California sea lions: California sea lions *(Zalophus californianus c.)* are abundant along the mainland coast. The population numbers between 204,000 and 214,000 (Caretta *et al.* 2001 and 2002). In the project area, they sometimes haul out on mooring buoys near the Ellwood Pier and just west of the project site. These buoys were installed for the use of crew boats used by Venoco and Exxon/Mobil. They also haul out on Venoco's oil barge mooring buoys east of the site about half a mile. California sea lions frequent the general region year-round, although in the summer months, large numbers of adults travel to various rookeries in the Channel Islands. Pupping peaks about the third week of June, and breeding starts soon afterwards. The pups stay with their mothers for at least three months, at which time they can catch their own fish but may continue nursing as well. Considering the timing of the projects, no dependent pups will be in the project area. Instead, they will be at the island rookeries. Nonetheless, some California sea lions will be encountered in the area and could cause short delays until they have left. This has happened in similar past projects in the region.

Coastal bottlenose dolphins: A coastal stock of bottlenose dolphins *(Tursiops truncatus)* exists from San Simeon into Baja California. These animals generally roam close to shore, sometimes venturing into the breakers. They usually travel in small groups of 15 to 20 individuals. They seldom linger in an area unless they are feeding, resting or nursing. Sometimes they venture offshore, but they usually stay within 0.6 miles (I km) of the coast. They are found year-round throughout their range (Leatherwood *et al.* 1983). Coastal bottlenose dolphins may venture past the site during the course of this project.

Coastal bottlenose dolphins are conspicuous, thus they are easily spotted. They have not posed any particular difficulties in similar past projects. Simply waiting for them to pass the project sites has proved adequate in safeguarding this species.

Common dolphins: Two species of common dolphins are found in the region: the short-beaked *(Delphinus delphis)* and the long-beaked *(Delphinus capensis)*. The long-beaked common dolphin generally remains within 50 nautical miles (nm) of shore, whereas the short-beaked is found up to 300 nm offshore (Carretta *et al.* 2001 and 2002). Although neither species has been observed in any hazard zone in similar past projects along the coast, long-beaked common dolphins can be abundant from one to six nm offshore from the project site. It is likely that some long-beaked common dolphins will be seen near the project site, but not so close to shore as to be near the hazard zone.

Other dolphins: Other dolphins seen in the region (Leatherwood *et al.* 1983; Leatherwood *et al.* 1987) include the Pacific white-sided dolphin *(Lagenorhynchus obliquidens)*, the northern right whale dolphin *(Lissodelphis borealis)*, the killer whale or orca *(Orcinus orca),* and Risso's dolphin *(Grampus griseus)*. These animals occur sporadically, generally farther offshore, and have never been observed in any hazard zone in past coastal projects. The Pacific white-sided dolphin and northern right whale dolphin are generally associated with cooler water and most often appear in spring and early summer, thus their presence at the project site in the fall is very unlikely. It is also unlikely that the other species will be seen near the project site.

Porpoises: The only porpoise that is seen with any regularity in this region (Leatherwood *et al.* 1983; Leatherwood *et al.* 1987) is Dall's porpoise *(Phocoenoides*

dalli). This particular species favors cooler water and generally appears in spring and early summer. Dall's porpoise is seldom seen near shore. It is most often seen several miles or more out and has not been seen in any hazard zones, thus it will probably not appear near the project site.

California gray whales: California gray whales *(Eschrichtius robustus)* are seasonally abundant near the project area. This population, once endangered, has recovered and now numbers about 17,414 animals (Rugh 2002).

California gray whales migrate south from their feeding grounds in Alaska in late fall. For regulatory purposes, the migration period in California is considered to extend from 1 December through 1 May, although a few individuals sometimes are seen as early as October or November (Howorth, unpublished field notes). During the southbound migration, most of the whales cut corners, swimming from point to point and swimming across the channel to the islands instead of hugging the mainland coast. By mid-February, the last stragglers are usually headed south, while a few early individuals are usually returning north. By March the northbound migration is in full swing, then it tapers off toward the end of April. The northbound grays travel close to shore for much of their migration, but off Southern California, the majority of animals journey past the Channel Islands rather than the mainland coast (Caretta *et al.* 2000; Howorth, unpublished field notes). During summer and fall, when the project is scheduled, gray whale sightings are virtually nonexistent. The likelihood of any gray whales being present near the project site at this time is nil.

Southern sea otters: Southern sea otters *(Enhydra lutris nereis)* are the only marine mammal in the region not under the jurisdiction of NOAA Fisheries; instead, they are managed by USFWS. The spring 2003 count of southern sea otters was 2,505, the highest count recorded since modern census techniques were implemented (U.S. Geological Survey [USGS] 2003).

Sea otters have been sporadically reported south of Point Conception in recent years. About 18 animals are usually seen off San Miguel Island, while another 13 are at San Nicolas Island, some of which may be from a failed translocation effort. In 1998, about 100 otters moved just south of Point Conception, foraging in the rich kelp beds there. They left after several weeks. In 1999, about 150 animals came to the same area, then left. These were thought to be mostly young males which tend to wander (Sanders, pers. comm.).

Only one sea otter was seen anywhere near a project site, but it was not in a hazard zone. This occurred during the Mobil Seacliff Pier Decommissioning Project (Howorth 1998e). Two sea otters were observed near the project site in 2002 by Sanders (pers. comm.), but considering the scarcity of such animals in Southern California, it is unlikely that any sea otters will be seen near the project area.

3.5.2 Sea Turtles

Four species of sea turtles have been reported off the California coast: the green sea turtle *(Chelonia mydas)*, the loggerhead sea turtle *(Caretta caretta)*, the olive ridley sea turtle *(Lepodochelys olivacea)*, and the leatherback sea turtle *(Dermochelys coriacea)* (NMFS and USFWS 1998a-d).

Leatherback sea turtles are considered endangered under the ESA, while greens, loggerheads and olive ridleys are listed as threatened. All normally frequent tropical, subtropical or temperate waters and are rarely seen near the project site. Most sightings have been during El Niño events. Considering the rarity of such creatures in these waters, it is extremely unlikely that any sea turtles will be present.

3.5.3 Birds

Several species of sea birds roost on the structure at PRC-421. Among others, these include the double-crested cormorant *(Phalocrocorax auritus)*, the California brown pelican *(Pelecanus occidentalis californicus)* and the western gull *(Larus occidentalis)*. Since the topside structures will be removed without detonations, the roosting birds will have left the structure and will probably not be present during the detonations.

Approximately 195 species of sea birds have been reported in the region. Of particular concern for this project are diving birds, which, depending on the season, can include alcids (murres, murrelets, guillemots, auklets, puffins, and others), loons *(Gavia* spp.*)*, grebes, cormorants *(Phalacrocorax* spp.*)*, shearwaters *(Puffinus* spp.*)*, and certain diving waterfowl, many of which are not sea birds. California brown pelicans, which are considered endangered, also dive, but they spend only seconds submerged before bobbing back to the surface. Moreover, they are very large and easily spotted. For additional details on sea birds at the project site, see Padre Associates, Inc. (2002).

3.5.4 Fish and invertebrates

In similar past projects (Howorth 1994c; 1996b; 1997a, b and d; and 1998e), the most abundant fishes have usually included surfperches and small schooling fish, particularly northern anchovies *(Engraulis mordax)*. Some rockfish *(Sebastes* spp.*)* and bass *(Paralabrax* spp.*)* may also be present, along with croakers, various flatfish, and bottom-dwelling cartilaginous fishes. Surveys conducted by de Wit (2000) provide site-specific data on fish and invertebrate species present. Conspicuous for its absence at the project site is the endangered white abalone *(Haliotis sorenseni).*

4.0 MARINE MAMMAL MITIGATION PLAN

The following sections provide step-by-step details of the Marine Mammal Mitigation Plan.

4.1 Planning and Preparation

- Biological monitors shall be selected in advance of the project. The monitors shall have training and experience in identifying marine wildlife of the region. They shall also have hands-on experience in the rescue and handling of marine wildlife as well as in marine wildlife mitigation monitoring and data recording. (All MMCG monitors have already been approved by NOAA Fisheries in consultation with CDFG.)

- An addendum to this Marine Mammal Mitigation Plan shall be provided to the regulatory agencies at least 30 days before the project begins. This addendum shall include a detailed project schedule and shall list all project vessels, key

points of contact, including telephone and fax numbers as well as e-mail addresses and radio call signs, as appropriate.

- The project shall be timed to avoid the gray whale migration season (1 December through 30 May), the harbor seal pupping season (1 January through 30 April) and the nesting seasons for various protected species of sea birds (1 April through 30 August).

- At least 30 days' notice shall be provided to the regulatory agencies and to local wildlife rescue centers prior to the start of project activities.

- Vessel captains and crews shall be briefed on ways to avoid collisions between project vessels and marine mammals. These measures shall include:

    - Maintain a watch for marine mammals at all times while vessels are underway;
    - Do not approach any whales close than 100 yards;
    - Do not cut in front of a whale;
    - Do not separate a whale mother and calf pair;
    - If a whale is observed on an intersect course, reduce speed until the whale has safely passed;
    - If a whale is moving on a parallel course, maintain a steady speed and course but do not go faster than the whale;
    - If a whale becomes evasive or defensive, stop the vessel until the whale has left the area;
    - While under way, provide a wide berth between any seals, sea lions or sea otters and project vessels;
    - Before and during explosive and pile driving operations, if dolphins begin riding the bow wave of a project vessel toward the project site, stop until the animals have left; and
    - In the unlikely event that a collision occurs, immediately notify the NOAA Fisheries Marine Mammal Stranding Coordinator by telephone at (562) 980-4017 and the Santa Barbara Marine Mammal Center at (805) 687-3255. Provide the date, time and place of collision, vessel name, owner and operator, species involved, status of animal, heading of animal if animal is moving, and onsite weather, sea conditions and visibility.

- A briefing shall be held between all key project personnel and MMCG prior to the start of the project. The briefing shall identify personnel safety concerns, key points of contacts, responsibilities of key personnel, and multiple means of contacting the key personnel. MMCG shall explain the requirements for the protection of marine wildlife.

4.2 Project Requirements

- No discharge of food wastes that may attract birds or other wildlife to the project site shall be allowed.

- For the same reason, no fishing activities shall be allowed.

- Small, spherical buoys shall be used when possible for all moorings. Unlike the larger "can" buoys, the small buoys are rarely used by sea lions because they are too small and rounded to provide enough surface area for resting. By using small buoys, the chances would be eliminated of sea lions being frightened into the water by the first detonations, then subjected to the underwater effects of subsequent detonations. It is unlikely that sea lions will haul out on the buoys used by the work barge because of the activities on the barge. Also, these buoys may be submerged once a strain is taken on the mooring lines.

4.3 Explosives Deployment Procedures

- The demolition contractor shall not deviate from the explosives plan specified in the Project Description (ARCO 2003). Individual charge weights have been specified at 1.8 pounds, for a total charge weight of 7.2 pounds per four H-piles or per column and a total of 57.6 pounds of explosives for all eight columns. Linear shaped charges, designed to concentrate the force of the detonations inward so that the H-piles will be severed, shall be used.

- In the event that unforeseen circumstances arise that necessitate a change in the explosives plan, MMCG shall be notified immediately so that changes can be made to the mitigation plan if needed. NOAA Fisheries shall be advised of such changes prior to implementation.

- As much as practicable, a berm made of jetted materials shall be built up on the seaward side of the columns. This will help reflect and absorb some of the energy of the detonations.

- All charges shall be set below the natural mudline of the sea floor.

- All eight sets of charges shall be detonated in rapid succession to avoid repeated risks associated with separate detonation events. This will also avoid the "dinner bell" effect, in which marine mammals and sea birds are attracted to injured or dead fish following a detonation.

- The seaward sets of charges shall be detonated first so the bubbles and mass of columns will help reduce sound pressure levels from subsequent detonations.

- Detonation of charges shall be staggered to avoid a build-up of sound pressure levels. The timing between individual charges shall be at least 25 milliseconds. The timing between the detonation of each set of charges can be less than a second apart but shall not exceed two minutes total for all eight charges.

4.4 Pile Driving Procedures

- Power to the pile driver shall be ramped up prior to driving each pile. This will warn marine wildlife of increasing underwater noise levels.

4.5 Placement of Quarry Rock

- A concrete-decked barge shall be used for the quarry rock. This will reduce the noise associated with moving quarry rock across steel barges.

4.6 Monitoring Equipment

- Two independent, dedicated monitoring vessels and one aircraft, approved by the agencies for monitoring work, shall be provided. The monitoring vessels shall have low-emission engines.

- The monitors shall have the necessary equipment to rescue wildlife in the unlikely event an animal is injured. The MMCG monitors already have authority from the regulatory agencies to rescue distressed marine wildlife.

- The monitors shall have a means of marking any dead floating or beach-cast specimens. MMCG monitors already have authority from the regulatory agencies to do this.

- The monitors shall have data recording forms designed to qualitatively and quantitatively assess effectiveness of mitigation measures.

- The monitors shall have low light marine binoculars for observations.

- Each monitoring team shall have reliable, multiple means of communications.

- An independent vessel and crew, provided by MMCG, shall be provided to pick up fish following the detonations.

4.7 Monitoring Personnel

- Monitoring personnel in the aircraft shall consist of an observer/recorder in the co-pilot's seat, one monitor on each side behind the front seats, and a monitor lying in the belly of the aircraft to see straight down. This is the same complement of observers used by the regulatory agencies for their wildlife surveys.

- Shipboard monitors shall consist of one observer/recorder and one monitor for each of the two vessels, plus the chief monitor in one of the vessels. Vessel crews shall be provided separately.

- Two land-based monitors shall be provided: one on the nearby bluff; the other on the beach.

- A qualified biologist shall be provided to identify and count fish after the detonations in addition to the vessel's crew.

4.8 Monitoring before Detonations

- Multiple means of communications shall be established and maintained between the MMCG monitoring team, the demolition contractor and the ARCO representative. Detonations shall postponed if communications are lost.

- If radio silence is imposed immediately prior to detonations, visual means of communications shall be established.

- An aerial monitoring survey shall be conducted at least one hour before the detonations. This survey shall be flown in a series of parallel lines (called transects), each of which is one-quarter of a mile apart, parallel with shore, and four miles to either side of the project site. These lines shall extend from the coast out to four miles offshore. The total transect area shall be four miles wide by eight miles long. A "lawn-mowing" pattern shall be utilized to cover the area. The purpose of this survey is to make certain no protected wildlife is in the hazard zone or likely to enter the hazard zone.

- Once the aerial survey has been completed, the aircraft shall monitor the area one mile around the project site.

- The chief monitor shall have the authority to waive the aerial monitoring if a low ceiling prohibits overflights, provided that, in the monitor's opinion, the hazard zone can be adequately monitored by additional personnel on land and at sea.

- A shipboard line transect monitoring survey shall also be conducted at least one hour before the detonations. The transect area shall extend one mile to either side of the project site and slightly more than one mile offshore. Like the aerial transects, the lines shall be a quarter of a mile apart, but they shall be staggered to avoid overlapping with the aerial line transect pattern. One boat shall begin surveying close to shore, while the other shall begin offshore at the other end of the transect pattern.

- If any dead floating wildlife is found during the surveys, it shall be noted and tagged if possible to avoid later confusing it as a project-related casualty.

- During both the shipboard and aerial surveys, the Ellwood harbor seal rookery and mooring buoys outside of the hazard zone frequented by sea lions shall not be approached too closely.

- Once the shipboard survey has been completed, the vessels shall monitor a 1000-yard hazard zone around the project site.

- If any sea lions are hauled out on any mooring buoys in the hazard zone, they shall be coaxed out of the area by the monitors aboard the boats. This is to avoid the risk of sea lions jumping into the water as the detonations are going off.

- Prior to taking up their monitoring stations, the land-based observers shall walk the beach to check for any dead wildlife. Any carcasses found shall be noted and marked to avoid confusing them as project-related casualties.

- After the beach has been surveyed, the land-based observers shall take up stations on the adjacent coastal bluff and/or on the beach near the project site.

- When the hazard zone is free of animals and the charges are about to be fired, the vessels shall retire to the vessel exclusion zone set by the demolition contractor.

- Monitors shall record data before, during and after detonation operations. These data shall include the following:

    - Date, monitor's name, vessel or aircraft designation;
    - Time and GPS position of each animal sighted;
    - Species and numbers of animals;
    - Animals' behavior (e.g., slow travel), heading, and any relevant remarks; and
    - Project-related activities at time of observations.

- Monitors shall also record data about weather and sea conditions, including the following:

    - Date, monitor's name, vessel or aircraft designation; and
    - Time, sky condition (e.g., cloudy with a marine layer), extent and type of clouds, visibility, wind direction and velocity, and swell direction and height.

- If protected wildlife is in hazard zone or likely to enter the hazard zone, the chief monitor shall have the authority to postpone the detonations.

- The demolition contractor shall not detonate the charges until the chief monitor has proclaimed the hazard zone free of marine mammals.

- Commencement of detonations shall be postponed if divers report appreciable numbers of fish present.

- The demolition contractor may postpone detonating the charges if any of the demolition personnel observe a marine mammal in the hazard zone that has not been observed by the MMCG monitors. If this occurs, the MMCG monitors shall be notified immediately so the animal can be monitored until it leaves the hazard zone.

- If weather, sea conditions or visibility prohibit adequate wildlife monitoring, the chief monitor has the authority to postpone the detonations.

- The chief monitor shall also have the authority to stop any operation in which it is possible that harassment, injuries or mortalities to protected wildlife could occur.

- If sea lions are present on mooring buoys within the hazard zone, the shipboard monitors shall coax the animals out of the area for their own safety. The detonations shall be postponed until the animals have left the hazard zone.

- If birds are perched near the detonation site and do not fly when the warning signal is sounded for personnel, a louder noise shall be sounded to safely