

**APPENDIX S.14**

**MARINE SPECIES BIOLOGICAL ASSESSMENT**

**CLEARWATER PORT PROJECT**

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## APPENDIX S.14 MARINE SPECIES BIOLOGICAL ASSESSMENT

This Biological Assessment for marine species is in support of the proposed Clearwater Port Project (Project). Clearwater Port LLC is proposing to construct Clearwater Port, an offshore Liquefied Natural Gas (LNG) receiving terminal and regasification facility 12.6 miles off the coast of Ventura County, California. The project involves the installation of two parallel floating docks (berthing facilities) for mooring of LNG carriers, an LNG offloading and transfer system, the conversion of the existing Platform Grace into a regasification facility, installation of a new pipeline parallel to an existing offshore pipeline corridor to bring the gas to shore at an existing industrial facility, and delivery of gas into the existing Southern California Gas Company (SCGC) pipeline infrastructure via a series of new onshore pipelines. The basic offshore/nearshore components of the project are as follows:

- An Offset Dual Berth (ODB) Satellite Service Platform (SSP) Floating docking system to be installed adjacent to Platform Grace;
- A carrier-to-platform cryogenic LNG transfer system utilizing an LNG unloading arm equipped with Emergency Release Coupling (ERC) safety systems;
- The conversion of Platform Grace to an LNG receiving and regasification facility;
- A new 36-inch diameter natural gas pipeline to transport the vaporized natural gas from the platform to shore; and
- Gas receiving and metering facilities at the Reliant Mandalay Generating Station;

The project site is within the Southern California Bight (SCB), which is a region that encompasses the marine waters from Point Conception, at the east end of the Santa Barbara Channel, to a point just south of the border between the United States and Mexico. The purpose of this assessment is to identify and characterize the special status marine wildlife (invertebrates, fish, birds, reptiles, and mammals) that could occur in the marine waters of the project site.

### S.14.1 REGULATORY BASIS

Endangered and threatened marine wildlife species off the coast of California are protected by the Endangered Species Act of 1973 (Section 9 and implementing regulations 50 CFR Part 17). The Endangered Species Act makes it unlawful to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect an endangered species, or to attempt to engage in any such conduct. A person violating the provisions of the Act and regulations is subject to a fine and imprisonment. An “endangered species” is any species, which the Secretaries of the Department of the Interior and/or the Department of Commerce determine is in danger of extinction throughout all or a portion of its range. A “threatened species” is any species, which the Secretaries determine is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The United States Fish and Wildlife

Service (USFWS) and National Marine Fisheries Service (NMFS) are responsible for implementation of the Endangered Species Act.

In addition to the Endangered Species Act, NMFS is also responsible for enforcing the Marine Mammal Protection Act of 1972 (MMPA), which protects all marine mammals within U.S. waters. Specifically, the MMPA prohibits the intentional killing or harassment of these marine mammals; however, incidental harassment, with authorization from the appropriate federal agency, may be permitted.

Consistent with the requirements of Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act, an Essential Fish Habitat Assessment (EFHA) that addresses which species of managed fish and invertebrate taxa could occur within the project area and, in accordance with 50 CFR 600.920(g)(2), what are the potential impacts that the proposed action could have on the habitat that is considered essential to those species.

## **S.14.2 SPECIAL STATUS MARINE SPECIES**

### **S.14.2.1 Invertebrates and Fish**

**Invertebrates.** Within the water depths and zoogeographic area of the project, only one special status marine invertebrate, the white abalone (*Haliotis sorenseni*), a federally endangered mollusk, would be expected. Following the closure of the fishery for this species in 1996, it was listed as endangered in 2001. NOAA Fisheries (2002) states that the white abalone is considered a deep-water mollusk, usually found in water depths of from 80 to over 200 ft (24 to 61 m), however offshore Santa Barbara County, individuals have been reported on rocky substrate in less than 20 ft (6.1 m) of water (L. A. de Wit, 2001). This species lives on rocky substrates and is herbivorous, feeding on encrusting and erect algae. Because it broadcast spawns, relatively dense aggregations of adults are necessary for successful egg fertilization. Eggs hatch within one day of fertilization, and after one to two weeks the free-swimming larvae settle to seafloor (Cox, 1960). The white abalone grows to approximately 0.8 ft (25 cm), but are usually 0.4 to 0.7 ft (10 to 20 cm) in diameter (NOAA Fisheries, 2002). The review period for the draft recovery plan (NOAA Fisheries, 2006c) ended in December 2006 and final revisions are currently being completed. Specific measures to facilitate the recovery of *H. sorenseni* have not yet been, but will be identified in that final plan.

Data collected during the 2003 and 2005 side scan sonar and geophysical surveys by Fugro West indicates that the seafloor from Platform Grace shoreward to a water depth of 18 ft (5.5 m), the inshore limit of those surveys, is sedimentary. The seafloor mosaic map developed from the Fugro West 2005 survey of the proposed pipeline route does not indicate any rock features within the survey corridor, although five isolated 50 to 900 ft- (15 to 27- m) long areas of coarse grained material were noted in the offshore-most 2.3 miles (3.7 km) of the survey area (water depths within that area range from 180 to 312 ft (55 to 95 m).

Diver observations of the nearshore area by Ecosystems Management in March of 2000 indicate the surficial sediments to be coarse sand with possibly a more consolidated sub-bottom

layer, which was characterized as possibly containing more silts and clays, but was not a hard substrate such as bedrock or boulder cobble. The additional solid substrate provided by the new pipeline within the documented water depths preferred by the white abalone could be considered a beneficial result of the project.

A project-specific survey of the seafloor habitats within the proposed SSP mooring area was completed in October 2006. Utilizing an ROV, video images of the seafloor habitat along a series of transects that traversed the shell mound, transition zone, and natural bottom habitats were collected. Around the jacket leg and extending to the west and northwest of the platform, is a 94,600 ft<sup>2</sup> (8,788 m<sup>2</sup>) area of exposed shell debris (defined for this report as the area of seafloor that has more than 50% exposed shell debris). That habitat supports a relatively diverse macroepibiota, and the shell debris is sufficiently exposed to provide attachment locations for epibiota including anemones and solitary and gorgonian corals.

The transition zone (for this report defined as seafloor with at least 10% exposed shell material) is estimated to extend approximately 490 ft (150 m) to the west and northwest of the exposed shell habitat and covers an estimated 240,100 ft<sup>2</sup> (22,300 m<sup>2</sup>). Natural sediment, consisting of a surficial cover of fine silts and clays, covered the westernmost portion of the survey area and covered approximately 80% of the entire survey area.

Although this species' depth and zoogeographic ranges include the project site, the lack of rock substrate within this area makes it unlikely to occur within the pipeline corridor. Platform Grace is in water depths that exceed *H. sorenseni*'s documented range. While the submerged portions of the platform provide hard substrate, the abundance of epifauna including mussels, barnacles, and anemones and the paucity of food sources (algae) make it unlikely that abalone would survive on those structures.

**Fish.** Fish distribution and habitat information in Miller and Lea (1972) and Leet, *et al.* (eds.), 2001 was used to estimate which of the species listed in NOAA (1998) could occur in the area. Because marine operations are limited to the -40 ft isobath, species either not occurring in southern California or in water depths of less than 40 feet are not included in Table S.14-1. Habitat, depth range, and zoogeographic distribution data were also used to estimate the relative importance of the habitat of the structures and the surrounding area for the managed species included in Table S.14-1.

The species listed in Table S.14-1 include taxa that have a zoogeographic and water depth distribution within the project boundaries (water depths of 40 to 320 ft). Based on those criteria, a total of 71 taxa, including five from the Coastal Pelagics, three from the Pacific Salmon, 62 from the Pacific Groundfish, and one from the Pelagic Fishery (Marketable Temperate Species) groups provided in NOAA (1998), could potentially occur within the project area.

**Table S.14-1. List of Managed Taxa Potentially Occurring Within the Project Area**

Common Name	Scientific Name	Common Name	Scientific Name
<b>COASTAL PELAGICS</b>			
Northern anchovy	<i>Engraulis mordax</i>	Pacific sardine	<i>Sardinops sagax</i>
Pacific mackerel	<i>Scomber japonicus</i>	Jack mackerel	<i>Trachurus symmetricus</i>
Market squid	<i>Loligo opalescens</i>		
<b>PACIFIC SALMON</b>			
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	Coho salmon	<i>Oncorhynchus kisutch</i>
Pink salmon	<i>Oncorhynchus gorbuscha</i>		
<b>PACIFIC GROUND FISH</b>			
Butter sole	<i>Isopsetta isolepis</i>	Flathead sole	<i>Hippoglossoides elassodon</i>
Curlfin sole	<i>Pleuronichthys decurrens</i>	Dover sole	<i>Microstomus pacificus</i>
English sole	<i>Parophrys vetulus</i>	Petrale sole	<i>Eopsetta jordani</i>
Rex sole	<i>Glyptocephalus zachirus</i>	Rock sole	<i>Lepidopsetta bilineata</i>
Pacific sanddab	<i>Citharichthys sordidus</i>	Sand sole	<i>Psetichthys melanostictus</i>
Arrowtooth flounder	<i>Atheresthes stomias</i>	Ratfish	<i>Hydrolagus coliei</i>
Starry flounder	<i>Platichthys stellatus</i>	Soupin shark	<i>Galeorhinus zyopterus</i>
Leopard shark	<i>Triakis semifasciata</i>	Big skate	<i>Raja binoculata</i>
Spiny dogfish	<i>Squalus acanthias</i>	Pacific ocean perch	<i>Sebastes alutus</i>
Shortbelly rockfish	<i>Sebastes jordani</i>	Widow rockfish	<i>Sebastes entomelas</i>
Bank rockfish	<i>Sebastes rufus</i>	Calico rockfish	<i>Sebastes dallii</i>
Black rockfish	<i>Sebastes melanops</i>	Black-and-yellow rockfish	<i>Sebastes chrysomelas</i>
Blue rockfish	<i>Sebastes mystinus</i>	Bocaccio	<i>Sebastes paucispinis</i>
Brown rockfish	<i>Sebastes auriculatus</i>	Canary rockfish	<i>Sebastes pinniger</i>
Copper rockfish	<i>Sebastes caurinus</i>	Gopher rockfish	<i>Sebastes carnatus</i>
Grass rockfish	<i>Sebastes rastrelliger</i>	Kelp rockfish	<i>Sebastes atrovirens</i>
Olive rockfish	<i>Sebastes serranoides</i>	Treefish	<i>Sebastes serriceps</i>
Yellowtail rockfish	<i>Sebastes flavidus</i>	California scorpionfish	<i>Scorpaena guttata</i>
Cabezon	<i>Scorpaenichthys marmoratus</i>	Canary rockfish	<i>Sebastes pinniger</i>
Chilipepper	<i>Sebastes goodei</i>	China rockfish	<i>Sebastes nebulosus</i>
Cowcod	<i>Sebastes levis</i>	Darkblotched rockfish	<i>Sebastes crameri</i>
Flag rockfish	<i>Sebastes rubrivinctus</i>	Greenblotched rockfish	<i>Sebastes rosenblatti</i>
Greenspotted rockfish	<i>Sebastes chlorostictus</i>	Greenstriped rockfish	<i>Sebastes elongatus</i>
Honeycomb rockfish	<i>Sebastes umbrosus</i>	Pink rockfish	<i>Sebastes eos</i>
Rosy rockfish	<i>Sebastes rosaceus</i>	Speckled rockfish	<i>Sebastes ovalis</i>
Squarespot rockfish	<i>Sebastes hopkinsi</i>	Starry rockfish	<i>Sebastes constellatus</i>
Stripetail rockfish	<i>Sebastes saxicola</i>	Vermilion rockfish	<i>Sebastes miniatus</i>
Yelloweye rockfish	<i>Sebastes ruberrimus</i>	Yellowtail rockfish	<i>Sebastes flavidus</i>

**Table S.14-1. (Continued)**

Common Name	Scientific Name	Common Name	Scientific Name
Shortspine thornyhead	<i>Sebastolobus alascanus</i>	Pacific cod	<i>Gadus macrocephalus</i>
Lingcod	<i>Ophiodon elongatus</i>	Kelp greenling	<i>Hexagrammos decagrammus</i>
Sablefish	<i>Anoplopoma fimbria</i>	Pacific whiting	<i>Merluccius productus</i>
HIGHLY MIGRATORY SPECIES			
Swordfish	<i>Xiphias gladius</i>	Albacore tuna	<i>Thunnus alalunga</i>
Dolphinfish	<i>Coryphaena hippurus</i>	Bigeye tuna	<i>Thunnus obesus</i>
Common thresher shark	<i>Alopias vulpinus</i>	Bluefin tuna	<i>Thunnus thynnus</i>
Shortfin mako shark	<i>Isurus oxyrinchus</i>	Yellowfin tuna	<i>Thunnus albacares</i>
Blue shark	<i>Prionace glauca</i>	Skipjack tuna	<i>Euthynnus pelamis</i>

Schroeder (1999) reports the results of multiple surveys of the fish associated with nine oil and gas platforms in the Santa Maria Basin and Santa Barbara Channel, including Platform Grace. Her data suggest that while several of the managed species were observed around the submerged section of the platform, the most abundant was the Pacific sardine (*Sardinops sagax*) a pelagic species that would not rely upon the platform as an essential habitat. Juvenile rockfish (*Sebastes* spp.) were relatively common, but were not as abundant as at other platforms within the area.

Using a submersible, Love, Caselle, and Snook (1999) recorded and compared the fish community at seven offshore platforms and their associated shell mounds. The results of that study indicate that more fish were observed around Platform Grace and its shell mound than any of the other six sites sampled. The halfbanded rockfish (*Sebastes semicinctus*) and the striped surfperch (*Cymatogaster aggregata*), neither of which are included in NOAA (1998) list of managed species, were the most abundant at the platform and shell mound, respectively. Nine species of managed groundfish, including eight rockfish taxa and one flatfish, were observed around the platform, however none were considered abundant. The most commonly observed managed species at Platform Grace was the widow rockfish (*Sebastes entomelas*).

Love, et al. (2003) report the results of six years' of diver and submersible observations (1996 through 2001) on the fish community associated platforms within southern California, including Platform Grace. Dominant mid-depth fishes observed in that study included juvenile widow rockfish (*Sebastes entomelas*), while squarespot and blue rockfish (*Sebastes hopkinsi* and *S. mystinus*), and unidentified species rockfish were also common within those water depths. That report also indicates that the near-bottom portion of the platform supported an ichthyofauna characterized by juvenile widow rockfish, and adult calico, vermilion, and halfbanded rockfish (*Sebastes dalli*, *S. miniatus*, and *S. semicinctus*, respectively); the sharpnose surfperch (*Phanerodon atripes*) was also common within the deeper portion of Platform Grace. Two species, halfbanded rockfish and shiner surfperch (*Cymatogaster aggregata*) accounted for 86.5% (5,184 of 5,992 individuals) of the total fish observed on the shell mound at Platform Grace during that six-year study. Young of the year and juvenile

boccacio (*Sebastes paucispinis*), a depleted species, were relatively abundant in the mid- and bottom-depth areas of Platform Grace during the 1999 and 2000 surveys respectively (Love et al., 2003).

### Special Status Fish Occurring Within Project Vicinity

*Steelhead (Oncorhynchus mykiss)*. The Southern California steelhead Evolutionarily Significant Unit (ESU) was listed as an endangered species in August 1997 (62 FR 43937). As discussed in the final listing determination, this ESU is considered to be at a high risk of extinction based on the results of the National Marine Fisheries Service (NMFS) West Coast Steelhead Status Review (Busby et al., 1996). Historically, steelhead occurred as far south as northern Baja California. Estimates of pre-1960s abundance for several rivers in this ESU (i.e. Santa Ynez, Ventura, Santa Clara, and Malibu Creek) suggest that individual steelhead populations numbered in the thousands of individuals. Published historic annual spawning estimates for the Santa Clara River, for example, ranged from 7,000-9,000 fish. At the time of NMFS' final listing determination in 1997, the total run size for several streams in the ESU (e.g., Santa Ynez, Ventura River, Santa Clara River, and Malibu Creek) was estimated to number fewer than 200 individuals each.

Recent information regarding steelhead abundance for the Santa Ynez, Ventura, and Santa Clara Rivers suggests that the abundance estimates made at the time of the final listing determination were probably high. The recent capture of juvenile and adult steelhead in fish traps at the Freeman Diversion indicates steelhead are currently spawning in the Santa Clara River system (likely in Sespe Creek).

*Green sturgeon (Acipenser medirostris)*. In April 2006 NOAA Fisheries published a draft finding that the southern population unit (south of the Eel River) of this species was federally threatened. The final rule is expected in July 2006. The green sturgeon can reach 7 ft (2.1 m) in length and weigh up to 350 pounds (159 kg). Very little is known about the green sturgeon's life history, however it is an anadromous fish that spends most of its life in salt water and returns to spawn in fresh water. In North America, green sturgeon are found from Ensenada, Mexico, to Southeast Alaska. They are not abundant in any estuaries along the Pacific coast, although they are caught incidentally in the estuaries by the white sturgeon fishery (Pacific Fisheries Management Council [PFMC], 1996). Miller and Lea (1972) indicate that this species is found in water depths of up to 400 ft (122 m) in the ocean.

*Rockfish (Sebastes spp.)*. Many rockfish species within the eastern Pacific are considered to be over fished and/or have depleted populations. Three species: yelloweye, bocaccio, and cowcod (*Sebastes ruberrimus*, *S. paucispinis*, and *S. levis*, respectively) are either being considered candidates for listing under the ESA and/or have had substantial restrictions placed on the commercial fishery. The following discussions are based on a series of pages under the Fishbase website (Fishbase, 2005) and from Miller and Lea (1972).

The yelloweye rockfish is viviparous (give birth to live young) and the adults are usually associated with rocky reefs and boulder fields, however the young found in shallower regions.



This species usually feeds on fishes and crustaceans and is found in water depths of from 150 to 1,200 ft (46 to 365 m). Bocaccio adults are usually found over rocky reefs, but are also common on open bottoms to about 1,050 ft (320 m). Juvenile bocaccio are pelagic and settle in near shore nursery areas before moving to deeper habitats, where the young form schools. Like most rockfish, bocaccio feed mainly on fishes, including other rockfishes.

The cowcod is one of the largest Pacific rockfish and is usually found on the bottom at moderate depths, to 1,200 ft (366 m). Like the bocaccio, this species is viviparous with planktonic larvae. The juveniles are pelagic and found inshore (in water depths of 70 ft [21 m] or more) over fine sand and clay, whereas adults inhabit deeper rocky areas.

*Other Marine Fish.* Discussions on marine taxa that are managed by NOAA Fisheries and the PFMC are provided in the Essential Fish Habitat Assessment (Appendix S.2). The habitat that these species require is “protected” under the Magnuson-Stevens Fishery Conservation and Management Act, wherein all federal actions that could affect the essential habitat of these species must be assessed and if impacted, mitigated for as part of the permitting process.

**Mammals and Reptiles.** The marine mammal population off California includes eight baleen whale species; more than a dozen species of porpoises, dolphins, and other toothed whales; six species of pinnipeds; and the southern sea otter. Some species are purely migrants that pass through central and southern California waters on their way to calving or feeding ground elsewhere, some are seasonal visitors that remain for a few weeks or months, and others are resident for much or all of the year. At certain times of the year, hundreds of thousands of marine mammals may be present along the coast of central and southern California (Bonnell and Dailey, 1993).




Table S.14-2 provides a graphical representation of general occurrence periods for those species which have been determined to have the potential to occur within the nearshore and offshore regions of the project area. It is important to note, where seasonal differences occur, individuals may also be found within the area during the “off” season. Also, depending on the species, the numbers of abundant animals present in their “off” season may be greater than the numbers of less common animals in their “on” season. Abundance estimates for these species are provided in Table S.14-3.

Data on abundance is taken from line-transect surveys of marine mammals conducted by the Southwest Fisheries Science Center from 1991 to 2001 along with seven additional surveys from 1975-1997 that were compiled in the Computer Database Analysis System (CDAS) are also displayed for each species to show relative distribution (NOAA, 2005).

**Marine Mammals-Cetaceans (Whales, Dolphins, and Porpoises).** Cetaceans consist of two suborders; the odontoceti and the mysticeti. Odontocetes are toothed whales which include the sperm whale (*Physeter macrocephalus*), dolphins, porpoises, and lesser known species such as the beaked whales. Mysticetes consist of large baleen whales which feed by filtering their food through long, fringed plates.

**Table S.14-2. Marine Mammals and Reptiles and Periods of Occurrence**

Species	Month of Occurrence											
	J	F	M	A	M	J	J	A	S	O	N	D
<b>MAMMALS</b>												
<b>Mysticeti</b>												
California gray whale	■	■	■	■	■	■	■	■	■	■	■	■
Blue whale (E)	■	■	■	■	■	■	■	■	■	■	■	■
Fin whale (E)	■	■	■	■	■	■	■	■	■	■	■	■
Humpback whale (E)	■	■	■	■	■	■	■	■	■	■	■	■
Minke whale	■	■	■	■	■	■	■	■	■	■	■	■
Northern right whale	■	■	■	■	■	■	■	■	■	■	■	■
<b>Odontoceti</b>												
Short-beaked common dolphin <sup>(2)</sup>	■	■	■	■	■	■	■	■	■	■	■	■
Dall's porpoise <sup>(2)</sup>	■	■	■	■	■	■	■	■	■	■	■	■
Long-beaked common dolphin <sup>(2)</sup>	■	■	■	■	■	■	■	■	■	■	■	■
Pacific white-sided dolphin <sup>(3)</sup>	■	■	■	■	■	■	■	■	■	■	■	■
Risso's dolphin	■	■	■	■	■	■	■	■	■	■	■	■
Sperm whale	■	■	■	■	■	■	■	■	■	■	■	■
Short-finned pilot whale	■	■	■	■	■	■	■	■	■	■	■	■
Bottlenose dolphin	■	■	■	■	■	■	■	■	■	■	■	■
Northern right whale dolphin	■	■	■	■	■	■	■	■	■	■	■	■
<b>Pinnipedia</b>												
Northern fur seal <sup>(4)</sup>	■	■	■	■	■	■	■	■	■	■	■	■
California sea lion	■	■	■	■	■	■	■	■	■	■	■	■
Northern elephant seal <sup>(5)</sup>	■	■	■	■	■	■	■	■	■	■	■	■
Northern (Steller) sea lion (T) <sup>(6)</sup>	■	■	■	■	■	■	■	■	■	■	■	■
Pacific harbor seal	■	■	■	■	■	■	■	■	■	■	■	■
Guadalupe fur seal (T) <sup>(6)</sup>	■	■	■	■	■	■	■	■	■	■	■	■
<b>Fissipedia</b>												
Southern sea otter (T) <sup>(7)</sup>	■	■	■	■	■	■	■	■	■	■	■	■
<b>REPTILES</b>												
<b>Cryptodira</b>												
Pacific ridley sea turtle (E/T) <sup>(8)</sup>	■	■	■	■	■	■	■	■	■	■	■	■
Green sea turtle (E/T) <sup>(8)</sup>	■	■	■	■	■	■	■	■	■	■	■	■
Loggerhead sea turtle (T) <sup>(8)</sup>	■	■	■	■	■	■	■	■	■	■	■	■
Leatherback sea turtle (E) <sup>(8)</sup>	■	■	■	■	■	■	■	■	■	■	■	■

Relatively uniform distribution 
 Not expected to occur 
 More likely to occur due to seasonal distribution 

- (E) Federally listed Endangered species.
  - (R) Rare species.
  - (T) Federally listed Threatened species.
  - (1) Where seasonal differences occur, individuals may also be found in the “off” season. Also, depending on the species, the numbers of abundant animals present in their “off” season may be greater than the numbers of less common animals in their “on” season.
  - (2) Winter-Spring distribution is mostly south of Pt. Conception.
  - (3) Spring-Summer distribution is mostly south of Pt. Conception.
  - (4) Only a small percent occur over continental shelf (except near San Miguel rookery, May-November).
  - (5) Common near land during winter breeding season and spring molting season.
  - (6) Now very rare in area.
  - (7) Only nearshore (diving limit 30 m). Only small numbers south of Pt. Conception.
  - (8) Rarely encountered, but may be present year-round. Greatest abundance during July through September.
- Sources: Bonnell and Dailey (1993), NOAA (2003).

**Table S.14-3. Abundance Estimates for Marine Mammals and Reptiles**

Common Name <i>Scientific Name</i>	Minimum Population Estimate (in decreasing order)	Current Population Trend
<b>MAMMALS</b>		
<b>Mysticeti</b>		
California gray whale <i>Eshchrichtius robustus</i>	18,178	Fluctuating annually.
Fin whale <i>Balaenoptera physalus</i>	2,541	Increasing off California
Blue whale <i>Balaenoptera musculus</i>	1,384 (California/Oregon)	Unable to determine
Humpback whale <i>Megaptera novaeangliae</i>	1,158	Increasing
Minke whale <i>Balaenoptera acutorostrata</i>	585	No long-term trends suggested
Northern right whale <i>Eubalaena japonica</i>	None available	No long-term trends suggested
Sei whale ( <i>Balaenoptera borealis</i> )	None available	No long-term trends suggested
<b>Odontoceti</b>		
Short-beaked common dolphin <i>Delphinus delphis</i>	365,617	Unable to determine
Dall's porpoise <i>Phocoenoides dalli</i>	75,915	Unable to determine
Pacific white-sided dolphin <i>Lagenorhynchus obliquidens</i>	39,822	No long-term trends suggested
Long-beaked common dolphin <i>Delphinus capensis</i>	25,163	Unable to determine
Northern right whale dolphin <i>Lissodelphis borealis</i>	16,417	No long-term trends suggested
Risso's dolphin <i>Grampus griseus</i>	12,748	No long-term trends suggested
Sperm whale <i>Physeter macrocephalus</i>	885	No long-term trends suggested
Bottlenose dolphin <i>Tursiops truncatus</i>	3,053 (185 in Coastal California population)	No long-term trends suggested

Table S.14-3. (Continued)

Common Name Scientific Name	Minimum Population Estimate (in decreasing order)	Current Population Trend
Short-finned pilot whale <i>Globicephala macrorhynchus</i>	149	No long-term trends suggested
Killer whale ( <i>Orcinus orca</i> )	84	Increasing
<b>Pinnipedia</b>		
Northern fur seal <i>Callorhinus ursinus</i>	676,540 (N. Pacific stock) 4,190 (San Miguel Island stock)	Unable to determine
California sea lion <i>Zalophus californianus californianus</i>	138,881	Unable to determine; increasing in most recent three year period
Northern elephant seal <i>Mirounga angustirostis</i>	60,547	Increasing
Steller or northern sea lion ( <i>Eumetopias jubatus</i> )	2,042 (California population)	Decreasing
Pacific harbor seal <i>Phoca vitulina richardsi</i>	31,600	Increasing
Guadalupe fur seal <i>Arctocephalus townsendi</i>	3,028 (Mexico stock) Undetermined in California	Increasing
Southern sea otter <i>Enhydra lutris nereis</i>	2,692**	Unable to determine
<b>REPTILES</b>		
<b>Cryptodira</b>		
Pacific olive ridley turtle <i>Lepidochelys olivacea</i>	350,000*	Increasing
Green turtle <i>Chelonia mydas</i>	1,000*	Increasing
Loggerhead turtle <i>Caretta caretta</i>	1,000*	Stable
Leatherback turtle <i>Dermochelys coriacea</i>	985*	Decreasing

Estimates provided by National Marine Fisheries Service Website- Stock Assessment Program, 2005.

\* Estimates provided by NMFS within "Our Living Oceans" (1999). Estimates are based on number of current numbers of nesting females.

\*\* provided by USGS (2006)

Cetaceans are transient marine mammals, and several species move through the southern California waters regularly. However, due to known abundance and migratory behaviors, not all cetacean species are expected to occur within the vicinity of the project site. In nearshore waters the most common cetaceans to occur are the common dolphin (*Delphinus delphis*), the Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), bottlenose dolphin (*Tursiops truncatus*), and the California gray whale (*Eshrichtius robustus*). The most common species which occur in offshore environments include: fin whale (*Balaenoptera physalus*), blue whale (*Balaenoptera musculus*), and humpback whale (*Megaptera novaeangliae*). A complete list of cetaceans which may potentially occur within the project area are listed in Table S.14-2.

The following cetaceans were excluded from further discussion because they are infrequently observed in the SCB and/or known to have low populations within the region. As such, these species have been omitted from Table S.14-2 because it is unlikely that these species would be encountered during project operations:

- Sei whale (E) (*Balaenoptera borealis*)
- Killer whale (R) (*Orcinus orca*)
- Bryde's whale (*Balaenoptera edeni*)
- Harbor porpoise (*Phocoena phocoena*)
- Cuvier's beaked whale (*Ziphius cavirostris*)
- Baird's beaked whale (*Berardius bairdii*)
- Pygmy sperm whale (*Kogia breviceps*)
- Striped dolphin (*Stenella coeruleoalba*)

Three families of mysticetes, or baleen whales, occur in southern California waters. Species include the gray whale, the northern right whale (*Eubalaena japonica*), and members of the rorquals family (Balaenopteridae). Rorquals are characterized as having pleated throats that expand to take in water, which is then strained outward through the baleen. Rorqual species include: blue whale, fin whale, humpback whale, and minke whales.

Although individual species' patterns vary, baleen whales range widely in the North Pacific, migrating between coldwater summer feeding grounds in the north and winter calving grounds in the south (Bonnell and Dailey, 1993). The mating season generally begins during the southbound migration and lasts through winter. Most baleen whales feed low on the food chain, eating a variety of swarming, shrimp-like invertebrates (Bonnell and Dailey, 1993). Some species also take small schooling fishes and squid. Larger rorquals, such as the blue whale, appear to feed mainly on large crustaceans, while the diets of smaller baleen whales tend to include more fish.

Due to the offshore and nearshore components of the project, several species of the mysticetes which exist within in the SCB have the potential to occur within the project site, or to be encountered by vessels traveling to the project site. The species with the highest potential to be encountered during project activities are discussed in the following paragraphs.

*Gray whale.* The gray whale population breeds and calves in lagoons along the west coast of Baja California and in the Gulf of California in the winter (Rice and Wolman, 1971). At the end of the season, the population begins a 4,900 mi (8,000-km) coastal migration to summer feeding grounds to the north. Migrating gray whales generally travel within 1.5 mi (3 km) of the shoreline over most of the route, unless crossing mouths of rivers and straits (Dohl et al., 1983). Off southern California, where gray whales often travel through the Channel Islands, offshore movements of up to 50 mi (80 km) have been observed (Jones and Swartz, 1987; Dohl et al., 1981; Bonnell and Dailey, 1993) due to the dispersal of the population through the islands. Gray whale abundance could be expected to be highest during their southbound migration and northbound migration periods. Southbound migration begins in December and

ends in mid February with an occasional sighting as early as October and as late as April. Northbound migration begins in mid-February and ends in May.

The most recent estimates of eastern North Pacific gray whale (taken from the 2001/2002 surveys) indicated that approximately 18,178 individuals are known to occur (NMFS, 2005), exceeding historic (1846) population estimates of 15,000 to 20,000 (NOAA; 1993, 1996). The gray whale population growth rate was about 3.3 percent per year between 1968 and 1988 (NOAA, 1993), and following three years of review, was removed from the endangered species list on June 15, 1994.

The population decline is based on a theory that the gray whale stock is reaching carrying capacity (estimated at 20,000 - 28,000 individuals) and, consequently, that prey is dwindling, or that prey is dwindling because of a general warming trend in the ocean (NMFS, 2005). It is important to note that NMFS scientists expect populations at carrying capacity to fluctuate as environmental conditions change and believe that recent population changes appear to be within a normal variation range, and do not expect the potential population decline to be a continuing trend (NMFS, 2005).

*Blue whale.* The blue whale is considered a federally listed endangered species, due to intensive historical commercial whaling. Blue whales are distributed worldwide in circumpolar and temperate waters and inhabit both coastal and pelagic environments (Leatherwood et al, 1982; Reeves et al., 1998a). Like most baleen whales, they migrate between warmer waters used for breeding and calving in winter and high-latitude feeding grounds where food is plentiful in the summer. In the waters off southern California, blue whales tend to aggregate in the Santa Barbara Channel along the shelf break and are frequently identified within the vicinity of the Channel Islands. The most recent estimates of blue whale indicate that at a minimum of 1,384 individuals are known to occur off California and Oregon, but estimates as high as 1,953 have been stated (NMFS, 2005).

Blue whales are expected to be seen from May to October with a peak in numbers from June to September. In the waters off southern California, blue whales tend to aggregate in the Santa Barbara Channel along the shelf break (NMFS, 2005).

*Fin whale.* The fin whale is considered a federally endangered species, due to a severe worldwide population decline due to intensive commercial whaling. In the Southern California Bight, summer distribution is generally offshore and south of the northern Channel Island chain, particularly over the Santa Rosa-San Nicolas Ridge (Leatherwood et al., 1987; Bonnell and Dailey, 1993). The most recent estimates of the fin whale population indicate that at least 2,541 individuals are known to occur off California, Oregon, and Washington (NMFS, 2005). There is some evidence that recent increases in fin whale abundance have occurred in California waters (Barlow, 1994; Barlow and Gerodette 1996, NOAA 2005), but these have not been significant (Barlow et al., 1997).

Fin whales, a federally endangered species, are most likely to be present from May to October. Summer distribution of the fin whale is generally offshore and south of the northern Channel Island chain, which includes the waters over the Santa Rosa-San Nicolas Ridge (Leatherwood et al., 1987; Bonnell and Dailey, 1993).

*Humpback whale.* The humpback whale is considered an endangered species, due to intensive historical commercial whaling. Humpbacks are distributed worldwide and undertake extensive migration in parts of their range (Leatherwood et al., 1982; NMFS, 1991a). The population in the project area is referred to as the eastern Northern stock, which spends the winter/spring months in coastal Central America and Mexico for breeding and calving and migrate to the coast of California to southern British Columbia in summer/fall to feed (NMFS, 2003). During migration, humpback whales are known to occur within the vicinity of the Channel Islands. Migrants passing through the SCB appear to follow a more inshore path than blue, or fin whales (Bonnell and Dailey, 1993). The most recent estimates of humpback whale indicate that at least 1,158 individuals are known to occur off California, Oregon, and Washington (NMFS, 2005). This population estimate is anticipated to be increasing (NMFS, 2005).

Humpbacks can be seen within Santa Barbara Channel all year long with a migration peak between May and August. During migration, humpback whales could occur within the vicinity of the Channel Islands. Migrants passing through the Southern California Bight appear to follow a more inshore path than blue, or fin whales (Bonnell and Dailey, 1993).

*Minke whale.* Minke whales are a coastal species which are widely distributed on the continental shelf throughout the eastern North Pacific (Green et al., 1989) and occur year-round off the coast of California. This species favor shallow water and venture near shore more often than other baleen whales (Watson, 1981), and they seem to be curious about shipping and approach moving vessels.

Southern California waters appear to be relatively central to the North Pacific distribution of minke whales (Bonnell and Dailey, 1993). Minke whales are most abundant along the Santa Rosa-Cortes Ridge near San Miguel and Santa Rosa islands and in waters between Santa Catalina Island and Forty-Mile Bank southeast of San Clemente Island. From May through July, minke whales are seen most frequently in the region of Lasuen Knoll, east of Santa Catalina Island in the San Pedro Channel. The most recent estimates of minke whales indicate that at least 585 individuals are known to occur off California, Oregon, and Washington (NMFS, 2005). No long-term trend for the population has been identified at this time (NMFS, 2005).

*Northern right whale.* The northern right whale is considered federally endangered, due to intensive historical commercial whaling. Like other baleen whales, right whales appear to migrate from high-latitude feeding grounds toward more temperate waters in the fall and winter, although the location of seasonal migration routes is unknown (Scarff, 1986). Reeves and Brownell (1982) concluded that the usual wintering ground of northern right whales extended from northern California to Washington, although sightings have been recorded as far south as

Baja California and near the Hawaiian Islands (Scarff, 1986; NMFS, 1991b; Gendron et al., 1999).

Estimates of the regional population are not available, however in 2002, two of the 13 individuals observed between 1999 and 2001 were “re-observed” (NMFS, 2005). It is believed that the population is between 100 to 200 individuals (Braham, 1984). Due to the low population numbers and lack of data, no long-term population trends have been determined.

*Sei Whale.* Sei whales (*Balaenoptera borealis*) are listed as endangered under the ESA and are considered depleted and strategic under the MMPA. Once commonly taken by whalers off the California coast in the 1950s and 1960s, sei whales are now very rare (NOAA, 2006a). Several extensive aerial and ship surveys from 1991 through 1993 revealed only one confirmed sighting of a sei whale (Carretta et al., 2006).

Odontocetes, or toothed whales, which are found in the southern California waters include: the sperm whale, several species of dolphins, porpoises, and small whales, and at least 6 species of beaked whale. With the exception of killer whales, which are the top predators in the ocean and feed on a wide variety of fishes, squid, pinnipeds, and cetaceans, odontocetes generally feed on schooling fishes and squid (Bonnell and Dailey, 1993). Major fish prey species include anchovy, mackerel, lantern fish, smelt, herring, and rockfishes. Octopus and crustaceans are also eaten on occasion.

Due to the offshore and nearshore components of the project, several of the odontocetes which exist within in the SCB have the potential to occur within the project site, or to be encountered by vessels traveling to the project site. The species with the highest potential to be encountered during project activities are discussed in the following paragraphs:

*Common Dolphins.* Common dolphins are found worldwide and are the most abundant cetaceans in California waters (Bonnell and Dailey, 1993). Common dolphins account for 57-84% of the total seasonal cetacean population in the SCB (Dohl et al., 1981). Two recognize species of common dolphin are found in central and southern California waters. The long-beaked common dolphin (*Delphinus capensis*) is commonly found within about 55 mi (90 km) from the coastline. Its relative abundance changes both seasonally and annually, with the highest densities observed during warm water events (Heyning and Perrin, 1994). A recent population estimate for this species is about 25,000 (NMFS, 2005). The more numerous short-beaked common dolphin (*D. delphis*) ranges from the coast to 340 mi (550 km) offshore. The most recent estimates indicate the California-Washington population of this species to be 365,617 individuals making it the most abundant cetacean off California (NMFS, 2005). California common dolphins are very gregarious and are frequently encountered in herds of 1,000 or more. Because populations tend to vary with water temperature, no long-term population trends have been determined at this time (NMFS, 2005).

*Dall's porpoise.* Dall's porpoises (*Phocoenoides dalli*) one of the most abundant small cetaceans in the North Pacific and are found in shelf, slope, and offshore waters throughout their range (Koski et al., 1998). Dall's porpoise are common off southern California in the winter



and probably range south into Mexican waters during coldwater periods (Leatherwood et al., 1982; Bonnell and Daily, 1993). The most recent population estimates indicate that at least 75,915 individuals are known to occur off California, Oregon, and Washington (NMFS, 2005). The population trend for this species has not yet been determined (NMFS, 2005).

*Pacific coast white-sided dolphin.* Pacific coast white-sided dolphins (*Lagenorhynchus obliquidens*) primarily range along the coasts of California, Oregon and Washington. This species frequents deep water foraging areas, but may move into nearshore areas in search of prey. Analysis of sighting patterns suggest that Pacific coast white-sided dolphins make north-south movements, occurring primarily off California in cold water months and moving northward to Oregon and Washington as waters warm in the late spring in summer (Leatherwood et al., 1994; Forney et al., 2000). Pacific coast white-sided dolphin populations are not showing any long-term trend in terms of abundance, but have a current minimum population size of 39,822 off California, Oregon, and Washington (NMFS, 2005).

*Risso's dolphin.* Risso's dolphins (*Grampus griseus*) are present off central and southern California year-round (Dohl et al., 1981, 1983; Bonnell and Dailey, 1993). Risso's dolphins are found off California during the colder water months and are extending their range northward as water temperatures increase (Leatherwood et al., 1980, 1982). Through the summer and autumn months, Risso's dolphins in the SCB are distributed inshore of the Santa Rosa-Cortes Ridge. Through winter and spring, the population shifts offshore except in the vicinity of the northern chain of Channel Islands. The most recent population estimates of Risso's dolphin indicate that at least 12,748 individuals are known to occur off California, Oregon, and Washington (NMFS, 2005). No long-term population trends have been determined, at this time.

*Northern right whale dolphin.* The northern right whale dolphins (*Lissodelphis borealis*) are endemic to temperate waters of the North Pacific, where they range from the Mexican border to British Columbia (Leatherwood and Walker, 1979; Leatherwood et al., 1982). They are primarily found over the shelf and slope in U.S. coastal waters and are known to make seasonal north-south movements (Forney et al., 2000). Off the coast of California, they are rarely sighted south of Point Conception in the summer. In winter, they are primarily distributed from central California south (Bonnell and Dailey, 1993; Koski et al., 1998). The most recent population estimates indicate that at least 16,417 individuals are known to occur off California, Oregon, and Washington (NMFS, 2005). No long-term population trends have been determined, at this time (NMFS, 2005).

*Sperm whale.* The sperm whale (*Physeter macrocephalus*) is considered a federally endangered species, due to historically intensive commercial whaling. The sperm whale is the largest of the toothed whales and is found predominately in temperate to tropical waters in both hemispheres (Gosho et al., 1984). Off California, sperm whales are present in offshore waters year-round, with peak abundance from April to mid-June and again from late August through November (Dohl et al., 1981, 1983; Gosho et al., 1984; Barlow et al., 1997). Sperm whales are primarily pelagic species and are generally found in waters with depths of greater than 3,300 ft (1,000 m) (Watkins, 1977), although their distribution does suggest a preference for continental

shelf margins and seamounts, areas of upwelling and high productivity (Leatherwood and Reeves, 1986). The majority of sightings by Dohl et al. (1983) in their three-year study off central and northern California were in waters deeper than 5,900 ft (1,800m), but near the continental shelf edge. The most recent estimates indicate that at least 885 individuals are known to occur off California, Oregon, and Washington (NMFS, 2005). No long-term population trends have been determined at this time (NMFS, 2005).

Sperm whales are most likely to be seen within the Channel during the winter (January and February) and summer months (July to October). The majority of sightings by Dohl et al. (1983) in a three-year study off central and northern California were in waters deeper than 5,900 ft (1,800 m), but near the continental shelf edge. No sperm whales were documented during the SWFSC and CDAS surveys.

*Bottlenose dolphin.* The bottlenose dolphin is probably more widely distributed than any other species of small cetacean in the eastern North Pacific (Leatherwood et al., 1982). This species occurring off the coast of California has been tentatively separated into a coastal form and offshore form. The coastal bottlenose dolphin is generally found within 0.6 mi (1 km) of shore and often enters the surf zone, bays, inlets and river mouths (Leatherwood et al., 1987). The California coastal population is estimated at 185 and appears to form small resident groups that range along the coastline, especially off Orange and San Diego counties (Weller and DeFran, 1989).

Offshore bottlenose dolphins are believed to have a more-or-less continuous distribution off the coast of California (Mangels and Gerrodette, 1994). In the SCB, this population appears to be centered around Santa Catalina Island, with possible dispersion in the winter (Dohl et al., 1981). The current minimal population of bottlenose dolphins is estimated at a minimum population size of 3,053 individuals off California, Oregon, and Washington (NMFS, 2005). No long-term population trends have been determined at this time (NMFS, 2005).

*Short finned pilot whale.* The short finned pilot whale (*Globicephala macrorhynchus*) is a relatively more southern or warm water species. Pilot whales were common off southern California until the early 1980's (Dohl et al., 1983), but disappeared from area waters following the 1982-83 El Nino (Bonnell and Dailey, 1993; Forney et al., 2000). Recently, pilot whales have begun reappearing in California waters, possibly in response to long-term changes in oceanographic conditions, but sightings are still rare (Forney et al., 2000). The most recent estimates indicate that at least 149 individuals are known to occur off California, Oregon, and Washington (NMFS, 2005). No long-term population trends have been determined at this time.

*Killer whale.* The killer whale (*Orcinus orca*) is a relatively more northern or colder water species. Killer whales off of the coast of California are currently referred to as the eastern Northern Pacific southern resident stock (Carretta et al., 2006). The transient and offshore stocks travel as far north as Alaska and as far south as California. Current population estimate of both the stock is 84 animals with the current population slowly rising (Carretta et al., 2006). Killer whales feed on fish and other marine mammals (Leatherwood et al., 1982). Around the

Channel Islands, killer whales have been observed feeding on gray whales, Pacific harbor seals, and California sea lions. They have also been observed feeding on fish (NOAA, 2006a).

**Marine Mammals-Pinnipeds (Seals, sea lions, and walruses).** Six of the 36 species of pinnipeds known worldwide occur off the Southern California coast. Four are eared seals (family Otariidae) and two are earless seals (family Phocidae). The species most likely to be encountered within the vicinity of the project site include the California sea lion (*Zalophus californianus californianus*), northern fur seal (*Callorhinus uranius*), northern elephant seal (*Mirounga angustirostris*), and the Pacific harbor seal (*Phoca vitulina richardsi*) (Bonnell et al., 1980).

The species of Otariidae (eared seals) that may occur within the Southern California Bight are: Guadalupe fur seal (*Arctocephalus townsendi*), northern fur seal (*Callorhinus ursinus*), Steller sea lion (*Eumetopias jubatus*), and California sea lion (*Zalophus californianus*).

*Guadalupe fur seal.* The Guadalupe fur seal (*Arctocephalus townsendi*) is considered a federally threatened species, due to the near extinction by commercial sealing in the 19<sup>th</sup> century. Historically, the Guadalupe fur seal apparently ranged northward from Islas Revillagigedo off the coast of Mexico to at least Point Conception (Repenning et al., 1971; Fleischer, 1987; Walker and Craig, 1979). Presently, the species breed only on Isla de Guadalupe off the coast of Baja California, Mexico, although individual animals appear regularly in the Channel Islands (Stewart et al., 1987; Bonnell and Dailey, 1993), and a single pup was born on San Miguel Island in 1997 (DeLong and Melin, 2000). The most recent population estimates for the Guadalupe fur seal in Mexico is 3,028 individuals, with “a few” observed on the Channel Islands (NMFS, 2005). Overall, the population is increasing at approximately 13%, considered to be relatively rapid (NMFS, 2005).

*Northern fur seal.* The northern fur seal (*Callorhinus ursinus*) is the most abundant otarid in the Northern Hemisphere. Most of the population is associated with rookery islands in the Bering Sea and the Sea of Okhotsk although a small population of northern fur seals has existed on San Miguel Island since the late 1950s or early 1960s (NMFS, 2003). A small percentage of the fur seal population from the Bering Sea arrive offshore California in late November (Bonnell and Dailey, 1993). Most of these animals are gone by early June (Bonnell and Dailey, 1993; Koski et al., 1998). Generally, individuals are been observed over the Santa Rosa-Cortes Ridge, the San Nicolas Basin, and the Tanner and Cortes banks (Bonnell and Dailey, 1993). The most recent population estimates for San Miguel stock indicate that at least 4,190 individuals are known to occur (NMFS, 2005). No long-term population trends have been determined at this time (NMFS, 2005).

*Steller sea lion.* The Steller or northern sea lion (*Eumetopias jubatus*) is considered a federally threatened species. Historically, this species was the most abundant pinnipeds in the SCB. Numbers have declined precipitously in the last several decades, but the causes of the decline are not well understood (Bartholomew 1967; Le Boeuf and Bonnell 1980). The SCB is the at the southern extreme of the historical breeding range of the species and present, 96% of the world population is found in Alaska or Siberian waters (Loughlin et al., 1980). A few adult or subadult males occasionally may occupy territories on relict rookeries at the west end of San Miguel Island and adjacent rocks in the summer months, but the last reported pups on San Miguel

Island were seen in the summer of 1980 (Bonnell and Dailey, 1993; DeLong and Melin, 2000). The most recent population estimate for the Steller sea lion indicate that at least 34,595 individuals are known to occur with 2,042 Stellar sea lions observed in California (NMFS, 2003). This population is believed to be decreasing (NMFS, 2003).

*California sea lion.* The California sea lion is the most abundant pinnipeds in the SCB, representing 50 to 93% of all pinnipeds on land and about 95% of all sightings at sea (Bonnell et al., 1981; Bonnell and Ford, 1987). This species ranges from Baja to British Columbia. In the SCB, California sea lions currently breed on four islands: San Miguel, San Nicolas, Santa Barbara and San Clemente. During the winter, the distribution in the SCB shifts eastward to the waters around Santa Catalina and San Clemente islands and southward to Tanner and Cortes banks (Bonnell and Dailey, 1993). The most recent population estimates for the California sea lion United States stock indicate that at least 138,881 individuals are known to occur in California (NMFS, 2005). This number believed to be increasing despite recent drops in pups due to El Nino events occurring in the late 1990's (NMFS, 2005).

Both of the species of Phocidae (earless seals) that are known to occur within the southern California coast live and breed within the Southern California Bight. These species include: northern elephant seal, and Pacific harbor seal.

*Northern elephant seal.* Northern elephant seals breed along the coast from Baja California north to Point Reyes. San Miguel and San Nicolas islands are the major California rookery islands (85 percent of 1990 production); a few are also born on Santa Rosa, Santa Barbara, and San Clemente islands (Bonnell and Dailey, 1993). Northern elephant seals typically haul out on land only to breed and molt and then disperse widely at sea. The most recent population estimates for the California breeding stock of Northern elephant seals indicated that at least 60,547 individuals are known to occur in California and the stock appears to increasing (NMFS, 2005).

*Pacific harbor seal.* Pacific harbor seals range from Mexico to the Aleutian Islands. The North Pacific population is centered in Alaska (Hoover, 1988). In the SCB, 71% of all harbor seals seen at sea have been within 10 km of land; greatest numbers were seen during autumn months, following the breeding and molting seasons (Bonnell et al., 1981). Unlike most pinnipeds occurring off Southern California, Pacific harbor seal maintain haul-out sites on the mainland on which they pup and breed, and the most recent minimum population estimates of the California stock indicate that at least 31,600 individuals are known to occur (NMFS, 2005). After increases in the 1990s, this population is believed to be stable and possibly reaching its carrying capacity (NMFS, 2005).

### **Marine Mammals-Fissipeds (Sea Otters)**

*Southern sea otter.* Historically the range of sea otters extended from the northern islands of the Japanese Archipelago northeast along Alaska and southward along North America to Baja California (Dailey et al., 1993). The sea otter was nearly extirpated by the fur trade during the 18<sup>th</sup> and 19<sup>th</sup> centuries. The current range is restricted to the waters of the

coast of Alaska and California. Currently, the sea otter is expanding its range southward along the coast, including a recent expansion south of Point Conception into the Santa Barbara area. This species prefers rocky shoreline with water depth less than 50 ft (15 m) deep, which support kelp beds where they feed on benthic macroinvertebrates including clams, crabs, abalone, sea urchins, and sea stars. The most recent minimum population estimates for southern sea otters in California indicate that at least 2,692 individuals are known to occur (USGS, 2006). No long term trends in this population is available (NMFS, 2005).

**Marine Reptiles-Cryptodira (Turtles).** In addition to the marine mammal populations, four species of sea turtle are known to occur off the west coast California. These species include: Pacific ridley sea turtle (*Lepidochelys olivacea*), leatherback sea turtle (*Dermochelys coriacea*), green sea turtle (*Chelonia mydas*), and the loggerhead sea turtle (*Caretta caretta*). Leatherback sea turtles are the most common sea turtle off the west coast of the U.S. (Department of the Navy, 2000; Channel Islands National Marine Sanctuary, 2000). Most of these turtles nest along the coasts of Mexico and Central America. Overall, the populations of marine turtles have been greatly reduced due to over-harvesting and loss of nesting sites in coastal areas (Ross, 1982). Of the four species, three of them (Pacific ridley, leatherback, and green) are listed as endangered and one (loggerhead) is listed as threatened, under the U.S. Endangered Species Act. Additional details on the marine reptile species is provided in the Marine Wildlife Contingency Plan (Appendix O.4).

*Green sea turtle.* Green sea turtles generally occur worldwide in waters above 20° C (MFS Globenet Corp./WorldCom Network Services, 2000; Department of the Navy, 2000). Green sea turtles have been reported as far north as Redwood Creek in Humboldt County and off the coasts of Washington, Oregon, and British Columbia (Channel Islands National Marine Sanctuary, 2000; MFS Globenet Corp./WorldCom Network Services, 2000; Department of the Navy, 2000). The green sea turtle is thought to nest on the Pacific coasts of Mexico, Central America, South America, and the Galapagos Islands. There are no known nesting sites along the west coast of the U.S., and the only known nesting location in the continental U.S. is on the east coast of Florida (MFS Globenet Corp./WorldCom Network Services, 2000; Department of the Navy, 2000). Green sea turtles are sighted year-round in marine waters off the southern California coast, with the highest concentrations occurring during July through September (Department of the Navy, 2000). Green sea turtles are omnivores, feeding on algae and sea grasses (MFS Globenet Corp./WorldCom Network Services, 2000), but also eat fish and invertebrates (e.g., sardines, anchovies, jellies, mollusks, worms, etc.) (MFS Globenet Corp./WorldCom Network Services, 2000; Department of the Navy, 2000). The most recent minimum population estimates for green sea turtles indicate that at least 1,000 individuals are known to occur (NMFS, 1999). This population is believed to be increasing (NMFS, 1999).

*Pacific ridley sea turtle.* The Pacific Ridley, or olive sea turtle, is distributed circumglobally and is regarded as the most abundant sea turtle in the world. Within the east Pacific, the normal range of Pacific Ridley sea turtles is mainly from Baja California to Peru (Channel Islands National Marine Sanctuary, 2000; MFS Globenet Corp./WorldCom Network Services, 2000; Department of the Navy, 2000). However, they have been reported as far north as Washington, Oregon, and are a rare visitor to the California coast (MFS Globenet

Corp./WorldCom Network Services, 2000). Major nesting beaches are located on the Pacific coasts of Mexico and Costa Rica (MFS Globenet Corp./WorldCom Network Services, 2000). The population on Pacific beaches in Mexico has declined from an estimated 10 million adults in 1950 to less than 80,000 in 1983 due to excessive over-harvesting (Channel Islands National Marine Sanctuary, 2000; MFS Globenet Corp./WorldCom Network Services, 2000). The Pacific ridley sea turtle is omnivorous, feeding on fish, crabs, shellfish, jellyfish, sea grasses and algae (Channel Islands National Marine Sanctuary, 2000; MFS Globenet Corp./WorldCom Network Services, 2000; Department of the Navy, 2000), and may dive to considerable depths (260 to 980 ft [79 to 300 m]) (Department of the Navy, 2000). The most recent minimum population estimates for Pacific ridley sea turtle indicate that at least 350,000 individuals are known to occur (NMFS, 1999). This population is believed to be increasing (NMFS, 1999).

*Leatherback sea turtle.* Leatherback sea turtles are the most common sea turtle off the west coast of the U.S. (Department of the Navy, 2000; Channel Islands National Marine Sanctuary, 2000). Leatherback sea turtles have been sighted as far north as Alaska and as far south as Chile (Channel Islands National Marine Sanctuary, 2000; MFS Globenet Corp./WorldCom Network Services, 2000; Department of the Navy, 2000). Their extensive latitudinal range is due to their ability to maintain warmer body temperatures in colder waters (MFS Globenet Corp./WorldCom Network Services, 2000). Off the U.S. west coast, leatherback turtles are most abundant from July to September. It has been noticed that their appearance off the U.S. west coast is "two pronged" with sightings occurring in northern California, Oregon, Washington, and southern California, with few sightings occurring along the intermediate coastline. In southern California waters, leatherback turtles are most common during the months of July through September, and in years when water temperatures are above normal (Department of the Navy, 2000).

Leatherback sea turtles are omnivores, but feed principally on soft prey items such as jellyfish and planktonic chordates (e.g., salps) (Channel Islands National Marine Sanctuary, 2000; MFS Globenet Corp./WorldCom Network Services, 2000; Department of the Navy, 2000). No nesting occurs within U.S. beaches (MFS Globenet Corp./WorldCom Network Services, 2000). The most recent population estimates for the eastern Pacific leatherback sea turtles indicates that at least 985 individuals are known to occur (NMFS, 1999). This population is believed to be decreasing (NMFS, 1999).

*Loggerhead sea turtle.* Loggerhead sea turtles primarily occur in subtropical to temperate waters and are generally found over the continental shelf (MFS Globenet Corp./WorldCom Network Services, 2000). Loggerhead sea turtles are omnivorous and feed on a wide variety of marine life including shellfish, jellyfish, squid, sea urchins, fish, and algae (MFS Globenet Corp./WorldCom Network Services, 2000; Department of the Navy, 2000; Channel Islands National Marine Sanctuary, 2000).

The eastern Pacific population of loggerhead sea turtles breeds on beaches in Central and South America. Southern California is considered to be the northern limit of loggerhead sea turtle distribution (MFS Globenet Corp./WorldCom Network Services, 2000). However, loggerhead sea turtles have stranded on beaches as far north as Washington and Oregon



(Channel Islands National Marine Sanctuary, 2000; MFS Globenet Corp./WorldCom Network Services, 2000; Department of the Navy, 2000). In addition, in 1978, a loggerhead sea turtle was captured near Santa Cruz Island in southern California (MFS Globenet Corp./WorldCom Network Services, 2000). Loggerhead sea turtle abundance in southern California waters is higher in the winter during warm years than cold years. However, during the summer months (July through September) abundance is similar in warm and cold years. The most recent minimum population estimates for loggerhead indicate that at least 1,000 individuals are known to occur (NMFS, 1999). This population is believed to be stable (NMFS, 1999)

**Birds.** There is a large variety of marine bird species that inhabit or migrate through the Santa Barbara Channel. Common species include loons, grebes, shearwaters, petrels, cormorants, ducks, gulls, terns, and murrelets. Several of the bird species observed or having the potential to occur within the project site and surrounding beach habitat areas have been afforded protected status by the State and/or federal governments due to declining populations and habitats. Discussions on special status shorebirds are included in the terrestrial/aquatic section of the Biological Assessment; the following special status marine bird species could be found within the project vicinity:

- Double-crested cormorant (*Phalacrocorax auritus*),
- Elegant tern (*Sterna elegans*),
- Long-billed curlew (*Numenius americanus*),
- California gull (*Larus californicus*),
- California brown pelican (*Pelicanus Occidentalis*)
- Ashy storm petrel (*Oceanodroma melania*), and
- Xantus' murrelet (*Synthliboramphus hypoleucus*)
- California least tern (*Sterna antillarum browni*),
- Western snowy plover (*Charadrius alexandrinus nivosus*).

A brief description of each special-status marine bird species is summarized below. Please refer to Table S.14-4 for additional information regarding these species.

Double-crested cormorant. This species is listed as a "California Species of Special Concern". The Double-crested Cormorant formerly bred on coastal cliffs and offshore islands along the coast from Marin Co. south to La Jolla, San Diego Co., and in the interior in northeastern California, the Sacramento Valley, the San Joaquin Valley, and the Salton Sea; however coastal breeding populations have declined in southern and central California (CDG, 2005). This species nests in colonies in nests built in trees and shrubs and on the ground of rocky cliffs and islands. Prey consists of fish and marine invertebrates from the water's surface.

Elegant tern. The elegant tern is listed as a "California Species of Special Concern", and may be found at coastal areas within Humboldt County and Marin County South to Baja California in Mexico. This species congregates on beaches and tidal flats when not feeding, and forages primarily within shallow ocean waters beyond the surf zone. Primary prey consists of fish. This species was initially a rare and irregular post-nesting visitor to California, but numbers have been increasing since the 1950s, and large flocks can now be seen. Breeding

primarily occurs within Mexico and extreme southern California. During 1959, a colony was established at San Diego Bay. This colony has persisted, and may have facilitated the species' range extension into the central coast of California (Zeiner et al., 1990).

California gull. The California gull is designated as a "California Species of Special Concern". This species is an abundant visitor to coastal and interior lowlands during the non-breeding season (mid-August to mid-April), and may be found in a variety of local habitats including: sandy beaches, mudflats, rocky intertidal, pelagic areas, fresh and saline emergent wetlands, lakes, rivers, cropland, landfills, and open lawns within urban areas. This omnivorous species feeds on garbage, carrion, earthworms, insects (adults and larvae), brine shrimp, and young birds. This species nests in colonies at alkali and freshwater lacustrine habitats east of the Sierra Nevada and Cascades (Zeiner et al., 1990).

*California least tern.* This species is designated as "Federal Endangered", "California Endangered" and "California Fully Protected". The California least tern is a migratory species that usually arrives in California breeding territories in late April. This species forages for small epipelagic fish (anchovy, atherinids, and shiner surfperch) within estuaries, lagoons and nearshore waters. Least terns are present at nesting colonies from April through August. Preferred nesting habitat for this species is open or sparsely-vegetated, sandy or gravelly shores, located near shallow-water feeding areas, which are relatively free of human or predatory disturbance. This species abandons nesting areas readily if disturbed. Courtship typically occurs at beaches near the nesting colonies (Zeiner et al., 1990).

*Western snowy plover.* The Western snowy plover is designated as "Federal Threatened", and "California Species of Special Concern". This subspecies of snowy plover occurs on coastal beaches from Washington to Baja California and they require sandy, gravelly or friable soil substrate for nesting. This species is usually present at nesting sites, which consist of sand beaches and dunes, from April through August. Snowy plover nests consist of a shallow depression which is either surrounded with driftwood, rocks, or bushes or it may be entirely in the open (Zeiner et. al 1990). Nesting at historic nesting sites (coastal sandy beaches) declined due to human disturbance. Western snowy plover are preyed upon by gulls, ravens, coyotes, and skunks. This species relies on camouflage for cover, and often crouches motionless on sandy substrate (Zeiner et. al 1990). Locally, western snowy plover are known to nest at Mandalay State Beach and McGrath State Beach, with the closest nesting site (at the southern end of McGrath Lake). Breeding birds at Mandalay Beach vary from 9 to 70 adults, with wintering birds numbering about 28 to 33. The target species recovery goal is 60 breeding adults at Mandalay Beach (U.S. Fish and Wildlife Service, 2001). During the breeding season, adults generally do not wander far from the nest (Zeiner et. al 1990), and this population may forage within the project area (Padre, 2001). Western snowy plover feed by gleaning insects and amphipods from the dry sand of upper beaches, and may occasionally forage in wet sand for sand crabs.

California brown pelican. The California brown pelican is listed as "Federal Endangered", "California Endangered", and "California Fully Protected". This species forages within estuarine, subtidal, and pelagic waters and feeds almost entirely on fish that are caught



by diving from a distance of 20 to 40 feet above the water surface. They are common along the Southern California Coast from June to October and can be regularly seen feeding within the offshore and nearshore portions of the project site. This species breeds on the Channel Islands (Anacapa, Santa Barbara, and Santa Cruz) from March to early August, where it builds nests of sticks on the ground. Following the breeding season, individuals leave the breeding colonies and disperse along the California and Mexico coastlines, with some small numbers visiting the Salton Sea and Colorado River Reservoirs (Zeiner et al., 1990).

Ashy storm petrel. This species is designated as a "California Species of Special Concern". The Ashy storm petrel is a small smoke gray seabird with a forked tail. It can only be found on the islands off California and in the adjacent waters of the continental slope. This species nest in cavities on offshore islands and move to and from their colonies at night. Unlike most other species of storm-petrel, Ashy Storm-Petrels do not travel far from their colonies after breeding, and the breeding season is spread out over most of the year (DFG, 2005).

Xantus' murrelet. The Xantus' murrelet is listed as California Endangered and candidate for Federal endangered species. This small black and white seabird nests on fewer than 10 islands in southern California and Baja Mexico. The estimated remaining global population of 5,600 birds is concentrated during the breeding season in four major colonies all in southern California's Channel Islands or Mexico's Baja California. The species typically nests in crevices, caves, under large rocks, on steep cliffs and canyons of offshore islands. The nesting period extends from February through July but may vary depending on food supplies (Audubon watchlist, 2005).

**Table S.14-4. Summary of Marine and Shorebird Species Within Vicinity of Project Site**

Species Name (Common/Scientific)	Status <sup>1</sup>	Distribution in Project Vicinity
Double-crested cormorant ( <i>Phalacrocorax auritus</i> )	CSC	The double-crested cormorant formerly bred on coastal cliffs and offshore islands along the coast from Marin Co. south to La Jolla, San Diego Co. however coastal breeding populations have declined in southern and central California
Elegant tern ( <i>Sterna elegans</i> )	CSC	Elegant terns breed on islands in the Gulf of California (90% of the know population on Isla Rasa), along the west coast of Baja California, and near San Diego, California (since 1959). Post-breeding birds commonly occur north to the central California coast from midsummer through fall. This species winters along the coast of western South America, from Peru to Chile.
California gull ( <i>Larus californicus</i> )	CSC	This species is an abundant visitor to coastal and interior lowlands during the non-breeding season (mid-August to mid-April), and may be found in a variety of local habitats including: sandy beaches, mudflats, rocky intertidal, pelagic areas, fresh and saline emergent wetlands, lakes, rivers, cropland, landfills, and open lawns within urban areas.
California brown pelican ( <i>Pelecanus occidentalis californicus</i> )	SE, FE, P (nesting colony)	California brown pelicans nest on Anacapa Island and could be expected to forage within the marine waters over the pipeline and at the landfall location at Mandalay Beach. It could also be expected to rest on the platform structure and SSP buoys.
Ashy storm petrel ( <i>Oceanodroma homochroa</i> )	CSC	The Ashy storm petrel breeds on islands from northern California south to northern Baja California. It is a pelagic species (spends most of the time offshore) and comes ashore only to breed.

**Table S.14-4. (Continued)**

Species Name (Common/Scientific)	Status <sup>1</sup>	Distribution in Project Vicinity
Xantus' murrelet ( <i>Synthliboramphus hypoleucus</i> )	ST	The estimated remaining global population Xantus' murrelet is 5,600 birds which are concentrated in four major colonies all in southern California's Channel Islands or Mexico's Baja California during breeding season.
California Least Tern ( <i>Sterna antillarum browni</i> )	SE, FE, P (nesting)	McGrath Lake supports a breeding colony, and is an important post-breeding stopover for a large number of northern least tern breeding colonies during migration. In 2000, 16 nesting pairs were recorded at McGrath Lake and produced 3 fledglings. This species may forage off the beach near the Mandalay Generating Station.
Western Snowy Plover ( <i>Charadrius alexandrinus nivosus</i> )	FT, CSC	Western snowy plovers forage along the beaches of Ventura County, and breed along Mandalay Beach. Breeding birds at Mandalay Beach vary from 9 to 70 adults, with wintering birds numbering about 28 to 33. The target species recovery goal is 60 breeding adults at Mandalay Beach (U.S. Fish and Wildlife Service, 2001). The Mandalay-Center Road pipeline alignments would avoid suitable habitat.

<sup>1</sup> CSC California Species of Concern; SE=State Endangered; FE=Federal Endangered; P=Protected; ST=State Threatened.

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