# 3.4 Cultural Resources and Paleontology

Cultural resources can reflect the history, diversity, and culture of the region and people who created them. They are unique in that they are often the only remaining evidence of activity that occurred in the past. Cultural resources can be natural or built, purposeful or accidental, physical or intangible. They encompass archaeological, traditional, and built-environment resources, including but not necessarily limited to buildings, structures, objects, districts, and sites. Cultural resources include sites of important events, traditional cultural places and sacred sites, and places associated with an important person. Many cultural resources are present in the Hermosa Beach area, both in terrestrial and marine contexts that could be affected by development without adequate protections in place.

Paleontological resources, or fossils, are the evidence of once-living organisms preserved in the geologic record. They include both the fossilized remains of ancient plants and animals and the traces thereof (e.g., track ways, imprints, burrows, etc.). In general, fossils are greater than 5,000 years old (middle Holocene) and are typically preserved in sedimentary rocks. Although rare, fossils can also be preserved in volcanic rocks and low-grade metamorphic rocks under certain conditions (Society of Vertebrate Paleontology [SVP], 2010).

## 3.4.1 Environmental Setting

### 3.4.1.1 Marine Cultural Resources

#### Marine Cultural Resources Categories

Three broad categories of marine cultural resources are considered in this EIR, all of which are currently submerged, and may be encountered during the marine installation of the Project. These include historic period shipwrecks (including downed aircraft and unidentified debris), prehistoric period watercraft, and prehistoric archaeological resources, both *in situ* site deposits and isolated artifacts. The historic and prehistoric period watercraft and downed aircraft came to rest after they were abandoned during travel across bodies of water, and they may currently be partially or wholly obscured by sediments of the ocean floor. The prehistoric period archaeological sites and isolated artifacts were deposited during occupation of what is now ocean floor, but what was dry land at the time of their deposition. These sites and/or isolated artifacts may be buried at varying depths depending upon their age and the depositional history of the location in which each is found.

**Historic period shipwrecks** include the remains of watercraft that were employed as early as the 16$^{th}$ century to cross the waters of the study area, remains of downed aircraft, and unidentified debris.

**Prehistoric period watercraft** may include the stitched-plank *tomol* (canoe) and the balsa reed bundle craft. During the approximately 13,000 years of Native American navigation through the study area some native vessels may have been inundated, stranded, or capsized in the area.

**Prehistoric archaeological resources** are places that Native Americans lived, performed activities, altered the environment, and created art before sustained contact with Europeans began in the 1770s. Prehistoric resources contain features left behind by these activities as well as artifacts and subsistence remains. Additionally, they may contain human remains in the form of burials, cairns, or cremations. Although originally deposited on a non-marine landscape, changes in sea level have resulted in such resources currently being submerged.

## Study Area

The study area for marine cultural resources includes the four proposed cable routes and a 10-nautical mile buffer around each route, beginning at the mean high tide line of Hermosa Beach in Santa Monica Bay at the Neptune Avenue and 25th Street landing sites. The broad-scale buffer allows for inaccuracies inherent in the reported locations of historic shipwrecks. There is some overlap in the buffers around each route. The study includes marine areas within California's jurisdiction that extend 3 nautical miles (4.8 km) from the mean high tide line, as well as marine areas under federal jurisdiction that extend beyond the 3-nautical mile state jurisdiction on the continental shelf where the submarine cables will be buried to the extent feasible. The continental shelf in this study includes areas where seawater depth is no greater than approximately 5,904 feet (1,800 meters). The proposed cable routes cross Santa Monica Bay and several offshore basins, ridges, and escarpments located on the California Borderland before reaching the edge of the outer continental shelf (E&E, 2001), the location of which is variable, with a maximum distance of approximately 280 km offshore in the study area.

Hermosa Beach is located in Santa Monica Bay, a large concave portion of the coast that has extensive sandy beaches. In Santa Monica Bay the continental shelf varies from less than 2 km wide at Point Mugu on the north and Palos Verdes on the south, to a maximum of 20 km in the middle (MMS, 1987:55). Nardin et al. (in MMS, 1987:55) indicates that the widening of the shelf is attributed to the Palos Verdes Fault Zone and adjacent folding. The Project area lies within the inferred subaerially exposed continental borderland circa 18,000 years ago (MMS, 1987:55).

Three submarine canyons, Dume, Santa Monica and Redondo, cut into the shelf. Redondo and Dume are considered active, meaning that they transport sediment from the near shore to the deep sea, and reach to within one-half kilometer of the shore. On the shelf leading into Redondo Canyon, there are three large buried channels that were back-filled with sediments during the Flandrian Transgression, which is the current sea level rise affecting the coastal regions around the globe that began approximately 18,000-19,000 years ago (Osborne et al., 1980). Fluctuations in sea level during the transgression resulted in the complex wave-cut platform that is seen in Santa Monica Bay (Nardin et al., 1981). Marine post-Wisconsin sediments cover the shelf in Santa Monica Bay. The thickest accumulations of those sediments, up to 28 meters, occur as linear patches that parallel the shoreline. The only outcrops in this area are in the walls of the submarine canyons, on the outer shelf off Santa Monica, and at the rocky foreshores of Palos Verdes Peninsula and the Point Dume headland (MMS, 1987:57).

The proposed marine routes are depicted in Figure 1-2 in Chapter 1.

## Prehistoric Setting

### Prehistoric Occupation of the Marine Study Area

At the height of the Wisconsin glaciation approximately 18,000 to 24,000 years ago, the sea level was as much as 120 meters (394 feet, 66 fathoms) below its present altitude (Milliman & Emory, 1968). At that time, the former California shoreline was near the edge of the continental shelf, approximately six nautical miles offshore from the present shoreline (uncorrected for local offshore deposition or uplift rates) within the study area.

Recent GIS studies summarized in Bureau of Ocean Energy Management (BOEM) (2013:21) indicate that the sea level raised an average of 6.3 millimeters per year, or 6.3 meters every 1,000 years, over

the 19,000-year period since the Last Glacial Maximum.This rate was not constant, but varied over time. Sea level continues to rise incrementally along the California coast.

Human populations have occupied the California coast for at least the past 13,000 years and enjoyed the products of the littoral zone for much of that time (Jones, 1992). The littoral zone includes the near shore intertidal area where many edible resources, including shellfish, can be harvested. Sea level at 11,000 years ago was at about 46 meters (151 feet, 25 fathoms) below present level. It is reasonable to assume that prehistoric occupation sites where debris from villages and campsite accumulated as far out as what is now the continental shelf, were abandoned as they were inundated by the rising sea level during the Holocene transgression (Nardin et al., 1981; Richards, 1971; Bloom, 1977). As sea levels rose after the Last Glacial Maximum, prehistoric people moved their sites farther inland to stay above shifting shorelines and to access shifting resource areas (BOEM, 2013:21).

If the preference for site locations remained the same over time, even as the sea level rose, we would expect to find inundated prehistoric period archaeological sites offshore in places where former streams once came together to flow into larger stream and rivers, and where the entered the ocean as they crossed bluffs and beaches (Stright, 1987). Former estuaries, bay mouth bars, tombolos, and backshore beaches as well as nearby bluffs would also be sensitive locations for offshore prehistoric archaeological sites.

Prehistoric archaeological sites are formed from the accumulation of layers of soil and debris from daily activities that have been deposited over time. Typically, the longer the period of occupation and the larger the group of people, the greater the accumulation of debris. Archaeological sites at or near the shoreline are most often characterized by concentrations of whole and fragmentary seashells, while archaeological sites that are more distant from the shoreline most often lack such concentrations of shell, and include the debris from the exploitation of inland habitats. Such debris may include stone tools and the remains of animals that were hunted, butchered, and cooked, as well as tools for grinding nuts and seeds. Archaeological sites on the continental shelf may be composed of a series of deposits that document the sea level rise and resulting change in the relative distance of the site from the sea. As the sea level rose, sites that were once used for the exploitation of terrestrial resources may have become bases for the exploitation of intertidal resources as the shoreline approached, and were finally abandoned as the sites became inundated. As stated in BOEM (2013:23), the order of site occupations recorded in such layered archaeological sites can reveal the sequences of environmental changes associated with rising sea levels and the resulting changes in human behavior and resource preferences.

Not all prehistoric sites would have been well preserved. Prehistoric sites on the paleolandscape of the POCS would have been subjected to the erosive effects of water as rising sea levels advanced the shoreline of the Pacific Ocean to the east. Inman (1983) suggests erosion would be widespread and sites may not have been preserved except in exceptional circumstances, where conditions on the landscape, such as clusters of plants and trees, or rocky overhangs, would have protected such deposits from erosion. Such conditions might be expected in the ecological and geomorphic contexts associated with lagoons and terraces. Snethkamp et al. (1990:111-102; Bickel, 1978) suggest that the same classes of physiographic locations that have a high potential for site preservation on land may have offered the highest potential for preservation during and following the process of inundation. Site preservation depended upon at least three factors: degree of protection of site deposits by overlying sedimentation prior to inundation, duration of exposure to increased forces of erosion

associated with time spent in the intertidal zone during the transgression, and intensity of wave energy. As is true of sites on dry land, rapid burial of sites prior to inundation would have created the best conditions for preservation during inundation. An example of rapid burial on dry land occurs when a river overflows its banks and leaves behind a thick layer of dirt (sediment) and debris on the surrounding landscape. The burial of sites on the continental shelf is most likely to have occurred in river floodplains and terraces. Prehistoric sites that were not rapidly buried, but remained on or near the surface of the POCS were most likely washed away (BOEM, 2013:25). The erosive effects of the Pacific's wave actions on buried archaeological would have been reduced through time, as the sea level continued to rise and the depth of the water increased. The subtidal zone includes all of the seafloor below the normal reach of high wave energy, and offers a more stable environment conducive to the preservation of inundated sites, especially if they had been buried beneath sediments prior to inundation (Snethkamp et al., 1990:111-105 in BOEM, 2013:26). All of the continental shelf within the study area is located within the subtidal zone and as sea level rose, the intertidal zone migrated landward leaving behind a layer of sand in the subtidal zone.

BOEM (2013: Figure 17) depicts shoreline contours in the study area that were present on the exposed POCS coastal landscape during the time since the Last Glacial Maximum. Contours depicted include 12,000 BP, 13,000 BP, 14,000 BP, 16,000 BP and 18,000 BP shorelines east and north of Redondo Canyon. It is also possible that inundated prehistoric sites on the POCS that may have been preserved along the margins of paleochannels or intervening buried landforms were buried under a substantial layer of sediment and are deep enough to remain unaffected by the proposed Project. However, the depth of such protective sedimentation, compared to the depth of anticipated Project-related ground disturbance has not yet been analyzed.

In summary, the study area has the potential for as yet undiscovered prehistoric archaeological deposits. Zones within the study area of moderate to high potential for such deposits are highly localized, and identification of these localities would require a sophisticated analysis of the pre-submergence landscape within the study area, and modeling of subsequent conditions of submergence and rate of deposition throughout the marine transgression.

### Prehistoric Watercraft

Native Americans employed watercraft for transportation in the bay and between the mainland and the Channel Islands. In addition to the simpler vessel types in use, a more complicated watercraft design, the stitched-plank canoe or *tomol* was employed to access the Channel Islands offshore. Human occupation of the Santa Barbara Channel Islands began as early as 13,000 years ago and would have required the use of watercraft to transport people from the mainland to the islands, as the route was covered by water since at least the Pleistocene (MMS, 1987).

After establishment of the Spanish Mission system, by request of the Franciscan padres, the Chumash were known to navigate their *tomols* around the northern Channel Islands of Anacapa, Santa Cruz, Santa Rosa, and San Miguel (Cunningham, 1989:76). *Tomols* were also used by the Mission padres to procure otter pelts by trading with the occupants of the Channel Islands and to ferry goods to and from foreign trading vessels.

The balsa reed bundle craft used by the Gabrieliño throughout the Los Angeles County area has an even greater distribution along the California coast. The balsa boat was used both in ocean and inland water navigation (Hudson, 1976). It is reasonable, therefore, to assume that during the 13,000 years of navigation, some native vessels may have been inundated, stranded, or capsized in the study

area. However, given the fragile nature of these craft, in terms of construction methods and perishable materials, it is unlikely that evidence of such vessels would be preserved in the nearshore environment.

## Historic Setting

### Historic Exploration, Settlement, and Commerce

The written history of the area of Redondo and Hermosa Beaches began in 1542 when Juan Rodriguez Cabrillo discovered Santa Monica Bay, which became a major seaport during the latter half of the nineteenth century. A discussion of the history of Hermosa Beach is provided below in the terrestrial cultural setting. The following is a discussion of the maritime history and cultural setting organized by three historic time periods, including the Maritime Exploration Period (1542 and 1775), the Spanish/Mexican period (1769 to 1846), and the American Period and development of the coastline (1846 to the present). A minority of authors have argued that Chinese and Japanese may have visited the coast prior to 1542; however, they have not provided substantive evidence in support of their claims (BOEM 2013:187).

### Maritime Exploration Period (1542-1775)

Juan Rodriguez Cabrillo, a Portuguese pilot and navigator, commanded an expedition to explore the California Coast north of Cedros Island in Baja California. With the hope of locating the fabled northwest passage, the “Strait of Annan”, and determining if Asia could be reached by following the Pacific Coast north, he departed Navidad near Acapulco in June of 1542 in the *San Salvador* and the *Victoria* (Bancroft, 1886:1). Cabrillo’s was the first European expedition to explore along the California coast. Cabrillo died during the voyage and his remains are believed to be buried on one of the Channel Islands, possibly San Miguel Island (Mortiarty and Keistman, 1973; Hole and Heizer, 1973).

Other explorers followed the Cabrillo expedition, including Pedro de Unameno who opened the Acapulco-Manila trade route between the Philippines and Mexico in 1565, allowing Spain to realize Columbus' dream of a new trade route with the Indies. The Manila galleon trade lasted until 1815 (Schurz, 1939; Keistman, 1964; Hole and Heizer, 1973). Another expedition led by Sebastian Vizcaino in 1602 produced fairly accurate charts of the coast and harbors of Southern and Central California.

The development by Spain of the Manila galleons in 1565, which transported Chinese porcelain, silk, ivory, spices, and other exotic goods from Asia to Spanish settlements in Mexico, resulted in the inclusion of the west coast into global trade (BOEM, 2013:188). The Manila galleons sailed annually from the Philippines bound for Acapulco. The sailing masters steered the galleons as near to 30 degrees north latitude as possible, often having to travel further north to find favorable winds. After the long trip across the Pacific, the ships turned south upon seeing the first indications of land and thus avoiding the uncharted hazards of the California coast (MMS, 1987). If all went well, the first land seen by the sailors would be the tip of the Baja peninsula. The ship then sailed to Acapulco. Many galleons never made it to safe harbor in Acapulco. Some of these included the *Capitana* (unknown location, circa 1600); *Nuestro de Senora Aguda* (Catalina Island, circa 1641); and the *Francisco Xavier* (Columbia River, Oregon, circa 1707). Galleons also fell prey to pirates such as Sir Francis Drake and Thomas Cavendish (*Santa Ana*, off the tip of Baja, 1587), and George Compton (*San Sebastian*, aground on Catalina Island, 1754) (Schurz, 1939; Bancroft, 1886; Meighan and Heizer, 1952).

When Spain finally colonized California, all Spanish ships sailing along the California coast including the Manila galleons, were required to stop at Monterey. Schurz (1939) states that over 30 Manila galleons were lost over the 250 years of trade. A few were wrecked on the westward passage and others shortly after leaving Manila. At least a dozen remain unaccounted for.

During the following period of Spanish rule, George Vancouver, an Englishman, explored much of the Pacific coast between 1791 and 1795, which was the last documented exploration of coastal California by ship.

**Spanish (1769 to 1818) and Mexican Colonial Period (1818-1848)**

The years of the Spanish-Mexican hegemony in California saw increasing numbers of vessels arriving on the California coast. These engaged in the sea otter fur trade, smuggling, and the legal trade of China's goods in exchange for California's abundant hides and tallow from the vast herds of cattle kept at various private ranchos (Ogden, 1923).

The sea otter trade, existing roughly from 1784 to 1848 though declining markedly after 1830, and the hide and tallow trade of the 1830s and 1840s, were the major international commercial activities that brought ships to California until the Gold Rush of 1849. While certain Spanish and later Mexican citizens were authorized to conduct business on behalf of the government, most commerce consisted largely of smuggling by Yankee ships from East Coast ports. Spanish and later Mexican authorities made trading except through specified ports either outright illegal or imposed exceedingly high tariffs to protect their economic interests.

To the inhabitants of colonial locations like California, participating in these smuggling ventures was the only way to acquire some common conveniences and luxury goods. Smugglers in the otter trade would buy as many skins as possible in California and then sail to China and trade them for goods that brought high prices in New England or Europe. Otter furs were initially supplied by Native Americans working for the missions. Later, Aleut Islanders from Alaska working for the Russians competed for this lucrative trade.

The hide and tallow trade consisted of buying cattle hides from the vast ranchos in California and shipping them to New England's expanding industrial base for the production of leather goods for domestic use and export. Most of the hide and tallow trade took place in Southern California. The Mexican-American war of 1846 and the gold rush of 1849 permanently changed the character of California shipping (MMS, 1987:82). Clipper ships and side-wheel steamers soon eclipsed the outdated sailing brigs and what had in Hispanic times been a sparsely-populated coast with a livestock-raising economic base supplemented by some fur trading, was transformed into a thriving, densely-populated, American state with a diverse economy.

**American Period (After 1848)**

With the discovery of gold in California in 1848, the primacy of San Francisco as the principal port on the West Coast was confirmed, as thousands of vessels made their way to San Francisco as part of the Gold Rush. The Pacific depended on ships bringing raw and manufactured goods, immigrants, and capital until the completion of the transcontinental railroad in 1869 offered an alternative method of transportation for commerce (Delgado, 1989:8). California waters were soon alive with clipper ships and side-wheel steamers. Lumber, bricks, food, machinery and labor were provided by vessels because San Francisco and the rest of California had only scarce agricultural and industrial output. Soon, however, reciprocal trade burgeoned with the establishment of lumber mills, farms, factories and ranches. One of the initial maritime trades to develop in the aftermath of the Gold Rush

was the active commerce resulting from the influx of goods from the eastern seaboard and Europe to San Francisco, from which these goods were subsequently shipped to various smaller ports on the coast. Lumber, hay, dairy products, produce, and meat were shipped up and down the coast.

Coastal trade in California continued to grow with the expansion of mining, agriculture, fishing and manufacturing. California's burgeoning economy coupled with the natural physical barrier of the mountains of the Sierra Nevada to terrestrial commerce resulted in coastal growth at an unparalleled rate (Caughey, 1970, in MMS, 1987:82). Rapid industrial growth and the advent of rapid technological development in the shipping industry in the latter half of the nineteenth century resulted in larger and larger wood, iron and steel ships. Southbound sidewheel steamers carried gold shipments from the gold fields. Spanish ships bringing grain from Chile were common during the last half of the 19th century. In the last quarter of the 19th century, lumber schooners were bringing lumber and railroad ties from the north, while huge British iron barks were bringing rails and heavy machinery round the horn (Caughley, 1970). With the development of agriculture in California, barks could carry grain out instead of sailing "in ballast" (without any cargo). Steamships and schooners were being built on this coast and steel-hulled ships were being built on the East Coast and elsewhere. The increasing need for coal brought in British ships from Newcastle, which were later used along with San Francisco ferryboats as fishing barges up and down the coast. Others were converted into cargo barges for use in the coastal trade. A large percentage of these ships sank along the California coast and constitute a significant element of the cultural resources that may be found in the study area. From the latter quarter of the 19th century, the Japanese dominated the California fishing industry with vessels of traditional Japanese design. During the first quarter of the 20th century, the Japanese fishing communities were gradually supplanted by Portuguese and Italian fisherman, and were finally displaced altogether when World War II brought about their relocation (USDOI, BLM, 1979:IV-115).

Coastal growth resulted in ships of all kinds from all over the world bringing in a variety of goods and distributing California products to ports worldwide (MMS, 1987:82). The latter half of the nineteenth century saw rapid industrial growth and the advent of rapid technological development within the shipping industry. Larger and larger wood, iron and steel ships appeared. By the end of the 19th century, steamships were replacing sailing vessels as the primary mode of transportation, and the Pacific coast of the United States became prominent in shipbuilding. By World War I, the diesel engine and the oil-burning steam turbine had replaced sail for all but bulk cargoes. As steam replaced sail, the internal combustion engine became popular.

California became the American gateway to the Pacific world and virtually every type of ship, large and small, was seen in California waters. Through the years separating the two World Wars, two additional shipping phenomena were added to southern California: the 'Hollywood Navy' and the U.S. Navy's Pacific Fleet.

The Hollywood Navy encompasses several vessels and barge mock-ups created to look like historic vessels and/or portions of historic vessels that were used in movies and/or destroyed during filming. Examples of those destroyed for movies near the Project area include the following:

- *Tarus [Taurus]* (BOEM 3599/MMS 333), a wooden 551-ton American Schooner built in 1901 or 1902 that was burned/blown-up for the Movie Captain Blood off Catalina Island in 1924.
- *Gambler* (listed as "Unknown" MMS 351) a Steam Sidewheeler destroyed for a movie outside of the Long Beach Harbor.

- *Charles F. Crocker* (BOEM 666/MMS 65), an 860-ton barkentine built in 1890 that was run aground and de-masted for a movie off Santa Catalina Island in 1929
- *Dauntless*, a schooner that was blown up for the movie "The Rescue" off Catalina Harbor in 1928
- *Los Amigues* (MMS 718), a 7 to 11 ton wooden gas powered yacht (1 masted schooner) built in 1905 burned/blown-up for a movie off the Isthmus at Catalina Island in 1926.
- *Margaret C* (BOEM 2322/MMS 200), a schooner/barge conversion built in 1889 that was blown up for a movie in Catalina Harbor in about 1933
- S.N. Castle (MMS 278) a 514-ton barkentine built in 1886 burned and sunk in Catalina Harbor/or San Pedro for the movie "Old Ironsides" in 1926.
- USS Moody DD 227 [MMS 403] built in 1918 and blown-up for MGM movie "Hell Below" in San Pedro Bay in 1933.

Of the above shipwrecks produced by Hollywood, the *Tarus* and *Charles F. Crocker* are located within a 10-nautical mile radius of Route D.

The U.S. Navy Fleet as cited above pertains to all vessels built for or used by the U.S. Navy during WWI or WWII that have been decommissioned and converted for pleasure, fishing, transport, survey or other uses that were lost in the study area. While not apparent by their use at their time of loss, some may have battle stars, or other historic associations that may require further research to determine their significance and eligibility for the NRHP.

**Historic Sea Routes and Shipwreck Distribution**

Coastal and overseas routes in use in Southern California today are those first established by the Spanish. While traversing coastal waters without stops, ships pass just seaward of the Channel Islands. Local traffic passes between the islands and the mainland. Overseas ships bound directly from or to a specific port will usually take a route south of the northern Channel Islands. Motorized ship traffic traverses within these shipping lanes. Sailing vessels, however, must constantly tack and jibe in order to make headway up the coast because of the prevailing northwesterly wind pattern. Sailing ships running down the coast usually will not tack or jibe because they are running before the wind. These routes are compiled from descriptions in the historic record and idealized depictions taken from route charts published by various shipping lines (MMS, 1987:85). Branching of shipping lanes to reach local ports varies with the point of origin, destination, and direction and force of the wind, which changes with the seasons. Ships often take shortcuts to reduce running time outside of the shipping lanes. While historic shipping lanes can be plotted, they are not always adhered to, and vessel losses may occur within the lanes or shoreward. The density of losses increases with the occurrence of natural hazards such as rocky shoals, headlands, reefs, as well as in the vicinity of ports-of-call.

The coastal shipping lane that serves local ports runs between the mainland and the offshore islands. This system is now separated into northbound and southbound lanes to reduce traffic accidents. These lanes occupy the historic coastal shipping lane. Ports of call continue to be accessed from the coastal shipping lane. This configuration has little changed since the first Spanish explorations and the Philippine Manila galleon trade.

While numerous vessels have been reported lost in the larger study region, the presence of many of these vessels may be eliminated by plotting their accurate or semi-accurate coordinates, which places them outside the immediate study area, or by description of their loss, which indicates a

stranding or grounding adjacent to the shoreline, sandbars, rocks, and reef areas. The remaining vessels include those for which the accurate coordinates for their loss location are unknown and those vessels whose accurate or semi-accurate coordinates place them within the study area.

A large number of vessels whose coordinates were never reported were lost enroute along the California coast. The planned cable routes cross through known historic shipping lanes and any of these vessels may be located within or near the deep water portion of the study area. While the distribution of shipwrecks is influenced by environmental factors (e.g., wind, weather and nearshore hazards), it is influenced even more by vessel traffic patterns. Due to the vagaries of wind and weather these sea routes could include a "sea lane" (an established sea route) more than 150 nautical miles wide. The sea lanes established historically are still in use today and appear on modern navigational charts.

The nine Manila galleons reported lost offshore of California could be located anywhere in the Pacific; however, given the southerly destination of Mexican ports there is a potential that they may be encountered within the deep-water portions of the proposed cable routes in the POCS.

## Local Maritime History (Onshore)

### Hermosa Beach

The history of Hermosa Beach is discussed below in the terrestrial resources section. The history of Redondo Beach and its pier is perhaps more relevant to a consideration of the historical context of maritime cultural resources to the study area.

### Redondo Beach

In the late 1700s through the late 1800s Redondo Beach, located immediately south of Hermosa Beach in the Santa Monica Bay, was a rich farming and ranching area that was part of the 43,000 acre Dominguez Rancho set aside in the Spanish Land Grant of 1784. The following text provides additional information about the maritime history of the city. Incorporated on April 29, 1892, the City was already well served by rail and steamship lines and was an early port for Los Angeles. The lumber and shipping industries preceded the Pacific Electric Big Red Car Line, which contributed to the reputation of Redondo Beach as a resort and recreation area for Southern California's rapidly expanding population. A large fire burned down most of the area of Redondo Beach between Emerald Street and Diamond Street in 1893. The location of the Redondo Pier in 1893 is shown in Chart 5144 of Santa Monica Bay (U.S. Coast Survey, 1893). The chart identifies the location of an offshore oil well and field area at a depth of 22 meters (12 fathoms, 72 feet) and extending in an ellipse at about 33 degrees 50 minutes N. latitude, from 118 degrees, 25 minutes to 118 degrees 26.5 minutes W. longitude. Based on the Chart 5144, the oilfield appears to be within the southernmost portion of the Project area. Another pier was built after the destruction of the first pier in 1895, next to the old Redondo Hotel, very close to where the Redondo Pier is located today. The Electric Railway originally ran down Diamond Street to the Pier. The current municipal horseshoe shaped "endless pier" was built in 1915 and rebuilt in 1929 after storm damage. The current Monstad Pier extends from the southern end of the municipal pier built in 1927 by W.M. Monstad.

On the north end of Redondo Beach, between Pacific and Francesca avenues, was an area of the Old Salt Lake. Local Native Americans obtained salt from this lake. Sometime in the 1850s, Johnson and Allanson erected the necessary works to manufacture salt by artificial as well as solar evaporation.

The peak salt yield of 450 tons was achieved in 1879. This site has been declared a State Historic Landmark No.373 and is mapped in the South Central Coastal Information Center as No. 186114.

During the 1890s Redondo Beach proved a perfect deep-water harbor, becoming an important part of the thriving Los Angeles area trade. Ocean-going vessels anchored offshore, goods from Asia and the Pacific slope were unloaded onto its wharves, a luxury hotel (Pacific Beach and Bathhouse) stood on the hill above, and railroad tracks ran from Los Angeles through Redondo and out onto its docks. Rail, sail and steamship lines served a thriving lumber and shipping business and Redondo Beach soon established a splendid reputation as a popular beach resort for ocean starved California inlanders.

When Federal funding was given to San Pedro in 1893, it ended Redondo's shipping trade. Instead, the city became a resort community and the terminus of three railroad lines including the Pacific Electric. Through the efforts of Congressman Cecil King and local businessmen, the entire harbor was renovated. Pleasure boat facilities were added in the 1960s. King Harbor as it exists today bears little resemblance to the early harbor of the 1890s.

The construction of a breakwater at San Pedro about 1912, as well as other political and economic developments, led to what is now the Los Angeles/Long Beach Harbor complex and Santa Monica Bay was eclipsed as the major local seaport.

### 3.4.1.2 Terrestrial Cultural Resources

#### Cultural Resources Categories

Four broad types of terrestrial cultural resources are considered in this EIR: prehistoric archaeological resources, historic period archaeological resources, built-environmental resources, and ethnographic resources.

**Prehistoric archaeological resources** are places that Native Americans lived, performed activities, altered the environment, and created art before sustained contact with Europeans began in the 1770s. Prehistoric resources contain features left behind by these activities as well as artifacts and subsistence remains. Additionally, they may contain human remains in the form of burials, cairns, or cremations.

**Historic period archaeological resources** are places where people lived, performed activities, altered the environment, and created art between 1769 AD and 50 years before the present. Like prehistoric archaeological resources, historic period archaeological resources often occur where people lived, but also include the remains of industrial, agricultural, recreational, and waste management activities. These can be surface features, subsurface features, or the remains of activities, including debris scatters.

**Built-environment resources** were constructed at least 50 years before the present. The most obvious are historic period buildings, but this category also includes structures, such as bridges and dams, and objects, such as monuments and signs. Groups of built-environment resources can be designated as historical districts.

**Ethnographic resources** are those places that have importance within a particular culture or are tied to important historical events. Generally these places are of importance to people in the present. They may also represent events in local, state, or national history; be tied to particular people; or relate to the mythology and traditions of particular cultures. One type of ethnographic resource is

the traditional cultural property (TCP). TCPs are most commonly associated with living Native American cultures but also include areas important to other social groups, such as minority ethnicities.

## Cultural Resources Setting

### Prehistoric Context

Hermosa Beach is located in the southern California Coast prehistoric culture region that encompasses the Transverse Ranges, the northern Peninsular Ranges, and the coastal zone and near-shore islands from Point Conception in the north to San Diego Bay in the south. The culture-historical chronological sequence for the area consists of four major periods: the Pleistocene-Holocene Transition (14,000 to 10,000 years B.P.); Early Holocene (10,000 to 7,000 years B.P.); Middle Holocene (7,000 to 4,000 years B.P.); and Late Holocene (4,000 to 200 years B.P.).

Humans arrived in what is now California prior to the shift between the late Pleistocene and early Holocene, approximately 12,000 years B.P. This interval of time also called the **Paleo-Indian Period**. During this period, the climate became progressively warmer and wetter and most of California's megafauna, including mammoths, bison, horses, and ground sloths, became extinct. Archaeological evidence from the Pleistocene-Holocene Transition is scarce and usually only dated by the presence of diagnostic artifacts such as fluted Clovis projectile points and crescent-shaped flaked stone tools. Resources that date to the earliest portion of this period are located primarily near the coast (Erlandson et al., 2007; Rondeau et al., 2007). Paleo-Indian period resources in the Hermosa Beach vicinity include human remains at the Haverty Site and Arlington Springs on Santa Rosa Island. The earliest archaeological remains come from Daisy Cave on San Miguel Island. They include the earliest marine shell midden, basketry, and cordage in North America and implies the use of boats by the terminal Pleistocene. At this time, sea levels were at least 50 meters lower than the present day, so what is now the Santa Monica Bay was a broad coastal plain with rocky shores and a water course running through what is now the Redondo Submarine Canyon (Masters and Aiello, 2007).

The **Early Holocene** (10,000 to 7,000 years B.P.) was characterized by warming temperatures, rising sea levels, and shifting environments. Large, precipitation-fed lakes covered areas of the California deserts and valleys, providing rich hunting grounds for people during the Early Holocene. These lakes and the wetlands surrounding them began to dry out during this period. In the Early Holocene people focused on exploitation of small game, waterfowl, and freshwater shellfish found around lakes and wetlands, especially in the Mojave Desert in southeastern California. It is at this time that the earliest tools for processing starchy plant foods appeared, consisting of a flat stone slab (millingslab) and a stone used to pulverize the plant material (handstone). These were likely used for grinding grass seeds into flour. In some areas near the end of this period, people increasingly ate acorns as their staple food and lived in year-round settlements, a pattern characteristic of the Middle and Late Holocene.

The **Middle Holocene** (7,000 to 4,000 years B.P.) was warmer and drier than the periods before or after it, continuing the environmental shift across much of California. Throughout this period there appears to be a high dependence on plant foods indicated by a profusion of stone milling tools. Cobble mortars and pestles appeared at the end of the Early Holocene, but become more common between 6,000 and 5,000 years B.P., implying a greater reliance on acorns in the diet (Arnold and Walsh, 2010; Jones and Klar 2007). Small game, such as rabbits and quail, appears to have been important as well, leading to a reduction in the size of projectile points used (Arnold and Walsh,

2010). The Millingstone Tradition of the Southern Coast consisted of seasonally mobile groups that relied heavily on plant and near-shore marine resources. Small, permanent villages appear in the Channel Islands at this time, pointing to the existence of well-established regional trade networks and a society with higher populations, greater labor specialization, and a more complicated political system (Byrd and Raab, 2007; Glassow et al., 2007). The olivella shell bead trade appears during this period and signals the beginning of long-distance trade networks (Glassow et al., 2007). It is during this period (around 5,000 years BP) that sea levels ceased to rise at approximately the location of the modern coast. It is also at this time that dunes formed in what is now Hermosa Beach (Masters and Aiello, 2007).

The **Late Holocene** (4,000 to 200 years B.P.) was the period where the environment and human cultures settled into the pattern that was recorded at the time of European contact. Sea levels stabilized at modern levels and the climate became cooler and wetter, with the exception of a severely hot and dry period between approximately 1,150 to 650 years B.P. (Arnold and Walsh, 2010). This climatic disruption led to technological and sociocultural changes in many regions. It appears that by this period Native Californians were engaged in widespread environmental management using tools such as controlled burning, resulting in larger harvests and an increase in small and large game animals such as rabbits and deer (Arnold and Walsh, 2010).

This period is too well documented and too diverse to summarize quickly. None-the-less, a series of themes appear to hold true across California during this time. There was widespread population growth, despite local shifts in how populations were spread across the landscape. Year-round settlement increased, accompanied by more complicated religions, governments, and economies. Populations intensified their resource collection, which may have made some resources become scarce. Territoriality appears to have increased, leading to greater intergroup violence in some areas. Regional exchange networks spread, linking much of the State with eastern Oregon, Nevada, Utah, and Arizona through the trade of olivella, dentalia, and clamshell beads. Some areas, particularly the San Francisco Bay, the Sacramento Delta, and the Southern Coast and Channel Islands experienced the emergence of social classes and complex governments (Jones and Klar, 2007). Near the end of this period, bow and arrow technology entered California from the northeast and southeast, resulting in population movements and shifts towards hunting larger game. By the time of sustained European contact at the end of the 18th century, there were at least 300,000 Native Californians organized into over 600 social groups known as tribelets (Arnold and Walsh, 2010).

## Ethnographic Context

When the Spanish colonists and missionaries settled the southern coastal areas of California, the indigenous inhabitants of the Los Angeles area were given the Spanish name “Gabrieleño,” after Mission San Gabriel where many of the inhabitants were forced to reside. In the 20th Century, modern descendants also began to use the native term “Tongva” to refer to themselves. Gabrieleño/Tongva territory included the watersheds of the San Gabriel, Santa Ana, and Los Angeles rivers; portions of the Santa Monica and Santa Ana mountains; the Los Angeles Basin; the coast from Aliso Creek to Topanga Creek; and San Clemente, San Nicolas, and Santa Catalina islands. The Gabrieleño language is classified as belonging to the Takic group (or “Cupan”) of the Uto-Aztecan language family and is subdivided into four or more separate dialects. The Project area is in the region where the Fernandeño dialect of the Gabrieleño language was spoken (Shipley, 1978). The names Gabrieleño and Fernandeño refer to the two major missions established in Gabrieleño territory: San Gabriel and San Fernando.

The Gabrieleño/Tongva inhabited some 50 to 100 permanent villages in fertile lowlands along streams and rivers and in sheltered areas along the coast at the time of European contact. The larger permanent villages most likely had populations averaging 50 to 200 persons. Sedentary villages also had smaller satellite villages located at varying distances; these remained connected to the larger villages through economic, religious, and social ties.

The Gabrieleño/Tongva were first contacted by Europeans in 1542 when Juan Rodríguez Cabrillo entered the area. Following subsequent Spanish visits, colonization began in 1769, precipitating the establishment of Missions San Gabriel (1771) and San Fernando (1797). Due in part to the introduction of Euro-American diseases and the harsh effects of mission life, the Gabrieleño/Tongva population and culture suffered a gradual deterioration. Following the secularization of the missions, most surviving Gabrieleño became wage laborers on the ranchos of Mexican California. In the early 1860s, a smallpox epidemic nearly wiped out those remaining. The combination of disease, forceful reduction, and poor diet contributed to their disappearance as a culturally identifiable group in the 1900 federal census (Bean and Smith, 1978). However, persons of Gabrieleño/Tongva descent have continued to live in the Los Angeles area to the present time and many have reestablished tribal groups.

South of the Project area, the Gabrieleño/Tongva used an area they called "Engva" or "The Place of the Salts." In this location there was a vast salt pond as well as adjacent freshwater springs. Although it is unknown if the Gabrieleño/Tongva maintained a permanent settlement near the salt pond, the data from past archaeological excavations strongly suggest the area was used repeatedly for short periods. Salt was later mined by Euro-American residents as described under the subheading "Redondo Beach" in Section 3.4.1.1 above.

**Historic Context**

The history of California has traditionally been divided into three historical periods: the Spanish Period (1769–1821), the Mexican Period (1821–1848), and the American Period (1848 to present). During the **Spanish Period** (1769–1821) from the time of the overland Portolá expedition until the culmination of the Mexican War of Independence, the Hermosa Beach area was a portion of Rancho San Pedro, but likely experienced little Spanish presence other than possibly cattle grazing. It was a considerable distance from the centers of population and commerce. The Pueblo de los Angeles was 15 miles to the north-northeast, Mission San Gabriel was about 22 miles to the northeast, Mission San Fernando was about 28 miles to the north, and Mission San Juan Capistrano was about 48 miles to the southeast (Clark and Archer, 2014).

The **Mexican Period** (1821–1848) began at the end of the Mexican War of Independence in 1821. The missions continued to operate as under Spanish control until 1833 when the Secularization Act was passed. This withdrew ownership of the mission lands from the Catholic Church, putting their extensive holdings into private hands. While the lands were supposed to go to the Native Californian neophytes, most were either granted away as ranchos to prominent and wealthy families of Mexico and to reward soldiers for their service during the revolution. The number of ranchos increased from 30 to over 450 by 1845. Hermosa Beach was part of the *Rancho Sausal Redondo* Mexican land grant, established in 1837.

The **American Period** (1848 to present) began with the end of the Mexican-American War and the ceding of California to the United States. The discovery of gold in 1848 began the mass influx of immigrants to the region and quickly ushered in statehood by 1850. The initial influx of immigrants

from eastern portions of Continental U.S. was limited by the distance and hazardous journey to reach California. The first Transcontinental Railroad was completed in 1869 and ushered in an era of increased immigration. This mass immigration westward only increased in the 20th century with the completion of transcontinental highways such as Route 66.

**History of Hermosa Beach**

The land upon which Hermosa Beach resides was historically part of the *Rancho Sausal Redondo* (translated as "round clump of willows") land grant given in 1822 by the King of Spain, via Captain Jose Arrega—the Comandante of Santa Barbara—to Antonio Ygnacio Avila. Upon Avila's 1858 passing the land was sold by his heirs. By the late 1800s much of the Rancho was owned by the Canadian Daniel Freeman who grew barley for livestock grazing.

The Hermosa Beach Land and Water Company was organized by Moses Sherman and Eli P. Clark on 1,500 acres of the former Sausal Redondo rancho, which they had purchased in 1900 for $35 per acre. That same year, the selling agents—Burbank and Baker—subdivided what would become Hermosa Beach. In all likelihood the land was purchased and subdivided by Sherman and Clark as an investment/ resort endeavor. They also owned the Los Angeles Pacific Railway Company—an interurban light rail system with a line servicing the area, running from Marina del Rey to Redondo Beach. This rail undercut the passenger occupancy of the Santa Fe rail line spur that had been servicing both freight and passengers from Inglewood to Redondo Beach, passing through Hermosa in what is today the City's Greenbelt.

Hermosa Beach's first residents would move to the area in 1901. Significant early families included the Clarks, the Mattesons, the Kerwins, and the Reinbolts. Hermosa's first building was constructed at the southwest corner of The Strand and Pier Avenues by Clement L. "Flying Bob" Reinbolt who claimed to be Hermosa's first resident. Reinbolt was named superintendent by the Hermosa Beach Land and Water Company, and was also the City's first planner and fire chief (Miller et al., 2005:39).

Also in 1901, the first official citywide survey was undertaken, establishing the locations of the City's wooden boardwalk in addition to Hermosa and Santa Fe avenues. After multiple incidents of ocean-related damage from storms, the boardwalk, originally constructed in 1908, was repaved in concrete and became known as The Strand by 1914 (Miller et al., 2005:20). The Strand would be paved to the northern portion of Hermosa Beach in the late 1920s. The first Hermosa Beach Pier was constructed in 1904 and lasted until storms destroyed it in 1913. Additionally in 1904, Santa Fe Avenue—now Pier Avenue—was paved for its first seven blocks to the former railway depot location at the present Valley Drive. The City of Hermosa Beach was formally created on January 14, 1907. During these early years Hermosa Beach developed as a seaside resort town, with numerous small cottages and bungalows.

Commercial development began around 1908 at the corner of Hermosa and Pier avenues with the Morse and Morse general store. The intersection remains a primary commercial node in the City. Around this same time (1909) the first church was built in Hermosa Beach, St. Cross Episcopal, established around services held in the back room of the Hermosa Beach Post Office, by the Reverend Charles H. de Garmo who led a church based out of Redondo Beach (Miller et al., 2005:15). During this period, grazing gave way to carnation growing as an early local cottage industry (Miller et al., 2005:17). Poultry, vegetable, and truck farms were also common across the South Bay, including In Hermosa Beach (Miller et al., 2005:41).

In 1914, the Marina Del Rey to Redondo line of the Los Angeles Pacific Railway was sold to Henry Huntington and his company, Pacific Electric, which operated the ubiquitous "Red Car" light rail system. Red Car service would continue until 1939 within Hermosa Avenue: its only alignment through the City. The Red Car had stops at both 25th Street and Longfellow Avenue. Early developers attempted to market Hermosa Beach's northern portion as an artist's community, hence many of the streets were named after poets such as Longfellow, Ruskin, Browning, and Hawthorne, all within the "Shakespeare Tract." The entirety of this northern portion was known as Shakespeare Beach during the early part of the twentieth century.

As Hermosa and Pier avenues became primary nodes for the City, the Chamber of Commerce and public library were installed in a prominent, newly completed building of an arched, Spanish eclectic design located at the pierhead in 1914 (Miller et al., 2005: 41).

During Hermosa Beach's early years, the City's primary commercial endeavor was the Hermosa Biltmore Hotel. Constructed in 1924 as the Hermosa Beach Surf and Sand Club, and changing name shortly thereafter, the massive, multi-story block of a building was a shoreline landmark for many years and hosted dignitaries and celebrities alike. As in similar resort towns, the Hermosa Biltmore was an economic generator, with various entertainment and commercial endeavors appearing along Pier Avenue to take advantage of its popularity. These included the Either/Or Bookstore, Insomniac Café, and most notably the Lighthouse; by the 1950s these establishments gave the Pier Avenue stretch a bohemian energy. The Lighthouse is particularly notable as the beacon of West Coast Jazz. Managed by former Stan Kenton bassist Don Rumsey, beginning in 1949 and running through late 1970s, the venue hosted innumerable jazz acts; during the mid-century period, many record albums, by such notables as Art Pepper, Chet Baker, and Miles Davis, were taped live at the Lighthouse.

Largely as a result of the baby boom generation, between 1940 and 1950 the population of Hermosa Beach grew from 7,197 to 11,826. Though surfing appears in Hermosa Beach in the 1930s, during the immediate postwar era it became a significant recreational activity for which the City became well known. Surfing greats such as Dewey Weber and Leroy Grannis (both a surfer and world famous photographer) and numerous board shapers such as Greg Noll, Phil Becker, Hap Jacobs, and Bing Copeland all made Hermosa Beach their home (Miller et al., 2005:65). The board shapers set up shop at 6th Street and Cypress Avenue in a complex that became known as "Shapers alley." In 1946, John "Doc" Ball—a local dentist and avid surfer—published California Surfriders, an early and significant lifestyle publication for the surfing culture.

The 1960s and 1970s were a peculiar and somewhat difficult time for Hermosa Beach. The construction of King Harbor to the south and Marina del Rey to the north had the effect of crippling the surf and adversely impacting the beaches for which Hermosa Beach had become known (Miller et al., 2005:58). The Hermosa Biltmore, which had fed many of the smaller nearby businesses, was demolished in 1969, and the Del Amo Center shopping mall in nearby Torrance also impacted local businesses after it opened in the early 1960s. However, the era's changes were not wholly negative. During this same period Hermosa Beach saw the advent of a recreational activity for which it is world renowned: beach volleyball. The City's first volleyball court dates from the mid-1940s on the Seawright family's property (Miller et al., 2005:39). By the late 1960s and early 1970s, the sport began to flourish with local greats such as Ron van Hagen—considered the "Babe Ruth of modern beach volleyball." By the late 1980s Sinjin Smith was the star, and professional beach volleyball became a global phenomenon, with Hermosa Beach as one of its primary nodes. The City hosts professional beach volleyball tournaments on a regular basis, and the sport has become a part of the

City's culture, with training camps, multiple permanent beach courts, and a Beach Volleyball Hall of Fame Museum, located within the Hermosa Beach Museum.

Hermosa Beach is currently a thriving, affluent and dense community with a culture still strongly tied to and identified with the beach. Among its residents are many players and staff of the Los Angeles Kings Hockey Team, which upon winning the 2014 Stanley Cup held a parade through Hermosa Beach and other South Bay communities.

### 3.4.1.3 Paleontological Resources

Potential paleontological resources are normally underground, out of sight, and not easy to locate other than by direct observation after erosion or during excavation. These resources are not found in "soil" but are contained within the geologic deposits or bedrock that underlies the soil layer. Therefore, in order to ascertain whether or not a particular study area has the potential to contain significant fossil resources at the subsurface, it is necessary to review relevant scientific literature and geologic mapping to determine the geology and stratigraphy of the area. Further, to delineate the boundaries of an area of paleontological sensitivity, it is necessary to determine the extent of the entire geologic unit because paleontological sensitivity is not limited to surface exposures of fossil material.

Significant paleontological resources are defined as "identifiable" vertebrate fossils, uncommon invertebrate, plant, and trace fossils that provide taphonomic, taxonomic, phylogenetic, paleo-ecologic, stratigraphic, or biochronological data. These data are important because they are used to examine evolutionary relationships, provide insight on the development of and interaction between biological communities, establish time scales for geologic studies, and for many other scientific purposes (SVP, 2010).

The following discussion is based on two documents: Archaeological and Paleontological Resources Assessment to Support the General Plan Update for the City of Hermosa Beach, Los Angeles County, California (Clark and Archer, 2014) and Paleontological Resources for the Proposed SEA-US Fiber-optic Cable Project, in the City of Hermosa Beach, Los Angeles County (McLeod, 2014).

#### Paleontological Setting

The Project area is located along the south central coastline of California within the Los Angeles Basin. Geologic maps indicate that the municipal boundary is underlain by ancient and recently active eolian (sand dune) deposits. These deposits are known as paralic (interfingered marine and continental) sediments, also consisting of tidal marsh deposits and alluvium and range in age from firm Pleistocene to loose Holocene deposits. From the bottom of these paralic deposits to a depth of about 500 feet below sea level is the Pleistocene San Pedro Formation, consisting of massive and poorly consolidated marine sand deposits. Beneath the San Pedro Formation to a depth of several thousand feet below ground surface are marine sedimentary units extending from the Pliocene to the Miocene and including numerous oil-bearing strata.

Geological strata present at the surface include younger Quaternary dune and beach sands and Quaternary stabilized surficial sediments that include older beach and sand dune deposits dating to the Pleistocene (Dibblee et al., 1999; Dibblee and Minch, 2007).

## 3.4.2 Regulatory Setting

The regulatory setting for cultural and paleontological resources comprises various sets of local, state, and federal ordinances serving as the legal framework in which cultural resources are identified, analyzed, and protected. These laws and regulations establish a process for compliance, define the responsibilities of the various agencies proposing the action, and prescribe the relationship among other involved agencies. In some instances the settings apply to both onshore and offshore cultural resources. In other instances certain settings will only apply to one or the other of such resource types.

### 3.4.2.1 Federal

Federal protections for scientifically significant cultural resources are primarily derive from the ***National Historic Preservation Act of 1966 As Amended*** (NHPA). If a project involves a federal property, federal permit, or federal funding, it may be considered a federal undertaking and then is required to comply with Section 106 of the NHPA (36 CFR Part 800). This regulation sets forth the responsibilities that federal agencies must meet in regard to cultural resources. Federal agencies must conduct the necessary studies and consultations to identify cultural resources that may be affected by an undertaking, evaluate those cultural resources to determine if they are eligible for the National Register of Historic Places (NRHP), assess the potential of the undertaking to affect NRHP-eligible resources, and take action to resolve any adverse effects that may occur. The NRHP eligibility criteria are very similar to those for the California Register of Historical Resources (see below).

The ***Outer Continental Shelf Lands Act (OCSLA) of 1953*** provides that the subsoil and seabed of the OCS are subject to U.S. jurisdiction, and as such, triggers other laws, including NHPA (BOEM 2014:53). The ***Antiquities Act (AA) of 1906***, enacted to protect cultural resources on lands owned or controlled by the U.S. government, has successfully been used to protect important cultural resources on the OCS in national marine monuments and other Federal marine protected areas, but has not yet been applied on the OCS outside of such areas (BOEM 2014:31-32).

The ***Native American Graves and Protection and Repatriation Act (NAGPRA) of 1990*** was enacted for the protection and repatriation of the remains of Native Americans and associated grave objects, and applies on tribal and Federal lands, defining Federal lands as any land other than tribal lands are that controlled or owned by the United States government. Although no case has yet been recorded of the application of NAGPRA in the marine context in the study area, it appears reasonable that NAGPRA would apply to the remains of Native Americans and associated objects on the OCS, when discovered during intentional excavation, and as a result of inadvertent discoveries (BOEM, 2014:47-48). It is the opinion of the authors that NAGPRA would provide the authority to protect Native American remains and associated grave objects on the OCS (BOEM, 2014:49).

Within the waters of the State of California and Federal waters from the three-nautical-mile limit to the continental shelf margin, it may be anticipated that the U.S. Army Corps of Engineers, Los Angeles District (Section 404, Clean water Act, Nationwide 12 Authorization) and BOEM may have jurisdiction over submerged cultural resources within the study area. It is the policy of the U.S. Army Corps of Engineers and BOEM to consult with the appropriate State Historic Preservation Officer regarding all federally permitted offshore activities.

### 3.4.2.2 State

***California Environmental Quality Act (Public Resources Code § 21000 et seq) (1970).*** Historical, archaeological, and paleontological resources are afforded consideration and protection by CEQA (Public Resources Section 21083.2, 14 CCR Section 15064.5). CEQA Guidelines define significant cultural resources under two regulatory designations: historical resources and unique archaeological resources.

A *historical resource* is defined as a "resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources"; or "a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code"; or "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency's determination is supported by substantial evidence in light of the whole record" (14 CCR Section 15064.5[a][1]-[3]). While Traditional Cultural Properties (TCPs) and cultural landscapes are not directly called out in the state definitions of historical resources, TCPs are places and cultural landscapes are areas, and places and areas are included as types of historical resources. Historical resources that are automatically listed in the California Register include California historical resources listed in or formally determined eligible for the National Register and California Registered Historical Landmarks from No. 770 onward (PRC 5024.1[d]). Locally listed resources are entitled to a presumption of significance unless a preponderance of evidence in the record indicates otherwise.

Under CEQA, a resource is generally considered historically significant if it meets the criteria for listing in the California Register. A resource must meet at least one of the following four criteria (PRC 5024.1; 14 CCR Section 15064.5[a][3]) for eligibility:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
2. It is associated with the lives of persons important to local, California, or national history;
3. It embodies the distinctive characteristics of type, period, region, or method of construction, or represents the work of a master or possesses high artistic values;
4. It has yielded or has the potential to yield information important to the prehistory or history of the local area, California, or nation.

Historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association (14 CCR 4852[c]).

An archaeological artifact, object, or site can meet CEQA's definition of a *unique archaeological resource*, even if it does not qualify as a historical resource (14 CCR 15064.5[c] [3]). An archaeological artifact, object, or site is considered a unique archaeological resource if "it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria (PRC 21083.2[g]):

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.

- Is directly associated with a scientifically recognized important prehistoric or historic event or person."

Under California law, cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, and/or scientific importance. All resources nominated for listing in the California Register of Historical Resources) must have integrity; the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Therefore, resources must retain enough of their historical character or appearance to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and/or association. It must also be judged with reference to the particular criteria under which a resource is proposed for nomination (PRC §5024.1).

***CEQA Guidelines, California Code of Regulations Title 14, Section 15064.5.*** When an initial study identifies the existence of, or the probable likelihood of, Native American human remains within the project, a lead agency shall work with the appropriate Native Americans as identified by the NAHC. The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials with the appropriate Native Americans identified as the Most Likely Descendant by the NAHC.

***Public Resources Code (PRC), Section 5097.5*** states that no person shall willingly or knowingly excavate, remove, or otherwise destroy a vertebrate paleontological site or paleontological feature without the express permission of the overseeing public land agency. It further states under PRC 30244 that any development that would adversely impact paleontological resources shall require reasonable mitigation. These regulations apply to projects located on land owned by or under the jurisdiction of the state or a city, county, district, or other public agency.

***Public Resources Code (PRC), Section 5097.9 et seq. (1982)*** establishes that both public agencies and private entities using, occupying, or operating on state property under public permit, shall not interfere with the free expression or exercise of Native American religion and shall not cause severe or irreparable damage to Native American sacred sites. This section also creates the NAHC, charged with identifying and cataloging places of special religious or social significance to Native Americans, identifying and cataloging known graves and cemeteries on private lands, and performing other duties regarding the preservation and accessibility of sacred sites and burials.

***California Coastal Act of 1976*** established policies pertaining to cultural resources investigations conducted for impact analysis pursuant to CEQA, NEPA, and NHPA Section 106 and 110. The act provides that "[w]here development would adversely impact archeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required" (PRC § 30244). Anyone who proposes any development in the coastal zone must secure a **Coastal Development Permit** from the **California Coastal Commission**, including those projects approved by the City of Hermosa Beach Planning Department.

The ***Abandoned Shipwreck Act*** **(ASA)** enacted by Congress in 1987 transferred ownership of submerged historic shipwrecks embedded in the bottomlands of a state's waters to state ownership. Under this law, submerged historic shipwrecks occurring within three nautical miles of a state's shoreline are owned by that state. The ASA provides authority for states to protect and manage submerged, abandoned shipwrecks through state law (BOEM, 2014:42).

Within federally owned waters, including all waters within three nautical miles of federally owned shorelines such as the Channel Islands National Park and marine sanctuary, preservation (marine sanctuary) areas of Santa Barbara and Santa Catalina Islands, and U.S. Navy controlled San Nicholas and San Clemente Islands, submerged shipwrecks remain the property of and responsibility of the federal government. Historic shipwrecks located within three nautical miles of these federally owned lands are the property of the federal government and cannot be disturbed by any activity without the effects of such action first being considered by the appropriate federal agency under Section 106 of the National Historic Preservation Act, 54 U.S.C. § 306108. (amended 19 December 2014).

### 3.4.2.3 Local

The ***City of Hermosa Beach Municipal Code Chapter 17.53*** is the City's historic preservation ordinance. According to Section 17.53.020, the purpose and intent of the City's Cultural Heritage ordinance is to: "promote the public health, safety, and general welfare by providing for the identification, protection, enhancement, perpetuation, and use of historic resources such as buildings, structures, sites, and places within the City that reflect special elements of the City's architectural, artistic, cultural, historical, political, and social heritage […]"

As set forth in Section 17.53.060, a City historic resource may be designated a landmark, pursuant to Sections 17.53.070 through 17.53.120, if it meets one or more of the following criteria:

A. It exemplifies or reflects special elements of the City's cultural, social, economic, political, aesthetic, engineering, or architectural history; or

B. It is identified with persons or events significant in local, state, or national history; or

C. It embodies distinctive characteristics of a style, type, period, or method of construction, or is a valuable example of the use of indigenous materials or craftsmanship; or

D. It is representative of the notable work of a builder, designer, or architect; or

E. Its unique location or singular physical characteristic(s) represents an established and familiar visual feature or landmark of a neighborhood, community, or the City. (Ordinance 98-1186, Section 4.)

## 3.4.3 Impact Analysis

The impact analysis for cultural resources includes discussions of methodology and approach, significance thresholds, as well as impacts and mitigation measures.

### 3.4.3.1 Methodology/Approach

#### Cultural Resources Methods and Results

The Project area is within the City of Hermosa Beach and primarily located along the coastline. The proposed terrestrial segments of the Project consist of power feed equipment (PFE) facilities, terrestrial conduit systems, landing manholes, cable landing sites with directional bores, and surface cable markers. The boundaries of the terrestrial Project area are illustrated by Figure 2-1. A record search, archival research, and pedestrian survey were conducted for these areas.

## Cultural Resources Record Search

A records search was conducted by ICF (the applicant's consultant) at the South Central Cultural Resources Information Center of the California Historical Resources Information System (CHRIS) housed at California State University, Fullerton on October 21, 2014. The record search area included the Project area plus a one-half mile buffer. The results of the records search indicate that 20 previous cultural resources investigations have been completed within the record search area, three of which include the Project area. These studies resulted in the identification of eight previously recorded cultural resources within the record search area. In addition, more than two hundred built-environment resources built between 1906 and 1971 were identified through the Hermosa Beach General Plan Update windshield survey (PCR Services, 2014a, 2014b). All of these resources appear to be individually eligible for listing on the California Register of Historical Resources because of their recognition of historical importance by a local government. Known cultural resources consist of resource types such as prehistoric shell and lithic scatters, industrial warehouses, educational buildings, and public utility buildings.

## Pedestrian Survey

An intensive pedestrian survey for archaeological and built-environment resources was conducted within the Project area on October 26 and 27, 2014. The surveyed area covered the full extent of accessible portions of the Project area. The Project area primarily consists of an urban paved, built, and landscaped environment, with groomed beach sands along the western portion of the Project area. Beyond the proposed beach landing sites, the Project area is heavily built-over, providing zero visibility for the detection of archaeological resources. Proposed conduit alignments were found to be in urban areas or along existing utility rights-of-way and again afforded zero visibility for the detection of archaeological resources. The Project area was revised in 2015. Therefore, portions of the Project area have not been surveyed. These areas include the PFE facility at the City Maintenance Yard, the Neptune Avenue beach landing site, a portion of the N/L Option 1 Segment A as it runs along 34th Street and Manhattan Avenue, and all of 25th Street in Option 3 Segment B.

## Results

All but one of the resources identified within the Project area are built-environment resources. One resource, the Clark Building, is listed on the National Register of Historic Properties (NRHP) as well as the California Register (CRHR). The City's General Plan Land Use Element (Historic Preservation) designates resources as potentially significant and identifies them in the Historic Resources Map. Based on this map, eight Potential Locally Significant Historic Resources are present within the Project area. Numerous buildings identified in the General Plan Update windshield survey are also present within the Project area. However, because the Project area covers a large part of the City, they are not individually discussed in the current analysis, except for the Civic Center Complex and the Hermosa Valley Greenbelt. Please see the results of the windshield survey (PCR Services, 2014a, 2014b) for details. For purposes of this EIR, these resources are considered historical resources under CEQA.

1. **Clark Building (861 Valley Drive).** This building was determined eligible for NRHP by a consensus through Section 106 process and is also listed on the CRHR. Construction of N/L Option 1 Segment B, 25th Option 2 Segment B, and 25th Option 3 Segment B will be visible from this building.

2. **GTE Building (102 Pacific Coast Highway).** Constructed circa 1938, the building is a former facility for the General Telephone Company, and is considered a good example of the WPA Moderne Style. The building is considered significant because it remains highly intact to its original design. It is a potentially locally significant historic resource (Hermosa Beach General Plan, 2009), and is therefore considered a historical resources under CEQA. Power feed equipment is proposed to be housed inside this building. Construction of N/L Option 1 Segment D, 25th Option 2 Segment D, and 25th Option 3 Segment D will be visible from this building.
3. **McComb House.** This residential building is a potential locally significant historic resource associated with the McComb family (Hermosa Beach General Plan, 2009). Construction of the Neptune beach landing will be visible from this building.
4. **Sprauge House.** This residential building is a potential locally significant historic resource associated with the Sprauge family (Hermosa Beach General Plan, 2009). Construction of the Neptune beach landing will be visible from this building.
5. **Ozzie and Harriet Nelson Home.** This residential building is a potential locally significant historic resource associated with the Nelson family (Hermosa Beach General Plan, 2009). Construction of the Neptune beach landing, the Longfellow landing and the N/L Option 1 Segment A on Longfellow will be visible from this building.
6. **Matteson Home.** This residential building is a potential locally significant historic resource associated with the Matteson family (Hermosa Beach General Plan, 2009). Construction of 25th Option 3 Segment A will be visible from this building.
7. **Mrs. Gooch's Building - Hermosa Tabernacle Church (526 Pier Ave)**. This multi-story commercial property maintains its integrity and is potentially eligible as a good example of the Roadside Vernacular Style. This building is a potential locally significant historic resource (Hermosa Beach General Plan, 2009). Construction of 25th Option 3 Segment B will be visible from this building.
8. **Community Center (Pier Avenue School).** This building was designated a locally significant landmark for the purposes of a grant application (City Council Resolution 02-6216). Construction of N/L Option 1 Segment B, 25th Option 2 Segment B, and 25th Option 3 Segment B will be visible from this building.
9. **Clark Stadium Building.** This building is a potential locally significant historic resource (Hermosa Beach General Plan, 2009). Construction of N/L Option 1 Segment D and 25th Option 2 Segment D will be visible from this building.
10. **Atchison, Topeka and Santa Fe Railway Grade/Hermosa Valley Greenbelt.** A 3.7-mile linear recreation trail that runs between S. Ardmore Avenue and S. Valley Drive. The Hermosa Valley Greenbelt is a segment of the former location of the Atchison, Topeka and Santa Fe Railway ROW. This line of the Atchison, Topeka and Santa Fe Railway was established in 1888 and ran from Inglewood south to Redondo Beach. In approximately 1982, the City purchased the abandoned ROW and began converting the property into a greenbelt and all of the tracks and ties were removed. In 2014, the City identified the former railroad segment as a locally eligible historical resource. The Project component would intersect this resource for approximately 1.25 miles from 30th Street from the north end to 5th Street at the south end.
11. **Civic Center Complex (1315 Valley Drive).** The New Formalist style Civic Center complex was designed by Savo Stoshitch between 1961 and 1965. The Civic Center complex includes buildings

for the city hall, public library, police station and fire station buildings. This group of buildings was identified during the General Plan Update windshield survey as a potentially locally significant historic resource. The Civic Center maintains its integrity and is potentially eligible as a good example of the New Formalist style. Construction of N/L Option 1 Segment B, 25th Option 2 Segment B, and 25th Option 3 Segment B will be visible from this building.

12. **Hermosa Beach City Dump (556 6th Street).** Recent investigations at the Hermosa Beach Public Works Maintenance Yard identified the presence of a buried archaeological resource extending 29-45 feet deep. With items such as glass, porcelain, and ceramics present, this historic dump potentially contains consumer behavioral data dating to the early 1920s. This site is considered potentially eligible at the local level under the City of Hermosa Beach Municipal Code, Chapter 17.53: Historic Resources Preservation, Criterion B. It is also considered potentially eligible under Criterion 4 of the CRHR for information potential. Power feed equipment is proposed to be housed on the same parcel, and construction may impact these deposits.
13. **City Maintenance Building Refuse Burner (556 6th Street).** Recent investigations at the Hermosa Beach Public Works Maintenance Yard identified a brick-and-mortar refuse burner/furnace contained within the City Maintenance Building. This structure is considered a potentially significant historical resource that may yield important information about site operations and refuse disposal practices associated with the operation of the dump during the early to mid-twentieth century. Installation of the equipment may impact the structure.

**Potential for Buried Cultural Resources**

The City of Hermosa 2014 General Plan Existing Conditions Report (Appendix B6) makes the argument that the area of Hermosa Beach is not considered sensitive for prehistoric resources, especially in the low-lying areas near the beach. This assertion is based on the statement that shifting beach sands and sand dunes are too dynamic to preserve prehistoric sites and on evidence that suggests that the Gabrieleño/Tongva generally located their settlements away from the beaches near the boundaries between several environmental zones in order to acquire a greater diversity of food resources. The authors argue that if buried prehistoric archaeological deposits are present, they would be located away from the low-lying areas near the beach (Clark and Archer, 2014).

While this is likely accurate for the potential for encountering sites dating to the later prehistoric period, there is still potential for encountering prehistoric archaeological deposits that date to before the stabilizing of the modern shoreline around 5,000 years BP and for encountering historic era archaeological deposits, especially those dating to the early 20th Century.

Prior to 5,000 years BP, the shoreline was located further to the west and there was a wide plain bordered by rocky shores (Masters and Aiello, 2007). This likely would have been a productive environment for early inhabitants of the areas. The presence of Quaternary terrace deposits that date to the late Pleistocene and early Holocene has been previously demonstrated in Hermosa Beach (Clark and Archer, 2014). The existence of such buried landforms shows that there is the potential for very early prehistoric archaeological deposits that would by their early nature be scientifically significant.

Project-related ground disturbance along the alignment that was formerly a route of the AT&SF Railroad has the potential to uncover buried 20th Century archaeological features that are related to railroad construction, operation, and use. Potential resources that may be recovered include the remains of train stops, railroad camps, or hobo camps. Additionally, recent excavations in Hermosa

Beach have encountered early 20th Century dumps and artifacts (Warren et al., 2014). The potential of encountering these types of deposits below the modern roadbed is reduced, because of destruction associated with the construction of the railroad and the road, but the possibility remains.

### Native American Consultation

The Native American Heritage Commission (NAHC) maintains two databases to assist cultural resources specialists in identifying cultural resources of concern to California Native Americans, referred to by NAHC staff as Native American ethnographic resources. The NAHC Sacred Lands database has records for places and objects that Native Americans consider sacred or otherwise important, such as cemeteries and gathering places for traditional foods and materials. The NAHC Contacts database has the names and contact information for individuals, representing a group or themselves, who have expressed an interest in being contacted about development projects in specified areas.

The NAHC was contacted on October 30, 2014, with a request for information regarding sites, resources, or locations of cultural importance to the local Native American community. The NAHC responded on November 6, 2014, with the information that the Sacred Lands File database failed to indicate the presence of Native American cultural resources in the immediate Project vicinity. The NAHC also forwarded a list of Native American groups or individuals interested in development projects in the Project area. On April 30, 2015, preparers of the EIR sent a letter to the eight Native American individuals and groups identified by the NAHC. On May 8, 2015, Andy Salas, Chairman of Gabrieleño Band of Mission Indians/Kizh Nation, requested that Native American monitors be present during Project-related ground disturbance. To date, no additional responses from any of the Native American tribes or individuals have been received.

## Paleontological Methods and Results

The proposed terrestrial segments of the Project consist of PFE facilities, terrestrial conduit systems, landing manholes, cable landing sites with directional bores, and surface cable markers as illustrated in Figure 2-1. A region of several miles surrounding the Project area was evaluated for the recorded presence of paleontological resources and the potential for the geologic units in the region to contain significant paleontological resources. This evaluation consisted of two parts: a literature review and a records search.

On October 23, 2014, a paleontological resources records search was commissioned through the Natural History Museum Los Angeles County (NHMLAC). This institution maintains files of regional paleontological site records as well as supporting maps and documents. This record search entailed an examination of current geologic maps and known fossil localities inside and within the general vicinity of the study area. The objective of the record search was to determine the geological formations underlying the study area, whether any paleontological localities have previously been identified within the Project area or in the same or similar formations near the Project area, and the potential for excavations associated with the Project area to encounter paleontological resources. The results also provide a basis for assessing the sensitivity of the Project area for additional and buried paleontological resources.

The Project area is located within surface deposits of active beach sands, younger Quaternary dune sands and older Quaternary dune sands. According to the NHMLAC, These deposits are not known for containing vertebrate fossils in the uppermost layers and no vertebrate fossil localities exist nearby. As a result, the probability of encountering buried paleontological deposits within active

beach sands, younger Quaternary dune sands and older Quaternary dune sands in the Project area is considered low.

Three fossil localities of the same sedimentary deposits (older Quaternary terrace deposits) which occur within the Project area have been found nearby and these have yielded fossils of two horses, a marine whale, and a mammoth at depths between 15 to 35 feet below surface In addition, the San Pedro Formation which underlies the Project area has produced numerous fossils of diverse invertebrate fauna within the general vicinity of Los Angeles Basin. These finds have included proboscidean, equid, wolf, sloth, and bison, and fish fossils. More importantly, immediately adjacent to the Project area and at the Redondo Beach Generating Station, a Rancholabrian-age tooth of an extinct llama was found at a depth of approximately 30 feet below ground surface. A horse tooth was also found near the Redondo Beach Generating Station at a depth of about 35 feet below surface. Based on all these findings, the potential to encounter buried paleontological resources within older Quaternary deposits in the Project area is considered at least moderate. The NHMLAC recommends monitoring of any deep substantial excavations of older Quaternary deposits (Clark and Archer, 2014; McLeod, 2014).

## Marine Resources Methods

### Marine Cultural Resources Records Search

Research methods were limited to an archival and records search to inventory marine cultural resources, including shipwrecks and downed aircraft, as well as prehistoric archaeological sites and isolated artifacts. The inventory was completed for the study area that includes the four potential routes plus a 10-nautical mile buffer. No remote sensing survey of the ocean floor for shipwrecks and other debris, or predictive modeling for prehistoric archaeological resources, has yet been completed for the maritime portion of the study area. Sources consulted included cultural resource inventories (shipwreck and downed aircraft listings) provided by the California State Lands Commission, the U.S. Department of the Interior Bureau of Ocean Energy Management (BOEM) (Pacific OCS Region) (BOEM, 2013, and former BLM POCS [Stickel & Marshack] 1979), the Minerals Management Service (MMS), and the National Oceanic and Atmospheric Administration (NOAA) Automated Wreck and Obstructions Information System (AWOIS) database (1988). The National Register of Historic Places, California Historical Landmarks, California Inventory of Historical Resources, and local archives were also consulted.

Other sources consulted include the U.S. Army Corps of Engineers Los Angeles District, National Maritime Museum in San Francisco, Los Angeles Maritime Museum, Commerce Department files at the National Archives in Washington D.C. and San Bruno, Regional Records Centers at Laguna Nigel and San Bruno, The Huntington Library in San Marino, the U.S. Department of Commerce Merchant Vessels of the United States and the U.S. Coast Guard Merchant Vessels of the United States at the University of California Library, University of California at Santa Barbara and Long Beach Library, and the State Library and State Archives and Records Office.

### Results

#### Submerged Prehistoric Resources (Offshore)

The records search yielded seven maritime finds, all of which were individual artifacts, within the larger 10-nautical mile study area, but none of these fall within the proposed cable routes. These finds are summarized in Table 3.4-1. The first recorded artifact finds in the study area included three

stone mortars (bowls pecked into a large rock typically used for grinding plant materials) and a metate (a hand-held grinding stone) reported in 1976 by divers near Redondo Beach (Hudson, 1976:6). The exact location and context of these finds is unknown. All subsequent finds have been issued Underwater Marine Site designations by the BLM (Stickel & Marshack, 1979) (refer to Table 3.4-1). All recorded locations were reported by scuba and free divers. Coordinates for all locations are approximate and have been reported by latitude and longitude degrees and minutes. Within the study area each minute or 1/60$^{th}$ of a degree is equal to about 1 nautical mile.

**Table 3.4-1. Underwater Prehistoric Sites within the Study Area**

| Marine Site | Artifacts | Geographic Location | Reference |
|---|---|---|---|
| CA-UMS-67 | Individual finds | Near Pt. Dume | Pierson 1977 in Pierson et al. 1987 |
| CA-UMS-68 | Mortar | Near Pt. Dume | Pierson 1977 in Pierson et al. 1987 |
| CA-UMS-69 | Individual finds | Offshore NE side of San Clemente Island | Pierson 1977 in Pierson et al. 1987 |
| CA-UMS-70 | Individual finds | Near Pt. Dume | No author cited in Pierson et al. 1987 |
| CA-UMS-71 | Individual finds | Redondo Beach | Bucknam 1974 in Pierson et al. 1987 |
| CA-UMS-72 | Individual finds | Offshore NE side of San Clemente Island | Muchie 1977 in Pierson et al. 1987 |
| CA-UMS-73 | Individual finds | Near Pt. Dume | Muchie 1977 in Pierson et al. 1987 |

A number of prehistoric artifacts have been reported by divers in the general vicinity of the Project, but outside of the study area. The incidence of these finds both inside and in the immediate vicinity of the study area supports the expectation that prehistoric peoples once occupied the continental shelf that is now Santa Monica Bay, and left behind evidence of those occupations. The isolated nature of each find suggests that only the largest and most obvious artifactual evidence (e.g., mortars and pestles) has been visible on the ocean floor and noted by divers. The presence of deposits typical of prehistoric archaeological sites that may include smaller and/or less obvious artifacts such as fire-affected rock, flaked stone tools and chipping debris, bone and shell tools and ornaments, ash and charcoal, faunal bone, midden soils, and shell fish debris, has not yet been confirmed.

Due to the lack of accurate recording of the location of finds, and the isolated nature of these artifactual finds, the results of the records search confirm the potential for finding prehistoric era sites, but fail to confirm the presence of intact archaeological deposits in specific locations within the study area that can be assessed for eligibility for listing in the California Register, and then assessed in terms of potential adverse effects from the Project.

**Submerged Historic Resources (Offshore)**

Another category of submerged cultural resources, historic period shipwrecks, are also characterized by inaccuracies in reported location and many, if not most, though reported as lost have not been accurately located or assessed for eligibility for listing in the California Register and, therefore, cannot be assessed for the potential adverse impacts of the Project.

The 10-nautical mile buffer included in the study area reflects the most conservative interpretation of the potential accuracy of the shipwreck location reporting. Databases of the State Lands Commission, BOEM, NOAA AWOIS, the cities of Hermosa Beach and Redondo Beach, and in-house shipwreck databases were checked for listings within the study area. Those shipwrecks fairly

accurately located within protected waters of Anacapa, Santa Cruz, Santa Catalina, Santa Barbara and San Clemente Islands were excluded from this listing. It should be noted that all of the alignments have some unavoidable overlap of vessels cited as lost within the near shore area (Hermosa and/or Redondo Beach).

Shipwrecks were mapped in relation to the alternate cable routes based on their reported coordinates. Depending upon the degree of accuracy for each reported resource location, coordinates may indicate an exact location or one that is within a 91-meter (100-yard) radius, a 1.8-km (1-nautical mile) radius, or an 18-km (10-nautical mile) radius of the route coordinates. These levels of accuracy were provided for each listing in the BOEM and MMS databases. The following describes the shipwrecks anticipated to occur within the maximum 10-nautical-mile radius of each of the proposed routes. The MMS (1987, 1990) databases discuss eligibility for listing in the California Register only in terms of historical significance. Three levels of significance were assigned to listings, ranging from insignificant to moderately significant, and significant. These assessments do not follow the guidelines for the California Register, and in recognition of this, the BOEM (2013) database lists resources as "probably eligible for listing in the National Register of Historic Places (NRHP)", "may be eligible for listing in the NRHP", and "most likely not eligible for listing in the NRHP." These designations are recommendations based on an assessment internal to the BOEM, but they have not yet been submitted to the SHPO for concurrence. For the purposes of this EIR, any property listed in the NRHP is also eligible for listing in the California Register of Historical Resources (CRHP).

**Route E**

A total of 25 shipwrecks fall within Route E (see Table 3.4-2). None of the shipwrecks were reported with exact coordinates or within a 1.8-km (1-nautical mile) radius. One shipwreck (*Sea Witch)* may be mapped to within 91 meters (300 feet) of the coordinates cited. Two of the shipwrecks (*Columbia Contract 41* and *Fullerton*) are located within the 10 nautical mile radius of the proposed route. The locations of the remaining 23 shipwrecks are listed as "accuracy not determined." One shipwreck *Santa Cecilia* has been previously cited as significant. Five shipwrecks (*Fullerton, Gardiner City, Irene, Katie Flickenger, National City,* and *Phyllis* have been previously cited as moderately significant. Five of the shipwrecks (*American Beauty, American Fisher, Anaconda, Columbia Contract 41, Novus,* and *WestMaco* have been previously cited as insignificant. The remaining shipwrecks are listed as "significance undetermined*."* Three of the shipwrecks (*American Fisher, Irene, Phyllis*, are reported as having been removed or refloated.

**Route D**

A total of 43 shipwrecks fall within Route D (see Table 3.4-3). Of the shipwrecks located within or near this route, two of them (an unknown sailboat and *Majestic Swan*), have accurate coordinates. One shipwreck (*Sea Witch*) may be mapped to within 91 meters (300 feet) of the coordinates cited. Four shipwrecks (*Rassiino II*, *Retriever, Sacramento,* and *Thomas P. Emigh)* may be mapped to within 1.8 km (1 nautical mile). Two shipwrecks (*Mabel Grey* and *Fullerton*) may be mapped to within 10 nautical miles of the coordinates cited. The accuracy of the locations for the remaining shipwrecks remains unknown. Five shipwrecks (*Kalindi, Rosi, Tyee, Victory* and *Wild Goose)* have no recorded coordinates. They are listed only as at Hermosa and/or Redondo Beach. There is an unavoidable overlap of vessels cited as lost within the nearshore area (no specific location within Redondo or Hermosa Beach), some of these shipwrecks located in Route D have the potential to overlap with Route E.

**Table 3.4-2. Shipwrecks Reported Alignment E**

| Merchant Vessel Registry | BLM No. | BOEM No. | Status | CR | A | Vessel Name [Former Names] (Construction) | Built | Loss Year | Mo./ Day | Type | Gross Tons | Net Tons | Water Depth | Situation | Location Cited |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 260237 | 20 | 212 | | 3 | E | American Beauty | 1950 | 1954 | 624 | OIS | 41 | | | Burned | Approx. 3-4 mi. from NE tip of San Clemente I. |
| | 421 | | RR | 3 | E | American Fisher | | 1937 | 524 | Tnk | | | | | 2mi off Pt. Vicente |
| | 24 | 229 | | 3 | E | Anaconda | | 1946 | | | | | | | Palos verdes |
| 254833 | | | | | | Avenger | 1944 | 1961 | 318 | OIS | 12 | | | Stranded | Approx. 500yds NE (a little over 1/4 mile) of Redondo Bkwtr |
| 49361 | | | | | | Co-Bi-Do | 1945 | 1954 | 1003 | OIS | 31 | | | Grounded and broke up in surf | At foot of 15th Street, Hermosa Beach |
| | 75 | | | 3 | D | Columbia Contract 41 | 1916 | 1941 | 607 | Brg | 473 | | | | 5mi off Redondo Beach |
| 223827 | | | | | | Daisy M. | 1917 | 1939 | 413 | GaS | 13 | | | Foundered | Off Redondo Beach |
| | 24 | | | 2 | D | Fullerton | 1902 | 1927 | 507 | Brkn/Conv Fish Barge | 1554 | | | Ashore, Abandoned | Redondo Beach |
| | 126 | 1443 | | 4 | E | Garcia | | | | | | | | | Off Pt. Vicente |
| | 617 | 1444 | | 2 | E | Gardiner City | | 1904 | 501 | Barque | | | | Ashore | At Redondo Beach |
| 86624 | | | | | | Georgia | 1902 | 1966 | 222 | Brg | 96 | | | Foundered | About 2 miles SW of King Harbor, Redondo Beach |
| 100721 | 154 | 1804 | RR | 2 | E | Irene [MMS 153] | 1900 | 1937 | 128 | Brg 186x39.7x14.3 | 772 | 687 | | Sunk | Off Redondo Beach, total loss |
| 14347 | 169 | 2028 | | 2 | E | Katie Flickinger | 1876 | 1905 | 1120 | (7/21) Brkn (MMS, 472 Tons) | 425 | | | Stranded | Redondo Beach/Santa Monica Bay |
| 250039 | | | | | | Kilindi | 1943 | 1967 | 923 | OIS | 27 | | | | At Redondo Beach about 7mi W of Playa Del Rey |
| 230077 | | | | | | Maiden | 1917 | 1954 | 217 | GaS | 13 | | | Foundered | On bkwtr in Redondo Beach |
| | 215 | 2542 | | 2 | E | National City | | 1907 | | | | | | | Off Hermosa Beach |
| 227467 | | | | | | New Monterey | 1816 | 1935 | 430 | GaS | 13 | | | Stranded | Off Redondo Beach |
| 237894 | 231 | 2659 | | 3 | E | Novus | 1938 | 1940 | 1025 | GaS | 34 | | | | Off Hermosa Beach Bkwtr |
| | 254 | | RR | 2 | E | Phyllis | | 1918 | 4 | | | | | | Pt. Vicente |
| 169590 | | | | | | Rosi | 1926 | 1944 | 215 | GaS | 15 | | | Stranded | Redondo Beach |
| | 290 | 3250 | | 1 | E | Santa Cecilia | | 1852 | 914 | Frigate | | | 48 | | 2.5mi off Ship's Rock |
| 224207 | | | | | | Sea Hawk | 1924 | 1937 | 1225 | OIS | 14 | | | Foundered | Off Redondo, California |
| | 319 | 5279 | | | | St. Anne of the Sunset | | | | | | | | | |
| 280396 | | | | | | Tyee | 1953 | 1977 | 210 | GaS | 12 | | | Foundered | At Redondo Beach |
| 215950 | | | | | | Victory | 1918 | 1923 | 617 | GaS | 14 | | | Stranded | Redondo Beach |
| 216443 | 387 | | | 3 | E | West Maco [Westmaco] | 1918 | 1940 | 1223 | OIS,Prs Snr | 29 | | | Swamped, foundered | 6 miles off Point Vincente |
| 535411 | | | | | | Wild Goose | 1971 | 1973 | 824 | OIS | 24 | | | Foundered | About 10 miles off California near Redondo Beach |

**Table 3.4-3. Shipwrecks Reported Alignment D**

| Merchant Vessel Registry | BLM No. | BOEM No. | Status | CR | A | Vessel Name [Former Names] (Construction) | Built | Loss Year | Mo./ Day | Type | Gross Tons | Net Tons | Water Depth | Situation | Location Cited |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5911 | | | | 68085 | | 1945 | 218 | | | | | Foundered | |
| 222840 | 6 | 74 | | 2 | E | Advance | 1920 | 1932 | 908 | GaS | 40 | | | Burned | Santa Catalina I. |
| 260237 | 20 | 212 | | 3 | E | American Beauty | 1950 | 1954 | 624 | OIS | 41 | | | Burned | Approx. 3-4 mi. from NE tip of San Clemente I. |
| | 421 | | RR | 3 | E | American Fisher | | 1937 | 524 | Tnk | | | | | 2mi off Pt. Vicente |
| 261061 | 42 | 436 | | 3 | E | Benjie Boy | 1950 | 1955 | 414 | Prse Snr/OIS | 64 | | | Burned | 2mi S of W end of Catalina I. |
| 126702 | 65 | 666 | | 2 | E | Charles F. Crocker | 1890 | 1929 | | Brkn | 860 | | | Foundered | Catalina I. |
| 235957 | 68 | 693 | | 3 | E | Chicago | 1926 | 1943 | 1215 | OIS | 76 | | | Foundered | 4mi. S of Catalina I. |
| 249361 | | | | | | Co-Bi-Do | 1945 | 1954 | 1003 | OIS | 31 | | | Grounded and broke up in surf | At foot of 15th Street, Hermosa Beach |
| 223827 | | | | | | Daisy M. | 1917 | 1939 | 413 | GaS | 13 | | | Foundered | Off Redondo Beach |
| 256511 | | 4928 | | | | Del Mar | 1943 | 1950 | 1101 | OIS | 14 | | | Foundered | 11 mi W of Catalina I |
| | 110 | 1194 | | 2 | E | Empress | | 1942 | | | | | | | |
| 86624 | | | | | | Georgia | 1902 | 1966 | 222 | Brg | 96 | | | Foundered | About 2 miles SW of King Harbor, Redondo Beach |
| 100721 | 154 | 1804 | RR | 2 | E | Irene [MMS 153] | 1900 | 1937 | 128 | Brg 186x39.7x14.3 | 772 | 687 | | Sunk | Off Redondo Beach, total loss |
| 14347 | 169 | 2028 | | 2 | E | Katie Flickinger | 1876 | 1905 | 1120 | (7/21) Brkn (MMS, 472 Tons) | 425 | | | Stranded | Redondo Beach/Santa Monica Bay |
| 250039 | | | | | | Kilindi | 1943 | 1967 | 923 | OIS | 27 | | | Burned | At Redondo Beach about 7mi W of Playa Del Rey |
| | 225 | | | 1 | E | Kin Tai Fong (see Ning Po) | | | | | | | | | |
| 230019 | 181 | 2089 | | 2 | E | Lady Alta | 1930 | 1931 | 920 | OI Yct | 102 | | | Burned | NW side of Catalina I. |
| 218146 | 186 | | | 3 | E | Liberty Girl | 1919 | 1942 | 1102 | OIS/Fsh | 57 | 38 | | | Off San Pedro |
| 230077 | | | | | | Maiden | 1917 | 1954 | 217 | GaS | 13 | | | Foundered | On bkwtr in Redondo Beach |
| | 198 | | | 3 | D | Mabel Grey (Wooden) | 1882 | 1904 | 311 | Schr/Ship (list 205 tons) | 205 | 195 | | | Hell's Half Acre Redondo Beach |
| | 498 | | | 3 | A | Majestic Swan | | 1969 | 12 | Schooner | | | 15 | | Isthmus Reef, Catalina I. |
| | 215 | 2542 | | 2 | E | National City | | 1907 | | | | | | | Off Hermosa Beach |
| 227467 | | | | | | New Monterey | 1816 | 1935 | 430 | GaS | 13 | | | Stranded | Off Redondo Beach |
| 237894 | 231 | 2659 | | 3 | E | Novus | 1938 | 1940 | 1025 | GaS | 34 | | | | Off Hermosa Beach Breakwater |
| | 234 | 2667 | P | 1 | E | Nuestra Senora (de) Ayuda [MMS 588] | | 1641 | | Spanish Galleon | | | | | |
| 226971 | 264 | | | | | Rassino II | 1927 | 1947 | 822 | OIS | 37 | | | Burned | 10 mi NW West End of Catalina Is. (entrance to harbor, MMS 1987) |
| 169590 | | | | | | Rosi | 1926 | 1944 | 215 | GaS | 15 | | | Stranded | Redondo Beach |
| | | 279 | None | 2 | C/A | Sacramento | 1877 | | | Ferry | 87 | | 360 | | 2mi. SW King Harbor Light, Redondo Beach |
| | 285 | 3230 | P | 1 | E | San Pedro | | 1598 | 504 | Galleon | 84 | | 84 | | Reef off Arrow Point at Catalina Is. |
| | 279 | 3163 | | 2 | C/A | Sacramento | 1877 | | | Ferry | 87 | | | 2mi. SW King | Redondo Beach |

**Table 3.4-3. Shipwrecks Reported Alignment D**

| Merchant Vessel Registry | BLM No. | BOEM No. | Status | CR | A | Vessel Name [Former Names] (Construction) | Built | Loss Year | Mo./ Day | Type | Gross Tons | Net Tons | Water Depth | Situation | Location Cited |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | Harbor Light, Redondo Beach | |
| 224207 | | | | | | Sea Hawk | 1924 | 1937 | 1225 | OIS | 14 | | | Foundered | Off Redondo, California |
| | 303 | | P | 4 | B | Sea Witch | | | | | 25 | | 70 | | BLM 1978; Pierson, 1980; Pierson, et al. 1987, p. 35; Acciratte |
| 216242 | 309 | | | 2 | A | Silver Gate | 1918 | 1948 | 904 | OIS | 40 | | | Stranded | Off Pt. Vincente |
| 235328 | 317 | | | 2 | E | Southland | 1936 | 1960 | 924 | OIS | 119 | | | Foundered | About 15mi off Anacapa Isl. |
| | 671 | 3469 | | | | Spare Time | 1952 | 1952 | 728 | | | | | Exploded | |
| | 319 | 5279 | | | | St. Anne of the Sunset | | | | | | | | | |
| 145954 | 333 | 3599 | | 2 | E | Tarus (sp?) [Taurus] (Wooden) | 1902 | 1924 | 731 | (1901) Schooner/A m Schr | 551 | | | Burned, Blown up for movie Cpt Blood | Catalina Isl |
| 145916 | 338 | | | 2 | C | Thomas P. Emigh | 1902 | 1932 | 420 | Brkn/Conv.Fishing Barge/Fsh | 1040 | | | Ashore, Foundered/Sank deeper water | At Old Redondo Pier (BLM lists 6/26) |
| 280396 | | | | | | Tyee | 1953 | 1977 | 210 | GaS | 12 | | | Foundered | At Redondo Beach |
| | 497 | | | 3 | A | Unknown | | | | Sailboat | | | | | |
| | | | | | | Unknown | | | | Schooner | | | | | |
| | | | | | | Unknown | | | | Wreck | | | | | |
| | | | | | | Unknown | | | | Wreck | | | | | |
| 215950 | | | | | | Victory | 1918 | 1923 | 617 | GaS | 14 | | | Stranded | Redondo Beach |
| 168688 | 382 | 4280 | | 2 | E | W.T. Co. No. 8 | 1923 | 1924 | 1224 | Brg | 173 | | | Foundered | Catalina I. |
| | 383 | 4281 | | 2 | E | W.T. Co. No. 9 | 1923 | 1926 | 1210 | Brg | 173 | | | | Catalina I. |
| 535411 | | | | | | Wild Goose | 1971 | 1973 | 824 | OIS | 24 | | | Foundered | About 10 miles off California near Redondo Beach |

**Table 3.4-4. Shipwrecks Reported Alignment US–SEA**

| Merchant Vessel Registry | BLM No. | BOEM No. | Status | CR | A | Vessel Name [Former Names] (Construction) | Built | Loss Year | Mo./ Day | Type | Gross Tons | Net Tons | Water Depth | Situation | Location Cited |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 215986 | 10 | | RR | 2 | C | ABBOROKA [See Absoroka] (Steel) | 1918 | 1941 | 1224 | StS/Lmbr Schr/Frt 410x54.1x 27.1 | 5698 | 3527 | | | Off Pt Fermin |
| 223392 | 5 | 72 | | 2 | E | Adriatic | 1920 | 1930 | 1226 | OIS | 42 | | | Foundered | Santa Barbara Island |
| 260237 | 20 | 212 | | 3 | E | American Beauty | 1950 | 1954 | 624 | OIS | 41 | | | Burned | Approx. 3-4 mi. from NE tip of San Clemente I. |
| | 24 | 229 | | 3 | E | Anaconda | | 1946 | | | | | | | Palos Verdes |
| | 372, 591 | 6219 | | | | Bashon (Vashon?) | | 1949 | | | | | | | Off Catalina Isl |
| 235957 | 68 | 693 | | 3 | E | Chicago | 1926 | 1943 | 1215 | OIS | 76 | | | Foundered | 4mi. S of Catalina I. |
| 249361 | | | | | | Co-Bi-Do | 1945 | 1954 | 1003 | OIS | 31 | | | Grounded and broke up in surf | At foot of 15th Street, Hermosa Beach |
| | 75 | 776 | | 3 | D | Columbia Contract 41 | 1916 | 1941 | 607 | Brg | 473 | | | 5mi off Redondo Beach | |
| 223827 | | | | | | Daisy M. | 1917 | 1939 | 413 | GaS | 13 | | | Foundered | Off Redondo Beach |
| | 87 | 931 | | 3 | E | Darfield | | 1954 | | | | | | | Palos Verdes |
| | 97 | 1009 | | | | Dominator | | | | | | | | | |
| 226573 | 107 | 1189 | | 2 | E | Emperor | 1927 | 1932 | 715 | | 56 | | | Foundered | Off Santa Barbara Isl. |
| | | | | | A | Fish Haven -Obstruction | | | | Obstruction | | | | | |
| | 124 | 1421 | | 2 | D | Fullerton | 1902 | 1927 | 507 | Brkn/Conv Fish Barge | 1554 | | | Ashore, Abandoned | Redondo Beach |
| 236759 | 128 | 1474 | | 3 | E | Genevieve H II | 1937 | 1956 | 112 | OIS | 112 | | | | 15mi SE of E end of Catalina Isl |
| 86624 | 132 | | | 3 | D | Georgia [MMS 622] | 1902 | 1966 | 222 | Barque/Brg Conv (?) | 96 | | | Foundered | About 2mi SW of King Harbor, Redondo Beach |
| 4600 | | 4600 | | 4 | | HOPEWELL | 1943 | 1972 | 211 | Destroyer | | | | | LA |
| 100721 | 154 | 1804 | RR | 2 | E | Irene [MMS 153] | 1900 | 1937 | 128 | Brg 186x39.7x 14.3 | 772 | 687 | | Sunk | Off Redondo Beach, total loss |
| | 163 | 1947 | | | | John C. Butler | | | | | | | | | |
| | 573 | | | 1 | | Junk | | | | | | | | | |
| 14347 | 169 | 2028 | | 2 | E | Katie Flickinger | 1876 | 1905 | 1120 | (7/21) Brkn (MMS, 472 Tons) | 425 | | | Stranded | Redondo Beach/Santa Monica Bay |
| 250039 | | | | | | Kilindi | 1943 | 1967 | 923 | OIS | 27 | | | Burned | At Redondo Beach about 7mi W of Playa Del Rey |
| 249998 | | | | | | Kingfisher | 1946 | 1962 | 1023 | OIS | 14 | | | Foundered | Off coast of San Clemente Isl. |
| | 195 | 2243 | | 3 | E | LSM 455 | | 1956 | 1120 | | | | | | San Clemente I. |
| | 198 | 2276 | | 2 | D | Mabel Grey (Wooden) | 1882 | 1904 | 311 | Schr/Ship (list 205 tons) | 205 | 195 | | Hell's Half Acre | Redondo Beach |
| 230077 | | | | | | Maiden | 1917 | 1954 | 217 | GaS | 13 | | | Foundered | On bkwtr in Redondo Beach |
| 247141 | | 5160 | | | | Minnie Belle | 1944 | 1961 | 1129 | OIS | 17 | | | Collided w/ submerged rock | Near San Clemente Isl. |

**Table 3.4-4. Shipwrecks Reported Alignment US–SEA**

| Merchant Vessel Registry | BLM No. | BOEM No. | Status | CR | A | Vessel Name [Former Names] (Construction) | Built | Loss Year | Mo./ Day | Type | Gross Tons | Net Tons | Water Depth | Situation | Location Cited |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 215 | 2542 | | 2 | E | National City | | 1907 | | | | | | | Off Hermosa Beach |
| 167305 | 218 | | | 2 | E | Nedra | 1918 | 1936 | 323 | Brg | 53 | | | Foundered | 6mi off San Clemente I. |
| 227467 | | | | | | New Monterey | 1816 | 1935 | 430 | GaS | 13 | | | Stranded | Off Redondo Beach |
| ` | | | | | | Nightingale | 1923 | 1943 | 1012 | GaS | 14 | | | Foundered | Redondo Beach |
| 237894 | 231 | 2659 | | 3 | E | Novus | 1938 | 1940 | 1025 | GaS | 34 | | | | Off Hermosa Beach Breakwater |
| 221977 | 269 | 3059 | | 3 | C | Retriever | 1922 | 1951 | 429 | Brg | 99 | | | | 1 mile South of Monstad Pier, Redondo Beach |
| 169590 | | | | | | Rosi | 1926 | 1944 | 215 | GaS | 15 | | | Stranded | Redondo Beach |
| | 279 | 3163 | | 2 | C/A | Sacramento | 1877 | | | Ferry | 87 | | | 2mi. SW King Harbor Light, Redondo Beach | Redondo Beach |
| | 290 | 3250 | | 1 | E | Santa Cecilia | | 1852 | 914 | Frigate | | | 48 | | 2.5mi off Ship's Rock Catalina Is. |
| | 293 | 3260 | | 1 | E | Santa Marta | | 1852 | | 1582? | | | | | Catalina Is. |
| 224207 | | | | | | Sea Hawk | 1924 | 1937 | 1225 | OIS | 14 | | | Foundered | Off Redondo, California |
| | 303 | | P | 4 | B | Sea Witch | | | | | 25 | | 70 | | BLM 1978; Pierson, 1980; Pierson, et al. 1987, p. 35; Acciratte |
| | 319 | 5279 | | | | St. Anne of the Sunset | | | | | | | | | |
| | | | | | | The Pacific | | | | | | | | | |
| 145916 | 338 | 3627 | | 2 | C | Thomas P. Emigh | 1902 | 1932 | 420 | Brkn/Conv.Fishing Barge/Fsh | 1040 | | | Ashore, Foundered/Sank deeper water | At Old Redondo Pier (BLM lists 6/26) |
| 280396 | | | | 4 | E | Tyee | 1953 | 1977 | 210 | Gas | 12 | | | Foundered | At Redondo Beach |
| | 471 | | | 4 | A | Unknown | | | | | | | | | |
| | 563 | | | 3 | D | Unknown | | | | Jetliner | | | | Off Redondo Beach | |
| | 564 | | | 3 | D | Unknown | | | | Jetliner | | | | Off Redondo Beach | |
| | 571 | | P | 3 | D | Unknown | | | | Large Aircraft | | | 33.583333 | | |
| | 163 | | | 3 | E | Unknown [MMS 697] | | | | | | | | to 25' above bot. 7.5' water | Aft. Section of DE John C. Butler |
| | 552 | | | 3 | E | US Burrfish | | 1969 | 11-- | Submarine | | | | | San Clement I. |
| | | 4622 | | | | US Moody | | 1933 | | | | | | | San Clemente I. |
| | 553 | 4623 | | 3 | E | USS Moray | | 1970 | 6-- | Submarine | | | | | San Clemente Is. |
| | 372 | | | 3 | E | Vashon | | 1949 | 8-- | | | | | | Off Catalina Isl. |
| 215950 | | | | | | Victory | 1918 | 1923 | 617 | GaS | 14 | | | Stranded | Redondo Beach |
| 215950 | | | | 4 | E | Victory | 1918 | 1923 | 617 | GaS | 14 | | | Stranded | Redondo Beach |
| 535411 | | | | | | Wild Goose | 1971 | 1973 | 824 | Ol.s. | 24 | | | Foundered | About 10 miles off California near Redondo Beach |
| 81380 | 396 | 4424 | | 2 | E | Wm Bowden | 1892 | 1926 | 212 | Schooner/Brg. Conv. | 778 | | | Stranded | Redondo Beach, Santa Monica Bay |

**Table 3.4-5. Shipwrecks Reported Alignment A**

| Merchant Vessel Registry | BLM No. | BOEM No. | Status | CR | A | Vessel Name [Former Names] (Construction) | Built | Loss Year | Mo./ Day | Type | Gross Tons | Net Tons | Water Depth | Situation | Location Cited |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 215986 | 10 | | RR | 2 | C | ABBOROKA [See Absoroka] (Steel) | 1918 | 1941 | 1224 | Sts/Lmbr Schr/Frt 410x54.1x27.1 | 5698 | 3527 | | | Off Point Fermin |
| 260237 | 20 | 212 | | 3 | E | American Beauty | 1950 | 1954 | 624 | OIS | 41 | | | Burned | Approx. 3-4 mi. from NE tip of San Clemente I. |
| | 421 | | RR | 3 | E | American Fisher | | 1937 | 524 | Tnk | | | | | 2mi off Pt. Vicente, Santa Monica |
| | 24 | 229 | | 3 | E | Anaconda | | 1946 | | | | | | | |
| 222059 | 266 | | | 3 | E | Aquila | 1917 | 1942 | 1212 | GaS/Yct 52.2x11.3x5.4 | 23 | 15 | | | Off Pt. Fermin, possibly 12/12/1949 |
| 254833 | | | | | | Avenger | 1944 | 1961 | 318 | OIS | 12 | | | Stranded | Approx. 500yds NE (a little over 1/4 mile) of Bkwtr |
| 218732 | 63 | | RR | 2 | E | CHARCAS (MMS 599) (Steel) | 1919 | 1919 | | StS/Fuel Oil/Frt 411x54.3x27.2 | 5555 | 3457 | | | Near LA Hbr (MMS 599) |
| 56171 | 526 | 711 | | 2 | E | City of Florence (Iron) | 1867 | 1900 | 3 | 4 Bulkheads 227x34.4x22.4 | 1200 | 1200 | | | Pt. Pedro/San Pedro Outer Harbor |
| 215907? | 73 | | RR | 2 | E | Claremont [MMS 600] | 1917 | 1922 | | StS/Frt | 1291 | 712 | | | Nr Los Angeles |
| 249361 | | | | | | Co-Bi-Do | 1945 | 1954 | 1003 | OIS | 31 | | | Grounded and broke up in surf | At foot of 15th Street, Hermosa Beach |
| 223827 | | | | | | Daisy M. | 1917 | 1939 | 413 | Gas | 13 | | | Foundered | Off Redondo Beach |
| | 87 | 931 | | 3 | E | Darfield | | 1954 | | | | | | | Palos Verdes |
| | 97 | 1009 | | | | Dominator | | | | | | | | | |
| 262291 | 106 | 1156 | | 3 | E | ELSIE II [LCI-L-797, USN] (Steel) | 1944 | 1956 | 1203 | Brg Conv /Pas 150x23.2x3.6 | 85 | 85 | | Stranded | At Long Beach |
| 226573 | 107 | | | 2 | E | Emperor | 1927 | 1932 | 715 | | 56 | | | Foundered | Off Santa Barbara Isl. |
| | | | | | | Fish Haven (not a shipwreck) | | | | | | | | | |
| | 124 | 1421 | | 2 | 3 | Fullerton | 1902 | 1927 | 507 | Brkn/Conv Fish Barge | 1554 | | | Ashore, Abandoned | Redondo Beach |
| | 126 | 1443 | | 4 | E | Garcia | | | | | | | | | Off Pt. Vicente |
| | 617 | 1444 | | 2 | E | Gardiner City | | 1904 | 501 | Barque | | | | Ashore | At Redondo Beach |
| 86624 | | | | | | Georgia | 1902 | 1966 | 222 | Brg | 96 | | | Foundered | About 2 miles SW of King Harbor, Redondo Beach |
| 221784 | 537 | | | 2 | E | H.M.STOREY (Steel) | 1921 | 1943 | 710 | StS/Fuel Oil/Tnk 500x68.2x 30 | 10763 | 7847 | | Lost to enemy action, enroute | In Pacific enroute Noumea, New Caledonia to SP |
| | 539 | 1746 | | 3 | E | Hwa Tung | | 1946 | 1214 | Chinese Freighter/Frt 226x43x16.2 | | | | Sank enroute | 375mi SW San Pedro |
| 100721 | 154 | 1804 | RR | 2 | E | Irene [MMS 153] | 1900 | 1937 | 128 | Brg 186x39.7x 14.3 | 772 | 687 | | Sunk | Off Redondo Beach, total loss |
| | 573 | | | 1 | | Junk | | | | | | | | | |

**Table 3.4-5. Shipwrecks Reported Alignment A**

| Merchant Vessel Registry | BLM No. | BOEM No. | Status | CR | A | Vessel Name [Former Names] (Construction) | Built | Loss Year | Mo./ Day | Type | Gross Tons | Net Tons | Water Depth | Situation | Location Cited |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14347 | 169 | 2028 | | 2 | E | Katie Flickinger | 1876 | 1905 | 1120 | (7/21) Brkn .(MMS, 472 Tons) | 425 | | | Stranded | Redondo Beach/Santa Monica Bay |
| 14422 | 171 | | RR | 2 | E | Kennebec | 1883 | 1887 | 204 | Ship/Full-rig 238x43.3x 27.3 | 2126 | 1935 | | | |
| 250039 | | | | | | Kilindi | 1943 | 1967 | 923 | OIS | 27 | | | Burned | At Redondo Beach about 7mi W of Playa Del Rey |
| 234995 | 172 | | | 2 | E | Kingfisher | 1936 | 1938 | 709 | OIS | 131 | | | Stranded | Near Newport Harbor |
| 218146 | 186 | | | 3 | E | Liberty Girl | 1919 | 1942 | 1102 | OIS/Fsh | 57 | 38 | | | Off San Pedro |
| 140479 | 192 | 2224 | | 3 | E | Lottie Carson | 1881 | 1940 | | Schr/3 Mstd/refit (list 272, 286 tons) 127x32.8x8.8 | 295 | 244 | | | Los Angeles |
| | 198 | 2276 | | 2 | D | Mabel Grey (Wooden) | 1882 | 1904 | 311 | Schr/Ship (list 205 tons) | 205 | 195 | | Hell's Half Acre | Redondo Beach |
| 230077 | | | | | | Maiden | 1917 | 1954 | 217 | GaS | 13 | | | Foundered | On bkwtr in Redondo Beach |
| | 544 | 2470 | R | 2 | E | Mississippi | | 1924 | 612 | | | | | | San Pedro |
| | 215 | 2542 | | 2 | E | National City | | 1907 | | | | | | | Off Hermosa Beach |
| 237585 | | | | | | New Deal | 1923 | 1943 | 1012 | GaS | 14 | | | Foundered | Redpmdp Beacj |
| 227467 | | | | | | New Monterey | 1816 | 1935 | 430 | GaS | 13 | | | Stranded | Off Redondo Beach |
| 239982 | | | | | | Nightingale | 1923 | 1943 | 1012 | GaS | 14 | | | Foundered | Redpmdp Beacj |
| 237894 | 231 | 2659 | | 3 | E | Novus | 1938 | 1940 | 1025 | GaS | 34 | | | | Off Hermosa Beach Bkwtr |
| 254926 | 248 | 2798 | | | E | Pan Pacific | 1948 | 1950 | 306 | OIS | 226 | | [10 20] | Foundered | 25mi offshore of Pt. Dume, at Pt. Mugu Firing Range |
| | 254 | | RR | 2 | E | Phyllis | | 1918 | 4 | | | | | | Pt. Vicente |
| 233869 | 535 | 3041 | | 3 | E | Reliant | 1935 | 1965 | 1221 | OIS | | | | Foundered | 12mi SW West End of San Clemente Island |
| 221977 | 269 | | | 3 | C | Retriever | 1922 | 1951 | 429 | Brg | 99 | | | | 1mi.S of Monstad Pier Redondo Beach |
| 233456 | 536 | 3099 | | 3 | E | Rocona | 1934 | 1936 | 1127 | OIS/Tow 65.8x18.2x 8.3 | 51 | 29 | | Burned | About 12 miles S of Pt. Fermin and 8 miles N of Long Point, Catalina Isl. |
| 169590 | | | | | | Rosi | 1926 | 1944 | 215 | GaS | 15 | | | Stranded | Redpmdp Beacj |
| | 293 | 3260 | | 1 | E | Santa Marta | | 1852 | | 1582? | | | | | Catalina Isl |
| 224207 | | | | | | Sea Hawk | 1924 | 1937 | 1225 | OIS | 14 | | | Foundered | Off Redondo, California |
| | 303 | | P | 4 | B | Sea Witch | | | | | 25 | | 70 | | BLM 1978; Pierson, 1980; Pierson, et al. 1987, p. 35; Acciratte |
| 216242 | 309 | | | 2 | A | Silver Gate | 1918 | 1948 | 904 | OIS | 40 | | | Stranded | Off Pt. Vincente |
| 145916 | 338 | | | 2 | C | Thomas P. Emigh | 1902 | 1932 | 420 | Brkn/Conv Fishing Barge/Fsh | 1040 | | | Ashore, Foundered/Sank deeper water | At Old Redondo Pier (BLM lists 6/26) |
| 209756 | 340 | | | 2 | E | Tillicum | 1912 | 1943 | 1019 | GaS | 12 | | | | Mouth of Santa Ana River, Newport Beach |

**Table 3.4-5. Shipwrecks Reported Alignment A**

| Merchant Vessel Registry | BLM No. | BOEM No. | Status | CR | A | Vessel Name [Former Names] (Construction) | Built | Loss Year | Mo./ Day | Type | Gross Tons | Net Tons | Water Depth | Situation | Location Cited |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 280396 | | | | | | Tyee | 1953 | 1977 | 210 | GaS | 12 | | | Foundered | At Redondo Beach |
| | | | | | | Unknown | | | | Wreck | | | | | |
| | | | | | | Unknown | | | | Wreck | | | | | |
| | 523 | | | 4 | A | Unknown | | | | | | | | | BLM 1978; Pierson, 1980; Pierson et al. 1987, p.40. Near Anaheim Bay |
| | 524 | | | 3 | A | Unknown | | | | | | | | | BLM 1978; Pierson, 1980; Pierson et al. 1987, p.42. Near Anaheim Bay |
| | 59 | 4622 | | | | US Moody | | 1933 | | | | | | | |
| | | 4623 | | | | US Moray | | 1970 | 618 | Sub | | | 60 | | Sam Clemente I. |
| | 365 | | RR | 3 | E | US Saratoga | | | | | | | | | Huntington Beach |
| 215950 | | | | | | Victory | 1918 | 1923 | 617 | GaS | 14 | | | Stranded | Redondo Beach |
| 216443 | 387 | | | 3 | E | West Maco [Westmaco] | 1918 | 1940 | 1223 | OIS,Prs Snr | 29 | | | Swamped, foundered | 6 miles off Point Vincente |
| 535411 | | | | | | Wild Goose | 1971 | 1973 | 824 | OIS | 24 | | | Foundered | About 10 miles off California near Redondo Beach |
| 81380 | 396 | 4424 | | 2 | E | Wm Bowden | 1892 | 1926 | 212 | Schooner/Brg Conv | 778 | | | Stranded | Redondo Beach, Santa Monica Bay |
| 80824 | 392 | 4387 | | 2 | E | William G. Irwin | 1881 | 1926 | 515 | Schooner | 348 | | | Burned | Catalina Isl |

**Legend for Tables 3.4-2 through 3.4-5**

| | |
|---|---|
| AM | American Merchant Vessel |
| AMC | American Merchant Cruister |
| ACM | Auxillary Mine Layer |
| AMc | Mine Sweeper, Coastal |
| Brg | Barge |
| Brig | Brigantine |
| Brk | Bark |
| Brkn | Barkentine |
| Conv | Conversion |
| Ferry | Ferry |
| Fsh | Fishing |
| Frt | Freight |
| GaS | Gas Screw |
| LC | Landing Craft |
| LCA | Landing Craft, Assault |
| LCI | Landing Craft, Infantry |
| LCM | Landing Craft, Mechanized |
| LCN | Landing Craft, Navigation |
| LCP | Landing Craft, Personnel |
| LCT | Landing Craft, Tank |
| Lmbr | Lumber (generally as in Lumber Schooner) |
| LSHL | Landing Ship, Headquarters (Large) |
| LST | Landing Ship, Tank |
| LT | Large Tug (Army) |
| Msc | Miscellaneous |
| OIS | Oil Screw |
| Pls | Pleasure |
| PRSE Snr | Purse Seiner |
| Prs Snr | Purse Seiner |
| Schr | Schooner |
| SSP | Steam Sternwheeler |
| SLP | Steam Sidewheeler |
| StS | Steam Screw |
| Tnk | Tanker |
| Tow | Tug/Towing |
| Yct | Yacht |
| [ ] | Former Names |

**Accuracy of Location Key (column A)**

| | |
|---|---|
| A | Exact |
| B | within 91 meters (100 yards) |
| C | within 1.8 km (1 nautical mile) |
| D | within 18 km (10 nautical miles) |
| E | accuracy undetermined |
| CR | Cultural Resource |
| | 1 = Significant |
| | 2 = Moderately Significant |
| | 3 = Insignificant |
| | 4 = Significance Undetermined |
| Status | Salvage Status |
| | RR = Removed/Refloated |
| | S = Salvaged |
| | E = Extensive Salvage |
| | P = Unauthorized Pilferage |
| | None = No salvage attempted |
| | C/M = Salvage of Cargo & Machinery |

Of the 43 shipwrecks cited above, one (*Santa Cecilia)* is listed as significant. Eleven of the shipwrecks (*Fullerton, Gardiner City, Irene, Katie Flickinger, Mabel Grey, National City, Novus, Phyllis, Sacramento, Thomas P. Emigh,* and *William Bowden)* are listed as moderately significant. Six shipwrecks are listed as insignificant. Nine of the shipwrecks have never been evaluated.

In terms of their salvage status two shipwrecks (*American Fisher* and *Irene*) are listed as having been removed or refloated and three shipwrecks (*Nuestra Senora (de) Ayude, San Pedro*, and *Sea Witch*) have been subjected to unauthorized pilferage.

**SEA-US Route**

A total of 52 shipwrecks and 3 aircraft fall within the SEA-US Route (see Table 3.4-4). One shipwreck (*Unknown 471*) has accurate coordinates. Four shipwrecks (*Retriever, Sacramento, Thomas P. Emigh, Abboroka*), have locations cited as accurate to within 1.8 km (1 nautical mile). Seven shipwrecks (*Columbia Contract 41, Fullerton, Georgia, Mabel Grey, Unknown Jetliner 563, Unknown Jetliner 564,* and *Unknown Large Aircraft 571*) have locations accurate to within a radius of 18 km (10 nautical miles. The accuracy of the location for 23 shipwrecks is listed as undetermined. The remaining 17 shipwrecks have no coordinates listed.

Three shipwrecks (*Unknown Junk, Santa Cecilia,* and *Santa Maria*) are listed as significant. Twelve shipwrecks (*Abboroka, Adriatic, Emporer, Fullerton, Irene, Katie Flickinger, Mabel Grey, National City, Nedra, Sacramento, Thomas P, Emigh, Wm Bowden*) are listed as moderately significant. Of these, three shipwrecks (*Abboroka*, *Irene* and *Mississippi*) are reported as having been removed or refloated. The Unknown Large Aircraft 571 is reported as having been subjected to unauthorized pilferage. Fifteen of the shipwrecks are listed as insignificant. The remaining shipwreck's significance has not been determined.

Three shipwrecks have been reported just offshore of Redondo Beach near Route A. These wrecks are the *Palowan* (a Liberty Ship sunk as an artificial reef), a shipwreck tentatively identified as the *Retriever,* and the *Thomas P. Emigh*. The site tentatively identified as the *Retriever* and the *Palowan* lie in about 37 meters (20 fathoms, 120 feet) of water about 1 nautical mile offshore the Redondo Beach Jetty. The *Thomas P. Emigh* was towed offshore and sunk and now lies at 18 meters (10 fathoms, 60 feet) of water and is represented largely by her fasteners and metal fittings (hinges, pipes and plumbing) (Cardone and Smith, 1989:61). The wreck site is located at the head of Redondo Canyon, close to where the old commercial wharves were located, and is generally covered by 2 to 6 feet of sediment.

**Southernmost Alignment A**

A total of 61 shipwrecks fall within the southernmost Alignment A (see Table 3.4-5). Of these shipwreck locations, two (*Silver Gate* and *Unknown 524*) are listed as having accurate coordinates. One shipwreck (*Sea Witch*) is listed as located within a 91 meter (300 yard) radius of the route. Three shipwrecks (*Abboroka* and *Retriever* and *Thomas P. Emigh*), are listed as located within a 1.8 km (1 nautical mile) radius of the route. None of the shipwrecks cited are listed as being within an 18 km (10 nautical mile) radius of the proposed route. Thirty-two (32) shipwrecks are listed as accuracy undetermined. The remaining shipwrecks have no coordinates cited.

Two shipwrecks (*Unknown Junk* and *Santa Marta* are listed as significant. Eighteen (18) shipwrecks (*Abboroka, Charcas, City of Florence, Claremont, Gardiner City, H.M Storey, Irene, Katie Flickinger, Kennebec, Kingfisher, Mississippi, National City, Phyllis, Reliant, Silver Gate, Thomas P. Emigh, Tillicum,* and *Wm Bowden*) are listed as moderately significant. Of these, the *Abboroka, American*

*Fisher, Charcas, Claremont, Irene, Kennebec,* and *Phyllis,* are listed as removed or refloated. Ten of the shipwrecks are listed as insignificant. The significance of the remaining shipwrecks remains undetermined.

**Summary**

In summary there are a numerous shipwrecks, three downed aircraft and other resources listed within the study area.

The references consulted as part of the records search for submerged historic period cultural resources provided information on shipwrecks, downed aircraft, unknown wreckage and debris locations. Causes of losses include fire, explosion, stranding, or foundering. Stranding generally occurs when a vessel runs aground, becomes caught on a sand bar or reef, is becalmed or runs out of fuel or has engine trouble, although this term is often misused by mariners to indicate trouble with the engine or ships machinery, rather than with the vessel itself. Vessels that foundered are those that took on water and sank below the surface of the water.

A total of 422 shipwrecks, downed aircraft, and unknown debris locations reported between 1598 and 1980 have been recorded within the study area. Vessels reported as lost ranged in size from 7 to 10,763 tons. Thirty-two vessels are reported as having been removed or refloated. A few of the older vessels had been converted to barges or other uses prior to their loss. Tables 3.4-2 through 3.4-5 list the vessels that, based on accuracy of location and other criteria, are more likely to occur within or near the four proposed cable routes with landing sites at 25$^{th}$ Street and Neptune Avenue at Hermosa Beach.

The accuracy of the coordinates provided for the shipwrecks varies. Of the 422 resources listed, only 81 are described in MMS 1990 and BOEM 2013 as being accurately located, two shipwrecks are listed as located to within 81 meters (100 feet), 31 shipwrecks are listed as located to within 1.8 km (1 nautical mile), 42 are listed as located to within 18 km (10 nautical miles) and the remaining 269 shipwrecks are listed as having an undetermined accuracy of location. All resources that could be placed to within 10 nautical miles of each of the proposed routes have been included for consideration, and are listed in Tables 3.4-2 and 3.4-5.

Some of the reported shipwrecks were eliminated, as they are associated with points of land, harbors, breakwaters, beaches, islands, and marinas that can be eliminated from the proposed cable routes.

**Eligibility for listing in the California Register of Historical Resources**

With reference to their potential eligibility for listing in the National Register of Historic Places (NRHP) and, by extension, the California Register of Historical Resources (California Register), the MMS 1990 reference uses the terms significant, probably significant, and not significant. Alternative terminology, employed by the BOEM 2013 reference, includes probably eligible, may be eligible, and not eligible for inclusion in the National Register. Unless the resource has been evaluated according to the criteria established for inclusion in the National Register, these statements of significance and eligibility remain informal suggestions. Of the 422 resources that may fall within the study area, 23 are considered potentially eligible for listing, 145 may be eligible, and the rest are considered not eligible. Any resource eligible for listing in the National Register is also eligible for listing in the California Register.

A large number of these resources have been previously listed (informally) as significant and moderately significant. An additional twenty of the shipwrecks listed have never been evaluated for their potential significance. The majority of these are small historic shipwrecks for which significance has not been determined by previous studies (BLM, 1979; MMS, 1987, 1990) because they were under 10 tons in size and/or having no loss of life reported. With the advent of small boat archaeology and the newly updated significance of many ships built during World War II, many of which have been converted into passenger transport, pleasure, fishing vessels or barges, some of these vessels may be determined with further research to have battle stars, construction, loss of life or other historic associations that would qualify them as potentially significant and thus potentially eligible for listing on the National and California Registers. The majority of these more recent shipwrecks, however, have been informally designated as "insignificant" in the latest BOEM (2013) database as a means eliminating them from consideration should they appear in the results of sonar, magnetometer, AUV, or multibeam surveys.

About 222 of the vessels listed were built prior to 1950. Vessels lost after 1950 that have an early building date, a specific or unusual design, are associated with significant loss of life, or other historic association may be evaluated as potentially significant (MMS, 1990) and "probably eligible for listing in the NRHP" (BOEM, 2013). These vessels may include workboats used after 1950 that were built as part of the war effort (World War II) and converted to pleasure craft, passenger transport, fishing boats or other workboats. For the most part, all vessels built after 1950 have been recommended as not eligible for the NRHP (Pierson, et al., 1987). The majority of these vessels are diesel, gas, or sail powered vessels of wood, fiberglass, and steel construction. These vessels were recently included in the updated BOEM 2013 shipwreck database so that they could be eliminated as potential historic cultural resources during the interpretation of side scan sonar, magnetometer, AUV and multibeam records. Vessels reported lost in the study area that were built between 1940 and 1945 may be associated with the war effort and may bear battle stars or have other historic associations that have not yet been evaluated. Only one of the vessels reported lost between 1940 and 1945 is attributed to an act of war: the *H.M. Storey*, a steel vessel lost in 1943. Several vessels reported as built after 1907 and lost after 1950 have never been evaluated and would require additional research beyond the scope of the present Project.

### 3.4.3.2 Significance Thresholds

Under CEQA, lead agencies are to protect and preserve resources with cultural, historic, scientific, or educational value. State CEQA Guidelines Section 15064.5 provides significance criteria for determining a substantial adverse change to the significance of a cultural resource. In addition, Appendix G of the CEQA Guidelines provides additional guidance in determining a project's impact on cultural resources. The information provided in the State CEQA Guidelines has been used to develop the significance criteria for cultural resources for the Transpacific Cables Project.

Paleontological resources are also afforded protection under CEQA. Appendix G (V) of the CEQA Guidelines indicates that a Project would have a significant impact on paleontological resources if it will disturb or destroy a unique paleontological resource or site or unique geologic feature. Section 5097.5 of the California Public Resources Code prohibits knowing and willful excavation, removal, destruction, injury, and defacement of any paleontological site or feature on public lands (lands under jurisdiction of state, county, city, district, authority, or public corporation, or any agency thereof), except where the agency with jurisdiction has granted express permission. Section 30244

requires reasonable mitigation measures for impacts on paleontological resources that occur as a result of development on public lands.

A Project activity would result in a significant impact to cultural or paleontological resources if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5 and PRC Section 21083.2.
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 and PRC Section 21083.2.
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature (PRC Section 5097.5).
- Disturb any human remains, including those interred outside of formal cemeteries (CEQA Guidelines Section 15064.5[d]).

### 3.4.3.3 Impacts and Mitigation Measures

A number of Project activities have the potential to affect historical resources, unique archaeological resources, paleontological resources, and human remains. These include:

- **Intermediate Manholes**: Pre-cast concrete manholes would be placed at intervals of approximately 1,200 feet (366 meters) to 2,500 feet (762 meters) along the routes. These would measure 4 feet square (0.4 square meter) and 6 feet (2 meters) deep. A total of 8 to 12 intermediate manholes are expected during the Project.
- **Landing manholes:** Two landing manholes would be installed at the landing sites. They would be approximately 8 feet (2 meters) wide, 12 feet (3.7 meters) long, and 9 feet (2.7 meters) deep. Additionally, a separate access vault would be placed on the land side of each manhole. The surface access vault would be a 4-foot (1.2-meter) wide, 5-foot (1.5-meter) long, and 2.5-foot (0.7-meter) deep concrete box.
- **Trenching (for tie-ins and miscellaneous):** A total of 2112 trenches are expected to be excavated in the streets and greenbelt, to a depth of 4 feet (1.2-meters). The greenbelt trenches would be 1 foot (0.3 meters)long and 15 feet (4.6 meters) wide while the street trenches would be 1 foot (0.3 meters) long and 1.5 feet (0.5 meters) wide.
- **Directional Bore Sites:** While all portions of directional boring have the potential to disturb cultural and paleontological resources, such disturbance can only be observed or monitored at the entry pits. These two pits would measure approximately 10 feet (3 meters) wide by 12 feet (3.7 meters) long and 4 feet (1.2 meters) deep.
- **Trenchless Construction:** While all portions of trenchless construction have the potential to disturb cultural and paleontological resources, such disturbance can only be observed or monitored at the entry/exit pits, excavated at each end of the bore. These would measure approximately 4 feet (1.2 meters) wide and 8 feet (2.4 meters) long and 5 feet (1.5 meters) deep. There are anticipated to be 70 entry/exit pits in the streets and 70 entry/exit pits in the greenbelt.
- **Conventional Bores:** It is anticipated that there would be a total of two conventional boring operations in the street and two in the green belt. While the boring itself cannot be monitored,

each bore would necessitate the excavation of a pit measuring 24 feet (7.3 meters) long by 6 feet (1.8 meters) wide by 5 feet (1.5 meters) deep.

- **Marine Directional Bores:** Four marine directional bores would be conducted, one for each of the four cable systems, to provide a housing for the fiber-optic conduit. Each directional bore would extend approximately 4,000 feet offshore into the Pacific Ocean.
- **Ocean Ground Bed (OGB):** one OGB would be installed for each of the two cable landing sites. These consist of anodes installed into holes drilled in the beach down to the seawater level below the beach surface, a depth of approximately 20 feet.
- **Pre-Lay Grapnel Run:** a grapnel would be dragged behind a ship along the cable routes before cable installation. The arms of the grapnel are designed to hook debris lying on the seafloor or shallowly buried to approximately 1.3 feet. If debris is hooked, towing will cease until the debris has been recovered.
- **Cable Laying and Plowing**: At the end of the bore pipe the cable would be temporarily laid directly on the seafloor to a water depth of approximately 328 feet until it can be post-lay buried by divers or by a Remotely Operated Vehicle (ROV). Cable plowing can be used between water depths of 328 and 3,037 feet. A cable plow is a large sled that is deployed by the main cable ship. Divers assist with loading the cable into the plow's articulated feed chute and burial shank. As it is towed by the ship, the plow slices through ocean floor sediments. Cable is fed into the bottom of the furrow. The furrow would be approximately 3.3 feet, or 1 meter wide. The plow, supported by outriggers, impacts a total width of approximately 20 feet. Together the weight of the soil and the sled serve to fully close and compact the furrow.
- **Diver-assisted post-lay burial:** this technique can be used in shallow depths between 33 and 98 feet (10 and 30 meters). Divers use hand jets to open a narrow furrow beneath the cable, the cable drops into the furrow as it is opened, and disturbed sediments settle back over the cable.
- **Remotely Operated Vehicle (ROV) Post-lay Burial:** Between water depths of 98 feet and 328 feet, or where the cable plow cannot achieve the targeted burial depth, an ROV would be used to bury the cable. The ROV would loosen the seafloor sediments beneath the cable, allowing it to settle to the desired depth. The sediments would then settle back over the area, burying the cable. The typical width of disturbance is 15 feet.

The impact discussions below address the significance thresholds listed above in Section 3.4.3.2.

***Impact CR-1: Installation of power feed equipment at the City maintenance yard and associated ground disturbance could result in a substantial adverse change in the significance of an historical refuse burner and archaeological deposits at the Hermosa Beach City Dump.***

The refuse burner has the potential to yield information important in prehistory or history on a local level (Criterion 4 of the CRHR). Damage to the burner as a result of the installation of power feed equipment within the City Maintenance Building could cause a substantial adverse change to a potentially significant historical resources, and mitigation would be required.

The Hermosa Beach City Dump is considered potentially eligible at the local level under the City of Hermosa Beach Municipal Code, Chapter 17.53: Historic Resources Preservation, Criterion B. It is identified with "....events significant in local, state, or national history." It is also considered potentially eligible under Criterion 4 of the CRHR with the potential to yield, information important to the prehistory or history of the local area, California, or the nation. Damage to the archaeological

deposits could cause a substantial adverse change to a potentially significant historical resource, and mitigation would be required.

Implementation of Mitigation Measure CR-1a (*Document the Refuse Burner*), CR-1b (*Archaeological Monitoring Plan*), and CR-1c (*Monitor Hermosa Beach City Dump*) would reduce the impacts of the proposed Project to a less-than-significant level (Class II).

*Mitigation Measures*

CR-1a **Document the Refuse Burner.** Prior to beginning any equipment installation that would damage the refuse burner, guidelines shall be developed for the careful exposure of extant elements of the historic brick and mortar furnace. Once exposed, detailed documentation of the furnace shall be undertaken. Documentation shall be guided by the Historic American Engineering Record (HAER) standards. This documentation shall include production of high quality 35-mm photographs and plan drawings of building elements exposed, including but not limited to, a floor plan, any character-defining building features, and elevation drawings. All work carried out pursuant to the recordation of the furnace building shall be conducted by, or under the direct supervision of a person or persons meeting, at a minimum, the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-39 as revised in 1994) as an architectural historian. A written report detailing the HAER-like documentation shall be provided to the City upon completion the work. This report shall be produced on archivally stable materials and filed with the Hermosa Beach Historical Society.

CR-1b **Archaeological Monitoring Plan.** Prior to any ground-disturbing activities, an Archaeological Monitoring Plan shall be developed by a qualified archaeologist with provision for review and input by concerned Native Americans and approval by the City. The Plan will also address worker safety during ground disturbing activities and installation of power feed equipment in the City Maintenance Building. The Plan is to include provisions for archaeological and Native American monitoring, detailed documentation of all early twentieth-century artifact-bearing deposits exposed during ground-disturbing site work, and development of a clear collection policy for both prehistoric and historic artifacts, subsequent artifact analysis, reporting of findings, and disposition and/or curation of any significant artifacts recovered. All reports of findings shall be filed with the SCCIC.

CR-1c **Monitor Hermosa Beach City Dump.** Any significant archaeological deposits remaining in the area of the previous City of Hermosa Beach Dump exposed by project related ground disturbance must be protected in place. Stabilization and covering of these archaeological deposits shall be monitored by a qualified historical archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-39 as revised in 1994).

***Impact CR-2: Project-related ground disturbance could encounter unknown buried archaeological or ethnographic historical resources, potentially resulting in an adverse change in the significance of those resources.***

Built-environment historical resources have been identified in and adjacent to the Project area. Construction activities that would occur from the Project do not appear to have the potential to cause long-term significant adverse changes to the significance of built-environment historical resources. While the process of excavating and installing these manholes and conduits could have a potential adverse impact to the setting of built-environment resources, this effect would be

temporary so they would not constitute a significant impact. The installation of telecommunications equipment within built-environment resources would also not constitute a significant impact, as these buildings already contain this type of equipment and the equipment would not be visible from the exterior. The setting of the refuser burner has already be impacted by extensive remodeling of the City Maintenance Building interior; therefore; the addition of modern equipment would not constitute a significant impact to the setting of the resource.

One archaeological historical resource was identified within the Project area, buried trash associated with the Hermosa Beach City Dump. Excavation associated with construction and power feed equipment installation could significantly impact this resource. In addition there is potential for Project-related ground disturbance to encounter unknown buried resources. This is from the likelihood of encountering buried landforms that have the potential to contain early prehistoric cultural materials and from the long history of Euro-American occupation in the area that may have left behind historic period deposits, including dumps, privies, and features that are related to railroad construction, operation, and use.

In addition to the above, the Gabrieleño Band of Mission Indians/Kizh Nation have requested that Native American monitors be present for all ground-disturbing activities. Due to a history of looting and disturbance of sites associated with their ancestors, Native American groups are generally wary of providing specific information regarding the location of these places. The interest of the tribe in this Project may be construed as an indication that important cultural resources are present in this area that are either archaeological or ethnographic in nature. Thus, any ground-disturbing activities that will impact sediments below the modern roadbed and any modern soil fill should be seen as having the potential to encounter buried cultural deposits.

Implementation of Mitigation Measures CR-1b, CR-2a, and CR-2b would reduce impacts to unanticipated resources, by providing for identification and appropriate treatment of any historical resources encountered but not to a less-than-significant level. Because the boring and trenchless work cannot be monitored except at the entry pits or end of the bore or trench, subterranean resources and impacts would be unknown. Therefore, these impacts are considered significant and unavoidable (Class I).

*Mitigation Measures*

CR-1b **Archaeological Monitoring Plan.** See above for the full text of this measure.

CR-2a **Evaluate and Treat Incidental Discovered Cultural Resources.** In the event that previously unidentified cultural resources are uncovered during Project implementation, all work within 100 feet of the discovery will be halted and redirected to another location. The find will be secured, and a cultural resources specialist who meets the Secretary of Interior Professional Qualifications Standards will be contacted immediately. The cultural resources specialist will inspect the discovery and determine whether further investigation is required. If additional impacts to the discovery can be avoided, the resource will be documented on California Department of Parks and Recreation cultural resource records (Form DPR 523) and filed at the California Historical Resources Information System; no further effort will be required. If additional disturbance to the resource cannot be avoided, the cultural resources specialist will evaluate the significance and California Register of Historical Resources eligibility of the resource and (if warranted) implement data recovery excavation or other appropriate treatment measures. If cultural materials are discovered at the directional bore sites, appropriate treatment may also include the

exploration and data recovery excavation of the resource where it would be impacted by the borers in addition to the bore site itself. The methods and results of evaluation or data recovery work at an archaeological find will be documented in a professional level technical report to be filed with the South Central Coastal Information Center.

CR-2b **Monitor for Cultural Resources.** Any Project-related ground-disturbing activities, with the exception of trenchless construction or directional boring, that will affect naturally occurring sediments below any artificial fill must be done in the presence of an archaeological monitor who is working under the supervision of an archaeologist who meets the Secretary of Interior Professional Qualification standards, or who meets those standards themselves. Although it is not possible to monitor trenchless construction, directional boring, or conventional boring, the entry/exit sites for these techniques should be monitored.

If, during the course of monitoring, a potentially significant resource is discovered, the archaeological monitor will have the authority to stop or redirect ground-disturbing activities away from the resource until it can be evaluated. The archaeological monitor must be able to: (1) recognize cultural resources; (2) take accurate and detailed field notes, photographs, and location coordinates; and (3) document Project-related ground-disturbance activities, their locations, and other relevant information, including a photographic record. The monitor shall identify, record, evaluate and determine appropriate treatment for any resources inadvertently discovered during ground disturbance. If cultural resources are encountered inadvertently, treatment shall occur as per Mitigation Measure CR-2a**.**

***Impact CR-3: Project-related ground-disturbing activities have the potential to uncover buried prehistoric or historic unique archaeological resources, potentially resulting in an adverse change in the significance of those resources.***

No unique archaeological resources have been identified in the Project area, but the hardscaped nature of most of the Project area limits the efficacy of archaeological survey. Project-related ground-disturbing activities have the potential to uncover prehistoric or historic unique archaeological resources that may be buried below the ground surface. As noted above, the area of Hermosa Beach is not considered sensitive for prehistoric resources dating to the last 5,000 years, but the presence of late Pleistocene and early Holocene buried landforms show that there is the potential for very early prehistoric archaeological deposits that would by their nature be scientifically significant. There is also potential for encountering historic period archaeological deposits. However, modern period development has greatly altered the landscape in this area, and it is possible no remains of past activity exist.

Implementation of Mitigation Measures CR-2a and CR-2b would reduce impacts to unanticipated unique archaeological resources by providing for identification and appropriate treatment of any resources encountered, but not to a less-than-significant level. Because the boring and trenchless work cannot be monitored except at the entry pits or end of the bore or trench, subterranean resources and impacts to them would be unknown. Therefore, these impacts are considered significant and unavoidable (Class I).

*Mitigation Measures*

CR-2a **Evaluate and Treat Incidental Discovered Cultural Resources.** See above for the full text of this measure.

CR-2b **Monitor for Cultural Resources.** See above for the full text of this measure.

***Impact CR-4: Excavation associated with Project construction could result in the destruction of scientifically important paleontological resources.***

There are no known paleontological fossil localities in the Project area based on the paleontological records search. However, vertebrate fossils have been recovered from between 15 and 35 feet (5 and 11 meters) below ground surface, 3.5 miles (5.6 kilometers) east of the Project area. The possibility of encountering paleontological resources cannot be entirely discounted. The NHMLAC has indicated that excavations extending down into older Quaternary deposits may encounter significant fossils specimens. Paleontological resources are considered significant if they may provide new information regarding past life forms, paleoecology, stratigraphy, or geological formation processes. As no paleontological or geological studies have been conducted in close proximity to the Project area, the depth of these underlying older Quaternary deposits is not known. Therefore, ground disturbance extending below 8 feet should be monitored.

The proposed Project includes the excavation and installation of two manholes, where ground-disturbing activities have potential to affect sediments with high paleontological sensitivity. The excavation for this installation is expected to reach at least a depth of 10 feet (3 meters), which is within the potential depth for encountering high sensitivity sediments.

In the event that paleontological resources are encountered, Mitigation Measures CR-4a and CR-4b would reduce impacts to unanticipated resources, by providing for identification and appropriate treatment of any resources encountered, but not to a less-than-significant level. Because the boring and trenchless work cannot be monitored except at the entry pits or end of the bore or trench, subterranean resources and impacts to them would be unknown. Therefore, these impacts are considered significant and unavoidable (Class I).

*Mitigation Measures*

CR-4a **Evaluate and Treat Incidental Discovered Paleontological Resources.** If paleontological resources are encountered during Project subsurface construction, all ground-disturbing activities within 25 feet (7.6 meters) will be halted or redirected to avoid additional impact and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. Project personnel will not collect or move any paleontological materials. Adverse effects on such deposits will be avoided by Project activities.

Upon completion of the assessment, a report documenting methods, findings, and recommendations will be prepared and submitted to the City of Hermosa Beach and, if paleontological materials are recovered, they would be stored at a paleontological repository, such as the Natural History Museum of Los Angeles County.

CR-4b **Monitor for Paleontological Resources.** A paleontological monitor will be present during ground disturbance when a depth of approximately 8 feet (2.4 meters) or greater is reached to monitor for paleontological resources that may be encountered in the older Quaternary terrace deposits that underlie the surficial dune and beach deposits. The

paleontological monitor will be able to: (1) recognize fossils and paleontological deposits, and deposits that may be paleontologically sensitive; (2) take accurate and detailed field notes, photographs, and locality coordinates; and (3) document project-related ground-disturbing activities, their locations, and other relevant information, including a photographic record.

***Impact CR-5: Project ground-disturbing activities could result in the disturbance or destruction of human remains.***

No human remains have been identified in the Project area. However, if any human remains are encountered during ground disturbance, implementation of Mitigation Measure CR-5 (*Appropriately Treat Inadvertent Discovered Human Remains*) would reduce impacts to unanticipated human remains, by providing for identification and appropriate treatment of any remains encountered, but not to a less-than-significant level. Because the boring and trenchless work cannot be monitored except at the entry pits or end of the bore or trench, subterranean resources and impacts to them would be unknown. Therefore, these impacts are considered significant and unavoidable (Class I).

*Mitigation Measures*

CR-5 **Appropriately Treat Inadvertent Discovered Human Remains.** If human remains are discovered or recognized during construction-related activities, all excavation or other disturbance within 100 feet of the discovery will be halted and directed away from the discovery until the Los Angeles County Coroner can determine if the discovery requires an investigation or if the remains are those of a prehistoric Native American. If the remains are determined to be Native American, the coroner will contact the NAHC. The NAHC will work with the landowner and a designated Most Likely Descendent to determine the disposition of the remains. According to the State Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052).

***Impact CR-6: Project-related ground-disturbing activities have the potential to disturb or destroy previously unknown or inaccurately recorded submerged prehistoric archaeological resources or historic shipwrecks.***

Marine construction activities would disturb bottom sediments from the MHW line and the outer limit of the continental shelf—that is, where the seawater depth is approximately 5,904 feet (1,800 meters) (E&E, 2001). Marine construction activities, therefore, have the potential to disturb, disrupt or degrade extant cultural resources such as prehistoric archaeological sites and watercraft, and historic shipwrecks on the seafloor and/or within seafloor sediments. Subsurface disturbance to a potentially significant or a significant shipwreck may also occur during directional boring through near shore sediments from the LMH to water depths of 40 feet (12 meters), by diver-assisted burial from water depths of 49-98 feet (12-30 meters) and from cable plow, diver or ROV-assisted post-lay burial in water depths of 98-3,937 feet (30-1,200 meters), and by direct surface lay in water depths greater than 3,937 feet (1,200 meters).

Adverse impacts from the pre-lay grapnel run, use of cable plow and diver- or ROV-assisted cable burial could include displacement and/or destruction of elements of these resources that would result in the loss of integrity, loss of structural and compositional information that could have addressed important research questions. Although cable-laying and support vessels are dynamically positioned rather than anchoring to locations along the route, anchoring may be anticipated to occur

for a variety of reasons: weather, repair or other problems and also has the potential to disturb, disrupt or degrade extant cultural resources.

Mitigation Measures CR-6a, CR-6b, and CR-6c would reduce impacts to a less-than-significant level (Class II) by providing for the identification and avoidance of any potentially significant resources by rerouting the cable.

*Mitigation Measures*

CR-6a **Conduct a Pre-Construction Offshore Archaeological Resources Survey**. Using results of an acoustic survey (e.g., a Chirp System survey) for evidence of erosion/incision of natural channels, the nature of internal channel-fill reflectors, and overall geometry of the seabed, paleochannels and the surrounding areas will be analyzed for their potential to contain intact remains of the past landscape that could have the potential to contain prehistoric archaeological deposits (e.g., Schmidt et al., 2014). The analysis will include core sampling in various areas including, but not limited to, paleochannels to verify the seismic data analysis. Based on the CHIRP and coring data, a Marine Archaeological Resources Assessment Report shall be produced by a qualified maritime archaeologist and reviewed by the Coastal Commission or the State Historic Preservation Office to document effects on potential historic properties.

CR-6b **Conduct a Pre-Construction Offshore Historic Shipwreck Survey**. A qualified maritime archaeologist, in consultation with the City of Hermosa Beach, shall conduct an archaeological survey of the proposed cable routes. The archaeological survey and analysis shall be conducted following current BOEM and U.S. Army Corps of Engineers (Los Angeles District) standard specifications for underwater/marine remote sensing archaeological surveys (Guidelines for Providing Geological and Geophysical, Hazards, and Archaeological Information Pursuant to 30 CFR Part 585).

The archaeological analysis shall identify and analyze all magnetic and side scan sonar anomalies that occur in each cable corridor, defined by a lateral distance of 0.5 kilometers on each side of the proposed cable route. This analysis shall not be limited to side scan and magnetometer data any may include shallow acoustic (subbottom) data as well as AUV and/or multibeam data that may have a bearing on identification of anomalies representative of potential historic properties. The analysis shall include evaluation to the extent possible of the potential significance of each anomaly that cannot be avoided within the cable corridor. If sufficient data is not available to identify the anomaly and make a recommendation of potential significance, the resource(s) shall be considered as potentially eligible for the National and California registers and treated as a historic property. If any cultural resources, i.e., shipwrecks, downed aircraft or other remains are discovered as the result of the marine remote sensing archaeological survey, the proposed cable route or installation procedures shall be modified to avoid the potential historic property. BOEM administratively treats identified submerged potential historic properties as eligible for inclusion on the National Register under Criterion D, and requires project proponents to avoid them unless the proponent chooses to conduct additional investigations to confirm or refute their qualifying characteristics. BOEM typically determines a buffer (e.g., 50 meters) from the center point of any given find beyond which the project must be moved, in order to ensure that adverse effects to the potential historic property will be avoided during construction.

CR-6c **Prepare an Avoidance Plan**. As per §30106 and §30115 of the Coastal Act of 1976, "where developments would adversely impact archaeological…resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required" (Pub. Res. Code §30244). An avoidance plan, therefore, shall be developed and implemented to avoid all documented resources from the Marine Archaeological Resources Assessment Report and the Offshore Historic Shipwreck Survey Report, provide for addressing discoveries of as yet unidentified resources encountered during planned marine survey and construction, and provide mitigation monitoring if deemed necessary during construction to ensure compliance.

## 3.4.3.4 Cumulative Effects

### *Introduction*

Cumulative impacts to cultural resources take into account the impacts of the Project in combination with those of other past, present, and reasonably foreseeable projects. The geographic extent of cumulative analysis for cultural resources encompasses a large region due to the interrelated nature of the region's prehistoric, historic, and ethnographic resources. The geographic area for the analysis of cumulative impacts for submerged cultural resources includes the offshore submerged lands beneath the Santa Monica Bay. For purposes of this cumulative analysis, impacts to cultural resources could occur at any time throughout the life of the Project, but are most likely to occur during ground-disturbing activities associated with construction.

Section 3.4.1 provides a historical background for the Project area and describes the inventory of known cultural resources in the area. The types of resources that are found within the Project area are similar to those found within the broader geographic region considered for the cumulative analysis.

The condition of these cultural resources varies considerably, and depends on the types and extent of human and natural factors that may have impacted the integrity of individual resources or group of resources. The most prevalent impacts to cultural resources in the region result from human activities that include settlement and urbanization, recreational use, ranching, and the development of roads and other infrastructure. Natural agents, such as erosion, sedimentation, and soil deflation, also play a role in adversely affecting cultural resources. The effect of these natural processes may be aggravated by human activities that increase their impact. For example, construction activities can destabilize sediments thereby increasing erosion at archaeological sites.

### Project Contribution to Cumulative Impacts

The proposed Project would not have a direct impact on any known terrestrial cultural resource. Therefore, construction and operation of the Project is not expected to contribute to cumulative impacts on cultural resources. However, unknown and unrecorded cultural resources may be found during construction, and this could occur for the proposed Project as well as for cumulative projects in the region. Similar to construction of the proposed Project, should resources be discovered during the construction of current and future projects, they would be subject to legal requirements designed to protect them, thereby reducing the effect of encountering unknown cultural resources. Due to the nature of the Project area, which is fully developed, and the planning of the marine cable routes to avoid cultural resources that may exist on the sea floor, as well as implementation of

Mitigation Measures CR-2a and CR-2b, the Project is unlikely to make a substantial contribution to cumulative impacts on terrestrial cultural resources.

Similarly, the archival, literature, and records searches failed to identify accurately recorded historical resources within the marine study area. The isolated prehistoric artifacts that have been recovered from the seabed by divers, and current archaeological research, support the assessment that there is the potential to encounter prehistoric archaeological sites during construction of the submerged portion of the cables. The same is true for historic shipwrecks. A number of shipwrecks have been reported within the study area, however the level of accuracy of these reports is not adequate to determine with certainty that any of the cables will encounter a shipwreck.

Mitigation measures require identification of areas of high potential for specific submerged cultural resources, which would reduce any impact to a less-than-significant level. No past projects have reported encountering submerged historic shipwrecks or prehistoric archaeological resources in the study area, and there are currently no proposed projects that have the potential to disturb or destroy such resources. Therefore, the Project's contribution to cumulative impacts on marine cultural resources would not be significant.

### 3.4.3.5 Summary of Impacts, Mitigation Measures, and Significance Conclusions

Table 3.4-6, below, provides a summary of each identified impact and associated mitigation measures to reduce or avoid the impact, if warranted. Mitigation measures are required for each significant impact, but are not required for impacts that are not significant. Table 3.4-1 also indicates the significance conclusion for each identified impact.

**Table 3.4-6. Summary of Cultural Resources Impacts, Mitigation Measures, and Significance Conclusions**

| Impacts | Mitigation Measures | Significance Conclusion |
|---|---|---|
| CR-1: Installation of power feed equipment at the City maintenance yard and associated ground disturbance could result in a substantial adverse change in the significance of an historical refuse burner and archaeological deposits at the Hermosa Beach City Dump. | CR-1a Document the Refuse Burner.<br>CR-1b Archaeological Monitoring Plan.<br>CR-1c Monitor Hermosa Beach City Dump. | Class II |
| CR-2: Project-related ground disturbance could encounter unknown buried archaeological or ethnographic historical resources, potentially resulting in an adverse change in the significance of those resources. | CR-1b Archaeological Monitoring Plan.<br>CR-2a Evaluate and Treat Incidentally Discovered Cultural Resources.<br>CR-2b Monitor for Cultural Resources. | Class I |
| CR-3: Project-related ground-disturbing activities have the potential to uncover buried prehistoric or historic unique archaeological resources, potentially resulting in an adverse change in the significance of those resources. | CR-2a Evaluate and Treat Incidentally Discovered Cultural Resources.<br>CR-2b Monitor for Cultural Resources. | Class I |
| CR-4: Excavation associated with Project construction could result in the destruction of scientifically important paleontological resources. | CR-4a Evaluate and Treat Incidentally Discovered Paleontological Resources.<br>CR-4b Monitor for Paleontological Resources. | Class I |
| CR-5: Project ground-disturbing activities could result in the disturbance or destruction of human remains. | CR-5 Appropriately Treat Incidentally Discovered Human Remains. | Class I |

**Table 3.4-6. Summary of Cultural Resources Impacts, Mitigation Measures, and Significance Conclusions**

| Impacts | Mitigation Measures | Significance Conclusion |
|---|---|---|
| CR-6: Project-related ground-disturbing activities have the potential to disturb or destroy previously unknown or inaccurately recorded submerged prehistoric archaeological resources or historic shipwrecks. | CR-6a Conduct a Pre-Construction Offshore Archaeological Resources Survey.<br>CR-6b Conduct a Pre-Construction Offshore Historic Shipwreck Remote Sensing Survey.<br>CR-6c Prepare an Avoidance Plan. | Class II |

**Class I:** **Significant impact; cannot be mitigated to a level that is not significant.** A Class I impact is a significant adverse effect that cannot be mitigated below a level of significance through the application of feasible mitigation measures. Class I impacts are significant and unavoidable.

**Class II:** **Significant impact; can be mitigated to a level that is not significant.** A Class II impact is a significant adverse effect that can be reduced to a less-than-significant level through the application of feasible mitigation measures presented in this EIR.