Chapter 3.10

Biota and Habitats

3.10.1 Introduction

This section analyzes potential construction- and operation-related impacts on biological resources in and near the project site, as well as potential regional impacts. The impacts analysis and development of mitigation measures take into consideration the requirements of the DFG, USFWS, ACOE, and City of Los Angeles. A description of the setting for these issue areas is provided, followed by a discussion of the environmental impacts and mitigation measures associated with the proposed project.

Biological resources of Los Angeles and Long Beach Harbors have been extensively studied, and this information has been summarized in the *Deep Draft Navigation Improvements Final EIS/EIR* (ACOE and LAHD 1992) and other recent EIRs (LAHD 1997), including baseline studies in *Ports Of Long Beach and Los Angeles Year 2000 Biological Baseline Study Of San Pedro Bay* (MEC Analytical Systems 2002). The purpose of these studies was to provide analysis of potential impacts to biological resources that would occur as a result of the projects.

3.10.2 Setting

3.10.2.1 Regional Setting

The natural environment within the harbor has changed substantially over the past 100 years, due primarily to harbor development and urbanization/ industrialization of the surrounding area. Breakwater construction, dredge and fill activities, and construction of associated harbor structures (e.g., piers and wharves) have both altered the natural physical environment and created artificial habitats that support a high diversity of biological communities. Urbanization and industrialization have changed sediment and water quality in the harbors through waste discharges, although regulations have decreased this type of pollution in recent years. Thus, although the harbors have a high level of disturbance, they support a wide variety of marine organisms. The abundance and diversity of these organisms (particularly those sensitive to pollution) has increased as water quality has improved.

Biological resources include plants, animals, and the habitats in which they occur. For descriptive purposes, the marine habitats of the study area have been subdivided into benthic (soft bottom and hard substrate), pelagic (water column), and kelp bed habitats. Terrestrial habitats are all uplands in the vicinity of the project site, and species characteristic of these habitats are described below. Birds use a variety of habitats and are discussed in section 3.10.2.1.3. In addition, species listed as threatened or endangered by the USFWS, species having equivalent status at the state level, species under consideration for listing as threatened or endangered, and other special status species (e.g., marine mammals protected under the Marine Mammal Protection Act) are considered in section 3.10.2.1.4.

The following discussion of existing conditions provides a general overview of biological resources in the harbor complex of Los Angeles and Long Beach Harbors and focuses on important resources that may be affected by the proposed project or its alternatives.

Marine Water Column

Plankton

Phytoplankton and zooplankton in the harbors have been described in previous-studies (Environmental Quality Analysts-MBC 1978; Soule and Oguri 1976 and 1979). In the Outer Harbor, seasonal phytoplankton patterns were marked by diatom-dominated spring blooms and more intense dinoflagellate-dominated fall blooms. All species present are typical components of the Southern California Bight shelf plankton community (Barnett and Jahn 1987). The mean density of zooplankton in the Outer Harbor near the Pier 300 landfill was 3,000 to 4,000 per m^3 (ACOE 1985).

Fishes

The Los Angeles-Long Beach Harbor complex is a transient or permanent habitat for over 130 species of juvenile and adult fish (Horn and Allen 1981; MEC Analytical Systems 1988; ACOE and LAHD 1980). Although fish populations of the entire harbor appear diverse and abundant, 75–85% of the harbor fish community is dominated by three species: white croaker (*Genyonemus lineatus*), northern anchovy (*Engraulis mordax*), and queenfish (*Seriphus politus*) (Brewer 1983). Four other species consistently rank high in abundance in all studies and are considered important residents of the harbor. These are white surfperch (*Phanerodon furcatus*), California tonguefish (*Symphurus atricauda*), speckled sanddab (*Citharichthys stigmaeus*), and shiner surfperch (*Cymatogaster aggregata*) (Horn and Allen 1981).

More recent investigations by MEC Analytical Systems (2002) of the entire harbor complex using a variety of sampling gear revealed similar dominance patterns for fish species. Using gear designed to capture demeral (trawls), pelagic (lampara nets), and nearshore fishes (beach seines), 74 species were collected. More species were collected at shallow water (4–6 meter) locations than at deepwater (11–24 meter) locations. Northern anchovy was the most abundant species collected with lampara net sampling (68%); white croaker, queenfish, topsmelt (*Atherinops affinis*), Pacific sardine (*Sardinoops sagax*), shiner surfperch, and salema (*Xenistius californiensis*) also had high abundances. The five schooling species (northern anchovy, white croaker, queenfish, topsmelt, and Pacific sardines) accounted for 90% of the total abundance. The five schooling species along with bat rays (*Myliobatis californica*) and California barracuda (*Sphyraena argentea*) accounted for 77% of the total biomass in lampara samples (MEC Analytical Systems 2002).

Trawl sampling collected 61 species, with 6 species constituting 95% of the total catch. Trawl sampling collected mostly northern anchovy, with white croaker and queenfish also having high abundances. Similar to lampara catches, these 3 species (schooling species) were the most abundant, accounting for 89% of the total abundance. These three schooling species along with the California halibut (*Paralichthys californicus*), bat ray, and shovelnose guitarfish (*Rhinobatus productus*) accounted for 63% of the total biomass in trawl samples (MEC Analytical Systems 2002).

Beach seining was conducted at Cabrillo Beach and at a beach at Pier 300 where, of the 17 species collected, topsmelt was the most abundant species; arrow goby (*Clelandia ios*) and diamond turbot (*Hypsopsetta guttulata*) were also commonly collected. These three species made up 95% of the total beach seine catch (MEC Analytical Systems 2002).

Harbor-wide (Long Beach and Los Angeles Harbors) estimates of the total number of fish were made using recent trawl and lampara net sampling methods during the day and night. For all species combined (day and night sampling), an estimate of 4.45 million fish occupy both harbor areas. The top five species (northern anchovy, white croaker, queenfish, topsmelt, and Pacific sardines) account for nearly 92% of the total estimated fish abundance in the harbor complex. (MEC Analytical Systems 2002).

The USFWS estimated seasonal fish densities from data collected from 1972 through 1982 (LAHD 1993a). There is a trend toward higher densities in the summer and fall, ranging from 40–55 fish per 100 m^2, to lower densities in the winter ranging from 2–10 fish per 100 m^2 of surface area. Juvenile and adult individuals of most species are more abundant during the spring and summer than in winter (Horn and Allen 1981). The similarity of collections over the years suggests that there have been no long-term, large-scale changes in the harbor fish fauna (MEC Analytical Systems 1988).

The fish community in the Inner Harbor is dominated by a few species that make up a very high percentage of the total catch. The eight most abundant species collected in four surveys (summarized in ACOE and LAHD 1984) are: white croaker, northern anchovy, bay goby (*Lepidogobius lepidus*), queenfish, California tonguefish, white surfperch, shiner surfperch, and Pacific butterfish (*Peprilus simillimus*). Bay goby and Pacific butterfish appear more abundant in the Inner Harbor than in the Outer Harbor community. Species richness and diversity decrease along a gradient from the Outer Harbor to the Inner Harbor (ACOE and LAHD 1984, MEC Analytical Systems 2002).

Peaks in seasonal abundance and species richness in the Inner Harbor do not coincide with Outer Harbor trends. High abundance and richness in the Inner Harbor occur in winter and early spring, and low abundance and richness occur in summer and early fall. Abundance and species richness may vary seasonally and yearly in the Outer Harbor. Outer Harbor abundance and species richness are high in late spring and early fall, peak in summer, and begin to decrease in late fall to yearly low levels in winter. Seasonal peaks in the Outer Harbor appear to reflect juvenile/young of the year recruitment (Brewer 1983). Summer abundance peaks in the Outer Harbor may be enhanced by recruitment of Inner Harbor species (ACOE and LAHD 1984).

Very little is actually known about the spawning and life history aspects of most commercially- and recreationally important fish in the Los Angeles Harbor (Horn and Allen 1981). The northern anchovy is better understood than others (Horn and Allen 1981). This species appears to be a key component in harbor ecosystem and is both a major consumer of zooplankton and a major forage food for fish of higher tropic levels. The northern anchovy uses the area inside and outside the breakwater for spawning, nursery, and adult habitat.

Studies of fish larvae and fish spawning have identified trends in abundance, density, and occurrence that help to characterize the harbor in terms of a spawning and nursery grounds (Brewer 1983 and 1984; Horn and Allen 1981; MBC 1984; MEC Analytical Systems 1988). The harbor is a viable, productive habitat for commercially- and recreationally valuable species. Areas outside the breakwater may have an equally important role as a nursery (LAHD 1993a).

Harbor fish larvae tend to be dominated by various species on a spatial and temporal basis. Larval abundance was significantly higher in spring and summer and a secondary peak occurred in the fall (MEC Analytical Systems 2002). Brewer (1983) found a similarity between the abundance of fish larvae and juvenile-adults in the harbor. A large number of fish larvae and juvenile-adult species have been reported in the harbor (HEP 1976, 1979; SCOSC 1980, 1982), which reflects the variety of nursery and adult habitats present.

Species composition varied among different areas and habitats in the harbor. Larval abundance was generally lower on the Los Angeles side of the harbor, which was similar to the abundance pattern indicated for adult fish (MEC Analytical Systems 2002). Larvae of pelagic or demersal species found over sand and/or mud bottoms as adults generally had a wide dispersal pattern within the harbor complex. In addition, some species were strongly associated with deep-water habitats while others were strongly associated with shallow-water habitats. For example, bay goby were more abundant at deep water locations. Larvae of flatfish generally had higher abundance in deep water habitats in the

Outer Harbor, basins, and channels. Fish associated with vegetation and/or rocky substrate during some part of their life stage had a more localized larval distribution which was associated with the outer breakwater, riprap around Pier 400, eelgrass beds in the Pier 300 Shallow Water Habitat, other locations near riprap, or nearby macroalgae beds (MEC Analytical Systems 2002). Larval fish data from Brewer (1983), MBC (1984), and the SCOSC (SCOSC 1980 and 1982) also demonstrates the importance of riprap or breakwaters as adult fish habitats.

Benthic Environment

Soft bottom (sand and silt) is the predominant benthic habitat in the harbor. Hard substrates are represented primarily by dikes, bank protection structures, and piles associated with Port facilities. Both habitats were surveyed during 1986–1987 (MEC Analytical Systems 1988) and during 2000 (MEC Analytical Systems 2002).

The Los Angeles/Long Beach Harbor area has a predominantly sand/silt composition (HEP 1980, MEC Analytical Systems 2002), although the proportions and distributions vary according to area. Weak current velocities in the harbor tend to sort primarily for silt and secondarily for sand. Sand generally drops out of suspension and is moved small distances, while silt is transported to a greater extent. Areas with the greatest proportion of sand are located in the Main Channel and Outer Harbor. A predominance of silt is present in Cabrillo Beach and the slips of Inner Harbor. Clay, which usually remains in suspension and is flushed out, makes up less than 25% of the sediment composition throughout Los Angeles Harbor; clay accumulates primarily in areas of reduced circulation or in deeper basins that are poorly flushed.

Benthic Organisms

The benthic environment supports a type of marine life that not only lives on the bottom, but also contributes to and markedly modifies the character of the bottom. Benthic organisms are involved in a number of sedimentation processes. They may ingest sediment, causing mechanical abrasion of the solid particles and accelerate the solution of materials such as calcium carbonate. Ingestion also results in uptake of organic matter. Turning over superficial sediment layers by mud-eating and burrowing organisms aids in the interchange of water in the sediment with the overlying water. This results in oxygenation of the deeper layers and enhancement of substrate for bacterial action. Benthic marine organisms are also important as a food source for fish, crabs, and other benthic organisms. They are a vital source of secondary productivity in the harbor trophic schemes.

Organisms associated with soft bottom habitat constitute an important portion of the harbor's food web. Soft-bottom habitat supports both infaunal organisms that burrow in the substrate and epifaunal animals that live on the surface of the substrate. Epifaunal macroinvertebrates feed directly or indirectly on the infauna, and many, in turn, are eaten by fish.

The soft bottom benthos of the harbor is dominated by polychaetous annelids. Data from the 1970s showed that the polychaete *Tharyx parvus* (a pollution-tolerant species) accounted for most of the benthic organisms identified to the species level from soft bottom benthos samples (HEP 1976, ACOE and LAHD 1980). Data from 1986, 1987, and 2000 showed that polychaetes were still numerically dominant, with crustaceans, mollusks, minor phyla, and echinoderms following in decreasing order of abundance (MEC Analytical Systems 1988, 2002).

Inner to Outer Harbor gradients in physical and biological parameters have been observed to create discrete faunal zones with distinct species complexes (HEP 197). Bottom depth, sediment coarseness, years since dredging/disposal, habitat quality, and various water quality parameters (in particular secchi depth and DO concentration) have been shown to correlate with diversity and number of taxa (taxonomic groups) of benthic invertebrates (MEC Analytical Systems 1988, 2002).

In the 1950s, some portions of the harbor benthos were devoid of macroscopic animal life due to high organic loading, low dissolved oxygen and anoxic conditions, leading to hydrogen sulfide buildup (HEP 1976, ACOE and LAHD 1984). Improvements in water quality have synergistically aided the establishment of diverse assemblages of benthic animals in previously disturbed Inner Harbor and channel areas (ACOE and LAHD 1980 and 1984).

Past studies (mid-1970s to mid-1980s) of the benthic infauna have indicated an improvement in environmental quality in the harbor complex (MEC Analytical Systems 1988, 2002). Recent benthic surveys show species diversity has increased and there is less dominance by pollution-tolerant benthic infauna species (MEC Analytical Systems 2002). This improvement has resulted from regulation of industrial, domestic sewage, and storm drain discharges to the harbor. In addition, dredging to deepen navigation channels and turning basins in Los Angeles Harbor during the early 1980s removed a considerable amount of polluted sediment as well as the infauna. These dredged areas have been recolonized, and a mature assemblage biologically similar to non-dredged areas has developed within ten years (MEC Analytical Systems 1988).

In 1986 and 1987, benthic invertebrates were sampled in the Inner Harbor for the Port of Los Angeles (MEC Analytical Systems 1988). There were 126 taxa collected. Of the 126 taxa, 26 were relatively abundant, indicating a moderately diverse assemblage. Some of the abundant species sampled are more commonly associated with bays, but 73 percent of the abundant species typically occur in open coastal habitats. Twenty-three percent of the abundant species reportedly are tolerant of pollution or environmental stress, and only one has been associated with relatively uncontaminated coastal habitats (MEC Analytical Systems 1988). These data indicate that the Inner Harbor supports a benthic invertebrate population that is a mixture of species that have an affinity for a variety of habitats, with a predominance of bay species. In comparison, benthic invertebrates found in the Outer Harbor were dominated by coastal species.

In 2000, benthic invertebrates were sampled within the larger harbor complex. A total of 400 taxa representing 361 unique species were collected. The greatest number of species (mean > 40 unique species) were collected in the Cabrillo and Pier 300 Shallow Water Habitats, deepwater habitat in the outer harbors, the main channel of Los Angles Harbor, and in Channel 2 of inner Long Beach Harbor. The fewest number of species (<25 unique species) were found at the Cabrillo Marina, northern channel between Piers 300 and 400, Fish Harbor, Consolidated Slip of inner Los Angeles Harbor, and Slip 1 of the East Basin is Long Beach Harbor (MEC Analytical Systems 2002).

Hard substrate habitats provide substantial surface area for the attachment of algae and epifaunal invertebrates, which, in turn, support a diverse community of organisms. The fauna associated with riprapped habitats form three major zones: upper intertidal, lower intertidal, and subtidal.

Riprap overstory epibiota studies in the harbor during 1986 and 1987 included observations at 100 stations, including one station in the west channel (MEC Analytical Systems 1988). Species of epifauna normally found in bays were the dominant species in the Inner Harbor, contrasted to the Outer Harbor where coastal species dominated. This trend was similar to the trend observed for benthic invertebrate species.

Studies in the Outer Harbor indicated that tidal elevation (high intertidal, low intertidal, or subtidal) was the major variable that dictated species assemblages and that station location was the secondary variable. Distinct tidal zonation was observed with numbers of species increasing with increasing depth, but total abundances were similar throughout the upper and lower intertidal and subtidal zones (MEC Analytical Systems 2002). In addition, the greater variety of species on riprap in the Outer Harbor relative to the Inner Harbor was consistent among recent and historical studies (MEC Analytical Systems 2002). Recolonization studies indicated that recolonization rates were lowest and most variable in the upper intertidal zone, and highest in the sub tidal zone. Complete recovery of the epibiota was estimated to require 37 months in the upper intertidal zone, 33 months in the lower intertidal zone, and 22 months in the subtidal zone (MEC Analytical Systems 1988). The riprap community in Los Angeles Harbor was generally unchanged from previous studies conducted by the SCOSC (1979 and 1982), HEP (1973 and 1974), and MBC (1984).

The riprap community was sampled again in 2000. A total of 237 species of invertebrates were identified during that study. The riprap community of Los Angeles Harbor has been fairly stable with similar zonation and dominant species since the 1980s. Barnacles dominated the upper intertidal and were conspicuous in the middle to lower intertidal strata, the non-indigenous Mediterranean mussel *Mytilus galloprovincialis* was a dominant species in the lower intertidal and shallow subtidal. Tanaid and amphipod crustaceans also were dominant species in the shallow subtidal. Other commonly observed fauna included crabs, sea anemones, sea urchins, and starfish in lower intertidal and shallow subtidal zones (MEC Analytical Systems 2002).

Marine Algae

Marine algae are primary producers, providing a food source for herbivorous invertebrates and fish. With the availability of sufficient light and substrate for attachment, marine algae can develop dense stands providing food and habitat for various marine animals.

Kelp and macroalgal communities are narrowly distributed within the harbor areas, being principally restricted to the shallow hard bottom environments associated with riprap shorelines, breakwaters, and pier structures. The true kelp communities are restricted to the outermost portions of the harbor where giant kelp forms a principal component of macroalgal assemblages. While nowhere within the Port is algal diversity high, there is a general decline of algal diversity and cover from the outermost portions of the harbor to the innermost channel environments (MEC Analytical Systems 2002, ACOE and LAHD 1984).

In the Inner Harbor, tidal flushing is reduced, wave surge and currents decrease, water temperatures and sedimentation increase, dissolved oxygen levels decline, and freshwater intrusion decreases salinity during the winter while evaporation increases the salinity during the summer. Each of these factors can affect the potential species supported at a given location. Restrictions in tidal circulation tend to inhibit the highly productive kelp and macroalgae such as *Egregia* and *Macrocystis*. As a result, *Sargassum*, *Ulva*, and *Colpomenia* were the dominant species consistently encountered along Inner Harbor transects where tidal flushing is greatly reduced. *Sargassum*, although an upright branching species, does not provide the same level of structure and colonizing space as the larger kelp species. *Ulva* and *Colpomenia* are smaller non-articulated forms that provide food for other organisms, but do not provide structure to the water column or a stable substrate for encrusting organisms (MEC Analytical Systems 2002).

Algal diversity was typically much higher in the Outer Harbor, compared with the Inner Harbor. The greatest diversity occurred along the San Pedro Breakwater (12 dominant species), diversity was also high where riprap was located (11 dominant species). However, only three species were observed on the Middle Breakwater and near the GATX Terminal in Los Angeles Harbor due to sea urchin grazing and dominance of *Macrocystis*, respectively. In general, Macrocystis and Egregia dominated the Outer Harbor. Understory species such as the coralline red algae, *Corallina* spp., the red alga *Rhodymenia*, and the brown algae *Dictyota* and *Colpomenia* were also common in Outer Harbor habitat. In addition, the introduced alga, *Sargassum muticum*, was also present in some Outer Harbor locations (MEC Analytical Systems 2002).

Previous investigations done by the ACOE and LAHD (1984) described the Inner Harbor as being dominated by sparse coverage of stress-tolerant species such as *Ulva* spp. and *Enteromorpha* spp., and the Outer Harbor as being dominated by red and brown algal species, including *Sargassum* spp., *Taonia* spp., *Gigartina* spp., and *Corallina* spp. In addition, the investigation identified a strip of giant kelp (*Macrocystis sp.)* lining the inner side of the breakwater and along the rock dikes in the Outer Harbor, with some macrocystis usually present on dikes at the entrance to Watchorn Basin.

The occurrence of giant kelp within the harbors is a relatively recent occurrence according to reports made in prior investigations. *Macrocystis* was transplanted to sections of the San Pedro Breakwater, including introduction of a Mexican strain. Whether the majority or even some of the kelp present within the Ports at this time are from this strain is unknown. Studies conducted during the last biological baseline demonstrated a tremendous productivity of giant kelp along the outer breakwater; however, the 2000 surveys did not attempt to quantify the distribution of kelp or other macroalgal flora. However, it is apparent that kelp distribution has increased in Los Angeles Harbor; in 1986–1987, the kelp was restricted to the San Pedro Breakwater, but studies done in 2000 mapped additional kelp along portions of the Middle Breakwater, Pier 400, on a submerged dike at the Cabrillo Shallow Water Habitat, and other riprap shorelines in outer Los Angeles Harbor (MEC Analytical Systems 2002).

Eelgrass

Eelgrass is an important component of estuarine ecosystems and is considered a "Special Aquatic Site" under the Clear Water Act. It provides food and habitat for many birds, fish, and invertebrates. It also acts as a substrate for other primary producers such as diatoms and algae.

Eelgrass (*Zostera marina*) is present in the Outer Harbor in shallow water adjacent to Cabrillo Beach and extends to the southerly perimeter of Cabrillo Marina off of the Youth Facilities (Southern California Marine Institute 1996). Recent eelgrass habitat surveys conducted during March and August of 2000 indicate the presence of eelgrass beds within the Cabrillo Beach and the Pier 300 Shallow Water Habitat (MEC Analytical Systems 2002).

The collective eelgrass total within the Port of Los Angeles ranges from approximately 50 acres in the spring to approximately 100 acres at their peak in the fall (MEC Analytical Systems 2002). Eelgrass coverage varies over time and undergoes seasonal variations. This pattern of expansion and contraction of eelgrass habitat is typical in marginal habitat areas. At Cabrillo beach, eelgrass coverage was 25 acres in 1996, 55 acres in October 1999, 22 acres in March 2000, and 42 acres in August 2000 (MEC Analytical Systems 2002). At the Pier 300 Shallow Water Habitat, eelgrass coverage was 50 acres in October 1999, 28.5 acres in March 2000, and 43 acres in August 2000 (MEC Analytical Systems 2002). Studied conducted by the Southern California Marine Institute (1996), reported that the eelgrass adjacent to the Inner Cabrillo Beach and salt marsh area at Cabrillo Beach as being very sparse (estimated to be less than 10%

bottom coverage) and the eelgrass generally north of the boat launch ramp and adjoining the Youth Facilities as being very dense (greater than 90% cover).

Birds and Marine Mammals

Birds

Birds are an important ecological component of the Los Angeles-Long Beach Outer Harbor due to their high trophic position. Over 100 avian species use the various habitats within the Ports seasonally, year-round, or during migration (MEC Analytical Systems 2002). The strong avian diversity of the Outer Harbor is attributable to the variety of habitat and food resources present. Relatively remote areas provide resting sites for species sensitive to human activity. Breakwaters permit birds to rest near open water foraging areas. These habitats are occupied by resident shorebirds throughout the year. Usage increases during the winter when migratory species appear. Avifaunal surveys have revealed that the greatest abundances and numbers of species occur between September and March (MEC Analytical Systems 2002, MEC Analytical Systems 1988, MBC 1984).

The majority of birds in the project region are considered water-associated. MEC Analytical Systems (2002) reported, that of the 99 species observed during 2000–2001 surveys, 69 species were considered to be dependent on marine habitats. The most abundant are surf scoter (*Melanitta perspicillata*), western gull (*Larus occidentalis*), Elegant Tern (*Sterna elegans*), California brown pelican (*Pelecanus occidentalis californicus*), Heermann's gull (*Larus heermanni*), and western grebe (*Aechmophorus occidentalis*). Ring-billed gull (*Larus delawarensis*), black-bellied plover (*Pluvialis squatarola*), double-crested cormorant (*Phalacrocorax auritus*), least tern (*Sterna antillarum browni*), and Brandt's cormorant (*Phalacrocorax penicillatus)* are also present, at least seasonally (MEC Analytical Systems 2002).

The protected harbor environment provides excellent resting sites and feeding habitats for many species of birds. The Inner Harbor is a major site for resting due to the generally protected areas in the inner channels, basins, and bulkheads. The majority of the species using the harbor do not breed in the area.

Marine Mammals

Marine mammals have not been well studied in Los Angeles Harbor, although both pinnipeds and cetaceans sometimes occur there. California sea lions (*Zalophus californianus*) are frequently observed resting on breakwaters of the Outer Harbor (ACOE and LAHD 1979). Harbor seals (*Phoca vitulina*) occupy buoys in the Outer Harbor (ACOE and LAHD 1979) and near the San Pedro fish markets in the Main Channel. Cetaceans observed in the Outer Harbor include gray whale (*Eschrichtius robustus*), Pacific bottlenose dolphin (*Tursiops truncatus*), common dolphin (*Delphinus delphis*), Pacific white-sided dolphin

(*Lagenorhynchus obliquidens*), Risso's dolphin (*Grampus griseus*), and Pacific pilot whale (*Globicephala macrorhynchus*) (ACOE and LAHD 1979). Sightings of these cetacean species within the harbor are rare.

Sensitive, Threatened, and Endangered Species

Sensitive Wildlife Species

Two state and federally listed endangered species, the California least tern (*Sterna antillarum browni*) and the California brown pelican (*Pelecanus occidentalis californicus*) regularly use the harbor area. The state-endangered peregrine falcon (*Falco peregrinus*) uses the harbor area, while the state endangered Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) may be a transient visitor in the area. One Belding's savannah sparrow was observed on the south side of Queensway Bay in March of 1984 (POLB 1984); none were observed during 2000–2001 surveys (MEC Analytical Systems 2002). The federally threatened western snowy plover (*Charadrius alexandrinus*) inhabits coastal sandy beaches and flats and has been sighted in Los Angeles Harbor, with the latest reported sighting in 2001 on Pier 400 (Keane 2002).

Several species of birds protected by the Migratory Bird Treaty Act, including the elegant tern (*Sterna elegans*), caspian tern (*Sterna caspia*), royal tern (*Sterna maxima*), black skimmer (*Rynchops niger*), black oystercatcher (*Haematopus bachmani*), and great blue heron (*Ardea herodias*), have nested in the harbor (MEC Analytical Systems 2002). Individuals of these species not only use the harbor for breeding but forage on fish in the harbor (MEC Analytical Systems 1988).

California Least Tern

(Federal and State Endangered Species)

The California least tern (*Sterna antillarum browni*) is listed as endangered by both state and federal governments. This small seabird migrates north to southern and central California in May to breed (Massey 1974). California least terns nest in coastal areas adjacent to shallow marine and estuarine habitats, where they can forage on fish at the water surface by diving into the water. The California least tern begin laying their eggs in May. Chicks start hatching by June and begin maturing into fledglings by early July (MEC Analytical Systems 1988, Keane 1997b). The terns generally depart for their wintering grounds in August (Massey and Atwood 1981).

One nesting colony for the California least tern is located on the southeast portion of Pier 400 within the Port of Los Angeles. Historically the site has been located at a variety of locations on Terminal Island in the vicinity of Pier 300. In 1997 the birds nested for the first time on Pier 400. Since 1998, the birds have nested exclusively on Pier 400.

The numbers and success of nesting pairs in the Port of Los Angeles colony have fluctuated considerably from year to year. Fourteen nests were observed in 1973, the first year of documentation. The number of nesting pairs ranged from zero in 1978, 1979, and 1980 to 437 in 2000, and the average number of fledglings per pair varied from 0.07 in 2002 to 1.31 in 1997 (Keane Biological Consulting 2002). In 2002 there were 320 nests, with 21 fledglings and in 2001 there were 459 nests, with 228 fledglings (Keane Biological Consulting 2002). This variability is related in part to 3 factors: (1) the influence of predation on eggs, chicks, and adults by American crows, American kestrels, gulls, and feral cats; (2) the availability of food in and around the harbor; and (3) the changing levels of human activity at the nesting sites.

Shallow water areas of the Outer Harbor are considered important areas for California least tern foraging. Adult California least terns observed in the Outer Harbor in 1986 and 1987 were feeding off Terminal Island in shallow water areas and off the Middle Breakwater (MEC Analytical Systems 1988). During surveys conducted in 1994–1996, adults were observed feeding off Terminal Island in shallow water areas east of Pier 300 and in areas south of Pier 300. In addition feeding was observed off of Cabrillo Beach. No survey of foraging at the Middle Breakwater was performed (Keane 1997a). After chicks hatched, foraging was more concentrated in the shallow waters adjacent to the colony (MEC Analytical Systems 1988). Primary prey items of the California least tern are the northern anchovy, topsmelt, and jacksmelt (Atwood and Kelly 1984; Massey and Atwood 1984).

California Brown Pelican

(Federal and State Endangered Species)

The California brown pelican (*Pelecanus occidentalis californicus*) is state and federally protected as an endangered species by both state and federal legislation. This species originally was listed because of its low reproductive success, attributed to the production of thin-shelled eggs as a consequence of DDT contamination. The discharge of DDT was prohibited in 1970, and it appears that the brown pelican population has largely recovered (Anderson et. al. 1975; Schreiber 1980; Gress and Anderson 1983).

California brown pelicans forage along the coast of California all year, but in smaller numbers during the breeding season (approximately January through June). Breeding occurs in Mexico, in the Gulf of California, and at Anacapa Island, Santa Barbara Island, and Scorpion Rock (Santa Cruz Island) off the coast of California (Gress and Anderson 1983).

Brown pelicans have been observed year-round in the harbor complex, although their numbers fluctuate seasonally due to an influx of postbreeding pelicans from Mexico in the summer. Studies conducted in 1983 and 1984 (POLB 1984) indicated that the highest densities of brown pelicans occur between early July and early November (several thousand birds), with a sharp decrease in numbers after November. Minimum densities were noted in late March. Brown pelicans were one of the most abundant bird species observed in the Outer Harbor during studies conducted in 1986 and 1987 (MEC Analytical Systems 1988). Similarly, the California brown pelican accounted for 9.5% of the total observations during 2000–2001 surveys and was ranked fourth in the number of observations for bird species observed within the Port. (MEC Analytical Systems 2002). Within the Outer Harbor, pelicans rest on breakwaters in areas with little human disturbance (MEC Analytical Systems 1988). In particular, remote areas of the Middle Breakwater appear to be preferred resting spots (MBC 1984; MEC Analytical Systems 1988). Pelicans are diving birds that feed exclusively on fish. During the MEC Analytical Systems (1988) study, pelicans were observed foraging in open waters off Terminal Island and in shallow waters adjacent to the Seaplane Anchorage.

Peregrine Falcon

(State Endangered Species)

The peregrine falcon (*Falco peregrinus*) had been federally listed as endangered until delisted by the federal government on August 25, 1999 (64 FR 46542), but is still currently listed as endangered by the State of California (DFG 2002a). Like the brown pelican, the peregrine falcon (*Falco peregrinus*) originally was listed because of its low reproductive success, attributed to the production of thin-shelled eggs as a consequence of pesticide contamination. With the prohibition of DDT production and use in 1970, the reproductive success of the species has increased. This coupled with a captive breeding program has helped increase the abundance of the species.

The peregrine falcon feed on other birds and nest on ledges on high structures. Peregrine falcons reside within the San Pedro Bay area and have been reported nesting on the Long Beach City Hall, near the Port of Long Beach Administration Building, on the Vincent Thomas bridge, on the Commodore Schuler F. Heim Bridge, and in the West Basin of the Port. During 2000–2001 surveys, a pair of Peregrine falcons was observed nesting on the Schuyler F. Heim Bridge (MEC Analytical Systems 2002). Peregrine falcons have also been observed on Terminal Island and flying over the Outer and Inner Harbor.

Belding's Savannah Sparrow

(State Endangered Species)

The state endangered Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) may be a transient visitor in the area. Belding's savannah sparrow frequents pickleweed in a few scattered saline emergent wetlands (DFG 2002e), of which there are small areas of pickleweed located in Los Angeles Harbor. However, due to the small size of the two patches and/or their proximity to recreational and/or commercial facilities, these do not appear to be utilized by the Belding's savannah sparrow for nesting.

Western Snowy Plover

(Federal Threatened Species)

The federally threatened western snowy plover (*Charadrius alexandrinus*) inhabits coastal sandy beaches and flats. Individuals have been sighted in Los Angeles Harbor, with the latest reported sighting in 2001 on Pier 400 (Keane

2002). However, the project area does not contain suitable habitat to support nesting or feeding by this species.

Elegant Tern

(Migratory Species)

The elegant tern (*Sterna elegans*) is a migratory species protected by the Migratory Bird Treaty Act that winters primarily in South American and migrates north for breeding season (which begins in June) then returns south in November (Stallcup 1990). Like all terns, the elegant tern feeds on small fish it captures by diving headfirst into the water. It has been observed feeding in both shallow and deep waters. This species was recorded nesting in Los Angeles Harbor for the first time in 1998 when a large group (approximately 6,000 individuals) nested on Pier 400 (Keane 1999). During 2000–2001 surveys, the Elegant Tern was the most numerous tern species observed within the harbor complex, accounting for over 7,000 individuals (MEC Analytical Systems 2002). The terns produced large number of chicks, most of which survived to fledge. The nesting elegant terns were found primarily in the south-central and southwestern portions of Pier 400 in association with caspian and royal terns. This onset of nesting within Los Angeles Harbor was coincidental with the absence of elegant terns nesting at Bolsa Chica wetlands. Since 1998, the terns have continued to nest on the southern portion of Pier 400 (Keane 2000a, 2000b).

Caspian Tern

(Migratory Species)

Caspian terns (*Sterna caspia*) are a migratory species common along the southern California coast and protected by the Migratory Bird. In 1997, approximately 25 pairs of caspian terns were observed nesting at the Central Least Tern Nesting Site on Pier 400. The nesting was successful and a number of chicks and fledglings were produced. Since then, the terns have continued to nest yearly on Pier 400 (Keane 1999, 2000a, 2000b). An estimated total of 336 caspian tern nests were counted in 2000 (MEC Analytical Systems 2002). Like all terns, the caspian tern feeds on fish it captures by diving headfirst into the water. Being the largest of the terns it feeds on a wider size range of fish. It has been observed feeding in both shallow and deep waters of the San Pedro Bay.

Royal Tern

(Migratory Species)

Royal terns (*Sterna maxima*) are a migratory species protected by the Migratory Bird Treaty Act which breeds along the southern California coast. Seventeen pairs of Royal terns were first observed nesting within the Port on Stage I of Pier 400 in 1998 (Keane 1999). The nesting was successful and a number of chicks and fledglings were produced. Royal terns were observed feeding in the vicinity of Pier 400. In subsequent years, this species has been observed nesting on Pier 400, but in very low numbers (Keane 1999, 2000a, 2000b). Their typical prey is small fish found in shallow and deep waters.

Black Skimmer
(Migratory Species)

The black skimmer (*Rynchops niger*) is a migratory species protected by the Migratory Bird Treaty Act, which has been extending its breeding range northward in recent years (Whelchel et. al. 1996). While previously observed in the San Pedro Bay, the species was first reported nesting in the Port in 1998. Nine nests have been observed in the south-central portion of Pier 400 (Keane 1999), but hatching and fledgling success for this nesting season was poor. Similarly, 115 Black Skimmer nests were counted at Pier 400 in 2000, but no checks were fledged (MEC Analytical Systems 2002). Black skimmers feed by flying just above the surface of the water and snatching-up fish swimming just below the surface. This restricts the species to feeding in very calm waters such as those in enclosed bays.

Black Oystercatcher
(Migratory Species)

The black oystercatcher (*Haematopus bachmani*) is protected by the Migratory Bird Treaty Act. A nesting colony of black oystercatchers was recently observed within the riprap along the entire length of the outer breakwater of the harbor (MEC Analytical Systems 2002). The species has been present since at least 1973, and were observed in all but one survey date during the 2000–2001 investigations (MEC Analytical Systems 2002). Black oystercatchers typically nest along rocky shores and islands along the Pacific coast of North America. The nesting colony within the Port is considered unusual (MEC Analytical Systems 2002).

Great Blue Heron
(Migratory Species)

The great blue heron (*Ardea herodias*) is protected by the Migratory Bird Treaty Act. The great blue heron usually nests in colonies in tops of secluded large snags or live trees, usually among the tallest available. The great blue heron rarely nests on ground or in shrubs (DFG 2002b). A great blue heron rookery was located within the Port of Long Beach at Gull Park, the mouth of the West Basin, which is a mitigation site constructed in 1998 for the loss of nesting trees at the Long Beach Naval Station (MEC Analytical Systems 2002). During the 2000–2001 surveys, high numbers of great blue herons were observed resting along the riprap at Pier 400 (MEC Analytical Systems 2002).

Black-Crowned Night Herons
(Migratory Species)

The black-crowned night heron (*Nycticorax nycticorax*) is protected by the Migratory Bird Treaty Act. The black-crowned night heron feeds along the margins of lacustrine, large riverine, and fresh and saline emergent habitats and on kelp beds in marine subtidal habitats (rarely) (DFG 2002c). The black-crowned night heron nests and roosts in dense-foliaged trees and dense emergent wetlands (DFG 2002c).

During the 2000–2001 surveys, black-crowned night herons were observed in many locations throughout the Ports. They were concentrated in the Port of Long Beach West Basin during the spring months, with peak number of individuals occurring in the rookery during May and June 2000. In addition to being used by great blue herons, the rookery located at Gull Park (a mitigation site constructed in 1998 for the loss of nesting trees at the Long Beach Naval Station), was used by black-crowned night herons (MEC Analytical Systems 2002). They are also known to nest and roost in ficus trees at Ports O' Call.

Loggerhead Shrike
(Migratory Species)

The loggerhead shrike (*Lanius ludovicianus*) is protected by the Migratory Bird Treaty Act. It is a common resident and winter visitor in lowlands and foothills throughout California where it prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches (DFG 2002d). Loggerhead shrikes were observed on riprap or dock/piling habitat during the 2000–2001 surveys in the Port of Long Beach and Los Angeles inner harbors (MEC Analytical Systems 2002).

Burrowing Owl
(Migratory Species)

The burrowing owl (*Athene cunicularia*) is protected by the Migratory Bird Treaty Act. Burrowing owls in the Los Angles area are generally resident (DFG 2002f). Burrowing owls utilize open, dry grassland and desert habitats, and grass, forb and open shrub stages of pinyon-juniper and ponderosa pine habitats. One individual burrowing owl was observed in March 2000, along riprap within the West Basin of the Port of Long Beach; it was not known if there was an active burrow in the area (MEC Analytical Systems 2002).

3.10.2.2 Regulatory Setting

Federal, state, and local authorities under a variety of legislative acts share regulatory authority over biological resources. Primary authority for general biological resources lies within the land use control and planning authority of local jurisdictions (e.g., the City of Los Angeles). The DFG is a trustee agency under CEQA for biological resources throughout the state and may be a responsible agency under the DFG code, in certain circumstances. Under the California Endangered Species Act (CESA) and federal Endangered Species Act (ESA), the DFG and USFWS have direct regulatory authority over specially designated species and their habitats. The Corps has regulatory authority over specific biological resources associated with wetlands and waters of the United States, under Section 404 of the CWA.

In response to legislative mandates, DFG and USFWS have defined sensitive biological resources as organisms that have regionally declining populations such that they may become extinct if population trends continue. Habitats are considered sensitive biological resources if they have limited distributions, have high wildlife value, support sensitive species, or are particularly susceptible to disturbance.

Special-status species are plants and animals legally protected under ESA, CESA, or other regulations, as well as species that are considered by the scientific community to be sufficiently rare to qualify for such listing. Special-status plants and animals are species in at least one of the categories defined below:

- species listed or proposed for listing as threatened or endangered under ESA (50 Code of Federal Regulations [CFR] 17.11 [listed plants], 50 CFR 17.12 [listed animals], and various notices in the Federal Register [FR] [proposed species]);
- species that are candidates for possible future listing as threatened or endangered under ESA (61 FR 40: 7596-7613, February 28, 1996);
- species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 CCR 670.2 and 670.5);
- species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines, Section 15380);
- plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
- plants considered by the California Native Plant Society (CNPS) (2000 Electronic Inventory Update) to be “rare, threatened, or endangered in California” (Lists 1B and 2 as defined in Skinner and Pavlik 1994);
- plants listed by CNPS (2000 Electronic Inventory Update) as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4 as defined in Skinner and Pavlik 1994), which may be included as special-status species on the basis of local significance or recent biological information;
- species listed as sensitive by the local U.S. Forest Service region (Forest Service Manual 2670) or U.S. Bureau of Land Management resource area;
- animal species of special concern to DFG (Remsen 1978 [birds], Moyle et al. 1995 [Fish], Williams 1986 [mammals], and Jennings and Hayes 1994 [amphibians and reptiles]); and
- animals fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], 5050 [reptiles and amphibians], and 5515 [fish]).

3.10.3 Impacts and Mitigation

3.10.3.1 Methodology

The current biological setting, described above, was determined from the biological surveys and reports contained in the *Deep Draft Navigation Improvements Final EIS/EIR* (USACE and LAHD 1992) and other recent EIRs (LAHD 1997 and 1998), including baseline studies in Los Angeles Harbor (MEC Analytical Systems 1988), Long Beach Harbor (MEC Analytical Systems 1984), and Year 2000 surveys of San Pedro Bay (Los Angeles and Long Beach Harbors) (MEC Analytical Systems 2002). Impacts to species, communities, and habitats expected to occur as a result of project implementation were identified by examining the project description in view of the existing biological setting.

3.10.3.2 Thresholds of Significance

Thresholds of significance for biota and habitats are based on the *Draft Los Angeles CEQA Thresholds Guide* (City of Los Angeles 1998). The City Thresholds Guide does not specifically address aquatic habitats within the harbor. The LAHD therefore has developed a harbor-specific significance criteria for permanent loss of biological habitats. For purposes of this EIR, significant impacts on biota or habitats in the project area would normally occur if the project results in the following:

BIO-1: The project would result in the loss of individuals, or the reduction of existing habitat, of a state or federal listed endangered, threatened, rare, protected, candidate, or sensitive species or a species of special concern.

BIO-2: The project would result in the loss of individuals or the reduction of existing habitat of a locally designated species or a reduction in a locally designated natural habitat or plant community.

BIO-3: The project would interfere with wildlife movement/migration corridors that may diminish the chances for long-term survival of a sensitive species.

BIO-4: The project would result in the alteration of an existing wetland habitat.

BIO-5: The project would interference with habitat such that normal species behaviors are disturbed (e.g., from the introduction of noise or light) to a degree that may diminish the chances for long-term survival of a sensitive species

BIO-6: The project would result in the permanent deterioration or contamination of the aquatic habitat such that the aquatic ecosystem of the harbor is substantially disrupted.

3.10.3.3 Project Impacts

Direct and Indirect Impacts

Impact BIO-1: The Project Would Not Result in the Loss of Individuals, or the Reduction of Existing Habitat, of a State or Federal Listed Endangered, Threatened, Rare, Protected, Candidate, or Sensitive Species or a Species of Special Concern

The proposed project would not have significant effects on any sensitive species. The federally protected least tern and brown pelican regularly use the harbor area. The brown pelican nests on the Channel Islands; therefore, foraging in the harbor area does not directly affect their reproductive success. The project area is not considered a critical area for foraging or nesting by the least tern or brown pelican; therefore, neither dredging activity nor construction of the project would affect these species. No other protected marine species normally occur, or are expected to occur, in the project area. Sensitive species do occur nearby, but the potential for impacts to sensitive species is minimal.

At full buildout, the project would have minimal impacts to sensitive species or their habitats. The greatest potential for impacts to sensitive species would be from accidental spills. However, because they would be contained on site, cleaned up, and disposed of at an approved location, most accidental spills would have minimal impacts on biological resources. In the event that a spill from the fuel dock operations that reached harbor waters, a variety of marine organisms could be affected. Specific impacts would depend on the type (chemical composition) and size of the spill, exact location of entry into the harbor, and timing (both season and time of day relative to tidal cycle, and the effectiveness of emergency response efforts to contain and clean up the fuel spill). Contaminants could have indirect effects on sensitive species by affecting prey species such as plankton, invertebrates, and fish. Some contaminants could bioaccumulate, potentially reducing the survival and reproductive success of sensitive species. Insoluble hydrocarbons that would float on the water surface could coat the feathers of birds using the water surface for resting or those diving into the water. Most impacts would occur in the immediate vicinity of the spill, but tidal currents could move the pollutant into the Outer Harbor. Dilution, flushing, and evaporation of volatile materials would reduce concentrations to below toxic levels and ultimately remove the materials from the harbor. Impacts would be local and could range from insignificant to significant, depending on the number and species of organisms affected and the size and toxicity of the spill. With appropriate operational controls and compliance with the various permit requirements and regulations, these events are considered unlikely and the potential impacts to sensitive species are considered less than significant. (See also Impact WQ-3.)

Mitigation Measures

No additional mitigation is required because the project would comply with existing state and federal water quality standards for dredging, filling, and construction operations and stormwater discharges.

Residual Impacts

Impacts would be less than significant.

Impact BIO-2: The Project Would Not Result in the Loss of Individuals or the Reduction of Existing Habitat of a Locally Designated Species or a Reduction in a Locally Designated Natural Habitat or Plant Community

The project area does not contain local designated species or locally designated natural habitat or plant communities. Therefore, no impacts would occur.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact BIO-3: The Project Would Not Interfere with Wildlife Movement/Migration Corridors that May Diminish the Chances for Long-Term Survival of a Sensitive Species

The project area does not contain wildlife or migratory corridors. The site is located within open water habitat and would not preclude movement of biological species. Therefore, no impacts would occur.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact BIO-4: The Project Would Not Alter an Existing Wetland Habitat

The project area does not contain any wetland habitat. Therefore, no impacts would occur.

Mitigation Measures
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact BIO-5: The Project Would Not Interfere with Habitat Such that Normal Species Behaviors are Disturbed (e.g., from the Introduction of Noise or Light) to a Degree that May Diminish the Chances for Long-Term Survival of a Sensitive Species

Noise from construction activities may temporarily disrupt the behavior of sensitive bird species and cause them to avoid the project area during times of active construction. However, because there are no nesting or important foraging sites in the immediate vicinity of the project site, the ambient noise levels in the surrounding areas are relatively high due to ongoing activities. In addition, because construction activities are temporary, potential impacts to the long-term survival of a sensitive species are considered less than significant.

Mitigation Measures
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact BIO-6: The Project Would Not Result in Permanent Deterioration or Contamination of the Aquatic Habitat Such that the Aquatic Ecosystem of the Harbor is Substantially Disrupted

The proposed project would result in impacts to marine habitats from construction. These effects are a result of dredging and filling portions of the harbor to accommodate the proposed project. Additionally, short-term construction-related impacts would occur to species and marine habitats. The potential impacts are discussed in greater detail below for the various species and habitat types.

Plankton
Planktonic organisms would be subjected to impacts from turbidity. Turbidity can impact plankton populations by lowering the light available for phytoplankton photosynthesis. In addition, turbidity can impact zooplankton by clogging their filter feeding mechanisms. Impacts to plankton are not expected to be significant because of the limited area of impact compared to the overall harbor area, and because turbidity would rapidly return to normal following the end of dredging. Planktonic organisms are adapted to a naturally occurring high mortality rate. Reproduction rates are correspondingly high allowing for rapid recovery from localized impacts.

Fish Species

Project construction will result in the excavation of 1.1 acres of existing land and filling of 3.5 acres of existing water area (as measured at +4.8 MLLW). The net loss of 2.4 acres of water area (Table 3.10-1) would be a significant adverse impact. It is proposed that the 2.4 acres of habitat will be replaced through use of the LAHD's Inner Harbor Mitigation Bank (LAHD 1984). In 1984, the LAHD entered into an MOU regarding habitat accounting for port developments involving landfill or excavation within the Inner Los Angeles Harbor. Parties to the agreement include the LAHD, the USFWS, the National Marine Fisheries Service, and the DFG. The MOU establishes a banking system of environmental credits and debits to be recorded on a project-by-project basis. Credits are to be credited and debited at a ratio of 1:1 for additional areas of water created and lost in the Inner Harbor as measured at +4.8 MLLW (~Mean High Water). At the time the Mitigation Bank was established in 1984, it contained 17.7 acres of credit. The bank presently contains a balance of 6.21 acres of credit (Appendix H). Following project implementation and removal of 2.4 acres of water area, the bank will have a positive balance of 3.8 acres. As a result of this excess balance of water area in the Inner Harbor, there will be no overall loss of marine habitat in the Inner Harbor because of the proposed landfill. The potential impact of the project landfill would be significant, but is reduced to less than significant levels by prior creation of water area in the Inner Harbor. The mitigation for this impact is provided under mitigation measure MM BIO-6 below.

Table 3.10-1. Changes in the Amounts of Various Habitats Existing Before and After Proposed Project Construction

	Pilings (Number)	Riprap (Linear Ft.)	Bulkhead (Linear Ft.)	Dock Area (Acres)	Soft Bottom Area (Acres)	Water Surface Area (Acres)
Existing	~150	5,600	0	2.6	35.0	40.0
Proposed	~550	4,900	285	5.2	31.2	37.6
Net Change	+400	-700	+285	+2.6	-2.4	-2.4

As an alternative to the use of the Inner Harbor Mitigation Bank as replacement for water area lost during project construction, the Port may elect to utilize excess credits present in the Bolsa Chica Mitigation Bank in accordance with Master Plan Amendment 15. The Port will confer with the respective resource agencies for approval and concurrence to use this alternative mitigation bank option.

Turbidity from dredging could result in impacts to fish. While fish are expected to avoid the dredging areas, fish exposed to suspended sediments in the laboratory have been shown to exhibit lethal and sublethal effects. In addition, excavation, placement of riprap, bulkheads, and docks will result in water quality effects similar to those described for dredging activities. These effects, which are largely related to turbidity, are considered adverse but temporary in nature. Studies (MEC Analytical Systems 1988) show that channel dredging, and landfill operations in the early 1980s did not have significant effects on fish populations. There has been no observed mortality of fish in the Los Angeles Harbor as a result of dredging activities associated with the Deep Draft Navigation Improvements Project (Pier 400).

Fish could also be subjected to toxic effects from re-suspended contaminants. As discussed above, recent chemistry analyses of the sediments to be dredged indicate that significant biological impacts are not expected from their re-suspension.

The noise and disturbance associated with dredge activities could cause fish to avoid these areas. These impacts are not expected to be significant because noise and disturbance from boat traffic and other activities in Los Angeles Harbor is an ambient condition.

Water and sediment quality in the project area will be marginally improved by the removal of the top layer of sediment that, in some areas, contains the buildup of sediment and sediment contaminants. Sediments serve as a reservoir for contaminants in the aquatic environment. Contaminants enter the system from terrestrial sources such as stormwater runoff and aerial deposition and are absorbed onto the sediments. Contaminants are then held in the system and build up over time. Dredging and disposing of these sediments removes the contaminants from the system and results in a healthier environment.

Project implementation will result in an increase in the amount of bulkheads, docks, and pilings (Table 3.10-1). However, the project area is highly modified from previous dredging and filling operations, and from marina development (including riprapped shorelines). The project area has been developed for a long period of time and the existing conditions of the region are degraded by current uses, structures, and urbanization. To offset some of the impacts that have occurred in the area over time, existing creosote guide piles, which can leach out creosote into the environment, will be replaced with concrete piles.

Benthic Habitats and Biota

Landfill as part of project construction, will result in the loss of 2.4 acres of bottom area (Table 3.10-1). It is proposed that the habitat will be replaced through use of the LAHD's Inner Harbor Mitigation Bank (LAHD 1984). Because loss of benthic habitat will be offset by the Inner Harbor Mitigation Bank, there will be no net loss of benthic habitat in the Inner Harbor as a result of the proposed landfill. The potential impact of the project landfill would be significant, but is reduced to less than significant levels by prior creation of habitat in the Inner Harbor.

Dredging will directly impact approximately 6.9 acres of predominantly soft bottom sediment. Dredging will remove the benthic organisms present in the sediments. Recolonization of the new harbor bottom would begin immediately after dredging and the same or similar species composition would be expected (given time for recovery to a mature community) to that of the area prior to dredging (MEC Analytical Systems 2002). The 1988 Biological Baseline Study (MEC Analytical Systems 1988) found that areas dredged in the 1982 Channel

Deepening Program returned to a condition biologically similar to non-dredged areas. Recovery, therefore, is expected to take 6 years or less. Direct impacts of dredging on soft bottom communities are judged adverse, but temporary.

Benthic organisms in soft bottom areas adjacent to the dredging will be subjected to impacts from turbidity generated by dredging. A wide variety of lethal and sublethal effects have been recorded and include direct mortality, arrested development, reduction in growth, reduced ingestion, depressed filtration rate, increased mucous secretion, and fin rot disease. Benthic organisms exposed to turbidity could be buried by suspended sediment or be subjected to other lethal or sublethal effects. Benthic recovery of communities exposed to turbidity would be expected to be rapid (i.e., less than a year).

Excavation and the placement of riprap, bulkheads, and docks will result in water quality effects similar to those described for dredging activities. These effects, which are largely related to turbidity, are considered adverse but temporary in nature.

Benthic organisms in soft bottom areas adjacent to the dredging could be impacted by re-suspension of toxic constituents in the sediments. Recent chemistry analyses of the sediments to be dredged indicate that significant biological impacts are not expected from their re-suspension (LAHD 1998). In addition, standard monitoring requirements by the LARWQCB will be imposed as part of the Waste Discharge Requirements for the dredging. Monitoring requirements are based on regulations designed to prevent significant damage to the aquatic environment.

The impact of turbidity on benthic communities would be adverse but temporary and the project would result in the loss of habitat. Project construction will result in a change to the amounts of habitat permanently available to marine organisms. However, compliance with the permit requirements and habitat mitigation (mitigation measure MM BIO-6 below) will reduce impacts to less than significant levels.

Kelp Beds and Eelgrass

Kelp (*Macrocystis*) bed communities are sensitive to turbidity; however, there are no kelp beds in the project area. The closest kelp beds are found in the Outer Harbor and lie far enough away from the proposed project site that turbidity (as a result of dredging) would not impact them.

Likewise, eelgrass beds are far enough away from the project site that it is unlikely turbidity would affect them. In addition, the layout of the breakwater for Cabrillo Marina Phase I would serve as a barrier even if a turbidity plume somehow moved beyond the immediate areas of the dredging and landfill regions.

Increased Contamination

At full buildout, the project would have minimal impacts to water quality and sediments. The only planned discharge is stormwater runoff, which is contingent upon installation of control systems to ensure permit compliance. The potential for accidental spills of hazardous materials during construction and the potential spills from the fuel dock would be minimized through the implementation of spill prevention plans. Accidental spills during construction, should they occur, are expected to result in minimal impacts on biological resources and habitats, because they would be contained onsite, cleaned up, and disposed of at an approved location (also see Impact WQ-3).

In the event that an accidental spill from fuel dock operations reaches harbor waters, a variety of marine organisms could be affected. Specific impacts would depend on the type (the chemical composition) and the size of the spill, the exact location of entry into the harbor, and the timing (both the season and the time of day relative to the tidal cycle), and the effectiveness of the emergency response efforts to contain and clean up the spill. Petroleum hydrocarbons soluble in water could have direct toxic effects on plankton, invertebrates, and fish exposed to the spill. Most impacts would occur in the immediate vicinity of the spill, but tidal currents could move the pollutant into the Outer Harbor. Dilution, flushing, and the evaporation of volatile materials would reduce concentrations to below-toxic levels and ultimately remove the materials from the harbor. Impacts would be local and could range from insignificant to significant, depending on the amount of material spilled, its concentration, and its toxicity. With appropriate operational controls and compliance with the various permit requirements, these events are considered unlikely and the potential impacts to biota are considered less than significant.

Dredged Material Disposal Alternatives

Several dredged material disposal alternatives are considered depending on the quality of materials being dredged. The preferred alternative is placement in Watchorn Basin landfill; however, ocean disposal and upland disposal must also be considered since the materials may not be suitable for the fill. The discussion below briefly summarizes anticipated impacts from each option.

- **Watchorn Basin landfill.** Placement of dredged material into Watchorn Basin as fill is the preferred disposal alternative, contingent on the material meeting disposal environmental and engineering criteria. Chemical and biological testing will be completed in association with this project to assure that the sediments to be dredged comply with the dredge material disposal criteria of the various regulatory agencies. Therefore, the impacts from landfill activities would not be significant.
- **Ocean disposal.** Ocean disposal of the dredge material would be considered if the material proved physically unsuitable for use in the Watchorn Basin landfill and if no other in-harbor disposal options were available. Chemical and biological testing will be completed in association with this project to assure that the sediments to be dredged comply with the dredge material disposal criteria of the various regulatory agencies. Based on existing data from the surrounding area, these sediments are expected to meet the disposal requirements of the LA-2 Offshore Dredged Material Disposal Site. Impacts to biological resources from ocean disposal would not be significant.
- **Upland disposal.** Upland disposal would only be considered if the dredge material proves unsuitable for either in-harbor fill or ocean disposal. Upland

disposal at an RWQCB-approved site would remove the dredged materials entirely from the marine environment. This disposal alternative would not impact the marine environment.

Mitigation Measures

MM BIO-6: Offset Habitat Loss with the LAHD Inner Harbor Mitigation Bank

The LAHD shall replace the loss of 2.4 acres of habitat by deducting 2.4 acres from the Inner Harbor Mitigation Bank (or the Bolsa Chica mitigation Bank, if approved).

Residual Impacts

Implementation of mitigation measure MM BIO-6 would reduce impacts to less-than-significant levels.

Cumulative Impacts

There are no other projects in the vicinity of the proposed project that, when considered together, would result in any cumulative impacts to biological resources. Similar to the proposed project, all future projects in the area would be evaluated on a project-by-project basis and would incorporate measures to reduce any potential impacts on biota and habitats. Mitigation for future projects would be expected to consist of measures such as deductions from existing mitigation banks, species conservation or relocation, habitat restoration, etc. Incorporation of these mitigation measures to other project would be expected to reduce impacts to biological resources to less than significant levels. Therefore, the project would not make a considerable contribution to the cumulative impacts related to biota and habitats.

3.10.3.4 Mitigation Monitoring Plan Summary

Impact	Mitigation Measure	Timing and Method	Responsible Parties	Residual Impacts
Impact BIO-6. The project would not result in permanent deterioration or contamination of the aquatic habitat such that the aquatic ecosystem of the harbor is substantially disrupted	MM BIO-6: O*ffset habitat loss with the LAHD inner harbor mitigation bank.* The project applicant shall replace the loss of 2.4 acres of habitat by deducting 2.4 acres from the Inner Harbor Mitigation Bank or the Bolsa Chica Mitigation Bank, if approved.	**Timing:** Prior to construction. **Methods:** Deduction of habitat from the inner harbor mitigation bank or Bolsa Chica Mitigation Bank (if approved) would constitute replacement of habitat. The LAHD shall provide the administrative functions to accomplish this mitigation.	LAHD	Less than significant