APPENDIX K

Essential Fish Habitat Assessment

Essential Fish Habitat Assessment
Pacific Energy Partners Crude Oil Marine Terminal, Tank Farm Facilities, and Pipelines Project

Port of Los Angeles, CA

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1.0 INTRODUCTION

1.1 Study Purpose

The Port of Los Angeles is proposing construction activities for the Pacific Los Angeles Marine Terminal (PLAMT), Tank Farm Facilities, and Pipelines Project (the Project). The Project consists of the construction of a new deepwater liquid bulk marine terminal (i.e., berth) on Pier 400, new tank farm facilities on Pier 400 and on Pier 300 between Terminal Way and Seaside Avenue and pipelines necessary to transfer crude oil from the marine terminal to the tank farms and ultimately to existing oil terminals in the port (Figure 1). This Essential Fish Habitat assessment was prepared to evaluate potential impacts of the project on fish species and upon marine biological resources found in habitats in the Los Angeles Harbor area that fish utilize. Because the new terminal and associated pipelines would transfer crude oil, potential impacts to fish and these resources due to oil spills are also assessed.

1.2 Proposed Project

The proposed project includes the construction and operation of a new marine terminal at Berth 408 on Pier 400. The new Berth 408 would include breasting dolphins with trestles to shore rather than a standard wharf structure. New tank farm facilities would be constructed at Pier 400 (Tank Farm Site 1) and Pier 300 on Terminal Island (Tank Farm Site 2). Tank Farm Site 1 would be located on the southern side (Face D) of Pier 400. Tank Farm Site 2 would be located south of Seaside Avenue and west of Terminal Way on the former LAXT site. A new 42-inch diameter, high volume pipeline would be constructed to transfer crude oil from the marine terminal to the tank farms. The Project's new tank farm facilities would be connected to the existing ExxonMobil Southwest Terminal on Terminal Island, the existing Ultramar/Valero Refinery on Anaheim Street near the Terminal Island Freeway, and to other Plains pipeline systems near Henry Ford Avenue and Alameda Street via new and existing 36-inch, 24-inch, and 16-inch pipelines. Oil tankers would utilize the new berth to offload crude oil via the pipeline system to the new tank farm facilities and ultimately the existing oil terminals on Terminal and Mormon Islands. The Project would have a crude oil tank storage capacity of 4.0 million barrels of oil (bbl).

Project activities that may directly impact the marine environment are limited to the construction of the new berth structures, a platform to support the Alternative Marine Power (AMP) facilities, and a second platform designed to support potential future installation of the Advanced Maritime Emissions Control System (AMECS) crane, all of which would involve driving support piles into the seafloor. All other construction activities are terrestrial in nature and would not directly impact the marine environment. Because the new terminal and associated pipelines would transfer crude oil, potential impacts to the marine environment may occur in the event of oil spills.

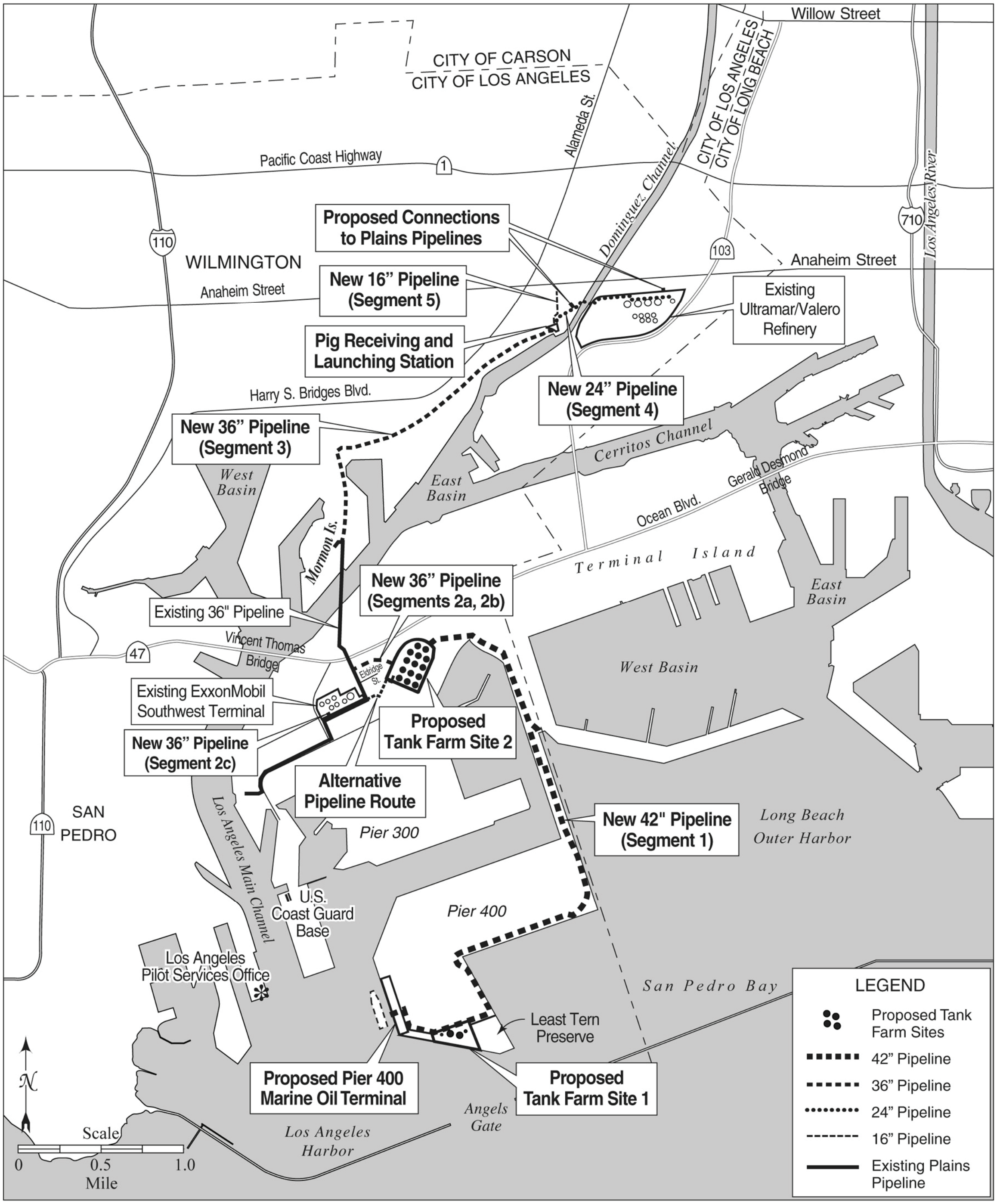

Figure 1. Schematic of the Proposed Project.

2.0 ESSENTIAL FISH HABITAT ASSESSMENT

Essential Fish Habitat is managed under the Magnuson Fishery Conservation and Management Act (Magnuson Act). This act protects waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (Magnuson-Stevens Act, 16 U.S.C. 1801 et seq.). Substrates include sediment, hard bottom, structures underlying waters, and associated biological communities (NMFS 2005). For example, eelgrass is considered Essential Fish Habitat for some managed species.

Based on results from the 2000 Baseline Study, there are 19 managed fish species that have been observed within the Los Angeles Harbor including four managed coastal pelagic fish species (northern anchovy, Pacific sardine, Pacific (chub) mackerel, and jack mackerel) and fifteen managed Pacific coast groundfish species (Table 1). Of these species, the most abundant is the northern anchovy, while the Pacific sardine, Pacific mackerel, and jack mackerel were also found to be moderately abundant in 2000. While none of the Pacific coast groundfish species were abundant in the outer harbor, Pacific sanddab were only slightly less abundant than the mackerels.

The potential impacts resulting from construction of the new berth and associated structures are expected to be minimal and temporary to the five managed fish species demonstrating moderate to high abundance in the Los Angeles Harbor. During construction activities, should any individuals of these managed pelagic or groundfish species (northern anchovy, Pacific sardine, Pacific mackerel, jack mackerel, and Pacific sanddab) occur within the immediate vicinity of the project area they would relocate to another area of open water, to avoid disturbances caused by pile driving, or excessive noise or light. As indicated in Chapter 2 of the SEIS/SEIR, at the current design stage it is not certain whether mooring dolphins for the proposed Project would require steel and/or pre-stressed concrete piles. However, present considerations are that both “Option 1” and “ Option 2” would use steel and pre-stressed concrete piles, with more steel piles for Option 1 (110 steel + 40 concrete) compared to Option 2 (74 steel + 184 concrete). The increase in noise would be less for pile driving associated with concrete piles. However, regardless of whether steel or concrete piles would be used a brief relocation of individuals represented by these transient species would not result in biologically significant impacts to their populations with regard to competition, predation, or spawning.

A moderate to large oil spill (greater than 238 bbl), while unlikely, could have an impact on the five managed fish species demonstrating moderate to high abundance in Los Angeles Harbor. Research on the life history and reproduction strategies of these species, discussed below, provided insight into the most susceptible managed fishery. Specifically, the northern anchovy is found along the Pacific coast; however, anchovies are well known to enter bays and inlets to feed on organisms such as copepods and sometimes to spawn, thus leaving their offspring to develop in these protected areas (Hunter and Goldberg 1980; Whitehead et al. 1988). Because a large number of adult and larval anchovies were found in Los Angeles Harbor (relative to other species present in the harbor) during the 2000 Baseline Study, of all of the managed species, individuals of this species would be the most likely to be affected by a large oil spill.

Table 1. Managed Fish Species Within Habitats of the Long Beach and Los Angeles Harbors

Common Name	*Scientific Name*	*Notes*
Coastal Pelagics Fishery Management Plan		
Northern anchovy	*Engraulis mordax*	Abundant throughout harbor in 2000[1]
Pacific sardine	*Sardinops sagax*	Common throughout in harbor in 2000[1]
Pacific (chub) mackerel	*Scomber japonicus*	Common throughout harbor in 2000[1]
Jack mackerel	*Trachurus symmetricus*	Common in inner to middle harbor and uncommon in Outer Harbor, primarily in deep water[1]
Pacific Coast Groundfish Fishery Management Plan		
English sole	*Parophrys vetulus*	Rare, 2 collected in Outer Harbor in 2000[1]
Pacific sanddab	*Citharichthys sordidus*	Common, primarily Outer Harbor deep water areas in 2000[1]
Leopard shark	*Triakis semifasciata*	Rare, 3 collected, all in shallow water[1]
California skate	*Raja inornata*	Uncommon, Outer Harbor in shallow water[1]
Big skate	*Raja binoculata*	Uncommon, primarily in shallow water[1]
Black rockfish	*Sebastes melanops*	Uncommon, primarily in Cabrillo Shallow Water Habitat[1]
Kelp rockfish	*Sebastes atrovirens*	Rare, in kelp along breakwater[2]
Calico rockfish	*Sebastes dalli*	Rare, 1 collected in Long Beach Harbor[4]
Vermillion rockfish	*Sebastes miniatus*	Rare, 4 collected in deep inner to middle harbor waters[1]
California scorpionfish	*Scorpena guttatta*	Common in rock dikes and breakwaters, also on soft bottom at night[1-4]
Grass rockfish	*Sebastes rastrelliger*	Rare, 2 collected in Pier 300 Shallow Water Habitat and 1 in Long Beach Harbor[1]
Olive rockfish	*Sebastes serranoides*	Common, juveniles in kelp around breakwater[2]
Bocaccio	*Sebastes paucispinis*	Uncommon, juveniles in kelp around breakwater[2]
Cabezon	*Scorpaenichthys marmoratus*	Rare, shallow water[1]
Lingcod	*Ophiodon elongatus*	Rare, shallow water[1]
Source 1. MEC 2002; 2. MEC 1999; 3. MEC 1988; 4. SAIC and MEC 1997		

Like the anchovy, Pacific sardine, Pacific mackerel, and jack mackerel are coastal fish species that feed on planktonic organisms (Froese and Pauly 2005). However, in contrast to the anchovy, these species spawn offshore, in the open water areas, and their larvae primarily develop as part of the pelagic plankton in the Pacific Ocean, using kelp forests and ocean piers as shelter from predators (Fitch 1974; Collette and Nauen 1983; Kailola et al. 1993). In addition, no larvae of sardine, Pacific mackerel, and jack mackerel were found in the Los Angeles or Long Beach Harbors in the 2000 Baseline Study and the abundances of adults were also substantially lower than that of the anchovy (less than 0.15% of the total fish caught) (MEC Analytical Systems Inc., 2002). Due to the ability of the adult Pacific sardine, Pacific mackerel, and jack mackerel to relocate from an oil-contaminated area, and the lack of their larvae and eggs within the harbors, it is unlikely that a large oil spill would impact these fisheries in the long-term; however, short-term effects of oil exposure may be experienced some individuals within the area of the spill.

The effects of an oil spill on the Pacific sanddab would likely be similar to that of the Pacific sardine, Pacific mackerel, and the jack mackerel, because of their low abundance in Los Angeles Harbor. Specifically, only five sanddab eggs were found in the 2000 Baseline Study and no larvae were detected. In addition, Pacific sanddab larvae are known to develop as part of the open water or pelagic plankton in the Pacific Ocean, and not within bays or inlets such as the Los Angeles Harbor (Materese et al. 1989). Finally, Pacific sanddab juveniles and adults prefer sandy sediment found along the coast over fine sediment, such as that found near Pier 400 (Froese and Pauly 2005). These findings indicate that while Pacific sanddabs may enter Los Angeles harbor, their presence is only transitory because of their preference for coastal habitats.

3.0 IMPACTS TO BIOLOGICAL RESOURCES

3.1 Impacts Resulting From Construction Activities

Activities associated with the construction of a new berth and associated structures on Pier 400 that may affect biological resources important to managed fish species in Los Angeles Harbor would involve pile driving (steel and/or pre-stressed concrete piles) for berth construction. All other construction activities are terrestrial in nature and would not directly impact the marine environment.

The habitat found in the area of the proposed berth construction is an open, deepwater habitat with soft bottom sediment comprised of silt and clay. Adjacent is the sloping, rocky fill containment dike of Pier 400. Marine resources including benthic infaunal organisms and macroinvertebrates that live in the soft bottom habitat near Pier 400 as well as subtidal invertebrates on the rocky dike habitat would likely be disturbed during the construction effort. Specifically, a small amount of the benthic infauna (e.g., polychaete worms, crustaceans, and molluscs), as well as the macroinvertebrates found near Pier 400 (i.e., black spotted shrimp, tuberculate pear crab, Xantus' swimming crab, etc.) would be lost within the footprint of the piles being driven and the rock placed around the base of these piles. Suspension of sediments during in-water construction could also have sublethal to lethal effects on the invertebrates immediately adjacent to the work. This impact, however, would be temporary given the relative abundance, rapid colonization rates, and movement of at least some individuals of these species. The soft bottom habitat lost would be replaced by hard substrate habitat on the bottom (rock) and in the water column (piles).

Fish eggs and larval, juvenile fish, and adult fish would likely experience few effects due to construction activities. Fish eggs and larval fish are primarily found in the water column in this area and are dispersed by water movement, while juvenile and adult fishes have the ability to move to avoid the disturbance during construction activities. Short-term water quality impacts (e.g., turbidity) may slightly affect resident fishes; however, these impacts would likely have no effect on the success of fish populations due to the ability of the juvenile and adult fishes to relocate to other areas, and the constant water replenishment that occurs in harbors and bays which transports fish larvae and eggs to various areas within harbors. A brief relocation of these transient species would not result in biologically significant impacts with regard to competition, predation, or spawning.

Other effects of the construction of the new berth and associated structures at Pier 400 include the unnatural occurrence of light and noise. Both would be short-term during construction activities. It is unlikely that these effects would lead to reduced survival, and if so, only a small percentage of individuals within fish populations would be affected.

Construction of a temporary mooring adjacent to staging area 412 on Pier 400 would result in short-term disturbances from driving and removing piles and mooring of barges/ships to unload gravel for the stone columns. These disturbances would be less than for berth construction and would have no adverse effects on individuals of managed fish species.

3.2 Impacts Resulting From Project Operations

Effects of Structures

A potential long-term effect of the new berth on biological resources would be an inconsequential amount of shading that would result from the very small surface area represented by breasting dolphins, mooring dolphins, walkways, and trestles connecting them to shore, as well as the platforms to support the AMECS and AMP facilities for air quality mitigation. However, neither kelp nor eelgrass is found within the proposed berth construction site and the inconsequential shading would not affect biological populations or communities. Also in the long-term, the pilings and rock installed as part of the new berth would provide substrate for riprap organisms such as barnacles and thus could benefit fish populations within Los Angeles Harbor.

Effects of Vessel Traffic

Up to 201 oil tankers would visit the new berth each year. This represents a small increase in vessel traffic in the Port of Los Angeles that would not adversely affect individuals of the managed fish species present because it would be less than one vessel call per day and the transit distance within the harbor would be short from Angels Gate to the new berth on Pier 400.

Effects of Oil Spills

The new terminal, pipelines, and tank farm facilities associated with the new berth at Pier 400 would transfer crude oil from tanker ships to onshore processing facilities. Marine biological resources and fish in Los Angeles Harbor may be affected if an oil leak or spill were to occur and enter harbor waters.

Small oil leaks from the pipelines or at the tank farm facilities would occur on land and are unlikely to enter Harbor waters. Berms surrounding the tanks would be designed to contain spills from the tanks, and the pipelines would be buried for nearly all of their distance. A spill containment boom would be placed around each tanker prior to unloading of oil. This boom would contain small spills during offloading, and these would be cleaned up immediately. Oil spilled at the berth could contaminate the berth pilings near the water surface as well as the intertidal zone of the Pier 400 shoreline within the area defined by the ends of the containment boom. Oil spilled in the immediate Berth 408 area that contacts rip rap in the shoreline dike or pier pilings could be difficult to recover completely, and residual oil could represent a source for hydrocarbons to Harbor waters for periods of weeks to months depending on the rate of oil degradation (i.e., weathering). Oil spills into Harbor waters could also occur from accidents during vessel transit to the berth. Crude oil spilled into Harbor waters would float on the surface. The surface area affected would depend on the size of the spill, type of oil, direction of tidal currents, and weather (particularly wind) at the time of the spill. Small spills associated with tanker transit and unloading at the berth that result in oil contamination in the marine environment near Pier 400 would not likely be detrimental to populations of organisms inhabiting deepwater habitats due to the small area affected and rapid cleanup of the oil on the water surface. The volatile components of the oil would evaporate, although some of these components would dissolve in the water. A summary of the fate of spilled oil (Cox et al. 1980) indicated that most of the volatile components evaporate with only a small fraction going into solution. Only the latter would be likely to adversely affect marine organisms due to toxicity. Although diffusion and mixing would rapidly dilute these components, sublethal to lethal effects on planktonic organisms near the surface under the oil slick could occur. Residual oil that cannot be removed from oiled pilings or riprap could leach into Harbor waters, creating an oil sheen, over a period of weeks to months. However, due to weathering, the oil is likely to be depleted in the lower molecular weight aromatic compounds that have the greatest toxicity. Therefore, the toxicity to planktonic organisms associated with an oil sheen would be low.

In most cases, small spills of oil would not be detrimental to managed fish populations because few individuals within a population would be affected. The northern anchovy is the only species in which more than a few individuals could be affected due to their numerical abundance in the harbor, presence of eggs and larvae at some times of the year, and schooling behavior near the water surface. This is a common species that is very abundant in coastal areas outside the harbor as well, and loss of some individuals within the harbor would not adversely affect populations in the region. Similarly, loss of some plankton (not fish eggs or larvae) under the spilled oil would not substantially reduce the amount of food available to anchovies or any other species of fish due to the small area affected and rapid regeneration of plankton.

It is very unlikely that a large oil spill would occur near Pier 400 as a result of oil transport activities to the proposed berth for several reasons. Specifically, double hulled vessels would be required for transporting oil into the Port of Los Angeles (Port), such that if the primary storage container leaks, the secondary containment prevents further leakage of the oil to the marine environment. As noted above, oil booms would be utilized to surround the vessel while at dock to help contain any spills that could potentially occur during offloading of crude oil. Also, as part of an emergency response system, companies specializing in oil spill emergencies are contracted with the Port to minimize the spread of oil spills and any detrimental effects they may have on marine biological resources.

However, should a large spill occur, planktonic organisms under the oil slick would likely suffer mortality as well as sublethal effects. Planktonic organisms known to be highly sensitive to the toxic (volatile) components of oil include fish larvae and eggs. Short-term exposure may cause impaired growth, abnormal development, or mortality of fish larvae and eggs that could subsequently reduce fish population size. As described above for small spills, even a large spill would be unlikely to affect enough northern anchovy eggs and larvae to result in a regional population reduction. Because most crude oil does not readily sink, benthic organisms (including fish) in the Pier 400 vicinity, as well as other areas in the harbor that could be affected by a large spill, would not likely be affected by an oil spill in the short-term. Rapid cleanup of the spilled oil would reduce the potential for weathered oil to sink and potentially affect benthic organisms. Furthermore, most of the volatile components would have evaporated from the oil before it sinks, thereby reducing its toxicity. In addition, the oil that sinks would be very thick and would most likely be in the form of tar balls that would not coat the bottom or adversely affect benthic organisms that provide forage for fish. Although, a large oil spill would likely spread to other areas of the Port, direct and indirect effects on habitats important for managed fish species and individuals of managed species would not adversely affect sustainable fisheries for the reasons described above. Additional impacts to EFH could occur as a result of large-scale spill cleanup activities. The extent and magnitude of impacts would depend on the cleanup methods used (e.g., physical collection and removal or chemical dispersants). Cleanup methods are closely evaluated by the on-scene spill coordinator based on a number of site and spill-specific conditions, including potentials for spill cleanup activities to reduce or exacerbate impacts to biological resources.

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