaning and maintenance require the use of solvents, paints, and varnishes, which can contribute to pollution entering the water. Use of a variety of boat cleaners, such as detergents, teak (wood) cleaners, and fiberglass polishers can also contribute to pollution and nutrients entering the water.
- **Fish Waste.** The amount of fish waste disposed into a small enclosed basin such as a marina can exceed that which exists naturally in the water at any one time. In sufficient quantities where water circulation is restricted, the decomposition of this fish waste can deplete the water of dissolved oxygen, leading to water quality degradation and fish kills.
- **Storm Water Runoff.** Water runoff from marina parking lots and maintenance areas can carry pollutants into the Bay. Paint chips, sawdust, metal filings, oils, grease, or fuel on the ground can be swept into surface waters by storm events. Unless the runoff is controlled or treated in some manner, these pollutants will end up in the marina basin.

On June 13, 2006, the Alamitos Bay Marina (Marina) was certified as a Clean Marina. This means that the Marina has been certified by the Clean Marinas California Program as a facility that has implemented practices that help to ensure the Marina operates in an environmentally responsible manner.

4.7.1.9 LA-2 Disposal Site

The LA-2 site is located approximately 5 nautical miles southwest of the breakwater at San Pedro, just south of the San Pedro Valley submarine canyon. The site is near the top edge of the continental slope in approximately 360 to 1,115 ft of water. The LA-2 site is a permanently designated ODMDS that has been historically managed at an annual disposal quantity of 200,000 cy for the disposal of material dredged primarily from the Los Angeles/Long Beach Harbor complex.

4.7.2 REGULATORY SETTING

4.7.2.1 Federal Regulations

Clean Water Act. The Clean Water Act (CWA) is a comprehensive piece of legislation that generally includes reference to the Federal Water Pollution Control Act. Overall, the CWA seeks to protect the nation's water from pollution by setting water quality standards for surface water and by limiting the discharge of effluents into waters of the United States. These water quality standards are enforced by the EPA. The CWA also provides for

development of municipal and industrial wastewater treatment standards and a permitting system to control wastewater discharges to surface waters. The CWA is the primary federal statute governing the discharge of dredged and/or fill material into waters of United States. Relevant sections include the following:

- **Section 404.** The United States Army Corps of Engineers (Corps) regulates discharge of dredged or fill material into waters of the United States under Section 404 of the CWA. Activities requiring Section 404 permits are limited to discharges of dredged or fill materials into the waters of the United States. The proposed project will require a 404 permit from the Corps for the discharge of dredged materials from the Bay.
- **Section 401.** Section 401 of the CWA specifies that any applicant for a federal license or permit to conduct any activity, including but not limited to the construction or operation of facilities that may result in any discharge into navigable waters, shall provide the federal licensing or permitting agency a certification from the State in which the discharge originates or will originate from the State agency with jurisdiction over those waters (Los Angeles RWQCB) that the project will comply with water quality standards, including beneficial uses, water quality objectives, and the State antidegradation policy. The proposed project will require a 401 Permit in order to obtain the Section 404 Permit from the Corps for the disposal of dredged materials from the Bay.
- **Section 402.** In 1972 the Federal Water Pollution Control Act (later referred to as the CWA) was amended to require that the discharge of pollutants into waters of the United States from any point source be effectively prohibited unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. In 1987, the CWA was again amended to require that the EPA establish regulations for the permitting of storm water discharges (as a point source) by municipal and industrial facilities and construction activities under the NPDES permit program. The regulations require that Municipal Separate Storm Sewer System (MS4) discharges to surface waters be regulated by an NPDES permit.

The CWA requires states to adopt water quality standards for water bodies and have those standards approved by the EPA. Water quality standards consist of designated beneficial uses for a particular water body (e.g., wildlife habitat, agricultural supply, fishing) along with water quality criteria necessary to support those uses. Water quality criteria are set concentrations or levels of constituents (such as lead, suspended sediment, and fecal coliform bacteria) or narrative statements that represent the quality of water that supports a particular use. Because California had not established a complete list of acceptable water quality criteria for toxic pollutants, the EPA Region IX established numeric water quality criteria for toxic constituents in the form of the California Toxics Rule (CTR).

- **Section 303(d).** Section 303(d) of the CWA requires identifying and listing those water bodies that are water quality impaired. Once a water body has been deemed impaired, a

total maximum daily load (TMDL) must be developed for each impairing water quality constituent. A TMDL is an estimate of the total load of pollutants from point, nonpoint, and natural sources that a water body may receive without exceeding applicable water quality standards (often with a “factor of safety” included, which limits the total load of pollutants to a level well below that which could cause the standard to be exceeded). Once established, the TMDL is allocated among current and future dischargers into the water body. The receiving water for the project site, as described in greater detail below, is 303(d) listed and is considered impaired for specific constituents.

Rivers and Harbors Act. Section 10 of the Rivers and Harbors Act requires authorization from the Corps for the construction of any structure in or over any navigable water of the United States, the excavation/dredging or deposition of material in these waters or any obstruction or alteration in “navigable water.” The proposed project will require a Section 10 Permit from the Corps for the disposal of dredged material, the placement of pile structures for the dock system, and the placement of any riprap for the seawall repairs.

Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972. Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 requires authorization from the Corps for the transportation of dredged material for the purpose of disposal in the ocean, where it is determined that the disposal will not unreasonably degrade or endanger human health, welfare, or amenities; the marine environment or ecological systems; or economic potentialities. A Section 103 permit will be required because the material is planned to be disposed of at the LA-2 disposal site.

4.7.2.2 State Regulations

Porter-Cologne Water Quality Control Act. The federal CWA places the primary responsibility for the control of water pollution and for planning the development and use of water resources within the states, although it does establish certain guidelines for states to follow in developing their programs.

California’s primary statute governing water quality and water pollution is the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Resources Control Board (SWRCB) and the RWQCB broad powers to protect water quality and is the primary vehicle for implementation of California’s responsibility under the federal CWA. The Porter-Cologne Act grants the SWRCB and RWQCBs the authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites, and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting

requirements for unintended discharges of any hazardous substance, sewage, oil, or petroleum product.

Each RWQCB must formulate and adopt a water quality plan for its region. The regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its State water policy. The Porter-Cologne Act also provides that a RWQCB may include in its region a regional plan with water discharge prohibitions applicable to particular conditions, areas, or types of waste. The RWQCBs are also authorized to enforce discharge limitations, take actions to prevent violations of these limitations from occurring, and conduct investigations to determine the water quality status of any of the waters of the State within their region. Civil and criminal penalties are also applicable to persons who violate the requirement of the Porter-Cologne Act or SWRCB/RWQCB orders.

California Ocean Plan. The SWRCB has adopted a WQCP for ocean waters of California called the California Ocean Plan. With the exception of wildlife habitat, the Ocean Plan identifies the same beneficial uses as the Los Angeles Basin Plan (Basin Plan). The Ocean Plan has similarly established water quality objectives for bacteriological, physical, chemical, radioactive, and biological characteristics. The Plan also incorporates general requirements for the management of wastes discharged directly into the ocean, effluent quality requirements for waste discharges directly into the ocean, discharge prohibitions, and general provisions. The Ocean Plan is incorporated by reference into the Basin Plan.

Water Quality Control Plan, Los Angeles River Basin Plan. The RWQCB has adopted a Basin Plan for its region of responsibility, which includes the City. The agency has delineated water resource area boundaries based on hydrological features. For purposes of achieving and maintaining water quality protection, specific beneficial uses have been identified for each of the hydrologic areas described in the Basin Plan. The Basin Plan also establishes implementation programs to achieve water quality objectives to protect beneficial uses and requires monitoring to evaluate the effectiveness of the programs. These objectives must comply with the State antidegradation policy (State Board Resolution No. 68-16), which is designed to maintain high-quality waters while allowing some flexibility if beneficial uses are not unreasonably affected.

Beneficial uses of water are defined in the Basin Plan as those necessary for the survival or well-being of humans, plants, and wildlife. Examples of beneficial uses include drinking water supplies; swimming, industrial and agricultural water supply; and the support of freshwater and marine habitats and their organisms.

The following list summarizes the beneficial uses for Alamitos Bay as designated by the RWQCB:

- **Industrial Service Supply (IND):** Uses of water for industrial activities that do not depend primarily on water quality, such as mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.
- **Water Contact Recreation (REC-1):** Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, waterskiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.
- **Noncontact Water Recreation (REC-2):** Uses of water for recreational activities involving proximity to water but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the above activities.
- **Wildlife Habitat (WILD):** Uses of water that support terrestrial ecosystems, including but not limited to preservation and enhancement of terrestrial habitats, vegetation, wildlife (i.e., mammals, birds, reptiles, amphibians, invertebrates), and wildlife water and food sources.
- **Rare, Threatened, or Endangered Species (RARE):** Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under State or federal law as rare, threatened, or endangered.
- **Commercial and Sport Fishing (COMM):** Uses of water for commercial or recreation collection of fish, shellfish, or other aquatic organisms.
- **Navigation (NAV):** Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.
- **Estuarine Habitat (EST):** Uses of water that support estuarine ecosystems, including but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).
- **Marine Habitat (MAR):** Uses of water that support marine ecosystems, including but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).
- **Shellfish Harvesting (SHELL):** Uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sports purposes.
- **Wetland Habitat (WET):** Uses of water that support wetland ecosystems, including but not limited to preservation or enhancement of wetland habitats, vegetation, fish, shellfish, or wildlife, and other unique wetland functions that enhance water quality, such as

providing flood and erosion control, stream bank stabilization, and filtration and purification of naturally occurring contaminants.

The RWQCB has designated narrative or numerical water quality objectives for all of its inland surface waters and enclosed bays and estuaries for the following parameters: ammonia; bacteria (coliform); bioaccumulation; biochemical oxygen demand (BOD); biostimulatory substances; chemical constituents; chlorine; color; exotic vegetation; floating material; methylene blue activated substances (MBASs); mineral quality; nitrogen (nitrate, nitrite); oil and grease; dissolved oxygen; pesticides; pH; polychlorinated biphenyls (PCBs); radioactive substances; solid, suspended, or settleable solids; taste and odor; temperature; toxicity; and turbidity. These objectives are listed in Table 4.7.A. If these objectives are exceeded, the RWQCB can use its regulatory authority to require municipalities to reduce pollutant loads to the affected receiving waters. The RWQCB utilizes water quality criteria, in the form of “scientific information developed by the EPA regarding the effect a constituent concentration has on human health, aquatic life, or other uses of water,” to develop its water quality objectives (RWQCB 1995).

The RWQCB employs water quality standards from the California Toxics Rule (40 Code of Federal Regulations [CFR] §131.38) for potentially toxic constituents, primarily trace (heavy) metals and organic compounds, to determine whether beneficial uses are affected by storm and dry weather runoff. The values represent the numeric limits in receiving waters that will protect the “presence of, as well as the uses of, both fresh and salt water organisms.”

That is, these values represent concentrations within a water body. The State has developed bacteriological standards to monitor water quality at public beaches. These are based on legislation adopted in 1999 (Assembly Bill 411) and are promulgated in the California Health and Safety Code, Section 115880. In the “Guidance for Beaches and Recreational Waters,” the bacteriological standards are defined in Appendix A, Article 4, Healthfulness. Table 4.7.A, Water Quality Standards and Benchmarks, provides a comparison of standards and benchmarks for concentrations of constituents in runoff or in receiving waters.

Clean Water Act, Section 303, List of Water Quality Limited Segments. Section 303(d) specifically requires the State to develop a list of impaired water bodies and subsequent numeric TMDLs for whichever constituents impair a particular water body. These constituents include inorganic and organic chemical compounds, metals, sediments, and biological agents. The TMDL is the total amount of a constituent that can be discharged while meeting water quality objectives and protecting beneficial uses. It is the sum of the individual load allocations for point-source inputs (e.g., an industrial plant), load allocations for nonpoint-source inputs (e.g., runoff from urban areas), and natural background, with a margin of safety (RWQCB 2002).

Table 4.7.A: Water Quality Standards and Benchmarks

Constituent	Basin Plan Objectives	California Toxics Rule (mg/L)¹	Assembly Bill 411²
Ammonia	Numeric objectives have only been established for COLD and WARM beneficial uses. Shall not be present at levels that, when oxidized to nitrate, pose a threat to groundwater.	N/A ³	N/A
Bacterial, Coliform	REC-1: Fecal coliform concentration shall not exceed a log mean of 200/100 milliliters (mL) (based on a minimum of not less than four samples for any 30-day period), nor shall more than 10 percent of samples collected during any 30-day period exceed 4,000/100 mL. SHELL: The median total coliform concentration throughout the water column for any 30-day period shall not exceed 70/100 mL, nor shall more than 10 percent of the samples collected during any 30-day period exceed 230/100 mL for a five-tube decimal dilution test or 330/100 mL when a three-tube decimal test is used.	N/A	Fecal coliform: 200/100 mL Total coliform: 1,000/100 mL
Bioaccumulation	Toxic pollutants shall not be present at levels that will bioaccumulate in aquatic life to levels that are harmful to aquatic life or human health.	See levels for metals	N/A
Biological Oxygen Demand (BOD)	Waters shall be free of substances that result in increases in the BOD, which adversely affect beneficial uses.	N/A	N/A
Biostimulatory Substances	Waters shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses.	N/A	N/A
Chemical Constituents	Surface waters shall not contain concentrations of chemical constituents in amounts that adversely affect any designated beneficial use.	Includes pesticides and PCBs	N/A

Table 4.7.A: Water Quality Standards and Benchmarks

Constituent	Basin Plan Objectives	California Toxics Rule (mg/L)¹	Assembly Bill 411²
Chemical Oxygen Demand (COD)	N/A	N/A	N/A
Chlorine, Total Residual	Chlorine residual shall not be present in surface water discharges at concentrations that exceed 0.1 mg/L and shall not persist in receiving waters at any concentration that causes impairment of beneficial uses.	N/A	N/A
Color	Waters shall be free of coloration that causes nuisance or adversely affect beneficial uses.	N/A	N/A
Total Copper	N/A	0.009	
Exotic Vegetation	Exotic vegetation shall not be introduced around stream courses to the extent that such growth causes nuisance or adversely affects beneficial uses.	N/A	N/A
Floating Material	Waters shall not contain floating materials, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.	N/A	N/A
Total Lead	N/A	0.025	N/A
Methylene Blue Activated Substances (MBASs)	Waters shall not have MBAS concentrations greater than 0.5 mg/L in waters designated MUN.	N/A	N/A
Mineral Quality	No waterbody specific objectives	N/A	N/A

Table 4.7.A: Water Quality Standards and Benchmarks

Constituent	Basin Plan Objectives	California Toxics Rule (mg/L)¹	Assembly Bill 411²
Nitrogen (Nitrate, Nitrite)	Waters shall not exceed 10 mg/L nitrogen as nitrate-nitrogen plus nitrite-nitrogen, 45 mg/L as nitrate, 10 mg/L as nitrate-nitrogen, or 1 mg/L as nitrite-nitrogen.		
Oil and Grease	Waters 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 adversely affect beneficial uses.	N/A	N/A
Oxygen, Dissolved	SPWN: Waters shall not be depressed below 7 mg/L as a result of waste discharges.	N/A	N/A
Pesticides	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.	Chlordane: max conc., 2.4; continuous conc., 0.0043	N/A
pH	Inland water shall not be depressed below 6.5 or raised above 8.5 as a result of waste discharges. Ambient pH levels shall not be changed more than 0.5 units from natural conditions as a result of waste discharge.	N/A	N/A
Total Phosphorus	N/A	N/A	N/A

Table 4.7.A: Water Quality Standards and Benchmarks

Constituent	Basin Plan Objectives	California Toxics Rule (mg/L)¹	Assembly Bill 411²
Polychlorinated Biphenyls (PCBs)	Pass-through or uncontrollable discharges to waters, or at locations where the waste can subsequently reach waters, are limited to 70 pg/L (30-day average) for protection of human health and 14 ng/L (daily average) to protect aquatic life in inland fresh waters.	N/A	N/A
Radioactive Substances	Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.	N/A	N/A
Solid, Suspended, or Settleable Materials	Waters shall not contain suspended or settleable material in concentrations that cause nuisance or adversely affect beneficial uses.	N/A	N/A
Total Suspended Solids (TSS)	N/A	N/A	N/A
Total Dissolved Solids (TDS)	N/A	N/A	N/A
Tastes and Odors	Waters shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible aquatic resources, cause nuisance, or adversely affect beneficial uses.	N/A	N/A

Table 4.7.A: Water Quality Standards and Benchmarks

Constituent	Basin Plan Objectives	California Toxics Rule (mg/L)¹	Assembly Bill 411²
Temperature	The natural receiving water temperature of all waters shall not be altered unless it can be demonstrated that such alteration in temperature does not adversely affect beneficial uses.	N/A	N/A
Toxicity	All waters shall be free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in, human, plant, animal, or aquatic life.	N/A	N/A
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in natural turbidity attributable to controllable water quality factors shall not exceed the following limits: <ul style="list-style-type: none"> • Where natural turbidity is between 0 and 50 National Turbidity Units (NTU), increases shall not exceed 20 percent. • Where natural turbidity is greater than 50 NTU, increases shall not exceed 10 percent. 	N/A	N/A
Total Zinc	N/A	0.12	N/A

Source: *Water Quality Control Plan, Los Angeles Region* (1995).

¹ Chronic toxicity values (over a four-day period) in water with a hardness of 100 mg/L.

² Values are based on the log mean of at least five weekly samples during any 30-day sampling period.

³ Not applicable. No standard or benchmark listed.

mg/L = milligrams per liter

pH = percentage of hydrogen (acidity level)

ng/L = nanograms per liter

pg/L = picograms per liter

The 2006 list of impaired waters (303[d] list) was approved by the SWRCB on October 25, 2006, and the EPA on November 30, 2006. Alamitos Bay was not included on the list of impaired waters. On March 8, 2007, the EPA partially disapproved California’s 2004-2006 303(d) list; that is, it disapproved the State’s omission of impaired waters that met federal listing regulations or guidance. EPA added 64 waters and 37 associated pollutants to the State’s 303(d) list. Alamitos Bay is on the list of waters added to the 2006 303(d) list. Listings relevant to the project site are described in Table 4.7.B.

Table 4.7.B: Impaired Waters

Name	Watershed	Pollutant/ Stressor	Source	Proposed TMDL Date
Alamitos Bay (four segments: Shore float; 1st & Bayshore; 2nd Street Bridge & Bayshore; 56th Place – Bayside)	San Gabriel	Indicator Bacteria	Urban Runoff	2019

Source: United States Environmental Protection Agency (EPA), Region 9 Water Program, EPA’s Final Decision Regarding Waters Added to California’s 2004-2006 303(D) List. <http://www.epa.gov/Region09/Water/Tmdl/303d-pdf/Ca-06-303d-List-Final-06-28-07-Combined.pdf>, accessed November 28, 2007.

4.7.2.3 State Requirements under Section 402 of the CWA

General Construction Activity NPDES Permit (General Permit). On September 2, 2009, the SWRCB adopted the *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated Construction and Land Disturbance Activities* (General Construction Permit). In accordance with NPDES regulations, the State of California requires that any construction activity disturbing 1 ac or more of soil comply with the General Construction Permit. To obtain authorization for proposed storm water discharges pursuant to this permit, the landowner (discharger) is required to submit Permit Registration Documents, which include a Notice of Intent (NOI), risk assessment, site map, SWPPP, annual fee, and signed certification statement to the SWRCB. Dischargers are required to implement BMPs meeting the technological standards of BAT and BCT to reduce or eliminate storm water pollution. BMPs include programs, technologies, processes, practices, and devices that control, prevent, or remove or reduce pollution. Permittees must also maintain BMPs and conduct inspection and sampling programs as required by the permit. Dischargers are also required to comply with monitoring and reporting requirements to ensure that discharges comply with the numeric action levels and numeric effluent limitations specified in the permit.

Resolution No. 2001-046. On September 15, 2000, the Superior Court issued a judgment and writ of mandate to modify the provisions of the General Permit to require permittees to implement specific sampling and analysis procedures to determine whether BMPs implemented on construction sites are preventing sediment and other nonvisible pollutants from causing or contributing to exceedances of water quality objectives. The SWPPP will include provisions for performing sampling and analysis during rainfall events.

Groundwater Dewatering Permit. On August 7, 2003, the Los Angeles RWQCB approved the *Waste Discharge Requirement for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties* (Order No. R4-2003-0111, NPDES No. CAG994004). For coverage under this permit, a discharger is required to submit an application for coverage under the permit to the Los Angeles RWQCB. Under this permit, discharges must comply with discharge specifications, receiving water limitations, and monitoring and reporting requirements detailed in the permit.

4.7.2.4 Local Requirements under Section 402 of the CWA

Construction and operation of the proposed project is subject to requirements of the following local permits and regulations.

Municipal NPDES Permit. The City has its own municipal NPDES Permit, *Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharges within the City of Long Beach*, Order No. 99-060 (NPDES No. CAS004003). This permit specifies that all new development and redevelopment projects that fall under specific priority project categories must comply with the Los Angeles County Standard Urban Storm Water Mitigation Plan (SUSMP).

The following projects are subject to SUSMP requirements: hillside projects; home subdivisions of 10 units or more; new commercial developments of 100,000 square feet (sf) or more of impermeable areas; and projects located adjacent to or discharging into environmentally sensitive areas. The proposed project is subject to the SUSMP requirements because it discharges to a designated environmentally sensitive area (Alamitos Bay).¹

The SUSMP includes requirements for Site Design BMPs, Source Control BMPs, and Treatment Control BMPs. As labeled, Site Design BMPs are BMPs that are incorporated into the design of the project, such as conserving natural areas and properly designing trash

¹ City of Long Beach Municipal Code Section 18.95.

storage areas. Source Control BMPs are pollution prevention BMPs that can be structural or nonstructural practices. Examples include good housekeeping, stenciling of catch basins, protecting slopes from erosion, and maintenance of BMPs. Treatment Control BMPs are physical devices that remove pollutants from storm water and include biofilters, water quality inlet devices, detention basins, etc.

The specific SUSMP requirements are as follows:

- Postdevelopment peak storm water runoff discharge rates shall not exceed the estimated predevelopment rate for developments where the increased peak storm water discharge rate will result in increased potential for downstream erosion.
- Conserve natural areas.
- Minimize storm water pollutants of concern. This requires the incorporation of a BMP or combination of BMPs best suited to maximize the reduction of pollutant loadings in that runoff to the maximum extent practicable.
- Properly design outdoor material and trash storage areas.
- Properly design trash storage areas.
- Provide proof of ongoing BMP maintenance.
- Protect slopes and channels from erosion.
- Provide storm drain stenciling and signage.
- Design postconstruction structural or Treatment Control BMPs (unless specifically exempted) to mitigate (infiltrate or treat) a set volume of runoff using any of four methods (in general, the 85th percentile storm in a 24-hour period).

4.7.2.5 City of Long Beach

A compliance summary of the City's NPDES and SUSMP regulations are set forth in Chapter 18.95 of the City Municipal Code.¹ The Long Beach Storm Water Management Plan (SWMP) provides the methods for implementing the requirements of the City's Municipal NPDES Permit.

4.7.3 THRESHOLDS OF SIGNIFICANCE

The impact significance criteria used for this analysis are based primarily on Appendix G of the State California Environmental Quality Act (CEQA) Guidelines and the City's CEQA

¹ City of Long Beach Municipal Code, Chapter 18.95, <http://www.longbeach.gov/cityclerk/lbmc/title-18/frame.htm>, accessed December 14, 2007.

Checklist. The project may be considered to have a significant effect related to water quality if implementation would result in one of more of the following:

- Violation of any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater level (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted).
- Substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or a substantial increase in the rate or amount of surface runoff in a manner that would result in flooding on or off site;
- Creation or contribution of runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or
- A significant adverse impact on groundwater quality or other substantial degradation of water quality.

The Initial Study previously prepared for this project determined that the proposed project would not have a significant impact with respect to the following: groundwater resources; housing or structures within a 100-year flood zone; significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; and inundation by seiche, tsunami, or mudflow. Therefore, these issues are not addressed further in this EIR.

4.7.4 IMPACTS AND MITIGATION

This section addresses the potential impacts related to the dredging, restroom replacement or remodeling, seawall repairs, dock and piling replacement, temporary docks, parking lot rehabilitation and use of the rehabilitated Marina by boaters and the general public. This section also addresses the effects of operational changes resulting from project implementation.

4.7.4.1 Less than Significant Impacts

Long-Term Water Quality Impacts (Operational).

Waste Discharge into Marina Waters. Marina operations and boater activities have the potential to significantly impair water quality in the long term if BMPs that are listed in the Long Beach Marina Environmental Policies are not implemented by boaters and Marina employees. For example, the potential for the discharge of gray (galley, bath, and shower water) and black water (sewage) exists within all marinas. If some boaters do not discharge their waste into pump-out stations, but rather discharge human waste directly into marine waters, significant water quality impairments could occur.

The Marina provides four sewage pump-out stations that are operated by the City; two at the Harbormasters Dock, one near the fuel dock, and one in Basin 6. There is no cost to utilize these stations, and they are available at all times. Therefore, because adequate pump-out facilities are provided by the City to Marina patrons, discharge of boater waste directly into marine waters is less likely.

The proposed project will ultimately result in the loss of approximately 321 slips. This loss of slips has the potential to result in an improvement over existing water quality since fewer boats will be berthed in the Marina. Fewer slips will result in fewer live-aboard permits being available Marinawide. The Marina's live-aboard policy is that no more than 10 percent of the Marina (slips) can be issued live-aboard permits, and boats must be 30 ft or longer. The existing number of live-aboards is approximately 88 and is currently restricted by the limited utilities. Although the overall number of permits would be reduced with fewer slips, the Marina anticipates that approximately 75 additional live-aboard permits may be issued once the Marina upgrades are completed. Although there could potentially be more live-aboards, there is no reason to expect that this would cause improper use of the Marina that could lead to degraded water quality. In addition, because the City is a participant in the Clean Marina Program, each Marina patron is educated by the City on proper disposal/containment of hazardous materials/practices that may impair water quality. Therefore, even without the reduction in slips, long-term impacts to water quality from Marina activities are considered less than significant and no mitigation is required.

Alteration to Flushing Rate within Alamitos Bay. Dredging the basins to original design depths and/or original basin depths (generally to -10 Mean Lower Low Water [MLLW]) will result in an increase in the volume of water (tidal prism) within the Marina. This increase in the Marina's tidal prism could potentially provide for greater flushing of Marina waters, thereby potentially increasing the water quality in the Marina. Likewise, the increased tidal prism is important for maintaining access for boats utilizing the Marina. Long-term effects of dredging activities would be beneficial and would

potentially result in an improvement of existing water quality due to increased tidal flushing. Therefore, long-term impacts to water quality from dredging activities are considered less than significant and no mitigation is required.

4.7.4.2 Potentially Significant Impacts

Short-Term Water Quality Impacts (Construction). Construction activities will occur on the waterside and land side of the project area. Impacts to each area are discussed separately below.

Landside Construction. The land side improvements include repaving the parking lot, and replacing or remodeling the existing restroom buildings. Construction activities associated with the land side improvements have the potential to impact water quality in Alamitos Bay. The potential impacts of construction activities on water quality focus primarily on sediments, turbidity, and pollutants that might be associated with sediments (e.g., phosphorus and legacy pesticides). Construction-related activities that are primarily responsible for sediment releases are related to exposing soils to potential mobilization (erosion) by rainfall/runoff and wind. Nonsediment-related pollutants that are also of concern during construction include waste construction materials; chemicals, liquid products, and petroleum products used in building construction or the maintenance of heavy equipment; and concrete-related waste streams.

The proposed land side improvements would be required to comply with all applicable federal, State, and regional regulations to protect water quality during construction as well as during the life of the project. Since the project site covers an area greater than one acre, a SWPPP is required. During construction, the City will adhere to the General Construction Permit and will utilize typical BMPs specifically identified in the SWPPP for the project in order to prevent construction pollutants from contacting storm water and to keep all products of erosion from moving off site into receiving waters. Under NPDES Permit 99-060, issued to the City, the project proponent must submit an NOI to the SWRCB prior to commencement of construction activities. In addition, the SWPPP must be implemented at the project site and revised as necessary if administrative or physical conditions change. The SWPPP would include BMPs, in accordance with the SUSMP for Los Angeles County, that address source reduction and provide measures and controls necessary to mitigate potential pollutant sources. Required elements of the SWPPP include:

- A site description addressing the elements and characteristics specific to the site;
- Descriptions of BMPs for erosion and sediment controls;
- BMPs for construction waste handling and disposal;

- Implementation of approved local plans;
- Proposed postconstruction controls, including a description of local postconstruction erosion and sediment control requirements; and
- Nonstorm water management.

The site is subject to inspection by the RWQCB during construction (General Construction Activity Permit). The General Construction Activity Permit requires the discharger (the City) to inspect the site prior to an anticipated storm, during extended storm events, and after actual storm events to ensure that BMPs are functioning properly. Corrective measures are to be implemented immediately, and the RWQCB must be notified within 48 hours. Construction BMPs act as physical barriers to prevent sediment and other construction-related pollutants from leaving a construction site. By adopting this permit, the SWRCB has determined that adherence to the provisions of the General Construction Activity Permit will prevent significant impacts to water quality during project construction.

Mitigation Measures 4.7-1 and 4.7-2 have been proposed to ensure compliance with BMPs as outlined in the SWPPP and the General Construction Activity NPDES permit. Mitigation Measure 4.7-3 is required to ensure that a SUSMP for the project is prepared in accordance with the Los Angeles County SUSMP and the Municipal NPDES Permit. With implementation of Mitigation Measures 4.7-1 through 4.7-3 potential waste discharge and water quality violations related to runoff during construction will be reduced to less than significant levels.

Waterside Construction. Construction activities associated with the waterside improvements of the proposed project may impact water quality temporarily due to the impacts associated with the dredging activities, removal of the docks and piles, construction of the new docks and piles, and repair of the sea wall. Each of these impacts is discussed in more detail below.

The City would be required to obtain a Section 10 permit from the Corps for dredging and placement of piles and riprap in navigable waters, a Section 404 permit from the Corps for the discharge of dredged materials, and a Section 103 permit from the Corps for the transportation of dredged material for ocean disposal. In addition, the City would be required to obtain a RWQCB water quality certification for the federal permits listed above.

A RWQCB water quality certification would specify methods for ensuring the protection of water quality during construction activities in Alamitos Bay. In addition, specific conditions would include the use of BMPs to minimize the discharge of construction

materials from on-land construction activities, control of floating debris, discharge of displaced water produced during construction of the concrete pilings to minimize discharge of pollutants to the Alamitos Bay, placement of fueling activities such that they would not affect water quality, and provision of spill containment and cleanup equipment to control potential accidental spills.

Water Quality Impacts Related to Dredging and Pile Replacement. The proposed maintenance dredging involves the removal of accumulated sediment in order to return each of the Marina's seven basins to the original design depth and/or basin depth, which will allow unobstructed maneuvering of recreational vessels. The Marina construction program involves dredging Basins 2–7 to a target depth of -10 MLLW; and Basin 1 to target depths to -12 to -15 MLLW. The estimated total volume of dredged material to be removed from the seven basins is approximately 287,120 cy.

Construction dredging, disposal of dredged materials, and removal and replacement of pile structures could affect water quality if water quality protection measures were not implemented. Proposed dredging activities and pile removal and replacement in Alamitos Bay would result in short-term disturbance of localized Bay sediments. As is typical for maintenance dredging projects, the dredging of Bay sediments could adversely affect water quality by temporarily resuspending sediments, thereby increasing turbidity. In addition, chemicals that are present in the sediments could be released to the water column during resuspension, which could temporarily degrade water quality. Suspended sediments in the water column can lower levels of dissolved oxygen, increase salinity, increase concentrations of suspended solids, and possibly release chemicals present in sediments into the water. The degree of turbidity resulting from the suspended sediments would vary substantially with the quantity and duration of the dredging and construction activity and would also depend on the methods used, the quality of equipment, and the care of the operator. In most cases, increased turbidity levels would be relatively short-lived and generally confined to within a few hundred yards of the activity. After initial high-turbidity levels, sediments would disperse and background levels would be restored. The length of disturbance caused by construction activities would vary depending on the basin under construction and the tidal conditions in the Bay.

The water quality in the basins closer to the entrance of the Bay would recover more quickly than basins further back in the Bay, such as Basins 6-North and 6-South (Basins 6-N and 6-S). The water quality near Basins 6-N and 6-S may take up to several days to recover if construction activities occurred at the same time that the power plant pumping rates were low. If these basins were under construction during high pumping rates, the water quality would recover in less than one day due to the

increased tidal flushing that occurs when the power plants are pumping at a high rate. However, Basins 6-N and 6-S are planned for construction after all other basins have been completed (Phase 12 of 12). By that time, dredging of the other basins would have occurred, which could potentially provide a greater tidal prism (water volume exchange) that may shorten the residence time of water in that area somewhat. However, it is unlikely to increase the tidal flushing significantly, and based upon current conditions, it could take up to several days for these two basins to recover under low pumping rates. Because recreational water quality in Alamitos Bay generally improves with higher pumping rates, the City entered into a contract with AES Power Plant to operate its circulating water pumps above a pre-established level. When AES' pumping rate drops below that level, the contract is activated and the City pays AES to increase the rate of pumping to improve water quality.¹ In the event that water quality remains impaired beyond 2 days after dredging within Basins 6-N and 6-S, the City will activate the contract with AES to increase the rate of pumping to improve water quality (Mitigation Measure 4.7-4).

Implementation of BMPs would reduce water quality impacts associated with dredging and pile removal and replacement. Common BMPs utilized during dredging include Silt Curtains, Gunterbooms, and Operational Controls.² These BMPs are further described in Appendix F of this document. Although temporary water quality impacts related to suspended solids in the water column would be expected, impacts related to resuspension of sediments would be reduced to a less than significant level with implementation of Mitigation Measures 4.7-5 and 4.7-6, which require that the appropriate dredging permits are obtained and that Dredging BMPs are incorporated into the project. Implementation of Mitigation Measures 4.7-5 and 4.7-6 will ensure that impacts related to construction dredging and pile removal and replacement are less than significant.

¹ Heal the Bay 2007 California Summer Beach Report Card, City of Long Beach, September 27, 2007.

² Long-Term Management Strategy for the Placement of Dredged Materials in the San Francisco Bay Region, Management Plan 2001, United States Army Corps of Engineers, <http://www.spn.usace.army.mil/lrms2001/>, accessed December 18, 2007.

Dock Removal and Replacement. Removal of the existing dock system consists of separating the slips in the water and floating the structures to a vessel that will remove the slip structures from the water and transport the discarded material off site for disposal. This process does create some debris that has the potential to impact water quality if it is not contained and disposed of properly. Implementation of a trash and debris containment boom, as described in Mitigation Measure 4.7-7, will contain the dock debris within the construction area, where the material can be easily recovered by the vessel operator for proper disposal. Implementation of Mitigation Measure 4.7-7 will ensure that impacts related to trash and debris from dock removal and replacement are less than significant.

Sea Wall Repairs. The sea wall system that exists in Alamitos Bay generally consists of a retaining wall with rock revetment covering the slope. Normal tidal and wave action from boats and storms in the Bay have caused erosion of sediment from under the sea wall footings, creating voids. The voids deteriorate the sea wall integrity, further allowing the surrounding water to wash away soils. This process removes support for existing structures. It is anticipated that 8,250 linear feet (lf) of sea wall repair will be required as part of the proposed project. The repairs are primarily focused on restoring the eroded bearing surface and reestablishing the rock revetment along the slope to the basin floor. Sea wall repairs will be conducted in phases that correspond with each basin's dock and piling replacement work. The proposed repairs will provide long-term protection of the Bay's infrastructure as well as protection of water-oriented recreational uses.

Specifically, the repairs are limited to reestablishing the rock riprap slope adjacent to the sea wall by installing polyvinyl chloride (PVC) grout injection pipes, and filling existing voids with grout beneath the footings of the concrete panels that make up the sea wall. The materials used for the sea wall repairs are relatively benign (filter, fabric, backing material, armor rock, or PVC pipe). The grout mixture will be prevented from mixing with Bay waters due to the injection process. Injection ports (through PVC pipes) will first be inserted into the void to be filled at a maximum interval. The rock slope will be reestablished by placing filter fabric along the face of the sea wall footing, around the injection ports, and extending it down to the bottom of the existing slope. Backing will be placed over the filter fabric to provide protection and holding in place. Armor rock will then be installed over the bedding layer. Both the backing and armor rock will be transported to the site by truck and placed using an excavator. Bulk storage will be located at one of the construction staging areas in a container, and individual pallets of bags of materials will be transported to each void location using a forklift. The grout will then be mixed and pumped into the voids from the sidewalk behind the sea wall using the PVC injection ports. The filter fabric and rock will cover the void openings to prevent the grout from

being released into Bay waters. In addition, Mitigation Measure 4.7-5, which requires that appropriate permits be obtained for both dredging activities and the placement of piles and riprap, will reduce impacts to water quality from sea wall repairs to a less than significant level.

Long-Term Water Quality Impacts (Operational).

Landside Drainage and Water Quality. The land side improvements include repaving the parking lot, and replacing or remodeling the existing restroom buildings. The surface area of the parking lot is not being increased, and therefore no increase in storm water runoff is expected. In addition, the project plans indicate that the existing parking lot surfaces will be removed and reused as a base for the new pavement. However, because the proposed project discharges into Alamitos Bay, the proposed project will be required to comply with the Los Angeles County SUSMP. The SUSMP includes requirements for Site Design BMPs, Source Control BMPs, and Treatment Control BMPs.

In order to comply with waste discharge requirements, the project SUSMP will target control of pollutants in runoff typically produced by that land use. In order to comply with water quality standards and prevent further degradation of water quality, the project SUSMP will address pollutants that have impaired receiving waters for the project as applicable. Treatment Control BMPs will be incorporated into the design of the on-site storm drain system to treat project runoff in accordance with the SUSMP standards.

The proposed project includes installation of storm drain inserts (filters) into the storm drains located in the parking lot. Storm drain inserts can be a variety of devices that are used in storm drain conveyance systems to reduce pollutant loadings in stormwater runoff. Most storm drain inserts reduce oil and grease, debris, and suspended solids through gravity, centrifugal force, or other methods. Storm water collection and treatment prior to discharge into the Marina will reduce contaminant levels and protect the existing water quality. As a result, the proposed project will result in improved drainage and storm water treatment over existing conditions. Implementation of a project SUSMP, as specified in Mitigation Measure 4.7-3, which addresses these pollutants of concern to the maximum extent practicable, is required to reduce potential water quality impacts to a less than significant level.

4.7.5 MITIGATION MEASURES

Implementation of the following mitigation measures will ensure that potential Hydrology and Water Quality impacts resulting from project implementation would be reduced to less than significant levels.

- 4.7-1** Prior to issuance of a grading permit, the Marine Bureau Manager shall demonstrate to the satisfaction of the Director of Long Beach Development Services, or his/her designee, that construction plans for the project include features meeting the applicable construction activity Best Management Practices (BMPs) and erosion and sediment control BMPs published in the *California Storm Water BMP Handbook—Construction Activity* or equivalent. The construction contractor shall be required to submit a Storm Water Pollution Prevention Plan (SWPPP) to the City that includes the BMP types listed in the handbook or equivalent. The SWPPP shall be prepared by a civil or environmental engineer and will be reviewed and approved by the City Building Official prior to the issuance of any grading or building permits. The SWPPP shall reduce the discharge of pollutants to the maximum extent practicable using BMPs, control techniques and systems, design and engineering methods, and such other provisions as appropriate. A copy of the SWPPP shall be kept at the project site.

The SWPPP shall meet the requirements of the General Construction Permit and shall identify potential pollutant sources associated with construction activities; identify non-storm water discharges; develop a water quality monitoring and sampling plan; and identify, implement, and maintain BMPs to reduce or eliminate pollutants associated with the construction site. The BMPs identified in the SWPPP shall be implemented during project construction. The SWPPP Notice of Termination (NOT) shall be submitted to the State Water Resources Control Board (SWRCB) upon completion of construction and stabilization of the site.

- 4.7-2** Prior to issuance of demolition and grading permits, the Marine Bureau Manager shall demonstrate to the Director of Long Beach Development Services, or their designee, that compliance with the provisions of the *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Construction and Land Disturbance Activities*, and any subsequent permit as they relate to construction activities for the project has been obtained. This will include submission of the Permit Registration Documents, including a Notice of Intent (NOI), a risk assessment, site map, Storm Water Pollution Prevention Plan (SWPPP), annual fee, and signed certification statement to the State Water Resources Control Board (SWRCB) at least 14 days prior to the start of construction.

- 4.7-3** Prior to issuance of demolition and grading permits, the Marine Bureau Manager shall provide evidence that a Standard Urban Storm Water Mitigation Plan (SUSMP) for the project has been prepared in accordance with the Los Angeles County SUSMP and the Municipal National Pollutant

Discharge Elimination System (NPDES) Permit. The project SUSMP shall identify all of the Nonstructural and Structural Best Management Practices (BMPs) that will be implemented as part of the project in order to reduce impacts to water quality to the maximum extent practicable by addressing typical land use pollutants and pollutants that have impaired the Alamitos Bay. The SUSMP shall be reviewed and approved by the City of Long Beach Building Official prior to issuance of a grading permit.

- 4.7-4** Prior to the issuance of any construction permits, the Marine Bureau Manager shall provide verification in the record that approval to initiate the City's contract with AES (to increase pumping rates) has been incorporated into project plans and will be implemented in the event that water quality standards are exceeded during construction activities associated with Basins 6-North and 6-South (Basins 6-N and 6-S). The construction contractor shall be responsible for notifying the Marine Bureau Manager in the event that increased flushing in the Bay is needed, should water quality remain impaired (i.e., water quality standards are exceeded) beyond 2 days after dredging in Basins 6-N or 6-S.
- 4.7-5** Prior to the issuance of any construction permits, the Marine Bureau Manager shall provide verification that authorization has been obtained from: (1) the United States Army Corps of Engineers (Corps) under the Section 404 Permit program for the discharge of fill material into jurisdictional waters; (2) the Corps, under Section 10 of the Rivers and Harbors Act for the disposal of dredged material and placement of piles and riprap; and (3) the Corps, under Section 103 of the Marine Protection Research and Sanctuaries Act for the transportation of dredged material for ocean disposal. In addition, standard conditions of the Corps permits require Section 401 water quality certification by the Regional Water Quality Control Board (RWQCB). In order to obtain these authorizations, the City shall develop a mitigation plan subject to review and approval by the appropriate resource agencies (Corps, United States Fish and Wildlife Service [USFWS], National Marine Fisheries Service [NMFS], California Department of Fish and Game [CDFG], and RWQCB).
- 4.7-6** Prior to the issuance of any construction permits, the Marine Bureau Manager shall demonstrate in the record that Best Management Practices (BMPs) for all dredging activities, as listed in Appendix F of this document, have been incorporated into project plans in order to reduce impacts to water quality to the maximum extent practicable. The construction contractor shall be responsible for performing and documenting the application of BMPs identified in this document.

- 4.7-7** Prior to the issuance of any construction permits, the Marine Bureau Manager shall provide verification in the record that a trash and debris containment boom has been incorporated into project plans and will be implemented during all dock removal and replacement activities in order to reduce impacts to water quality to the maximum extent practicable. The construction contractor shall be responsible for performing and documenting the application of the trash and debris containment boom.

4.7.6 CUMULATIVE IMPACTS

The cumulative study area for hydrology and water quality impacts consists of: (1) affected areas where drainage or dredging disposal from proposed project activities could have an impact; and (2) areas in Alamitos Bay or the immediate area of the ocean near the mouth of Alamitos Bay that could be affected by drainage or tidal fluctuation, thereby affecting water quality conditions combined with other nearby project activities or operations. Currently, the following projects that have been proposed or approved but are not yet fully constructed would be considered within the project's cumulative study area for land use impacts:

- Colorado Lagoon Restoration Project, currently under construction
- Second+PCH Mixed Use Commercial/Hotel/Residential Project
- Proposed Home Depot Project at Loynes Drive and Studebaker Road
- Termino Drain Project, various segments terminating at the northern end of Marina Stadium

Cumulative development in the Alamitos Bay Watershed is a continuation of the existing urban pattern of development that has already resulted in extensive modifications to watercourses in the watershed. Many of the watershed's watercourses have been channelized, and drainage systems have been engineered to respond to the urbanization that has occurred in the Long Beach area. Therefore, the cumulative analysis related to hydrology and water quality includes the cumulative projects listed above as well as the project's combined effect with all potential projected development discharging to Alamitos Bay. Because cumulative hydrology and water quality impacts are caused by build out of properties that increase impervious area and pollutant loads, cumulative development is considered to be the build out of the Alamitos Bay Watershed over an extended time period.

New development and redevelopment can result in increased urban pollutants in dry weather and storm water runoff from project sites. Each project must comply with NPDES permitting requirements and include BMPs to avoid impacts to water quality and local hydrology in compliance with local ordinances and plans adopted to comply with the MS4 Permit (DAMP and LIP) and other permits (e.g., De Minimus Permit, General Construction Permit). Each

project must consider impaired receiving waters and annual TMDL loads for receiving waters. The TMDL program is designed to identify all constituents that adversely affect the beneficial uses of waterbodies and then identify appropriate reductions in pollutant loads or concentrations from all sources so that the receiving waters can maintain/attain the beneficial uses in the Basin Plan. Thus, the regional control measures are designed to account for the cumulative effects of proposed development.

The project is the rehabilitation of existing Marina dock and slip facilities and the continuation of existing Marina land uses consistent with the City's General Plan and the RWQCB Basin Plan. Implementation of the proposed project would not alter the on-site drainage pattern and would not increase on- or off-site erosion, or significantly contribute to impaired water quality in the region. Therefore, storm water flows will not be increased with project implementation and will be contained within an existing drainage system. In addition, as outlined in Mitigation Measures 4.7-1, 4.7-2, 4.7-3, and 4.7-5, the project is required to obtain appropriate permits, including a Section 404 Permit; incorporate Construction BMPs as identified in a SWPPP; obtain an NPDES permit; and comply with the SUSMP requirements, as are other new construction projects in the cumulative study area. Compliance with these regional programs and the General Construction Permit constitutes compliance with programs intended to address cumulative hydrological and water quality impacts. Therefore, the project would not contribute to long-term cumulative impacts and may in fact have a positive impact on water quality due to the increased tidal prism (water volume) resulting from the proposed dredging activities.

Short-term water quality impacts would be limited to the immediate project area, since construction activities would generally be confined to the proposed construction corridor and individual basins within the Marina. Construction dredging, disposal of dredged materials, and removal of the dock system could adversely affect water quality by temporarily disturbing sediments and/or releasing chemicals that are present in the sediments, and by creating floating debris in the Bay that could temporarily degrade water quality. In addition to the measures discussed above, Mitigation Measures 4.7-4 through 4.7-7 require implementation of increased pumping rates (in regard to Basins 6-S and 6-N only), BMPs, and trash and debris containment during construction activities, will further reduce impacts to water quality to less than significant levels. Therefore, the project would not contribute to short-term cumulative water quality impacts.

Implementation of the proposed mitigation measures will ensure that construction and operation of the proposed project would have a less than significant impact related to water quality. Therefore, with implementation of the proposed mitigation, the project's water quality impacts are considered less than cumulatively considerable.

4.7.7 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Implementation of Mitigation Measures 4.7-1 through 4.7-7, described above, would reduce potential project and cumulative hydrology and water quality impacts to less than significant levels. Therefore, there are no significant unavoidable adverse impacts of the proposed project related to hydrology and water quality.