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STAFF REPORT: REGULAR CALENDAR

Consistency Determination No.: CD-0007-19

Federal Agency: U.S. Army Corps of Engineers

Location: East San Pedro Bay, Long Beach, Los Angeles County (**Exhibit 1**)

Project Description: Construction of 200 acres of kelp, open water and near shore rocky reef, and eelgrass habitat offshore of the City of Long Beach in East San Pedro Bay to improve ecosystem structure and function.

Staff Recommendation: Concurrence

SUMMARY OF STAFF RECOMMENDATION

The U.S. Army Corps of Engineers (Corps) submitted a consistency determination for the East San Pedro Bay Ecosystem Restoration project in East San Pedro Bay, located offshore of Long Beach. The project area includes the Port of Long Beach, the Long Beach shoreline, the Long Beach Breakwater, and four artificial oil islands. Urbanization and development of the Port of Long Beach and Port of Los Angeles resulted in the extensive loss of estuarine habitat. Remaining marine habitats in San Pedro Bay include open water and sandy soft-bottom benthic habitat, as well as artificial habitat created by harbor and oil island structures. The Corps proposes to create 200 acres of kelp beds, eelgrass beds, and rocky reef habitats in East San Pedro Bay, an 18 square mile offshore area (11,465 acres). The goal of this project is to improve aquatic

ecosystem structure and function for increased habitat biodiversity and ecosystem value within East San Pedro Bay.

While the ultimate project goal is marine resource enhancement, and while the Commission has previously supported converting soft bottom habitats to artificial reefs, short term adverse impacts to marine resources could occur through construction and dredging activities. Specifically, the proposed project has the potential to adversely affect ecologically important species, habitats, and water quality. To minimize impacts, the Corps has committed to implementing mitigation measures designed to protect marine habitats, species, and water quality. These measures include monitoring for marine mammals and sea turtles, lowering vessel speeds to reduce collisions with marine wildlife, avoiding areas with existing eelgrass, monitoring for changes in water quality, implementing turbidity control measures, monitoring for non-native species, and removing *Caulerpa taxifolia* from construction areas. In addition, the Corps has committed to submitting to the Commission the following mitigation plans for review, prior to project construction: an Anchoring Plan, Dredging Plan, Green Sea Turtle Monitoring and Avoidance Plan, Marine Mammal Monitoring and Avoidance Plan, Hazardous Material Spill Prevention Plan, and a Monitoring and Adaptive Management Plan. With these measures and plans in place, the Commission staff recommends the Commission find the proposed project is consistent with Sections 30230, 30231, 30232 and 30233 of the Coastal Act.

In addition, the proposed project also has the potential to adversely affect public access, cultural resources, and air quality. To minimize impacts, the Corps has committed to implementing mitigation measures including: avoiding beach closures, monitoring for cultural resources, consulting with Tribal representatives, and minimizing emissions from project-related vehicles and equipment. The staff therefore recommends the Commission find the project consistent with the public access and recreation, cultural resource protection, and air quality policies (Sections 30210, 30212, 30220, 30244, and 30253) of the Coastal Act.

The staff recommends that the Commission **concur** with the Corps' consistency determination CD-0007-19. The motion and resolution are on Page 4 of this report. The standard of review for this consistency determination is the Chapter 3 policies of the Coastal Act.

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EXHIBITS

- Exhibit 1 – Location Map
- Exhibit 2 – Built Habitat Features Map
- Exhibit 3 – Distribution of Open Water Rocky Reef Complex
- Exhibit 4 – Nearshore Rocky Reef and Eelgrass Cross-section
- Exhibit 5 – Kelp Reef Construction Method
- Exhibit 6 – Habitats within the Project Area

I. FEDERAL AGENCY'S CONSISTENCY DETERMINATION

The U.S. Army Corps of Engineers has determined the project is consistent to the maximum extent practicable with the California Coastal Management Program.

II. MOTION AND RESOLUTION

MOTION:

I move that the Commission concur with consistency determination CD-0007-19 that the project described therein is fully consistent, and therefore consistent to the maximum extent practicable, with the enforceable policies of the California Coastal Management Program (CCMP).

Staff recommends a **YES** vote on the motion. Passage of this motion will result in a concurrence with the determination and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

RESOLUTION TO CONCUR WITH CONSISTENCY DETERMINATION:

The Commission hereby concurs with the consistency determination by the U.S. Army Corps of Engineers, on the grounds that the project described therein is fully consistent, and therefore consistent to the maximum extent practicable, with the enforceable policies of the CCMP.

III. FINDINGS AND DECLARATIONS

A. PROJECT BACKGROUND AND DESCRIPTION

In 2009, the City of Long Beach (City) developed a reconnaissance report to examine the Federal interest in participating in a feasibility study of modifying the Long Beach Breakwater and related ecosystem restoration in East San Pedro Bay (**Exhibit 1**). In 2010, the U.S. Army Corps of Engineers (Corps) agreed to partner with the City on a feasibility study for the project, although the study was delayed until 2015 due to lack of funding. The Corps developed a Draft Integrated Feasibility Report (IFR) for the East San Pedro Bay Ecosystem Restoration Feasibility Study in November 2019. The study concluded that breakwater modifications would be infeasible and would result in significant adverse impacts to the U.S. Navy's and Port of Long Beach's maritime operations, would provide inadequate habitat benefits, and would require extensive mitigation for wave impacts and erosion on the shoreline. Thus, the final alternative plans analyzed in the IFR did not include modification of the breakwater, and modified the study and final proposed alternative to focus on habitat improvements. Similar to past Corps feasibility studies, the Corps has submitted a consistency determination to the Commission relatively early in the planning process as a necessary step before it can seek continued funding for the project.

The project would consist of creation of 200 acres of kelp beds, eelgrass beds, and rocky reef habitats in East San Pedro Bay, located throughout an 18 square mile area (11,465 acres) offshore of Long Beach (**Exhibit 2**). The Corps's stated goal for this project is to improve aquatic ecosystem structure and function for increased habitat biodiversity and ecosystem value within East San Pedro Bay. To achieve this goal, the Corps would construct twenty-four rocky reefs totaling 122 acres and using approximately 132,000 tons of quarry stone. The Corps anticipates that giant kelp would establish on the rocks through passive recruitment of propagules over time. Twelve of those kelp reefs would be placed adjacent to the breakwater near existing kelp beds, and the other twelve kelp reefs would be placed in the open water zone off the eastern end of the breakwater. These locations are near the existing reef that is expected to provide a recruitment source for kelp propagules. The Corps expects the cold water current in that area to provide a nutrient rich environment beneficial to kelp growth. Each kelp reef would span an area approximately 500 feet in diameter and would result in 20% of bottom coverage of substrate, made from a single layer of quarry stone, to achieve low rock coverage and relief. Two rocky reef complexes, each 100 feet in diameter, would be constructed in the open water near Island Chaffee, an existing oil island (**Exhibit 3**). Open water rocky reefs would be constructed using approximately 440,000 tons of quarry stone and total 29.2 acres. Rocky reefs would vary in height between three to twelve feet above the seabed at depths greater than -20 feet MLLW, with higher reefs placed farther from marine navigation channels than lower reefs. Six eelgrass beds and six near-shore rocky reefs would be constructed alongside each other near Peninsula Beach within nearshore shallow waters, at depths less than -20 feet MLLW (**Exhibit 4**). The near-shore rocky reefs would be constructed using 365,000 tons of quarry stone and would total 20 acres. The eelgrass beds would be constructed using 100,000 cubic yards of dredged sand and would total 30.3 acres.

Quarry stone for rocky reefs would be transported to the site from either the Catalina Quarry via supply barge or via truck from a secondary quarry site, 3M Quarry, in Corona, California. When the supply barge arrives at the site, it would be tethered to an anchored derrick barge (**Exhibit 5**). To ensure accurate rock placement, the derrick barge and supply barge would be positioned for rock placement using a differential Global Positioning System (DGPS) system. As the barges are moved into location, a front-end track loader would push rocks off of the supply barge into the ocean at designated placement spots. If rock comes solely from the Catalina Quarry, the Corps estimates that a total of 735 small barge loads or 460 large barge loads would need to be transported to the project area (50 miles roundtrip). If rock comes solely from the 3M Quarry, the Corps estimates that a total of 45,000 truck trips (100 miles round trip) over 680 days would be needed. The Corps plans to primarily source rock from the Catalina Quarry but will transport rock from 3M Quarry if supply runs low. Sand for the eelgrass beds would be dredged from the Surfside/Sunset borrow site located three miles from the project site. The sand would be placed on the leeward side of the adjacent nearshore rocky reefs. Eelgrass would be transplanted from a nearby existing donor bed. The Corps expects construction to begin in 2028 and take 37 months.

The Corps is in the process of developing a Monitoring and Adaptive Management Plan (MAMP) to provide a framework for effective monitoring, project performance standards, and implementation of adaptive management activities. The project's Adaptive Management Team (AMT), composed of members from the Corps, the City of Long Beach, and interested resource agencies, will review the MAMP after completion of each project feature. The AMT would provide management recommendations through its analysis of monitoring results, performance objectives, and adaptive management triggers. The AMT will evaluate the status of the project goals and determine corrective action if goals are not being met. The AMT is still in development but is expected to include the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, California Regional Water Quality Control Board, United States Geological Survey, and Commission staff.

B. OTHER GOVERNMENTAL APPROVALS AND CONSULTATIONS

U.S. Fish and Wildlife Service (USFWS)

The Corps has consulted with the USFWS pursuant to the Fish and Wildlife Coordination Act (FWCA). USFWS has provided a Planning Aid Letter and will continue consulting with the Corps to develop a Wildlife Service Coordination Act Report.

National Marine Fisheries Service (NMFS)

The Corps has completed informal Endangered Species Act Section 7 consultation with the NMFS regarding green sea turtles and essential fish habitat (EFH). NMFS concurred that the proposed project is not likely to adversely affect green sea turtles or EFH and is expected to provide long-term beneficial impacts. NMFS determined that an increase in noise and decrease in water quality from turbidity near construction zones would be temporary and minimal, as the Corps has committed to a number of conservation measures to avoid and minimize impacts to green sea turtles.

California State Office of Historic Preservation (SHPO)

The Corps has begun consultation with the SHPO for historic and cultural resources located in East San Pedro Bay. The Corps is developing a Programmatic Agreement with SHPO that will satisfy the responsibilities under the National Historic Preservation Act.

Tribal Outreach and Consultations

During the process of reviewing the Corps' consistency determination for this project, Commission staff reached out to representatives from Native American Tribes understood to have current and/or historic connections to the project area. These Tribes include the Gabrieleno Band of Mission Indians – Kizh Nation, Juaneno Band of Mission Indians, Soboba Band of Luiseno Indians, Barbareno/Ventureno Band of Mission Indians, Coastal Band of the Chumash Nation, Fernandeno Tataviam Band of Mission Indians, Kern Valley Indian Community, Kitanemuk & Yowlumne Tejon Indians, and the Morongo Band of Mission Indians. Contact information for these Tribal Representatives was gathered from the Native American Heritage Commission's Native American Contact List. At the time of publication of this staff report and

recommendation, no questions or concerns had been brought to the attention of Commission staff by representatives of these Tribes. Any concerns raised subsequent to the publication of this report will be brought to the attention of the Commission through the development of an addendum to this staff report and recommendation. In addition, during development of the project DEIS the Corps also consulted with Tribes from a list the Corps received from the NAHC.

C. MARINE RESOURCES AND WATER QUALITY

Coastal Act Section 30230 states:

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Coastal Act Section 30231 states:

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Coastal Act Section 30232 states:

Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.

The project area lies within the Southern California Bight (SCB), a dynamic coastal region extending from Point Conception to the U.S./Mexican border. The SCB is the location where the cool California Current mixes with the warm Southern California Countercurrent and creates a highly productive transition zone that supports a diverse array of both warm and cold water marine species. The SCB supports a variety of offshore and nearshore habitats such as soft sediment habitats, coastal wetlands, and rocky reefs that support kelp and eelgrass beds. The project area includes the area between the Long Beach shoreline and the offshore Middle and Long Beach Breakwaters. Prior to the development of the port and urbanization of the surrounding

area, San Pedro Bay was a large estuary with slough, mudflat, and salt marsh habitats. By the 1930s, channelization and fill from creating the Los Angeles and Long Beach Harbors had drastically reshaped the estuary. Currently, the only remaining wetland in the project area is the 6.5 acre Golden Shore Marine Biological Reserve, located at the mouth of the Los Angeles River. Four artificial islands with oil wells are located within the project area. The closest Significant Ecological Area (SEA) designated by the County of Los Angeles, is the Terminal Island SEA located at Pier 400 in the Port of Long Beach. The nearest Marine Protected Areas (MPA) to the project site are the Abalone Cove State Marine Conservation Area (SMCA) and the Point Vicente SMCA both located approximately 15 miles west of the project area. Multiple species of seabird, sea turtle, and marine mammals have been observed near the project area. The project area is located in Essential Fish Habitat (EFH) under the Coastal Pelagics Management Plan and the Pacific Groundfish Management Plan.

The most extensive habitat in the project area is soft bottom habitat, which consists of a combination of silt and sand (**Exhibit 6**). Soft bottom habitats support marine infauna and epifauna invertebrate species which serve as a food source for other marine organisms. Several species of flatfish, such as the English sole (*Pleuronectes vetulus*), Pacific sanddab (*Citharichthys sordidus*), and California scorpionfish (*Scorpaena guttata*) have been known to occur within the soft bottom habitats of San Pedro Bay.

Soft bottom areas also provide habitat for eelgrass (*Zostera marina* L. and *Z. pacifica*), a type of submerged aquatic vegetation that functions as habitat and foraging areas for fish, sea turtles, and invertebrates. Eelgrass also provides other important ecosystem functions including improving water quality by filtering aquatic pollutants and absorbing excess nutrients, carbon sequestration, and protecting against shoreline erosion. Eelgrass grows in calm waters at shallow depths, less than 19 feet, to be able to receive enough light to survive. Approximately 16 acres of eelgrass beds are present within the project area, along Belmont Shore and near the entrance to the Anaheim Bay.

Hard substrate habitats provide valuable resources such as shelter, food, spawning and nursery areas for a wide variety of fish, invertebrates, algae, and marine plants. Giant kelp is one type of algae that grows on hard rocky substrate to form highly productive kelp forests that provide habitat for fish, invertebrates, and marine mammals. Juvenile fish, such as the Pacific mackerel (*Scomber japonicus*) and Jack mackerel (*Trachurus symmetricus*), use kelp beds as shelter and for foraging. Kelp forests also play a key role in nutrient cycling and carbon sequestration. In San Pedro Bay, giant kelp and feather boa kelp have established on manmade hard structures including the Long Beach Breakwater, on Pier J (Port of Long Beach), and on the oil islands. Kelp coverage in this area has changed over time, ranging from 29 acres in 2007 to 120 acres in 2012. The closest natural kelp bed to the project area is Horseshoe Kelp, a historically extensive kelp bed in Point Fermin that has been dramatically reduced in size due to past anthropogenic factors.

Rocky reefs are submerged rocky outcrops that provide habitat and refuge for diverse communities of algae, small invertebrates, and juvenile and small fish species. Natural

rocky reef habitat is limited in Southern California, and within the project area, current rocky reef habitat is restricted to riprap and shoreline armoring found on port and THUMS oil island infrastructure.

The purpose of this proposed project is to improve the ecosystem structure, function, and value within East San Pedro Bay through the creation of kelp, rocky reef, and eelgrass habitats. The purpose is not to restore habitats in their historical footprint within East San Pedro Bay, but to increase the abundance and biodiversity of marine populations through the addition of high value habitats that are currently present in the project area. The conversion of sandy soft-bottom habitat to the proposed habitats involves short- and long-term tradeoffs with respect to marine resources and water quality. Potential adverse impacts include: loss of sandy soft-bottom habitats to kelp, rocky reef, and eelgrass habitats; damage to existing marine species during construction; and decrease in water quality from construction materials and during construction activities.

Habitat Conversion

The Ports of Los Angeles and Long Beach have assessed the marine biological resources within San Pedro Bay approximately every 5 years since the 1970s, with the latest biological study completed in 2013-2014 (MBC and Merkel 2016). These studies show relatively low diversity and low density of benthic invertebrates and fish on soft bottom habitat. The proposed project would convert approximately 201 acres of unvegetated soft bottom habitat to kelp reef, rocky reef, and eelgrass habitat. The area of soft bottom habitat to be converted represents approximately 1.8% of existing soft bottom habitat within the project area. Thus, the creation of proposed habitats in East San Pedro Bay would replace a small proportion of low-diversity, low-density soft bottom habitat with diverse and highly productive kelp, rocky reef, and eelgrass communities. The species that rely on soft bottom habitat would still have ample acreage available within San Pedro Bay and are unlikely to be affected by the loss of a small area of available habitat. Furthermore, the addition of proposed rocky reef, kelp and eelgrass habitats would create new opportunities for increased movement and ecological complexity for enhanced biodiversity of marine communities in San Pedro Bay. The Commission has historically found these types of conversions to be consistent with Sections 30230 and 30231 of the Coastal Act, because, as is the case with this project, they would result in the enhancement of marine resources and biological productivity.

Construction-Related Impacts To Existing Biota

Project-related construction activities could result in adverse impacts to marine resources through: (1) the expansion of non-native species, (2) disturbance or injury to marine mammals and sea turtles, (3) damage to existing eelgrass habitat from ship anchors and rock placement, and (4) changes in water quality from changes in water circulation.

Non-native Species

Non-native species are introduced into the Port of Long Beach through recreational boating, commercial shipping traffic, and the nearby highly urbanized area. Non-native species can invade areas and compete with or prey on native species, changing ecosystem processes and causing economic impacts. Non-native species in the surrounding area include Japanese brown alga (*Sargassum muticum*), New Zealand bubble snail (*Philine auriformis*), Japanese mussel (*Musculista senhousia*), an isopod (*Sphaeroma quoyanum*), and yellowfin goby (*Acanthogobius flavimanus*). *Caulerpa taxifolia*, an invasive algal species, has not been found in the study area but has the potential to cause ecological and economic losses to the harbor. To prevent this invasive species from being introduced and spreading in the project area, the Corps will complete pre-construction *Caulerpa* surveys within the construction areas prior to underwater disturbances in accordance with the *Caulerpa taxifolia* Control Protocol. If *Caulerpa taxifolia* is found, construction will stop until *Caulerpa* is treated in a manner that eliminates risk of spreading and work will not begin until the National Marine Fishery Service (NMFS) has declared the area cleared. Post-construction monitoring of non-native species will be further described in the MAMP and include other non-native algae, and sessile invertebrates including bryozoans, mussels, Pacific oyster, and tunicates.

Impacts to Marine Mammals and Sea Turtles

Marine mammals, including California sea lions, harbor seals, whales, and dolphins have been observed in the open waters near the project area. Green sea turtles also occur frequently in the bay and estuarine areas adjacent and inshore of the project area. The proposed construction has the potential to disturb or injure marine mammals and sea turtles by: (1) direct contact injury from dredging equipment or reef materials, (2) collisions from project-related vessels, and (3) disturbance from construction-related noise. Collisions by dredging equipment can cause bodily harm to marine mammals and sea turtles. However, the clamshell dredging method proposed involves relatively slow-moving machinery that impacts small areas of substrate at one time and is generally considered to be less harmful to sea turtles than other dredging methods. There is also no foraging habitat near the Surfside/Sunset borrow pit where dredging would occur, and construction noise is expected to deter marine mammals and sea turtles away from the dredging area. Falling rocks during reef construction also pose a risk for injuring marine mammals and sea turtles. To ensure marine wildlife is protected from falling rocks, a qualified biologist will be on site to monitor for sea turtles and marine mammals and will cease construction activities if an individual is observed within 30 meters of the construction site. Construction noise from rock placement is expected to deter marine mammals and sea turtles. Collisions from project-related vessels can also cause bodily harm to marine mammals and sea turtles. Vessels will restrict their speed to 8 nautical miles (nm) per hour (knots) or slower, which is less than the 10-knot recommendation that NOAA outlines for vessel speed reduction protocols to protect whales, to reduce the risk of collisions with marine wildlife.

Underwater noise associated with construction activities could result in behavioral changes and disturbance to marine mammals and sea turtles. Construction noise levels would be similar to existing marine vessel traffic operating out of the Port of Long Beach

and would not have a significant effect on the existing underwater noise environment. Noise from the placement of rocks and sand would also be similar to noise from other activities in the area such as dredging, Port maintenance, and other beach and Terminal Island maintenance activities. In addition, only construction equipment fitted with noise-reduction features will be used within the project area. Construction noise would not exceed thresholds listed in the National Oceanic and Atmospheric Administration's (NOAA) Technical Guidance for Assessing the Effects of Anthropogenic Noise on Marine Mammal Hearing. Noise levels from construction activities may cause marine mammals to avoid the project area but would be temporary and not exceed thresholds that cause injury. Sea turtles are also not expected to use the project area during construction, due to the lack of foraging habitat within the project area and available preferred habitat south of the project area.

Given that marine mammals and sea turtles are not expected to be within the project area for extended periods of time and that there is no critical habitat for them in the project area, any exposure to construction activities are not likely to cause adverse effects. To further ensure protection of marine mammals and green sea turtles, the proposed project includes implementation of an Environmental Protection Plan which includes a Marine Mammal Monitoring and Avoidance Plan, Green Sea Turtle Monitoring and Avoidance Plan, and employee training surrounding protection of these species. These plans would be provided to the Commission for review prior to project construction. As stated in the IFR, the Environmental Protection Plan would include:

- Procedures for monitoring marine mammals and sea turtles, and specifications for Marine Wildlife Observers.
- Methods for communicating with contractors to stop work if there is a risk that any marine mammals or sea turtles active in the area may move closer to construction sites.
- Procedures for Marine Wildlife Observer monitoring of barge transport, if necessary.
- Methods for communicating with ship captains if there is a risk of collision with a marine mammal or sea turtle.
- Limitations that work occur only during daylight hours when visual monitoring of marine mammals and sea turtles can be conducted.

With these avoidance and minimization measures in place and the low likelihood that marine mammals and sea turtles would remain in close proximity to construction activities, the Commission finds the construction activities would be consistent with Sections 30230 of the Coastal Act.

Impacts to Existing Eelgrass Beds

Construction of proposed habitats could result in adverse impacts to existing eelgrass habitat. To avoid impacts to existing eelgrass from the placement of rocky reef and dredged sand, pre-construction surveys would be performed to document eelgrass extent in construction areas. Placement of materials would be adjusted to avoid impacts to existing eelgrass habitat and areas where eelgrass has been previously observed. An

Anchoring Plan would be submitted to the Commission for review and approval prior to construction detailing further measures to minimize impacts from vessel anchors on sensitive habitats. Eelgrass beds would be created by transplanting bare-root eelgrass plant material from donor beds selected on factors including proximity, suitability, accessibility, recovery potential for the donor site, and donor site diversity. To prevent impacts and allow for quick recovery of donor beds, no more than 10% of eelgrass within a donor bed would be harvested. The Corps states that adverse impacts to eelgrass from dredging activities would not occur, as there are no eelgrass beds in or near the Surfside/Sunset Borrow site, likely due to the frequent dredging activity.

Water Quality

Increased turbidity during construction and the release of hazardous materials from project vessels have the potential to cause adverse impacts to water quality. Increases in turbidity from placement of rocky reefs and dredged sand can degrade water quality by causing fine sediment to be suspended in the water column. The resulting decrease in light penetration can adversely impact photosynthetic species, such as eelgrass, that need light to survive. Fine sands and silt are expected to remain suspended in the water column for up to several hours, while other sand particles would settle to the ocean floor within minutes. Smaller sediment particles could remain suspended for longer if ocean currents or wave energy do not disperse the particles. Dredging activities could also result in short-term localized increases in turbidity at the Surfside/Sunset Borrow site. Turbidity control measures would be implemented during dredging and placement activities to minimize adverse impacts to water quality including modifying the dredge operation, slowing placement until turbidity plumes clear, shifting to a closed bucket, restricting work during ebb tidal conditions, or using silt curtains. Water quality monitoring would be performed during all dredging and construction activities that could result in turbidity plumes, to further reduce the risk of harmful increases in turbidity. The measures include Best Management Practices to reduce turbidity if specified levels above background are detected. Monitoring parameters include percent light transmissivity, dissolved oxygen, water temperature, salinity, and pH. With the proposed measures and monitoring in place, impacts to water quality from increased turbidity would be short-term and minor.

Accidental release of fuel or other hazardous fluids from project-related vessels and equipment could also degrade water quality and cause adverse impacts to marine life. The likelihood of a spill is low. However, depending on the size and contents of a release, impacts to marine organisms could be significant. To reduce the risk of accidental releases and ensure marine resources are protected, a Hazardous Material Spill Prevention Plan would be prepared and provided to Commission staff for review prior to construction.

The Corps along with the AMT will work on developing and implementing the MAMP which will evaluate the biological and physical aspects of the proposed habitats to determine if the new habitats are successful in achieving the Corps' stated ecological goals. The main goal is to improve aquatic ecosystem structure and function for increased habitat biodiversity and ecosystem value within East San Pedro Bay.

Secondary goals include increasing the extent of complex aquatic habitats in the project area, increasing the diversity and spatial heterogeneity of complex aquatic habitat types in the project area, and increasing the overall connectivity of complex aquatic habitat types. The MAMP would include monitoring protocols and performance criteria for kelp reef, rocky reef, and eelgrass habitat. Performance standards would include maintaining the area of exposed rocky reef substrate, and specific goals for eelgrass and kelp coverage, in order to demonstrate that the project has increased habitat biodiversity and ecosystem value. Should monitoring results show poor ecological performance, the AMT would work with the Corps to develop appropriate adaptive management actions. The MAMP will also include further details on monitoring and adaptive management to minimize adverse impacts from non-native and invasive species. Given the early stage of development of this project and the fact that it is a habitat conversion/enhancement project rather than a true restoration project, these general performance criteria are sufficient to ensure that the project will conform with Chapter 3 standards; however, as described above, they will be refined further, with the input of Commission and other agency staff, as the project develops. The Corps will be responsible for monitoring and adaptive management for up to 10 years. After this ten year period, the City will be responsible for any monitoring or maintenance activities.

Construction of the proposed project is not expected to begin until 2028. Thus, most of the plans described above will not be written for several years. The Corps' commitment to continuing Commission review is as follows:

“Prior to the commencement of construction, the Corps will submit to the Coastal Commission, for its review, an Anchoring Plan, Dredging Plan, Green Sea Turtle Monitoring and Avoidance Plan, Marine Mammal Monitoring and Avoidance Plan, Hazardous Material Spill Prevention Plan, and Monitoring and Adaptive Management Plan. The USACE will carefully consider all comments by the Coastal Commission and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated into said plans.”

This commitment has been worded in a manner consistent with agreements between the Corps and the Commission in consistency determinations CD-003-13 (Encinitas, beach nourishment), and CD-0006-17 (Malibu, Rindge Dam Removal). As the Commission found in its concurrence with those consistency determinations, the Commission noted its authority to “re-open” this consistency determination (under federal consistency regulations 15 CFR §§ 930.45 and 930.46) to determine whether the project remains consistent with the Coastal Act and whether any project modifications are necessary. Thus, the Commission retains its statutory ability to determine, upon review of these plans and/or based on new information, that the Corps needs to take appropriate remedial action, pursuant to the re-opener provisions of 15 CFR Sections 930.45 and 930.46 of the NOAA federal consistency regulations. The Corps has committed to provide copies of these plans to the Executive Director for review prior to the start of any construction activity. Should the Executive Director identify shortcomings in the content of any of these plans regarding protection of marine

habitat and resources, and if the Corps and the Executive Director are unable to resolve any disagreements over the plans, staff will bring the matter back to the Commission for a public hearing on the question of whether the project is likely to have an effect on coastal resources that is substantially different from what was originally described and anticipated and, as a result, the project no longer appears consistent with the California Coastal Management Program.

For the reasons discussed above, the Commission finds that the proposed project would be implemented in a manner that maintains marine resources and improves biological productivity and quality of coastal waters, and protects against the spillage of hazardous substances into the marine environment, and is therefore consistent with Coastal Act Sections 30230, 30231 and 30232.

D. DREDGE AND FILL OF MARINE WATERS

Coastal Act Section 30233 states:

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

- (1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.
- (2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.
- (3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.
- (4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.
- (5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.
- (6) Restoration purposes.
- (7) Nature study, aquaculture, or similar resource dependent activities.

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for

these purposes to appropriate beaches or into suitable longshore current systems.

The proposed project involves the placement of fill (clean quarry rock and sand) within coastal waters to form 200 acres of kelp, rocky reef, and eelgrass habitat. Coastal Act Section 30233(a) imposes three tests on a project that includes dredging and/or fill of open coastal waters. The first test requires that the proposed activity must fit into one of the seven categories of enumerated uses. The second test requires that there be no feasible less environmentally damaging alternative. The third test requires that feasible mitigation measures be provided to minimize the project's adverse environmental effects.

Allowable Use Test

Coastal Act section 30233(a)(7) allows fill in open coastal waters for nature study, aquaculture, or similar resource-dependent activities. The proposed marine habitat creation consists of the placement of clean quarry rock and dredged sand on existing sandy soft-bottom habitat. The proposed rocky substrate and eelgrass beds will replace soft bottom habitat that is known to support less diverse and abundant populations of marine algae and fish. The rocky reefs would support a high diversity and abundance of fish, invertebrate species, and algae including kelp forests which provide habitat for a variety of commercially and recreationally valuable marine species and improve ecosystem productivity. The Commission finds the creation of these habitats in East San Pedro Bay would be a resource dependent activity similar to aquaculture, and thus a use allowable under Coastal Act section 30233(a)(7).¹

Alternatives

The second test of Coastal Act Section 30233(a) requires that the proposed dredging/filling project must be the least environmentally damaging feasible alternative. As part of the EIS/EIR process, the Corps evaluated a large number of alternatives, including, as noted above, modifying the harbor breakwaters, which the Corps determined to be infeasible because it would cause erosion and would disrupt Navy and Port operations. The Corps also examined what it called a "Surfrider Alternative, which would limit restoration to soft-bottom habitats. The Corps ultimately reduced the feasible alternatives to four in its final array of alternatives being evaluated for environmental impacts and feasibility. Aside from the proposed project, which the Corps calls the "Reef Restoration Plan," these alternatives included: the No Action Plan, Kelp Restoration Plan, and Scarce Habitat Restoration Plan, summarized as follows.

No Action Plan. Under this alternative, the project area would remain as is and no new habitats would be created. Existing habitats such as the limited patches of eelgrass, coastal saltmarsh, and soft-bottom habitat would not change significantly in acreage. Ecosystem functioning and value would remain at their

¹ The Commission has made similar findings for other projects involving the construction of new rocky reef areas (i.e., CDPs 9-19-0025, E-07-010, E-96-07)

current low conditions. Habitats sensitive to rising sea levels and climate change effects would, according to the Corps, become increasingly vulnerable. Impacts from construction activities would not occur, but neither would the benefits expected from the habitat conversion. The Commission agrees with the Corps that the No Action alternative would not meet any of the project objectives of increasing the diversity and abundance of marine populations and is thus not a feasible alternative that would meet the project's underlying objectives.

Kelp Restoration Plan. Under this alternative, the Corps would create 121 acres of kelp beds, 16 acres of nearshore rocky reef, and 25 acres of eelgrass. Kelp beds would be placed along the breakwater and in the open water zone east of the breakwater. Similar to the proposed project, the nearshore rocky reef and eelgrass beds would be built adjacent to each other to provide suitable eelgrass habitat conditions. The Corps concluded that the Kelp Restoration Plan would meet project objectives and would not significantly adversely affect the environment or marine resources. However, the Corps also concluded that, compared to the proposed project, this alternative would provide less habitat benefit, with an only slightly lower acreage of created habitats. The Commission agrees with the Corps that this alternative would not be less environmentally damaging than the proposed project.

Scarce Habitat Plan. Under this alternative, the Corps would construct a 24 acre sandy island, a 42 acre salt marsh wetland, a 10 acre salt marsh wetland, 0.03 acres of oyster beds, 102 acres of open water rocky reef, 121 acres of kelp beds, 20 acres of nearshore rocky reef, and 52 acres of eelgrass beds. The Scarce Habitat Plan covers over 372 acres of the project area with new habitats. This alternative would result in long-term minor direct adverse impacts on hydrology within the project area. The addition of the sandy island and wetland habitats would alter wave velocities and sand transport patterns on Peninsula Beach. This alternative would also result in significant and unavoidable adverse impacts to air quality primarily due to increased emissions from hauling more than 2 and a half times the amount of material compared to other alternatives and also an increase in workday duration. Wetlands and sandy island habitats would require further sand replenishment and dredging at least every 5 years to maintain the habitat's structural integrity. The Corps determined this alternative would involve excessive costs compared to the habitat benefits that would be provided, and thus that it would not be the appropriate for selection of the preferred National Ecosystem Restoration Plan. The Corps states (DEIS, p. 1-2): "The National Ecosystem Restoration (NER) Plan is ... the plan that reasonably maximizes ecosystem restoration benefits compared to costs."

In selecting the proposed alternative as the least environmentally damaging feasible alternative, the Corps relied on four criteria it considers under the National Ecosystem Restoration Plan. The four criteria under this plan are completeness, effectiveness, efficiency and acceptability. The Corps states (DEIS, p. 4-76):

After evaluation of the three action plans in the Final Array of Alternatives, Alternative 4A, also known as the “Reef Restoration Plan,” was selected as the NER Plan. This plan meets ecosystem restoration objectives as well as planning objectives and reasonably maximizes environmental benefits compared to cost while passing tests of cost effectiveness and incremental cost analyses.

Sandy or Soft-Bottom Restoration - The “Surfrider Alternative” includes a suggestion to restore sandy bottom habitat, as the original habitat type that existed within the bay. The Corps maintains (DEIS, p. 8-2, under Stakeholder Perspectives and Differences) that:

... [T]he objective of this study is to restore imperiled aquatic habitats and other types historically present in San Pedro Bay, to address the problems of loss of sensitive marine habitats and associated functions. The intent is not to restore what may have historically existed in the exact footprint in East San Pedro Bay, but to restore ecological functions associated with high value habitat within San Pedro Bay to support overall biodiversity and ecological health for marine populations within the southern California Bight. East San Pedro Bay is the largest remaining undeveloped area of San Pedro Bay, representing the largest opportunity area for restoration in open waters. These habitat types are also currently found in East San Pedro Bay.

The Commission agrees with the Corps that a primarily soft-bottom alternative would not provide the habitat benefits described above that are associated with the addition of comparably more productive rocky reef, eelgrass and kelp habitats included in the proposed alternative. Thus, this alternative would not meet any of the project objectives of increasing the diversity and abundance of marine populations. Because agencies need not study alternatives that cannot achieve a project’s underlying fundamental purposes, this alternative cannot be considered a reasonable, feasible alternative and need not be considered further.

For the reasons described above, the Commission concludes the Corps has proposed the least environmentally damaging feasible alternative, and that the project is therefore consistent with the alternatives test of Section 30233(a).

Mitigation

The third test of Section 30233(a) requires that feasible mitigation measures be provided to minimize the project’s adverse environmental effects. The proposed project includes mitigation measures to minimize adverse environmental effects, including placement of quarry rock and dredged sand in areas that avoid existing eelgrass habitat, monitoring water quality for changes in turbidity and dissolved oxygen during construction and dredging activities, and stopping work immediately if marine mammals or green sea turtles are observed within 30 meters of project activities. The project includes a list of commitments to protect against adverse environmental effects. A Dredging Plan would be submitted to the Commission for review prior to project construction.

In addition, Section 30233(b) involves mitigation considerations as it requires that dredging be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredging activities could result in short-term localized increases in turbidity at the Surfside/Sunset Borrow site. Turbidity control measures would be implemented during dredging and placement activities to minimize adverse impacts to water quality and marine and wildlife habitats. Water quality monitoring would be performed during all dredging and construction activities that could result in turbidity plumes, to further reduce the risk of harmful increases in turbidity. The project also includes monitoring procedures for marine mammals and sea turtles to avoid adverse impacts resulting from dredging and rock placement activities. With the proposed measures and monitoring in place, the Commission finds that dredging would avoid significant disruption to marine and wildlife habitats and water circulation.

While no suitable dredged material sites outside of the Surfside/Sunset Borrow site are currently available for this project, the Corps has committed to “beneficially reusing” dredge material if a site becomes available and sediment analysis confirms that the material is appropriate for use. One such option would include using dredged material from the Port of Long Beach Deep Draft Navigation Project. The Corps will evaluate the sediment quality and construction timeline during the pre-construction engineering and design phase, and coordinate with the Commission staff concerning the final selection of borrow material.

For the reasons described above, the Commission finds the project, as conditioned, consistent with Coastal Act Section 30233(a) and (b).

E. PUBLIC ACCESS AND RECREATION

Coastal Act Section 30210 states:

In carrying out the requirements of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Coastal Act Section 30220 states:

Coastal areas suited for water-oriented recreational activities that cannot be readily provided at inland water areas shall be protected for such uses.

The proposed project is located offshore from Long Beach in San Pedro Bay. Nearby popular beaches include Seal Beach and Huntington Beach. Long Beach’s coast is 4 miles long and is protected by harbor breakwaters that reduce wave action in the project area. The lack of surf makes paddle boarding, kite surfing, and recreational boating

common aquatic activities. Recreational fishing, volleyball, and use of the Shoreline Pedestrian Bike Path are other activities that occur on or adjacent to the beach.

The project would not adversely affect public access or recreational activities on the beach. Beach closures would not be required as construction would occur predominately in the open water. Construction materials would be staged in an existing paved storage area inside the Port of Long Beach and would not impede public access. Offshore construction activities will be visible to beach-goers in the project vicinity, but the impact will be temporary and short-lived. Short-term localized disruptions to aquatic recreational activities would occur due to the presence of barges and other equipment during construction activities. These areas would need to be avoided for safety reasons during construction, but exclusion areas would be short-lived and would re-open as construction of habitats are completed. As kelp beds grow, the potential exists for recreational boaters who traverse over kelp forests to get their propeller blades caught in the kelp at the ocean surface. Kelp bed placement would be localized in clusters identifiable to boaters. Pathways for boats to avoid kelp and other restoration features have been included in the design to ensure boaters have adequate open water space. The construction of kelp, rocky reefs, and eelgrass beds could also result in opportunities for new recreational activities like scuba diving, paddle boarding, bird watching, and sailing due to an increased interest in diverse biological features of new habitats.

For the reasons described above, the proposed project will not have a substantial negative effect on the public's ability to access, enjoy and recreate on the coast. Therefore, the Commission finds that the proposed project is consistent with the public access and recreation policies of the Coastal Act (Sections 30210 and 30220).

F. CULTURAL RESOURCES

Section 30244 of the Coastal Act states:

Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

Coastal Act Section 30244 states that reasonable mitigation measures shall be required where development would adversely impact archaeological resources. These resources may include sacred lands, traditional cultural places and resources, and archaeological sites, including places or objects that possess historical, cultural, archaeological or paleontological significance and include sites, structures, or objects significantly associated with, or representative of earlier people, cultures and human activities and events. As described in the Commission's Tribal Consultation Policy, adopted on August 8, 2018, tribal cultural resources are not confined to the boundaries of archaeological sites, but instead can encompass landscapes that are significant to Native American tribal groups because of habitation or use for cultural practices.

Project-related activities have the potential to disturb or damage Native American artifacts and shipwrecks of potential cultural resources value. In the offshore environment, project-related activities have the potential to disturb, disrupt or degrade prehistoric sites, watercraft and historic shipwrecks and tribal cultural resources found on or within ocean sediments. Impacts from placement of new rock or sand on the seafloor have the potential to bury or destroy elements of these resources that could result in the loss of important information about the historical, cultural or tribal context of the resource.

Cultural and Historical Resources

The California Native American Heritage Commission (NAHC) conducted a sacred lands search for the project area, but none were found. The Corps conducted a records search for potentially sensitive cultural resources in the project area including underwater shipwrecks and prehistoric sites. The search did not identify any known sensitive cultural resources within or near the project area. The project area is offshore of the California coast and in a highly developed harbor where wave energy, past dredging events, and construction of artificial islands make the possibility of finding underwater cultural and historic resources low.

Tribal Resources and Consultation

The Corps has begun consultation with the State Historic Preservation Officer (SHPO). In its planning process, it coordinated with tribal groups with any potential interest in the project area. The Corps sent a letter in November of 2017 to tribal contacts provided by the NAHC requesting comments on the proposed project and assistance in identifying cultural resources in the project area. The Corps has received no responses to date. In February 2020, the Commission staff mailed letters to 38 tribes informing Tribal representatives of the proposed project and requesting information on any Tribal cultural, historic, or religious sites within or adjacent to the project area. As of the date of this report, the Commission staff has not received any additional information or responses.

The Corps, Advisory Council on Historic Preservation (ACHP), SHPO, and other consulting parties are developing a Programmatic Agreement (PA) that outlines historic properties identification, avoidance, and that will outline cultural and historic properties identification, avoidance, and mitigation measures. The Corps will implement measures outlined in the PA to mitigate for potential impacts to cultural resources.

To further reduce the potential for adverse impacts to cultural, tribal, and historic resources, the Corps will implement the following mitigation measures as stated in the IFR:

CR-1 In the event that previously unknown cultural resources are uncovered, work in the immediate area would cease until the requirements in 36 C.F.R. 800.13 are complied with. The on-site supervisor shall contact a District Archaeologist or an approved archaeological consultant immediately. The on-site supervisor shall additionally divert all Proposed Project-related activities to other

areas until the discovery has been evaluated by the District Archaeologist or the approved archaeological consultant, who will consult with interested Native American community groups and Indian Tribes and SHPO, as appropriate, and determine if subsequent treatment is warranted.

CR-2 Surveying and protecting exposed cultural deposits.

CR-3 Protecting exposed archaeological sites from vandalism and erosion with appropriate materials, or capping sites in an approved manner with appropriate material.

CR-4 Preparing and implementing a monitoring and discovery plan per the terms of the PA; if previously undiscovered resources are identified during an undertaking, suspend work while the resource is evaluated and adverse effects are mitigated to avoid any further impact. Continue to consult with Native American groups to identify any traditional cultural properties or resource uses and address impacts.

CR-5 Developing a plan of action between the Corps and interested Native American community groups and Indian Tribes to rebury or repatriate human remains should any be encountered during implementation of the project. The principal purpose of the plan would be to facilitate the repatriation process.

CR-6 If human remains are encountered during excavations associated with this Proposed Project, all work must halt, and the County Coroner must be notified (Section 7050.5 of the California Health and Safety Code). The coroner will determine whether the remains are of forensic interest. If the coroner, with the aid of the District Archaeologist, determines that the remains are prehistoric, the coroner will contact the California Native American Heritage Commission (NAHC). The NAHC will be responsible for designating the most likely descendant (MLD).

The Commission agrees with the Corps that the proposed project, with avoidance and mitigation measures and ongoing tribal consultation, will not adversely affect cultural resources. Therefore, the Commission finds that the proposed project is consistent with the cultural resource policy of the Coastal Act (Section 30244).

G. AIR QUALITY

Coastal Act section 30253(c) states:

New development shall be consistent with requirements imposed by an air pollution control district or the State Air Resources Control Board as to each particular development.

The proposed project is located in the South Coast Air Basin (SCAB) which is managed by the Regional South Coast Air Quality Management District (SCAQMD). SCAQMD is responsible for enforcing air quality standards and regulating sources of air pollution within the SCAB. Project activities, including the transportation of quarry rock, have the potential to degrade air quality in the region. Impacts to air quality include toxic air contaminant emissions from dredging, material hauling, marine vessel generators, and

on-deck equipment. Extended periods of exposure to high concentrations of air toxics can lead to the risk of cancer. Construction equipment would operate for brief durations at each site and would not expose sensitive receptors to substantial pollutant concentration, including air toxics. Project-related odors can also impact air quality. Odor impacts are dependent on the nature of the source, distance to source, and weather conditions. Potential odor sources include diesel exhaust from material hauling, marine vessel generators, and on-deck equipment. Although diesel exhaust may be noticed, emission activities would be temporary and distance would allow for the odor to dissipate without significant effects on the limited number of people exposed.

According to the IFR, project-related impacts to air quality would not significantly increase pollutant or greenhouse gas concentrations in the SCAB. Projected emissions would be below NEPA's General Conformity Applicability Rates and CEQA's SCAQMD Daily Emission Thresholds. To reduce air quality impacts from hauling material, the Corps is planning to use barged rock and will only use trucked rock from 3M Quarry if supply runs low at Catalina Quarry. To further minimize air quality impacts associated with the proposed project, the Corps will implement the following mitigation measures included in the IFR:

AQ-1 Diesel engine idle time would be restricted to no more than ten minutes duration.

AQ-2 Idling of heavy-duty diesel trucks during loading and unloading shall be limited to five minutes; auxiliary power units should be used whenever possible.

AQ-3 All on-road construction vehicles would meet all applicable California on-road emission standards and would be licensed in the State of California.

AQ-4 Activities and operations on unpaved road areas would be minimized to the extent feasible during high wind events to minimize dust.

AQ-5 Vehicle speeds shall be limited to 15 miles per hour on unpaved surfaces.

AQ-6 Dredging equipment utilized during construction and maintenance will be licensed in California and will meet the model year 2010 (Tier 4 Final) or newer emissions standards for sand dredging operations.

AQ-7 Diesel catalytic converters, diesel oxidation catalysts, and diesel particulate filters as certified and/or verified by the EPA or CARB shall be installed on equipment operating onsite.

AQ-8 Keep roadways next to the proposed staging area clean and frequently remove daily project-related accumulated silt and debris.

AQ-9 Maintain all equipment as recommended by manufacturers' manuals.

AQ-10 Shut-down any equipment not in use for more than 30 minutes.

AQ-11 Substitute electric equipment whenever possible for diesel- or gasoline-powered equipment.

AQ-12 If equipment is operating on soils that cling to wheels, use a "grizzly" or other such device using rails, pipes, or grates to dislodge mud, dirt, and debris from the tires and undercarriage of vehicles on the road exiting the staging area, immediately before the pavement in order to remove most of the soil from vehicle tires.

With the inclusion of these mitigation measures, the proposed project is consistent with the requirements of the applicable air pollution control district. Thus, the Commission finds the proposed project consistent with the air quality requirement of Coastal Act Section 30253.

APPENDIX A: SUBSTANTIVE FILE DOCUMENTS

1. Draft Integrated Feasibility Report for the East San Pedro Bay Ecosystem Restoration Feasibility Study, November 2019, and accompanying technical reports.
2. May 1, 2020, Endangered Species Act Section 7(a)(2) Concurrence Letter, Magnuson-Stevens Fishery Conservation And Management Act Essential Fish Habitat Response, and Fish and Wildlife Coordination Act Recommendations for the East San Pedro Bay Ecosystem Restoration Study, from National Marine Fisheries Service to U.S. Army Corps of Engineers, Los Angeles District.
3. Coastal Development Permit 9-19-0025 (Wheeler North Reef permit as part of mitigation for the San Onofre Nuclear Generating Station)
4. Coastal Development Permit E-96-07 (Big Sycamore Canyon Ecological Reserve Artificial Reefs permit)
5. CD-003-13 (U.S. Army Corps of Engineers, Encinitas Beach Nourishment)
6. CD-0006-17 (U.S. Army Corps of Engineers, Rindge Dam Removal - Malibu)