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STAFF REPORT: REGULAR CALENDAR

Application No.:	**9-16-0384**
Applicant:	**Los Angeles Department of Water & Power (LADWP)**
Location:	In state waters of Santa Monica Bay offshore of Los Angeles; one onshore location near 17300 Pacific Coast Highway, Pacific Palisades, Los Angeles County
Project Description:	Construction of the Sylmar Ground Return System Replacement Project, including installation and operation of a new marine cables and an electrode array on the seafloor two miles offshore.
Staff Recommendation:	Approval with conditions.

SUMMARY OF STAFF RECOMMENDATION

The City of Los Angeles Department of Water and Power (LADWP) proposes to carry out the Sylmar Ground Return System (SGRS) Replacement Project within state waters of Santa Monica Bay (**Exhibits 1 – 3**). The project would consist of the installation of new offshore facilities, including marine cables and electrode structures, in a different location and in a different alignment than the existing structures. The existing marine electrode and cables would be abandoned in place pending the completion of a feasibility study for possible future removal.

The new facilities would be located in the vicinity of the existing SGRS, but would extend further offshore, to a point approximately two miles off of Will Rogers State Beach, in the Pacific Palisades district of the City of Los Angeles.

The SGRS is an integral component of the Pacific Direct Current Intertie Transmission Line (PDCI), a 3,100 megawatt direct current system which transmits bulk power between the Pacific Northwest and Los Angeles. The SGRS provides for the safe dissipation of excess electrical current during disruptions on the transmission line, allowing the PDCI to remain operational for a period and preventing a complete outage of the line. The existing marine portion of the SGRS is over 45 years old, and needs to be replaced due to physical degradation and operational deficiencies. The proposed project would involve the following construction activities: (1) the installation of two bundled sets of marine cables beneath the seafloor sediments using a jet-plow; (2) installation of a new marine electrode array, consisting of 36 20-ton concrete vaults each containing four electrode rods, on the seafloor two miles offshore; (3) the connection, testing, and occasional operation of the new SGRS during future PDCI disruptions.

The key Coastal Act issues raised by this project are the potential for adverse impacts to marine resources, fishing, public access and recreation, and cultural resources. The proposed project has the potential to harm both soft- and hard-bottom subtidal habitats, as well as marine mammals, fish and marine water quality. To avoid and minimize impacts, Commission staff recommends several conditions designed to protect sensitive habitats and species. These include **Special Conditions 3**, **4** and **5**, which incorporate measures to protect hard bottom areas and kelp beds during cable laying activities and project vessel anchoring; **Special Condition 6** requiring LADWP to submit a Marine Wildlife Monitoring and Contingency Plan for the protection of marine mammals and sea turtles during offshore work; and **Special Condition 7**, limiting night-time construction. **Special Conditions 8**, **9**, and **10** would minimize the risk of marine mammal and fishing gear entanglement by requiring, respectively, the burial of the marine cables to a depth of 5 feet, future inspections of cable burial status, and the full removal of the electrode array and cables upon the expiration of LADWP's state lease. **Special Conditions 12**, **13** and **14** require LADWP to submit plans and enact measures to protect against the discharge of hazardous and non-hazardous substances into the marine environment.

Project activities also have the potential to interfere with recreational fishing and boating in offshore areas. To minimize this potential, **Special Conditions 3** and **11** require the deployment of surface buoys marking the electrode location, provision of advance notice to fishermen and boaters prior to proposed offshore activities, and submittal of project location information to NOAA allowing for updates to nautical charts.

Special Condition 3 includes measures to ensure the protection and proper handling of any cultural and archaeological resources discovered during project construction.

As conditioned, staff recommends the Commission find the project consistent with Coastal Act Sections 30210, 30220, 30221, 30230, 30231, 30232, 30233, 30234.5, 30244 and 30251.

Commission staff recommends **approval** of coastal development permit application 9-16-0384, as conditioned.

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APPENDICES

EXHIBITS

I. MOTION AND RESOLUTION

Motion:

*I move that the Commission **approve** Coastal Development Permit 9-16-0384 subject to conditions set forth in the staff recommendation.*

Staff recommends a **YES** vote on the foregoing motion. Passage of this motion will result in approval of the permit amendment as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of Commissioners present.

Resolution:

The Commission hereby approves the Coastal Development Permit 9-16-0384 and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the amended development on the environment.

II. STANDARD CONDITIONS

This permit is granted subject to the following standard conditions:

1. **Notice of Receipt and Acknowledgment**. The permit is not valid and development shall not commence until a copy of the permit, signed by SCE or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration**. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation**. Any questions of intent of interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment**. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land**. These terms and conditions shall be perpetual, and it is the intention of the Commission and SCE to bind all future owners and possessors of the subject property to the terms and conditions.

III. SPECIAL CONDITIONS

This permit is granted subject to the following special conditions:

1. **Permit Term Limit.** The permit shall expire on December 5, 2036, which is the date on which the current California State Lands Commission Lease No. PRC 4480.9 expires. If this lease is extended or a new lease is issued by the California State Lands Commission, the Permittee may apply to the Commission for a permit amendment to extend the term of this permit.

2. **Other Permits and Approvals.** PRIOR TO THE START OF CONSTRUCTION, the Permittee shall provide to the Executive Director copies of all other local, state, and federal permits required to perform project-related work. These permits and approvals include:

(a) Regional Water Quality Control Board – Los Angeles Region: Final approved 401 Water Quality Certification.

Any changes to the approved project required by this agency shall be reported to the Executive Director. No changes to the approved project shall occur without a Commission amendment to this CDP unless the Executive Director determines that no amendment is legally required.

3. **Environmental Impact Report (EIR) Best Management Practices**. This permit incorporates those best management practices identified in the July 2016 *Final Environmental Impact Report* (State Clearinghouse No. 2010091044) concerning marine habitats, biological resources, water quality, navigation, and cultural resources that are attached to this report as **Appendix B**.

PRIOR TO THE COMMENCEMENT OF OFFSHORE CONSTRUCTION, the Permittee shall submit the following items to the Executive Director for his review and approval:

(a) A report summarizing the results of the pre-construction survey required under **BMP-2**;

(b) Copies of the USCG Notice to Mariners and the project notices to be posted in local harbormasters' offices, as required under **BMP-6.**

4. **As-Built Documentation**. Within 45 days of completing the installation of the marine cables and electrode array, the Permittee shall submit to the Executive Director the following:

(a) As-built plans, drawn to scale, of the installed marine electrode array and cable sets, depicting bathymetry, seafloor substrates and features, seabed profile, and depth of cable burial below the seafloor. The As-built plans shall be overlaid on National Oceanic and Atmosphere Administration ("NOAA") navigation charts. The cable locations shall be obtained by an acoustic navigation system linked to a surface differential global positioning system. The transponder for the acoustical navigational system shall be mounted on the equipment used for cable burial. The cable shall be considered installed the day after the last day of post-lay inspection burial operations.

(b) A cable installation report containing, at minimum, the following: (i) a summary of pre-lay, cable-laying, and burial methods used; (ii) a description of methods and equipment used to control cable slack during installation; and (iii) results from a post-lay burial survey indicating the depth of burial achieved along the cable route.

5. **Anchoring Plan**. PRIOR TO THE COMMENCEMENT OF OFFSHORE ACTIVITIES, the Permittee shall prepare and submit an Anchoring Plan to the Executive Director for review and approval that describes how the Permittee will avoid placing anchors on sensitive ocean floor habitats and pipelines. The Plan shall include at least the following information:

(a) A list of all vessels that will anchor during the Project and the number and size of anchors to be set;

(b) Detailed maps showing proposed anchoring sites that are located at least 40 feet (12 meters) from rocky habitat identified during the project EIR and supporting studies;

(c) A description of the navigation equipment that would be used to ensure anchors are accurately set; and

(d) Anchor handling procedures that would be followed to prevent or minimize anchor dragging, such as placing and removing all anchors vertically.

6. **Marine Wildlife Monitoring and Contingency Plan (MWMCP**). PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Permittee shall prepare a MWMCP for review and approval by the Executive Director. The Permittee shall implement the MWMCP during all marine operations (e.g., cable and electrode vault installation). The MWMCP shall include the following elements, and shall be implemented consistent with vessel and worker safety needs:

(a) Prior to the start of offshore activities the Permittee shall provide awareness training to all Project-related personnel and vessel crew, including viewing of an applicable wildlife and fisheries training video, on the most common types of marine wildlife likely to be encountered in the Project area and the types of activities that have the most potential for affecting the animals.

(b) A minimum of two qualified marine mammal observers shall be located on the crane barge, cable laying vessel or other nearby project vessel to conduct observations, with two observers on duty during all marine construction activities. The MWMCP shall identify any scenarios that require an additional observer on the barge or other Project vessel and, in these cases, make recommendations as to where they should be placed to ensure complete coverage of the surrounding marine environment.

(d) Shipboard observers shall submit a daily sighting report to the Executive Director no later than noon the following day that shall be of sufficient detail to determine whether observable effects to marine mammals are occurring.

(e) The observers shall have the appropriate safety and monitoring equipment adequate to conduct their activities.

(f) The observers shall have the authority to temporarily halt any project activity that could result in harm to a marine mammal, sea turtle or other special status species, and to suspend those activities until the animals have left the area.

(g) For monitoring purposes, the observers shall establish a 1,640 foot (500 meter) radius avoidance zone around the construction work zone and project vessels for the protection of large marine mammals (i.e., whales) and a 500-foot (152-meter) radius avoidance zone around the derrick barge and other Project vessels for the protection of smaller marine mammals (i.e., dolphins, sea lions, seals, etc.) or sea turtles. The observers shall closely monitor any animal entering within these radii, and notify the project manager or construction supervisor of the possible need for suspension or redirection of construction activities. If a marine mammal or sea turtle is identified within 100 meters of the construction work zone and/or project vessels, construction activity shall be temporarily halted until the sea turtle or marine mammal moves safely beyond this distance.

(h) In the event that a whale becomes entangled in any cables or lines (e.g., vessel mooring lines), the observer shall immediately notify NMFS and the Executive Director, so appropriate response measures can be implemented. Similarly, if any take involving harassment or harm to a marine mammal or sea turtle occurs, the observer shall immediately notify the Executive Director, NMFS and any other required regulatory agency.

(i) Propeller noise and other noises associated with construction activities shall be reduced or minimized to the extent feasible.

(j) In addition to on-site monitoring, the MWMCP shall describe measures to be taken during the transit of project vessels and equipment to the project site in order to minimize the risk of collisions with marine mammals and/or sea turtles. Such measures shall include, but are not limited to, restrictions on vessel speed.

(k) Marine observers and vessel operators shall monitor for and take steps to avoid observed fishing gear during vessel transit and project operations.

(l) The captain of the derrick barge and the Permittee's project management team shall be responsible for ensuring that the MWMCP is implemented.

(m) A final report summarizing the results of monitoring activities shall be submitted to the Executive Director and other appropriate agencies no more than 90 days following completion of pipeline removal and other offshore activities. The report shall include: (a) an evaluation of the effectiveness of monitoring protocols and (b) reporting of (i) marine mammal, sea turtle, and other wildlife sightings (species and numbers); (ii) any wildlife behavioral changes; and (iii) any project delays or cessation of operations due to the presence in the project area of marine wildlife species subject to protection.

7. **Limitations on Night Operations**: Project activities shall be limited to daylight hours to the maximum extent feasible. Night work shall be allowed only when necessary to ensure conformance to the timing restrictions contained in State Lands Commission Lease No. PRC 4480.9. Night-lighting required for Project activities shall be shielded and directed to the immediate work area to minimize light spillage into surrounding areas. Night lighting

of any project vessels remaining on site shall be limited to that necessary to maintain navigational safety and to serve the nighttime site monitors who will be present on board the derrick barge.

8. **Cable Burial Depth**. The marine cable sets shall be buried within the seafloor sediments, to a target depth of five feet. Where a 5-foot burial depth cannot be achieved, the Permittee shall bury the cables to the maximum depth feasible.

9. **Electrode Array and Cable Surveys**.

A. The Permittee shall survey the electrode vault array at least once annually to verify that (1) the Kevlar mesh continues to cover the openings to the electrode vaults, as designed, and (2) no fishing gear, lines, or other marine debris that could pose an entanglement risk to marine wildlife or fishing activity has become snagged on the structures. The Permittee shall make needed repairs to the mesh coverings as needed. If the survey shows that debris has become snagged on any electrode structures, it shall be removed as soon as possible, and within 30 days of the date of the survey.

B. The Permittee shall survey those portions of the marine cable route from the point where the cables emerge from the subsurface conduits (approximately 1200 feet offshore) to the location of the marine electrode array (approximately 2 miles offshore) to verify that the cables have remained buried consistent with the as-built plans and cable burial report required by **Special Condition 4**, subject to the following:

(1) The cable surveys shall be performed after any event that has the potential to affect the cable. For the purposes of this condition, "event" is defined as: an incident or activity (such as a fishing gear snag), the circumstances of which indicate the likelihood that a previously buried cable has become unburied; an extraordinary event, such as a severe earthquake in the vicinity of the cables that could cause deformation of the sea floor or underwater landslides; or any other significant event that could cause excessive ocean floor scouring (e.g., large tsunami).

(2) The survey shall be conducted using an ROV equipped with video and still cameras.

(3) The applicant shall notify the Executive Director in writing within 10 days of the reporting or other identification of a qualifying event, and shall schedule a survey at the soonest available opportunity, subject to vessel availability, weather conditions, and related operational conditions affecting the survey.

(4) Within 30 days of survey completion, The Permittee shall submit to the Executive Director a report describing the results of the survey. If the survey shows that a segment(s) of a cable is no longer buried consistent with the as-built plans and cable burial report required by **Special Condition 4**, the applicants shall, within 30 days of survey completion, submit to the Executive Director for approval a plan to re-bury those cable segments.

10. **Electrode and Cable Removal**. WITHIN 90 DAYS OF EITHER TAKING THE ELECTRODE AND CABLES OUT OF SERVICE or after the expiration or earlier termination of the Permittee's California State Lands Commission lease, the Permittee shall

apply for an amendment to this permit to remove the electrode array and cables from the territorial waters of the State of California. Upon approval by the Commission of the permit amendment, the applicant shall implement the cable removal project authorized by the amendment in accordance with the time schedule specified therein.

11. **Changes to Nautical Charts:** WITHIN 30 DAYS OF COMPLETING IN-WATER CONSTRUCTION, the Permittee shall provide written verification to the Executive Director that the Permittee has submitted project-related information to the National Oceanic and Atmospheric Administration (NOAA) to be included on area nautical charts. Information submitted shall include as-built drawings, blueprints, or other engineering documents which depict the completed development; geographic coordinates of the location, using a Differential Geographic Positioning System (DGPS) unit or comparable navigational equipment; and the Permittee's point of contact and telephone number.

12. **Spill Prevention and Response Plan.** PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit a project-specific Spill Prevention and Response Plan to the Executive Director for review and approval. The Plan shall identify the worst-case spill scenario and demonstrate that adequate spill response equipment will be available. The Plan shall also include preventative measures the Permittee will implement to avoid spills and clearly identify responsibilities of onshore and offshore contractors and the Permittee personnel and shall list and identify the location of oil spill response equipment (including booms), appropriate protocols and response times for deployment. Petroleum-fueled equipment on the main deck of all vessels shall have drip pans or other means of collecting dripped petroleum, which shall be collected and treated with onboard equipment. Response drills shall be in accordance with Federal and State requirements. Contracts with off-site spill response companies shall be in-place and shall provide additional containment and clean-up resources as needed.

13. **Critical Operations and Curtailment Plan.** PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit a Final Critical Operations and Curtailment Plan (COCP) to the Executive Director for approval. The COCP shall define the limiting conditions of sea state, wind, or any other weather conditions that exceed the safe operation of offshore vessels, equipment, or divers in the water; that hinder potential spill cleanup; or in any way pose a threat to personnel or the safety of the environment. The COCP shall provide for a minimum ongoing 5-day advance favorable weather forecast during offshore operations. The plan shall also identify the onsite person with authority to determine critical conditions and suspend work operations when needed.

14. **Marine Discharge**. There shall be no marine discharge of sewage or bilge/ballast water from vessels either installing or repairing the marine electrodes and cables. A zero-discharge policy shall be adopted for all project vessels.

IV. FINDINGS AND DECLARATIONS

A. PROJECT DESCRIPTION

The Los Angeles Department of Water and Power (LADWP) proposes to replace the marine cables and the marine electrode portions of the existing Sylmar Ground Return System (SGRS), within state waters of Santa Monica Bay offshore of Pacific Palisades (**Exhibits 1 – 3**). The new marine facilities would be installed in a different alignment than the existing system, but would serve the same purpose and function, which is to conduct and dissipate electrical current from a major transmission line during a disruption or other emergency.

Background

The SGRS is an integral component of the Pacific Direct Current Intertie Transmission Line (PDCI), which transmits bulk power to the Los Angeles area from generating facilities in the Pacific Northwest. The PDCI is a 3,100 megawatt (MW) direct current (DC) transmission line extending approximately 850 miles from The Dalles, Oregon, to the Sylmar Converter Station in the San Fernando Valley, used primarily to transfer large amounts of electricity from Bonneville Power Administration hydroelectric and wind energy facilities in the Northwest to the Southern California regional grid. In order to function safely and reliably, the PDCI requires a ground return system to safely conduct and dissipate overflows of electrical energy during system disruptions that prevent the normal transmission of the energy on one pole of the bipolar DC system. The SGRS serves as a safeguard to allow the PDCI to remain operational for a period of time when a fault occurs on the transmission line, thus preventing a complete outage of the line and allowing time to resolve the disruption and/or secure alternative generation sources.

The existing SGRS is made up of three segments: a 22.5-mile overhead segment, a 7.5-mile underground segment, and a one-mile marine segment terminating at an electrode array in Santa Monica Bay (**Exhibit 2**). LADWP has determined that overhead and underground segments of the SGRS, with maintenance improvements, are adequate to support the continued reliable operation of the PDCI, and would not be replaced as part of the proposed project.

The existing marine segment originates at the Gladstone Vault, a sub-surface utility vault located in a parking lot along the south side of the Pacific Coast Highway (PCH) near its intersection with Sunset Boulevard, adjacent to Will Rogers State Beach. From this vault, six conductor cables (bundled into two cable sets) extend underground and under the ocean floor to connect to an electrode array (**Exhibit 2**). From the vault to a point approximately 1,200 feet offshore, the two SGRS cable sets are installed inside two separate underground conduits, which run beneath the beach and nearshore zone. A third conduit is also present, but it remains vacant as a potential spare for future use. Further offshore, the existing cables are largely buried beneath seafloor sediments. At the termini of the bundled cable sets, approximately one mile offshore, the conductors divide and connect to 24 concrete vaults, each containing two electrode rods which serve to dissipate current to the seafloor. The array is located directly on the ocean floor one mile offshore, approximately 50 feet below mean sea level.

The SGRS was placed into service in 1970, and the marine segment, which had a projected life of approximately 40 years, has deteriorated due to the long-term corrosive effects related to system operation and the ocean environment. Recent inspections of the system have revealed a

number of physical deficiencies, including seawater penetration and corrosion of the marine cables, metal fatigue at the point of attachment between the cables and the electrode array vaults, and corrosion of the electrode rods, which threaten the reliability and on-going functionality of the system. In addition, the limited capacity of the existing system limits the flexibility of system operators to respond to and resolve disruptions on PDCI,[1] while the location of the electrode just a mile from shore presents a corrosion threat to onshore metal infrastructure related to the operation of the ground return system. For these reasons, LADWP has proposed to upgrade the SGRS by replacing the marine segment of the system.

Project Description

The proposed replacement SGRS would consist of two primary components to be placed on or beneath the seafloor of Santa Monica Bay: (a) two marine cables; and (b) 36 concrete vaults housing 144 electrodes. The new electrode array would be located two miles offshore at a depth of approximately 100 feet below mean sea level (**Exhibit 3**). Plans of the proposed project are provided in **Exhibit 4**. Construction and installation of the new cables and electrode array is expected to begin in the first quarter of 2017, and would be completed in approximately five months. A variety of vessels and equipment would be needed during installation, including a barge, cable laying vessel, jet plow, tug boats and several smaller support vessels, as well as a large generator, a 30-ton crane to be operated from the barge, and an onshore cable-pulling rig. In addition, several truck trips would be required to deliver equipment and materials to the onshore work site during cable pulling.

Marine Cables

The proposed replacement SGRS would include two new bundled sets of conductor cables, extending from the Gladstone Vault to the new electrode array location approximately two miles offshore. Each 3.2-inch diameter cable set would consist of three individual conductors encased within a HDPE jacket. In order to avoid construction impacts in the beach and nearshore zones, the initial segments of the cables would be placed within the existing conduits extending from the Gladstone Vault to a point approximately 1,200 feet offshore. The first bundled set of new cable would be pulled through a currently vacant spare conduit and into the vault by a cable pulling rig, which would be parked near the vault. The cable would be fed from a barge stationed in the bay. After the cable is pulled through the previously vacant conduit, the existing cables in one of the remaining existing conduits would be severed where they exit the conduit in the ocean and would be pulled back through the vault and placed onto a reel on the cable pulling rig for appropriate recycling. The second cable set would then be pulled through the conduit and into the vault. In this way, the existing SGRS could remain operational at reduced capacity during the construction of the new system. LADWP states that cable-pulling operations will take about one week. Work at the Gladstone Vault would occur Monday – Friday, between 7 a.m. – 5 p.m.

Once the cables have been pulled through the conduits, cable installation would proceed by means of a remotely-operated water-jet plow,[2] which would bury the cables approximately five

[1] The existing SGRS was designed to operate at a maximum current of 1,800 amps for 30 minutes, providing LADWP with time to resolve disruptions occurring on the PDCI. However, since 1970 the capacity of the PDCI has increased, and as a result the operating time of the SGRS at maximum current (now 3,100 amps) has decreased in order to compensate.

[2] A jet-plow is a remotely-operated apparatus that moves across the ocean floor on skids or tracks and is controlled via a cable connected to the cable-laying vessel on the surface. It uses a plowshare that contains water jets along the

feet deep into seafloor sediments for the remainder of the distance to the electrode array. A cable-laying vessel would provide a continuous feed of the bundled cable sets from an onboard reel to the jet plow as it proceeds along the seafloor. The two bundled sets would be installed in parallel furrows spaced about 20 feet apart. Cable burial activities using the jet-plow are expected to last approximately one month. To ensure a shorter duration construction time, work in the ocean would occur six days per week, Monday through Saturday, up to 10 hours per day. No nighttime work would occur.

Electrode Array
The new electrode array would consist of 36 concrete vaults, each containing four silicon iron electrode rods, arranged in two rows of 18 vaults, spaced 30-feet apart (**Exhibit 4**). The vault would consist of a fiberglass-reinforced concrete floor and ceiling, with open sides covered in a one-inch Kevlar mesh. Each vault would measure 20 feet long, 8-feet wide, and 4-feet high, and weigh 20 tons. Cumulatively, the 36 vaults would cover 5,670 square feet of seafloor.

The pre-fabricated vaults would be loaded onto a barge at Marina del Rey harbor, and the barge dragged by tugboat to the electrode array site. LADWP anticipates that 12 vaults would be loaded at a time, and thus that three separate round-trips between the harbor and electrode site would be required during the installation process. Once the barge is anchored at the site, four electrode rods would be installed within each vault, the ends of the marine cable sets would be brought up to the barge, and the six individual conductor cables would be subdivided and connected to the electrode rods within the vaults. The sides of the vaults would be securely covered with Kevlar mesh. The vaults would then be individually lowered to the seafloor using a 30-ton crane mounted on the barge, with divers present to guide and monitor the installation process. An average of one vault per day would be assembled and lowered into position. LADWP anticipates that a set of six vaults could be placed from each barge anchoring position; a tugboat would be used to reposition the barge following the placement of each set of six vaults. Construction personnel would be transported to the project site from Marina del Rey on a daily basis via water taxi. The barge would remain anchored at the project site overnight. The barge would contain all the required equipment to assemble and lower the vaults, including a 30-ton crane and a 500-kilowatt diesel generator for power. Assuming a six-day work week, with one vault lowered each day, the installation of the vaults would take about six weeks to complete. However, allowing for loading and transport time and unforeseen delays or stoppages related to product manufacture, weather or wave conditions, mammal migration or activity in the vicinity of the electrode site, or other issues, the process could take two to three months. During this time, the barge may be stationed at the marina or anchored at the electrode site, with no construction activity occurring. Work would occur Monday – Saturday, up to 10 hours per day, with no nighttime work.

Facility Commissioning
After completion of construction, divers would complete a visual inspection and video recording of the facility. The facility would be tested from the Gladstone Vault, including running current

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leading edge. As the plowshare moves through the sandy bottom, water pumped through the jets fluidizes the sand, which reduces the force required to move the plow forward and minimizes the width of the furrow to just slightly larger than the cable bundle itself. The cable, which is fed from the cable-laying vessel on the surface, is guided through the plow and sinks into the fluidized sand as the plow passes.

through the cables and measuring the resistance of the system. The commissioning process would require several days. Once all components of the proposed marine facility have been commissioned, the existing marine cables would be disconnected at the Gladstone Vault. The new cables, which would run from the Gladstone Vault the new electrode array, would be spliced to the existing underground cables, and the system would be activated.

Operations and Maintenance

Once the proposed marine facility is completed, the SGRS, in the event of a fault or disruption on the PDCI, would have the capability of operating at up to 3,100 amps for up to 30 minutes. If the issue on the PDCI that triggered the event could not be resolved during this time, the power on the PDCI would be ramped down to no greater than 2,000 MW and could continue to operate at up to 2,000 amps for up to two more hours to provide operators additional time to resolve the issue or provide alternative sources of energy to temporarily meet demand. Based on these parameters, any individual SGRS operating event would have a total maximum duration of about 2.5 hours. However, based on historical operations of the existing SGRS, most events are considerably shorter than this maximum allowable duration. Based on historical data, it is anticipated that the electrode would be operational an average of 5.25 hours per year, representing the combined time of an average of seven discrete events averaging 45 minutes each. Between 2008 and 2014, the combined annual operating time of the system ranged from 40 minutes to 10.5 hours. The number of discrete events per year ranged from three to eleven, and the duration of individual events ranged from under 15 minutes to 2.5 hours. The maximum duration time of a single event was 2.5 hours.

Routine maintenance and replacement of components of the proposed marine facility is not anticipated. However, routine inspection and testing of the facility and early identification of items needing maintenance or repair are critical for the continued reliable operation of the PDCI. The submarine cables would be tested monthly by measuring the loop resistance of the conductors. A visual inspection of the facility by divers would occur twice annually, unless circumstances arise indicating the need for more frequent inspections.

Decommissioning of the Existing SGRS

At present, LADWP is not proposing to remove the marine facilities of the existing SGRS, and did not analyze a full removal plan as part of the EIR for the proposed project. However, as a condition of its general lease of state submerged lands for the proposed electrode array and cables, the California State Lands Commission (CSLC) is requiring LADWP to conduct a feasibility study for the removal of the existing electrode array, to be submitted within 18 months of the approval of the new lease. Pending the outcome of the feasibility study, the full removal of the existing array and cables could be required by June 30, 2019. Further environmental review under CEQA may also be required for the removal project. If and when the removal of the existing electrode facilities becomes necessary, a CDP amendment or new CDP would be required to authorize the removal project.

B. OTHER AGENCY APPROVALS

Los Angeles Department of Water and Power

The Los Angeles Department of Water and Power (LADWP) is the project proponent and lead agency under the California Environmental Quality Act (CEQA) for the proposed project. On

August 2, 2016, the LADWP Board of Commissioners approved the project and certified a final Environmental Impact Report (EIR).

The City of Los Angeles does not have a certified Local Coastal Program, and thus the Coastal Commission will consider both the onshore and offshore portions of the project as part of a CDP.

California State Lands Commission
The California State Lands Commission (CSLC) authorized a 49-year General Lease to the LADWP for the existing marine cables and electrode array on July 30, 1970, and on February 6, 2016 authorized a new lease for the continued use and maintenance of the existing facility through [insert date]. On December 6, 2016, the CSLC authorized a new General Lease – Industrial Use for (a) the construction and operation of the proposed new cables and electrode facility for a period of 20 years, ending December 5, 2036; and (b) the continued maintenance of the non-operational electrode array and cables (following the commissioning of the new facility) through December 5, 2019. Under the provisions of the new lease, LADWP shall submit a feasibility study to the CSLC by June 1, 2018 assessing the full removal of the existing electrode array and cables, and depending on the outcome of the feasibility study, agrees to fully remove the existing electrode facilities by December 5, 2019, subject to further review under CEQA.

Los Angeles Regional Water Quality Control Board (RWQCB)
The RWQCB regulates waste discharges into receiving waters in the project area. On June 14, 2016, LADWP submitted an application for a Section 401 Water Quality Certification. The RWQCB is currently reviewing this application.

U.S. Army Corps of Engineers
The U.S. Army Corps of Engineers (ACOE) has regulatory authority over the proposed project under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U.S.C 1344). On June 24, 2016, the ACOE conditionally certified the proposed project under Nationwide Permit No. 12 (Utility Line Activities), contingent upon the issuance of a Coastal Zone Management Act (CZMA) consistency certification. Pursuant to Section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA), any applicant for a required federal permit to conduct an activity affecting any land or water use or natural resource in the coastal zone must obtain the Commission's concurrence in a certification to the permitting agency that the project will be conducted consistent with California's approved coastal management program. The subject coastal development permit (9-16-0384) will serve as Commission review of the project under the CZMA.

C. DREDGING AND PLACEMENT OF FILL IN COASTAL WATERS

Coastal Act Section 30233(a) states, in relevant part:

> *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.

…

(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.

The proposed project includes the placement of structures and materials on the seafloor, and thus would result in the "fill" of the open coastal waters of Santa Monica Bay. The installation of two parallel marine cable bundles along approximately 10,560 linear feet of seafloor using a jet-plow would result in about 0.13 acres of dredging and fill, while the placement of 36 concrete vaults (20 feet L x 8 feet W x 4 feet H) would result in an additional 0.13 acres of fill.

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 seven categories of 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

One of the seven allowable uses of fill under 30233(a) is a new or expanded energy facility. As described in Section IV.A, above, the proposed SGRS is a necessary component of the PDCI, a major regional electrical distribution system, and would be used to conduct and dissipate overflows of electrical energy during system disruptions, and thus qualifies as a new or expanded energy facility. The Commission thus finds that the proposed SGRS meets the allowable use test of Coastal Act Section 30233(a).

Alternatives

The Commission must further find that there is no feasible less environmentally damaging alternative to the proposed project, especially with respect to the impacts of the proposed electrode array and submarine cables on marine organisms and benthic habitats. In order to find that there is no less environmentally damaging alternative to the proposed project, it is necessary to investigate several types of alternatives: (a) alternatives to constructing a new marine electrode; (b) alternative facility sites and configurations; and (c) alternative cable installation methods.

No Project, Non-Electrode, Onshore and Retrofit Alternatives

In the project EIR, LADWP provided an overview of several alternatives which would have avoided the need to construct a new marine electrode facility. However, in all cases, these alternatives were determined to be either infeasible or more environmentally-damaging than the proposed project. These "non-electrode based" or onshore alternatives are described briefly below:

- Energy Conservation. Under this alternative, the replacement marine facilities would not be constructed, eventually rendering the PDCI transmission line unusable, when the marine electrode and cables become unsafe or physically inoperable. LADWP would compensate for this loss of electricity supply by instituting new programs to increase

energy conservation within its service area, including both energy efficiency and demand response programs. However, there is a practical limit to the amount of electricity demand that could be displaced through conservation in the near future. In its 2014 Power Integrated Resource Plan (20-year plan), LADWP estimates that its current conservation programs, representing a "realistically achievable, cost-effective amount of conservation … derived from state-mandated energy efficiency studies," will eliminate the need for approximately 500 MW of capacity by 2026. Eliminating the over 3,000 MW of electricity demand supplied by the PDCI would present a much greater challenge, and was determined to be infeasible within the expected remaining life of the existing SGRS.

- Replacement of PDCI with an Alternating Current Transmission Line. Under this alternative, LADWP would replace the existing PDCI transmission line with an alternative current transmission line that would not require a ground return system, rendering the proposed project unnecessary and avoiding its potential impacts to marine resources. However, the replacement of the PDCI along its entire 850-mile length would result in its own set of substantial environmental impacts to the terrestrial environment, in particular due to the need to clear a new right-of-way because the existing system would need to remain operable during construction. This alternative would also be vastly more expensive and less-energy efficient (40 – 60% increase in transmission losses due to use of AC) than retaining the existing PDCI and replacing the marine electrode. For these reasons, this alternative was deemed to be both infeasible and more environmentally-damaging than the proposed project.

- Land-Based Electrode System: Under this alternative, the existing marine electrode would be replaced by a new electrode constructed at an onshore location. This alternative would be technically feasible, but would involve significantly greater logistical challenges (e.g., identifying and acquiring a sufficiently large vacant parcel of land located distant from existing development) and greater expense than the proposed project, while involving its own set of terrestrial environmental impacts. Although LADWP identified several potential onshore electrode sites, each would require a ground return line of over 100 miles in length, costing three to four times as much to construct as the proposed project. LADWP determined that this alternative would be economically infeasible.

- Retrofit of Existing Electrode Array: Under this alternative, the existing electrode array, located about one mile offshore (**Exhibit 2**), would be retrofitted to eliminate deficiencies in the existing system and, if feasible, provide similar operational capabilities as the proposed project. Based on the present capacity and condition of the existing system, a retrofit alternative would include the replacement of the marine cables and at least some of the electrode vaults and the placement of additional, new vaults. As a result, this alternative would have many of the environmental effects of the proposed project. Most critically, however, the location of the existing electrode just one mile offshore exposes surrounding metal infrastructure to the risk of corrosion when the SGRS is operational, and limits the capacity of the SGRS. Retrofitting or replacing the SGRS at the same location and distance offshore would neither address the corrosion issue nor allow for LADWP's desired increase in ground return capacity.

Siting & Configuration Alternatives
The siting and configuration of the proposed SGRS marine facility was based on several considerations, including maximizing the use of existing facilities, avoiding sensitive marine environments, minimizing the cable length, and providing a sufficient distance from shore to achieve the required system operational capability while also reducing corrosive effects to onshore infrastructure. In arriving at the proposed design, LADWP considered a number of alternative electrode and cable configurations and sites that would fulfil the objectives of the project. For example, LADWP's initial design for the project included the replacement of several onshore components of the SGRS, the use of a different starting point for the marine cable to the south of the Gladstone Vault, and the construction of a larger, circular electrode array (consisting of 88, 25-foot diameter vaults) at a location 3.1 miles offshore. In comparison to the proposed project, this alternative would have required the disturbance and fill of a larger area of seafloor to accommodate the longer marine cables and greater number of electrode vaults. Moreover, because this alternative would not have made use of the existing Gladstone Vault conduits beneath the nearshore zone, it would have required more extensive onshore construction activities (such as directional drilling of new conduits) with potential to adversely affect shoreline access and recreation and resulting in greater traffic and noise impacts. As a general matter, while other project configurations originating from the Gladstone Vault would be possible, their environmental impacts would be no less than those associated with the current project. Therefore, the Commission finds that there is no environmentally superior alternative for siting and configuring the marine cables and electrode.

Cable Installation Alternatives
LADWP considered several alternatives for installing the marine cables beneath the seafloor, including long-distance directional drilling, the use of a mechanical plow and the proposed use of a jet-plow. While long-distance directional drilling from the shore to the electrode array site two miles offshore would avoid disturbance of the seafloor, this method was determined to be infeasible due to the difficulties of drilling horizontally through poorly-consolidated seafloor strata and the need to use a steel casing for the borehole, which would act as a conductor for electrical current discharged along the SGRS, carrying the current back landward and defeating the purpose of the proposed SGRS upgrades. Additionally, the staging of a drilling rig on the shoreline would have the potential to result in greater impacts to shoreline access and visual resources than the proposed project. LADWP selected the jet-plow method of cable installation over the use of a mechanical plow because, for an equivalent depth of installation, a jet-plow results in a far narrower cross section of disturbance, minimizes the actual displacement of sandy bottom material, reduces turbidity, and leaves areas adjacent to the furrow essentially undisturbed. Thus, the Commission finds that there is no feasible, environmentally superior alternative to the proposed cable installation method.

Accordingly, for the reasons described above, the Commission finds that the proposed project is the least environmentally damaging feasible alternative and therefore meets the second test of Coastal Act Section 30233(a).

Mitigation
The final requirement of Coastal Act Section 30233(a) is that dredging and filling of coastal waters may be permitted if feasible mitigation measures have been provided to minimize any adverse environmental effects. In Sections IV.D, E, F and G of this report, the Commission has

identified feasible mitigation measures that will minimize the adverse environmental effects of the SGRS component to be placed on the seafloor These mitigation measures include requiring LADWP to bury the marine cables to a depth of 5 feet, avoid all hard substrate habitats, develop a plan for monitoring and avoiding impacts to marine mammals and special status wildlife, provide notification to fisherman of the location of the electrode and cables and any exposed sections (to reduce the potential for snags), submit plans to minimize impacts from anchoring, spills of hazardous materials, and to avoid discharges to open coastal waters. With the imposition of the conditions of this permit, the Commission finds that the third test of Coastal Act Section 30233(a) has been met.

D. MARINE RESOURCES AND WATER QUALITY

Section 30230 of the Coastal Act 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.*

Section 30231 of the Coastal Act 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.*

Most of the work associated with the installation of a new ground return system would take place in the marine environment. The new cables would extend from the shoreline to a point two miles offshore, in 100 feet of water, where 36 new electrode vaults would occupy approximately 0.13 acres of the seafloor in Santa Monica Bay (see **Exhibits 3**, **4**). The project area thus traverses a range of coastal environments, including sandy beach, soft-bottom and hard-bottom seafloor, and the nearshore ocean, supporting ecologically-significant habitats and species. Proposed project activities include the laying of electrical cables beneath the seafloor using jet-plows, the placement of the concrete vaults on the seafloor at the electrode site, the use of barge, cable-

laying vessel, tug-boats and several support vessels during construction, and the future operation of the SGRS itself. These activities have the potential to affect several different marine resources, including marine vegetation, benthic habitats species, fish, marine mammals and sea turtles, and water quality.

Impacts to Benthic Habitats

Nearshore habitats within the Project area range from sandy beach and rocky intertidal areas along the shoreline to soft-bottom habitat interspersed with seagrass beds and small rocky reefs in the nearshore subtidal zone (Weston 2012a, b). Further offshore, soft-bottom habitats predominate, with only a small percentage of rocky reefs. The proposed project, including the installation of two new ground return cables and 36 concrete electrode vaults on the seafloor and the placement and setting of vessel anchors, have the potential to adversely affect benthic habitats and associated biota in the project area. These impacts would occur largely in areas of soft-bottom, sandy seafloor, but could also extend into more sensitive hard substrate areas adjacent to the path of the ground return cables (**Exhibit 5**).

Sandy Beach Habitats

The proposed ground return cables would pass beneath Will Rogers State Beach within two pre-existing four-inch diameter conduits, emerging onto the seafloor at a point approximately 1200 feet offshore. The new cable sets would be pulled through the conduits from the Gladstone Vault, a below-ground utility vault located off of the beach within an existing parking lot. No construction activities would occur on the beach itself. Thus, the installation of the new ground return cables would avoid adverse impacts to sandy beach habitats.

Hard Substrate Seafloor

Hard substrate is exposed rocky seafloor area that provides habitat for a diverse group of plants and animals. Hard substrates, including rocky bottoms, rock outcrops, and rock crevices, provide habitat and shelter for numerous sessile organisms, demersal fishes, and mobile invertebrates such as lobsters and crabs. Hard substrates also provide the necessary anchoring sites for macroalgae such as giant kelp (*Macrocystis pyrifera*), one of the more visible and iconic marine organisms of the California coast. The kelp forests of coastal Southern California are highly productive and species-rich, in large part due to the multi-layered vertical habitat they provide. Over 50 fish species, 130 species of plants and macroalgae and almost 800 species of invertebrates are known to inhabit Southern California kelp forests, making them both ecologically and economically important.

Offshore of Southern California, hard substrate habitats and their associated biota are relatively rare, and therefore any effect on them is potentially significant. In particular, impacts to hard substrate are significant because: (a) rocky reefs and other hard substrate habitats comprise a small fraction of the seafloor area; (b) they support a diverse and productive assemblage of epifaunal invertebrates; (c) they attract fish as a nursery ground, food source, and as shelter; (d) epibiota residing on rocky substrates are sensitive to mechanical disturbance and increased sediment loads; and (e) hard bottom ecosystems are slow to recover from direct impacts.

A relatively large area of hard substrate habitat occurs immediately to the east of the proposed cable alignment, approximately 1800 feet offshore (**Exhibit 5**) (Fugro 2012). This habitat

consists of a low-relief cobble reef, partially covered by sand, rising two to four feet above the surrounding seafloor. Biological surveys within the reef area (Weston 2012a) observed a variety of marine wildlife, including bat star (*Asterina miniata*) three gorgonian species (*Muricea fruticosa*, *Lophogorgia chilensis*, and *Muricea californicus*), two crab species (*Taliepus nuttalli* and *Loxorhynchus grandis)*, ornate tube worm (*Diopatra ornata*), chestnut cowry (*Cypraea spadicea*), and red and purple sea urchins, (*Strongylocentrotus franciscanus* and *Strongylocentrotus purpuratus*). Marine vegetation included palm kelp (*Eisenia arborea*), and the red alga (*Acrosorium uncinatum)*. Rock outcroppings also occur along the shoreline, extending approximately 750 feet offshore at the centerline of the proposed cable alignment (see **Exhibit 5**). Kelp forest habitat within Santa Monica Bay is primarily located in the shallow subtidal zone around Malibu and the Palos Verdes peninsula. Recent surveys indicate that no large kelp beds are present within the project area (Weston 2012a), though smaller, more ephemeral kelp stands may be present, including a small area of kelp canopy to the east of the proposed cable alignment, shown in **Exhibit 5**. No kelp is known to occur within the proposed cable alignment or project footprint.

The cable installation and placement of the electrode vaults is proposed to occur outside of hard substrate habitat areas, avoiding most direct impacts to these resources. However, the project has the potential to adversely affect adjacent rocky seafloor habitats and species due to (a) the close proximity of the proposed cable alignment to a significant hard substrate habitat area; (b) the setting or dragging of anchors during the situating of project vessels, and (c) disturbance of seafloor sediments and turbidity during cable and electrode vault installation activities. Placement and dragging of anchors and/or anchor lines from project vessels could result in scraping, scouring and other physical damage of rocky habitat and kelp beds, while turbidity and sediment redistribution could result in the burial of hard substrate habitats and organisms and/or reduction in light penetration and photosynthesis in kelp or other macroalgae beds.

As shown in **Exhibits 3** and **5**, the initial segment of the proposed marine cables would be installed within existing conduits that pass beneath the nearshore zone, emerging approximately 1,200 feet offshore onto soft-bottom seafloor, and thus avoiding nearshore rock outcroppings. Further offshore, between approximately 1,800 and 3,000 feet along the cable route, cable installation would occur immediately adjacent to a large area of hard substrate habitat. The center line of the cable route crosses near the edge of this hard substrate area; however, LADWP has stated that the actual cable placement would avoid traversing this area of hard substrate. In addition, LADWP proposes to implement **BMP-2**, which would provide for a pre-construction ROV-survey of the proposed cable route to ensure that all project facilities (cables and electrode array) would be located within areas of soft-bottom seafloor, avoiding hard substrates. The Commission is including this measure in this CDP as a part of **Special Condition 3**. In order to further safeguard sensitive hard substrate habitats, the Commission is also including **Special Condition 4,** which requires LADWP, within 45 days of the completion of project construction, to submit to the Executive Director as-built plans of the installed cable alignment and electrode array demonstrating that all areas of hard substrate have been avoided.

The proposed installation of the 36 concrete vaults comprising the new electrode array and the laying of two new cable sets would require the use of several ocean-going vessels, including a barge and a cable-laying vessel, which would need to be anchored in fixed positions. In

particular, the anchoring of project vessels in nearshore or in close proximity to previously-identified areas of rocky seafloor could result damage to sensitive hard substrate habitats if anchors are not carefully set or drag after placement. Although the project EIR states that vessel anchors would be set only in areas of soft-bottom seafloor, LADWP has not identified specific anchoring locations, nor described measures to ensure that anchor placement or dragging would not impact hard substrate habitats. In order to avoid and minimize the potential for adverse impacts to these resources from anchoring, the Commission is including **Special Condition 5**, which would require LADWP to submit, for the Executive Director's review and approval, an Anchoring Plan demonstrating that hard bottom substrate areas would be avoided and listing equipment and procedures to be used to ensure anchors are accurately placed.

The emplacement of the marine cables and concrete electrode vault would result in some disturbance of seafloor sediments, and will likely generate a minor amount of turbidity. A recent review of cable-setting techniques in the offshore windfarm industry found that the use of jet-plows, as proposed by LADWP, produced a relatively low level of disturbance in sand- and silt-sized marine sediments, as are found in the project area, that cable furrowing in general tended to increase background concentrations of suspended sediment in the water column by only a few percent, and that the fine sediments mobilized by furrowing tended to disperse rapidly (BERR 2008). Moreover, because the sediment in the project area consists predominantly of sand and silt, project activities are not likely to generate large or persistent turbidity plumes, and suspended sediments would settle nearby the point of disturbance. In the project EIR, LADWP estimates that turbidity levels generated by the project would be less severe those associated with waves, tidal action and storm events occurring naturally within Santa Monica Bay. Based on these considerations, construction-related turbidity would not result in significant burial or other impacts to hard substrate habitats.

For these reasons, and as conditioned, the installation of the SGRS would not result in significant adverse impacts to hard substrate habitats and organisms.

Soft Bottom Seafloor
Soft bottom areas are unconsolidated sediments (e.g., gravel, coarse-grained and mixed sediments, sand, and mud) that provide habitat to epifaunal (surface living) and infaunal (below-surface living) organisms. As discussed above, beyond the nearshore zone the seafloor along the proposed cable route and at the site of the proposed electrode array consists of sand, silty sand, sandy silt, and sandy clay (Fugro 2012; Weston 2012a; Burns & McDonnell 2016). The proposed cable and electrode vault installation would occur entirely within soft-bottom areas, avoiding hard substrates and other sensitive habitats. Scattered seagrass beds occurring in the project area are located within the 1,200-foot wide nearshore zone that would be avoided during cable installation by pulling the new cables through an existing conduit.

Project impacts to soft bottom areas are of potential concern because: (1) the installation of the electrode vaults and cables and placement of anchors for project vessels would cover or disturb the habitat of both epifaunal and infaunal benthic organisms; (2) infaunal organisms have limited mobility and cannot easily escape habitat destruction or disturbance ; and (3) the infauna provides a source of food for more mobile epifaunal and pelagic marine organisms such as crabs, fin fish, and marine mammals, and is thus an important component of the marine ecosystem.

Previous biological surveys of the soft-bottom habitats of Santa Monica Bay have documented a productive, diverse infauna composed of 625 different taxa (City of Los Angeles 2003). The most abundance infaunal invertebrates are polychaete worms (various species), followed by brittle stars (*Amphiodia urtica*), horseshoe worms (*Phoronis* sp.), capitellid worms (*Mediomastus* sp.), and amphipods (*Ampelisca brevisimulata*). Epibenthic invertebrates of Santa Monica Bay include sea stars, sea cucumbers, sand dollars, sea urchins, crabs, shrimp, snails, tube worms, nudibranchs, and sea slugs. The extensive soft-bottom habitat within Santa Monica Bay supports an abundant and diverse assemblage of more than 100 species of demersal fish (fish that live and feed on or near the sea bottom). Flatfish, rockfish, sculpins, combfishes, and eelpouts make up the majority of the soft-bottom fish found in the bay (Marine Biological Consultants 1993; City of Los Angeles 2003). According to the EIR, no threatened or endangered soft-bottom benthic species were identified during surveys or are known to exist in the project area.

The new ground return cables would be installed by means of a jet plow, which would create a temporary furrow in the seafloor sediments into which the cables would be placed, followed by immediate reburial. Cable installation would result in a zone of temporary sediment disturbance, covering a total of approximately 0.13 acre, along the twin two-mile cable alignments. Within these areas, sessile or slow-moving benthic species would be directly affected, possibly resulting in injury or mortality due to physical disturbance or burial. More mobile invertebrates and fish would be expected to avoid the active plowing activities and return to the area following its completion. The placement of the 36 concrete vaults that comprise the electrode array would result in the permanent fill of soft-bottom habitat that supports benthic infaunal, epifaunal, and demersal species. Each of the 36 vaults would be 20 feet long, 8 feet wide and 4 feet high. The total seafloor area covered by the vault structures would be approximately 5,760 square feet (0.13 acre).

Although the project would result in some loss of benthic habitat and impacts to benthic invertebrates, the soft-bottom areas that would be disturbed are very small relative to the geographical extent of this habitat type in Santa Monica Bay. Soft-bottom benthos is the dominant seafloor type in Santa Monica Bay; in the EIR, LADWP estimates that the total area of soft-bottom habitat between the shoreline and the 100-foot depth contour (the depth at which the electrode array would be placed) is over 35,000 acres. Thus, the permanent loss of soft-bottom habitat (estimated at 0.13 acre) resulting from the placement of the concrete vaults is a very small percentage of the overall available soft-bottom habitat in Santa Monica Bay (less than 0.0004 percent). Over time, the disturbed sediments along the cable route would be redistributed over the project area by the same processes (wave action, currents, etc.) that are the primary source of natural disturbance in this environment. In addition, the benthic infauna that would be affected is comprised of common species capable of re-colonizing an area following temporary sediment disturbance. Studies have shown that other factors, including the fact that project-related disturbances would not involve the removal of sediment, and the close proximity of the disturbed sediments to undisturbed sediments, would tend to minimize the amount of time needed for recolonization and recovery by benthic organisms.

For these reasons, the proposed installation of the ground return cables and electrode vaults would not result in significant adverse impacts to soft bottom habitats or organisms to the extent that would necessitate mitigation requirements.

Impacts to Marine Wildlife

Marine Mammals

The Southern California Bight supports 40 different species of marine mammals and five species of sea turtles that are protected by state and federal law. A number of these species are known to occur in the nearshore waters of Santa Monica Bay, and could be adversely affected by the proposed project. Seven cetacean species, including bottlenose dolphin (*Tursiops truncatus*), short-beaked common dolphin (*Delphinus delphis*), Risso's dolphin (*Grampus griseus*), Dall's porpoise (*Phocoenoides dalli*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), long-beaked common dolphin (*Delphinus capensis*), and California gray whale (*Eschrichtius robustus*), are commonly observed in nearshore waters in significant numbers and may occur in the project area either seasonally or on a year-round basis. The dolphin and porpoise species live in the region year-round, while gray whales migrate through the area twice each year, between December – February (southern migration) and February – May (northern migration). Other whale species, including blue, fin, humpback, sperm and killer whales, are typically observed farther offshore than the project area, but may occur closer to shore when their prey are abundant in nearshore waters. California sea lions (*Zalophus californianus*) and harbor seals (*Phoca vitulina*) inhabit the coastal waters of Santa Monica Bay on a year-round basis and are likely to occur in the project area. Northern elephant seals (*Mirounga angustirostris*), though less ubiquitous, maintain breeding colonies in the offshore Channel Islands and may also occasionally pass through the project area. Though extremely rare, leatherback, green, loggerhead and olive ridley sea turtles have also at times been observed off the Southern California coast and have the potential to occur in the project area.

Other Sensitive Species

Santa Monica Bay is known to support several sensitive fish species. California Department of Fish & Wildlife (CDFW) regulations prohibit the targeting, catch, or possession of certain species due to low population levels or other concerns, a number of which have the potential to occur in the project area.[3] Among these species, the southern California population segment of steelhead trout is also listed as endangered under the federal Endangered Species Act, while the cowcod rockfish is listed as a federal species of concern. Santa Monica Bay also supports an abundant and diverse array of resident and migratory seabirds, including several special status species.[4]

There are several potential types of impacts to marine wildlife due to the proposed project activities, including marine mammal collisions with project vessels, harassment or injury during project construction, entanglement with the project cable or snagged fishing gear, and adverse effects related to electromagnetic fields during periods when the SGRS is operational.

[3] CDFW-listed fish species in Santa Monica Bay include giant black sea bass (*Stereolepis gigas*), steelhead (*Oncorhynchus mykiss*), broomtail grouper (*Mycteroperca xenarcha*), garibaldi (*Hypsypops rubicundus*), bronze spotted rockfish (*Sebastes gilli*), canary rockfish (*Sebastes pinniger*), yelloweye rockfish (*Sebastes ruberrimus*), and cowcod rockfish (*Sebastes levs)*, basking shark (*Cetorhinus maximus*) and the bocaccio rockfish (*Sebastes paucispinis*).

[4] Special-status seabirds of the Southern California Bight include bald eagle (*Haliaeetus leucocephalus*), California brown pelican (*Pelecanus occidentalis californicus*), California least tern (*Sterna antillarum browni*), Western snowy plover (*Charadrius alexandrines nivosus*), Marbled murrelet (*Brachyramphus mamoratus*), Xantus's murrelet (*Synthliboramphus hypoleucus)*, Ashy storm petrel (*Oceanodroma homchroa*), Black storm petrel (*Oceanodroma melania*) and Rhinoceros auklet (*Cerorhinca monocerata*).

Collisions with Project Vessels and Impacts during Project Construction
The offshore location of the proposed project places it within potential foraging and migration areas of marine mammals and turtles, raising the possibility of collisions with project vessels or harassment or injury during construction activities. Incidents with marine wildlife could occur during several phases of the project: (a) vessel transit between the project site and the probable shore base of the project vessels at Marina del Rey; (b) installation of the ground return cables; and (c) the placement of the concrete electrode vaults on the seafloor. Project activities could also result in the harassment of marine wildlife entering the project area, for instance as a result of construction-related underwater noise. The potential for adverse impacts to marine animals from project activities would be heightened during night work, when poor visibility would increase the risk of collisions and artificial lighting associated with the project could become an attractive nuisance or disrupt the behavior of sensitive species.

The Commission has determined in reviewing previous offshore projects that the most effective way to prevent disturbance of special status species in offshore areas, and to avoid marine mammal or sea turtle collisions with project vessels, is to (a) time in-water activities so that they occur, as much as possible, outside of known migratory seasons, and during daylight hours; and (b) monitor effectively for the presence of these species in the project area and during project activities and vessel transit.

Project construction is proposed to begin in January 2017, and, as required under the terms of LADWP's lease from the California State Lands Commission, be completed by June 30, 2017. This construction schedule would substantially overlap with the gray whale migration period (December through May), and given the amount of time necessary to complete the electrode installation and the terms of the state lease, it would not be feasible to time all in-water activities to avoid the gray whale migration. As described above, LADWP's construction schedule is based a 6-day, 10 hour per day work week, with no night-time work.

As a safeguard against vessel collisions and other adverse impacts to marine mammals and sea turtles, LADWP proposes to implement mitigation measure **BIO-1**, which provides as follows:

BIO-1 Marine Mammal and Sea Turtle Avoidance Practices

1. *A biological monitor will be required on vessels and, when appropriate, in the water during construction activities within Santa Monica Bay and will have the authority in coordination with LADWP to halt and redirect construction activities to avoid adverse impacts to marine wildlife. If a sea turtle or marine mammal is identified within 100 meters of the construction work zone, construction activity shall be temporarily halted until the sea turtle or marine mammal moves safely beyond this distance.*
2. *Construction and vessel crews will be trained to recognize and avoid marine mammals and sea turtles prior to initiation of Project construction activities.*
3. *Vessels involved in construction activities will maintain a steady course and slow speed.*
4. *Any collisions with marine wildlife will be reported promptly to state and federal resource agencies.*

Implementation of **BIO-1** would decrease the risk of collisions between marine wildlife and project vessels, as well as adverse impacts during construction activities, such as the lowering and placement of the electrode vaults. However, the measure **BIO-1** lacks several specific provisions necessary to protect and minimize the potential for harm to marine wildlife species, as required under Sections 30230 and 30231 of the Coastal Act. For example, in approving previous offshore projects of similar scope, the Commission has generally specified a minimum of two marine wildlife monitors to ensure adequate coverage of the project area and required the monitoring of larger marine wildlife "avoidance zones". The Commission is including additional mitigation measures to ensure that adverse impacts to marine mammals and sea turtles are minimized and healthy populations of marine organisms are maintained. **Special Condition 6** requires LADWP to submit a Final Marine Wildlife Monitoring and Contingency Plan (MWMCP) to the Executive Director for review and approval prior to beginning project construction. The Final MWCP shall include measures similar to those contained in BIO-1, but shall also require that a minimum of two qualified marine wildlife observers be present during both project vessel transit and project operations, the establishment of 500-foot and 1640-foot avoidance zones, for smaller mammals and large cetaceans, respectively, and several additional mitigation and reporting requirements. In addition, the Commission is including **Special Condition 7**, which imposes limitations on night-time construction in order to further reduce the risk of collisions with marine mammals and to minimize the adverse impacts of artificial lighting during project activities.

Another potential concern for marine mammals, sea turtles and fish species is injury or harassment from underwater noise generated by project construction activities. The project EIR examined the potential for noise impacts associated with the operation of project vessels, the use of a jet-plow to install the marine cables, and the lowering and placement of the electrode vaults. The EIR relied on several previous evaluations of noise levels generated during cable-laying operations (Nedwell et al. 2003, 2007; BERR 2008), which LADWP states would be the loudest proposed construction activity. Field measurements by Nedwell et al. (2003) indicate that noise levels at varying distances from a cable trenching operations can be great enough to cause mild avoidance reactions, but are well below thresholds thought to cause significant distress or injury in marine mammals, sea turtles, or fish. Generally, maximum sound pressure levels related to the installation or operation of cables are moderate to low, and appear to pose a low risk of harming marine fauna (BERR 2008). Based on this evidence, noise associated with project construction would not result in significant adverse effects to marine wildlife.

Risk of Entanglement

Marine mammals that live and migrate through coastal waters in the project area may become entangled in unburied or insufficiently buried cable or in cable suspensions. Although the risk of is considered to be low, past instances of whales becoming entangled in suspended or unburied submarine cables have been documented (e.g., Heezen 1957; Wood and Carter 2008). Of the marine mammal species known to occur in the project area, two whale species—the California gray whale and sperm whale (*Physeter macrocephalus*)--have the greatest potential to become entangled due to, respectively, their bottom-feeding or deep-diving behavior patterns. Gray whales in particular occur in relatively high abundances in the project area during their migration period, and may feed and forage on the seafloor in relatively shallow waters. Similarly, marine wildlife could become entangled in fishing gear or nets that have snagged on exposed cables and

were subsequently abandoned by fishermen. Such abandoned gear, and particularly the nets (often termed "ghost nets"), can become a hazard to marine life, potentially entangling marine mammals and fish, preventing them from feeding and/or causing them to drown.

Several characteristics of the project site and design would serve to minimize the potential for marine wildlife entanglement. First, the entire SGRS would be installed within two miles of shore, on flat, soft-bottom seafloor at depths of less than 100 feet below mean sea level. The relatively nearshore location of the project would limit the potential for entanglement among species, particularly whales, which generally occur further offshore, while the flat, mostly featureless character of the seafloor would minimize the potential for cable suspensions. LADWP has proposed to bury the cable sets to a depth of five feet below the seafloor (or to the maximum depth feasible), which would further reduce the potential for direct entanglement and the snagging of fishing gear once the cable is installed. **Special Condition 8** would incorporate this commitment into this CDP. In order to ensure that the cable installation is consistent with the project description, eliminating suspensions and exposed sections of cable, **Special Condition 4** requires LADWP, within 45 days of the completion of project construction, to submit to the Executive Director as-built plans of the marine cables and a cable burial report demonstrating that the proposed cable burial depth has been achieved to the maximum extent feasible and that significant cable suspensions have been avoided.

In contrast to the cables, the marine electrode array would not be buried in the seafloor sediment, and there is a small risk that fishing gear, lines or other debris could snag on the electrode vaults and become an entanglement risk for marine wildlife. This risk would increase if in the future Santa Monica Bay were to be opened to more commercial fishing activity (see below). As a preventive measure against potential entanglement impacts, **Special Condition 9** requires that LADWP survey the marine electrode vaults and related structures (e.g., connecting cables) at least once each year to ascertain that no fishing gear or other debris has become snagged on the concrete vaults or other exposed portions of the electrode array, and to remove any snagged materials that are discovered. This condition also requires that LADWP conductl surveys of the marine cable routes following extraordinary or unexpected events (e.g., reported fishing gear snags, major earthquakes, tsunami, etc.) that would have the potential to uncover the cables or create entanglement risks, to ensure that the cables have remained buried. In addition, **Special Condition 10** requires LADWP to apply for an amendment to this permit to remove the marine cables and electrode within 90 days of either taking the cable out of service or after the expiration or earlier termination of LADWP's lease of state submerged lands within Santa Monica Bay. To further minimize the likelihood that fishing gear could become snagged on the marine cables and/or electrodes, **Special Condition 11** requires LADWP to provide NOAA with the location information necessary to update its nautical charts to reflect the position and burial status of the installed cable and marine electrode.

Operational Impacts – Electromagnetic Fields

When operational, the proposed marine electrode would generate electric and magnetic fields in the vicinity of the electrode array. Depending on the strength of the field and duration of exposure, electromagnetic fields (EMFs) have the potential to harm marine wildlife, particularly those species with electrical or magnetic sensory abilities such as elasmobranchs (sharks and

rays), eels, cetaceans, and sea turtles, which use these abilities for navigation and/or prey detection.

As described in Section IV.A, above, the SGRS would be used infrequently, only during faults or disruptions on the PDCI, for relatively short periods of time (maximum operational time of 160 minutes). Between 2008 and 2014, the existing SGRS was placed in operation an average of seven times a year, for an average of 45 minutes (for an average total operational time of 5.25 hours per year). The project EIR states that the electrode vaults have been designed to limit the strength of the electric field at the exterior of the vaults to no greater than about 1.15 volts per meter (V/m) when the SGRS is operating at maximum amperage (3,100 amps). The strength of the field would decrease rapidly with distance from the electrode vaults (e.g. to 0.15 V/m at a distance of 6 feet). The SGRS would also generate a maximum magnetic field of about 245 Gauss (G) during peak operations, measured at a distance of one inch from the electrode cables, assuming all the cables were immediately adjacent to each other. The strength of the magnetic field would also decrease substantially with distance from the cables, to about 4 G at a distance of five feet and 1 G at a distance of 20 feet, and would be halved by placing the two cable sets in furrows 20 feet apart, as proposed.

The electrical field generated by the SGRS would be detectable at a distance by electro-sensitive species such as sharks and rays, and may temporarily attract these species toward the facility. However, even at maximum strength, the electric field at the exterior of the vault would be below 1.25 V/m, a threshold that has been identified as safe for humans, marine mammals and large fish in seawater in a number of studies (see Weston 2012a). Moreover, the exponential decrease in field strength with distance ensures that even wildlife within a few feet of the electrodes would be exposed to much weaker field strengths. Although field strengths would be higher within the electrode vaults, the sides of the vaults would be covered with one-inch Kevlar mesh to exclude all large marine organisms. The five-foot burial depth of the cables would likewise prevent direct contact with elasmobranches attracted by the EMFs.

Magnetic fields within 20 feet of the cables during SGRS operation would likely be detectable by magneto-sensitive species, including eels, sea turtles, salmonids, elasmobranchs, whales, and dolphins, which use these abilities for navigation (Fisher and Slater 2010). However, even when the SGRS is operating at maximum strength, the magnetic fields generated by the facility would be orders of magnitude less strong than the International Electrotechnical Commission (IEC) safety threshold (5000 G), and would be weaker than the magnetic fields generated by the existing array (Weston 2012a). At worst, the SGRS would result in a temporary weak magnetic field the vicinity of the project, and would not significantly impact marine wildlife.

In order to minimize risks to marine wildlife from EMFs generated by the proposed marine cables and electrode array when operational, the Commission is including **Special Condition 9**, which requires LADWP to conduct annual inspections of the electrode vaults to ensure that the Kevlar mesh covering the vault opening remains intact and continues to exclude marine wildlife from the interior of the vaults. **Special Condition 9** also requires LADWP to conduct surveys of the marine cable route following any event (e.g., reported fishing gear snag, earthquake, major storm) with the potential to have uncovered the cable, to ensure that the cables remain buried consistent with their installed condition.

Water Quality

The proposed project would occur in the open coastal waters of Santa Monica Bay, and could adversely affect water quality and marine biota as a result of: (1) increased turbidity and the mobilization of sediment contaminants during project installation; (2) production of chlorine gas during SGRS operation; and (3) the release of fuel, hazardous materials, sewage or bilge/ballast water from project vessels, vehicles and equipment.

Turbidity and Resuspension of Contaminated Sediments

The size of the turbidity plume caused by project activities (i.e., jet-plowing during cable burial, electrode vault placement) would depend on the area and depth of seafloor sediments being disturbed, the type of disturbance, the grain size of the sediments, and local water conditions (which would affect suspended sediment settlement rates and distance of dispersal). Increases in turbidity can degrade water quality by reducing light penetration, discoloring the ocean surface, or interfering with filter-feeding benthic organisms sensitive to increased turbidity, and, as discussed above, result in the burial of sensitive hard-substrate habitats. The installation of the new marine cable sets beneath the seafloor will result in localized increases in turbidity along the cable route between the termination of the existing conduits (approximately 1200 feet offshore of Gladstone Vault) and the electrode array location. However, because the seafloor sediments in the project area include high percentages of sand, turbidity plumes are expected to settle out of the water column relatively quickly, and in the general area of the cable route. Based on a recent review of seafloor cable installation techniques (e.g., BERR 2008), LADWP elected to use jet-plow technology, which was found to produce a relatively low level of disturbance -- on the order of a few percent increase above background suspended sediment concentrations -- in marine sediments composed of sand and silt. Other studies discussed in the Final EIR have shown that elevated levels of suspended sediment caused by jet-plowing on sandy seafloor tend to settle very quickly, within minutes to at most a few hours. The EIR states that "[t]his level of impact is well within the natural variability associated with waves, tidal action, and storm events experienced in Santa Monica Bay and substantially less than that associated with anthropogenic impacts from dredging or aggressive fishing practices." Moreover, these localized turbidity increases would be limited to a one-month period during active cable furrowing activities. Similarly, sediment disturbance associated with the placement of the electrode vaults would result in only temporary and localized impacts to water clarity. Based on these factors, turbidity impacts on water quality would be insignificant.

Sediment re-suspension during cable furrowing and electrode vault placement also has the potential to increase the concentrations of contaminants in the water column. It has been estimated from large-scale regional studies that 90 percent of the surface sediments of the Santa Monica Bay are contaminated with DDT, PCBs, metals, and other pollutants, largely due to legacy inputs of pollutants from a variety of industrial and urban sources (Schiff 2000). Re-suspension of sediments during project activity could result in the dispersal and uptake of these contaminants by benthic organisms. Sediment concentrations of contaminants of concern were measured within the Project area as part of the 2012 *Marine Resources Assessment* (Weston 2012a) and 2015 Existing Electrode Study (Burns & McDonnell 2016) and found to be similar to concentrations typically observed in Santa Monica Bay sediments. Crucially, however, these contaminant concentrations were below relevant thresholds for biological effects, and showed no evidence of toxicity in laboratory bioassays (Weston 2012a). Based on this information, resuspension of sediments associated with cable plowing or placement of the electrode vaults

would not result in an increase in the distribution of contaminants of concern above bay-wide background levels or result in toxicity to benthic organisms.

Chlorine Gas
The operation of the proposed electrode would to generate chlorine gas as a byproduct of the electrolysis of seawater. Free chlorine (chlorine gas dissolved in water) is an oxidizing biocide that can be toxic to fish and aquatic organisms at concentrations greater than 0.01 mg/L. However, its dangers are short-lived because it reacts quickly with other substances in water or dissipates as a gas into the atmosphere. Although the production of chlorine can be a water quality concern for electrodes operated continuously, for long periods of time, the proposed electrode would, as described previously, be operated only occasionally, for relatively short periods. The project EIR concludes that the discrete, short-duration operation of the electrode, combined with the small amount of chlorine gas produced per event, spread over the large area of the electrode array, would result in only very small, temporary and localized increases chlorine concentration in the water column, and would not result in significant impacts to water quality or marine biota. The EIR also notes that the operation of the existing electrode over the past 45 years has not prevented the development of a productive, diverse biological community in association with the existing concrete vaults.

Spills, Leaks & Releases from Project Activities, Vessels and Equipment
The proposed project requires the use of several vessels, vehicles, and a variety of heavy equipment to support both on- and offshore cable and electrode array installation activities. It is possible that marine vessels could, accidentally or intentionally, discharge fuel or other hazardous fluids, sewage water, bilge water, debris, or ballast water into the marine environment. Similarly, leaks or spills of fuel or other hazardous materials from onshore vehicles and mechanized equipment could be washed into the ocean. Depending on the size and contents of a leak, spill or discharge from one of these sources, impacts to marine organisms could be significant.

Although the likelihood of a spill occurring is low, LADWP has proposed to implement **BMP-7**, which provides as follows:

> *As required by the Clean Air Act, Section 401 of the Clean Water Act, the Toxic Substance Control Act, and the Hazardous Materials Transportation Act, all vehicles, vessels, and equipment must be in proper working condition to avoid fugitive emissions or accidental release of motor oil, fuel, antifreeze, hydraulic fluid, grease, or other hazardous materials. To reduce potential for accidental spills and discharges that could impact water and sediment quality during construction, the following are recommended:*
>
> - *Discharge of hazardous materials during construction activities into the Project area shall be prohibited.*
> - *A comprehensive spill prevention control and countermeasure plan shall be developed that documents management practices that will be enacted to limit the potential for accidental spills.*
> - *An environmental protection plan shall be developed that addresses issues related to storage and handling of fuel, waste disposal, equipment and vessel operation, and field policies.*

- *All debris and trash shall be disposed of in appropriate trash containers on land or on construction barges by the end of each construction day.*

In order to further reduce and minimize the potential for accidental spills or leaks, the Commission is including **Special Condition 12**, which requires LADWP to submit a project-specific Spill Prevention and Response Plan to the Executive Director for review and approval. In addition to the requirements of **BMP-7**, the Plan shall identify the worst-case spill scenario and demonstrate that adequate spill response equipment is available. In addition, the Plan shall clearly identify responsibilities, list and identify the location of oil spill response equipment, and include a plan for conducting training and response drills. The Commission is also including **Special Condition 13**, which requires LADWP to implement an Executive Director-approved Critical Operations and Curtailment Plan (COCP). The COCP shall define the limiting conditions of sea state, wind, or any other weather conditions that would hinder safe operation of vessels and equipment or a potential spill cleanup. Additionally, consistent with its approvals of previous major offshore projects, the Commission is including **Special Condition 14**, which requires implementation of a zero discharge policy for all project vessels.

In summary, with the inclusion of the Special Conditions described above, the proposed project will minimize the potential for adverse impacts associated with increased turbidity, mobilization of contaminated sediments, and spills and discharges from project vessels, vehicles and equipment.

Conclusion

For the reasons discussed above, the Commission finds that the proposed project, as conditioned by **Special Conditions 3 - 14**, will be carried out in a manner that maintains marine resources, sustains the 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.

E. COMMERCIAL AND RECREATIONAL FISHING

Coastal Act Section 30234.5 states:

> *The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.*

Commercial and recreational fishing are important components of the regional economy in Los Angeles County. The project site lies within CDFW Fishing Block 879[5] and an area designated as Essential Fish Habitat (EFH) for the Pacific Coast Groundfish Fishery Management Plan under the federal Magnuson-Stevens Act. However, much of Santa Monica Bay, including the entire project area, is contained within a CDFW Commercial Fishing Closure Area (Fishing District 19A; **Exhibit 6**), which severely restricts the allowable gear types and the take of most commercially-important species within this area (see Draft EIR, pp. 3-87 to 3-97). As a result, in 2014, the total value of commercial landings within Fishing Block 879 was less than $7,500.

[5] Fishing block units are 10 x 10 minute areas used to describe a general location for fishing activity. The blocks were developed by the CDFW Marine Region and are used to report catch locations for use in CDFW landing receipts and Pacific Fishery Management Council Trawl logbooks.

Kelp harvesting is also prohibited along the portion of the Los Angeles County coastline where the project would occur.

Recreational fishing in Santa Monica Bay and the project area includes fishing from the shore, from boats originating from the two local harbors (Marina Del Rey and Redondo Beach), from kayaks launching from local shores, and by divers. Primary species targeted by recreational fishermen include California halibut, kelp bass, barred sand bass, rockfishes, Pacific chub mackerel, Pacific bonito, white seabass, and Pacific barracuda. Sandy shelf areas such as those surrounding the project site are fished mainly for pelagic species such as bonito and barracuda, and bottom dwelling species, such as California halibut. Recreational fishing for California spiny lobster (*Panulirus interruptus*), via diving or hoop-netting, is also popular in Santa Monica Bay. The CDFW specifies a legal season for spiny lobster each year, typically from October through mid-March. Recreational fishing in Block 679 typically peaks in January and February, with a small, secondary peak during the summer.

The proposed project has the potential to adversely affect fishing activity in the project vicinity by: (a) directly harming fished species during project construction and operation; (b) damaging or altering the habitats (e.g., hard- or soft-bottom seafloor, kelp forest) that sustain fished species; (c) causing damage or loss of fishing gear due to entanglement with or snagging on the ground return cables and electrode vaults; (d) damaging fishing gear (such as buoys or traps) during vessel transit; and (e) precluding the use of an established fishing area for the duration of the project.

Potential adverse impacts to fish species and their habitats are discussed in detail in the marine resources section, and will be avoided and/or minimized by **Special Conditions 3 - 14**, which would prevent damage to hard substrate habitats, protect water quality, and minimize impacts from underwater noise.

Fishing Gear Entanglement
Given the current restrictions on commercial fishing activity in the project area, including restrictions on the use of traps and fixed gear, the presence of the ground return cables and electrode vaults on the seafloor would pose little or no risk to gear deployed by commercial fishermen in the near-term. If, in the future, the CDFW were to lift the existing restrictions on commercial fishing activity within Santa Monica Bay, the potential for negative interactions between the project and bottom fishing gear could increase. In addition, the potential exists for bottom-fishing gear used by recreational fishermen to become entangled with the seafloor cables or electrodes.

In order to reduce the risk of such impacts, LADWP has proposed to bury the offshore portions of the ground return cables to a depth of approximately 5 feet in the seafloor sediments, where feasible. The Commission is including **Special Condition 8** in order to incorporate this commitment into this permit. In order to assure that the marine cable sets were successfully buried, and will remain buried over the life of the project, the Commission is also including **Special Condition 4**, which requires LADWP to submit to the Executive Director as-built plans and a cable burial report depicting the installed alignment of the marine cables and indicating the depth of cable burial achieved over the full route, and **Special Condition 9**, which requires LADWP to carry out occasional surveys of the cable route to ensure that the cables remain buried consistent with the as-built plans. The cable surveys shall be carried out following any

event (e.g., reported fishing gear snag, major earthquake or storm) with potential to have shifted or uncovered the cables. In the project EIR, LADWP also proposed to implement **BMP-5**, which would ensure that the position of the electrode array is marked using surface buoys and that the U.S. Coast Guard is notified of the position and as-built characteristics of the electrode array and seafloor cables. This measure is being incorporated into the CDP as a part of **Special Condition 3**. Additionally, the Commission is including **Special Condition 11**, which requires LADWP to submit to NOAA the geographical coordinates of the cables and electrode structures so that NOAA can update its navigational charts for this area of coast. Together, these measures would minimize the risk of fishing gear entanglement with project structures on the seafloor.

In order to minimize the potential for damage to fishing gear during vessel transit, the Commission is including **Special Condition 6**, which requires that project personnel receive training to recognize and monitor for fishing gear, and that marine observers and vessel operators monitor for and avoid fishing gear vessel transit and marine operations.

Preclusion from Fishing Areas
Recreational fishing activities will be precluded from the cable installation corridor and the area around the electrode site during installation and construction activities.

The laying and burial of the ground return cables is anticipated to begin in January 2017, lasting for approximately one month. Installation of the electrode would last approximately four to five months, and would be completed by June 30, 2017. During these periods, an area of varying size around the active work sites and within the anchor spreads of project vessels would be unavailable for commercial and recreational fishing. As described above, due to the extremely limited nature of commercial fishing activities in the area, disruptions related to project construction would not be significant. Moreover, the areas of temporary closure would be very small relative to the total area available for fishing along the Santa Monica Bay coastline. The proposed work periods would partially overlap with the recreational lobster season (typically October – March), but the sandy bottom areas in which the project would take place are not areas that would be targeted by lobster fishermen.

EIR mitigation measure **BMP-6** would commit LADWP to (a) submitting a Local Notice to Mariners to the U.S. Coast Guard and (b) posting notices in local harbor master's offices prior to in-water construction activities. The Commission is incorporating this requirement into this CDP as a part of **Special Condition 3**. This condition will ensure that advance notice of project-related restrictions and closures will be available to local commercial and recreational fishermen with sufficient lead-time to allow those affected to plan their fishing activities for alternate times and locations

Conclusion
With these measures and special conditions in place, the Commission finds that commercial and recreational fishing activities will be protected in accordance with Coastal Act Section 30234.5.

F. COASTAL ACCESS, RECREATION AND VISUAL RESOURCES

Coastal Act Section 30210 states:

> *In carrying out the requirement 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 readily be provided at inland water areas shall be protected for such uses.

Coastal Act Section 30221 states in part:

Oceanfront land suitable for recreational use shall be protected for recreational use and development …

Coastal Act Section 30251 states:

The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas.

The proposed replacement of the marine segment of the SGRS would occur within the nearshore waters of Santa Monica Bay and at an onshore location in close proximity to Will Rodgers State Beach and the Pacific Coast Highway, a major coastal access route. As a result, the proposed project has the potential to adversely affect coastal access, recreation, and visual and scenic resources.

Temporary Onshore Impacts

The marine segment of the existing SGRS originates at the Gladstone Vault, located in a large, 200-space parking lot between the PCH and Will Rodgers State Beach. The parking lot is currently used for paid valet parking serving the beach and Gladstone's Restaurant, and is not open to unpaid, general public use. From the vault, the existing ground return cables pass beneath the parking lot, beach, and surf zone inside a subterranean conduit extending to a point approximately 1,200 feet offshore. Onshore portions of proposed SGRS replacement project include the removal of one of the existing cable sets (in order to make way for the new marine cables) and the pulling of the two new marine cable sets through the existing conduits. Cable replacement activities would occur within and adjacent to the Gladstone Vault, and would require the staging of a cable pulling rig in an existing, 10-foot wide easement in the parking lot near the vault. LADWP anticipates that the cable pulling activities could require the use of an additional 10 parking spaces for a period of approximately one work week (Monday – Friday). The proposed short-term temporary use of these parking spaces within the existing valet lot would only marginally reduce the availability of parking within the valet lot, and would not alter the supply of unpaid, generally-available public parking at this location. The proposed cable pulling activities would also generate up to four truck trips per day over the course of a week. This additional, project-related traffic would not appreciably affect traffic conditions along the

PCH. For these reasons, the onshore portion of the proposed project would not result in significant adverse impacts to public shoreline access, coastal recreation or visual resources.

Offshore Impacts

Project construction would temporarily restrict access to certain offshore areas to recreational boaters, fishermen, and divers for up to 5 months in 2017. However, as discussed previously in Section IV.E, the area of temporary closure would be very small relative to the total area available for recreational boating and fishing along in Santa Monica Bay, with ample area still open for use both up and downcoast of the project site. In order to further minimize project interference with recreational boating, fishing and water sports, LADWP has proposed to implement **BMP-6**, under which LADWP would provide advance notice of all offshore construction activities in a Local Notice to Mariners to be submitted to the U.S. Coast Guard (USCG) prior to the start of construction. In addition, LADWP would post notices of the planned work in local harbor master's offices at least 15 days in advance of in-water construction activities. As discussed above, LADWP also proposes to implement **BMP-5**, which would provide for the position of the electrode array to be marked using surface buoys, and require notification of the USCG of the position and as-built characteristics of the electrode array and underwater cables. The Commission is incorporating these measures into this CDP as a part of **Special Condition 3**. Additionally, the Commission is including **Special Condition 11**, which requires LADWP to submit to NOAA the geographical coordinates of the cables and electrode structures so that NOAA can update its navigational charts for this area of coast. Together, these conditions will ensure that: (a) advance notice of project-related restrictions and closures will be available to local commercial and recreational fishermen with sufficient lead-time to allow those affected to plan their fishing activities for alternate times and locations; and (b) the location of the electrode array would be both visible at the surface and incorporated into nautical charts, minimizing navigational hazards.

Project vessels and equipment used during cable-laying activities would be visible from the beach and shoreline for about a month, but any resulting minor impacts to visual resources would be temporary and insignificant. The large barge and 30-ton crane to be used during the placement of the electrode vaults would be present two miles offshore, and thus, if visible, would result in only minor, temporary changes to coastal views.

Operational Impacts

As discussed above, LADWP anticipates that the SGRS would be operational on only a few occasions each year, and for only brief periods at any given time. The SGRS system would have a total maximum operational time of about 160 minutes during a single event, and it is anticipated that the electrode would be operational an average of about 5 hours per year in several shorter discrete events. Thus, during the vast majority of the time, there would be no electric or magnetic fields generated by the SGRS because no electrical current would be flowing in the facility. Nonetheless, the project EIR states that the system is designed to limit the impacts associated with the release of electrical current at the electrode array during an event triggered by a fault on the PDCI. When operational, the SGRS is designed to maintain an electric field at the exterior of the vaults of no greater than 1.15 volts per meter (V/m) when the SGRS is operating at maximum amperage (3,100 amps), with the strength of the field decreasing rapidly with distance from the array (e.g., to a field of 0.15 V/m at six feet from the vault). These electric field strengths would be below the threshold of 1.25 V/m considered to be safe for

humans in seawater (ICNIRP; IEC Technical Standard 62344:2013). Similarly, the static magnetic fields strengths generated by the SGRS when operational would be below established thresholds for human safety. Combined with the relative inaccessibility of the electrode (100 foot water depth, two miles offshore), the design of the facility would ensure that the operation of the SGRS would not adversely affect public safety or coastal recreation.

Conclusion

As conditioned, the Commission finds that the proposed project would be consistent with the public access, recreation and visual resources policies of the Coastal Act.

G. CULTURAL RESOURCES

Coastal Act Section 30244 states:

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

Historic and cultural resources are 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. Project-related activities have the potential to disturb or damage Native American artifacts and shipwrecks of potential cultural resources value.

The proposed onshore work at the Gladstone Vault would not involve any excavation or ground disturbance, and thus would not adversely the several known cultural resource sites (e.g., prehistoric village sites, historic buildings) in the area. However, in the offshore environment, the disturbance of surface and subsurface sediments during the proposed cable and electrode installation have the potential to disturb, disrupt or degrade prehistoric sites and watercraft and historic shipwrecks found on or within ocean sediments. Searches of shipwreck databases conducted by LADWP indicate that there are five known shipwrecks within three miles of the project site, none of which would be directly affected by project construction. Based on searches of relevant databases and the results of outreach to local Native American tribes, the project EIR also concluded that there were no known archaeological resources or human remains within the project footprint. Underwater side-scan sonar surveys conducted along the proposed marine facility alignment in 2012 did not detect any other shipwrecks, artifacts or archaeological deposits that would be affected by project construction (Fugro 2012).

The available evidence suggests that project construction is unlikely to adversely affect cultural resources in the project area. However, it is possible that previously unknown archaeological deposits or cultural resources could be affected. To minimize the potential for adverse impacts to marine cultural resources, LADWP proposes to implement several best management practices. Under **BMP-3**, if a previously unknown archaeological resource is found during project construction activities, all activities in the immediate area will be suspended, and LADWP will undertake a full review by a project archaeologist, to be followed by the preparation of a mitigation plan and/or the recording and reporting of the discovery pursuant to state law and the CEQA Guidelines. **BMP-4** outlines procedures to be followed in the event that human remains

are discovered during construction, and includes the suspension of project construction in the area of the discovery until the site has been investigated by the County Coroner, the Native American Heritage Commission has been notified, and, if necessary, a plan for the disposition of the remains has been implemented in consultation with Native American representatives. These measures are being incorporated into this CDP under **Special Condition 3** (see **Appendix B**).

The Commission finds that with these measures in place the project will not adversely impact cultural resources and is therefore consistent with Section 30244 of the Coastal Act.

H. California Environmental Quality Act

The LADWP, acting as the CEQA lead agency, certified an Environmental Impact Report for the proposed project on August 2, 2016.

In addition, Section 13096 of the Commission's administrative regulations requires Commission approval of coastal development permit applications to be supported by a finding showing the application, as modified by any conditions of approval, to be consistent with any applicable requirements of the California Environmental Quality Act ("CEQA"). Section 21080.5(d)(2)(A) of CEQA prohibits approval of a proposed development if there are feasible alternatives or feasible mitigation measures available that would substantially lessen any significant impacts that the activity may have on the environment. The project as conditioned herein incorporates measures necessary to avoid any significant environmental effects under the Coastal Act, and there are no less environmentally damaging feasible alternatives or mitigation measures. Therefore, the proposed project is consistent with CEQA.

Appendix A: Substantive File Documents

***Coastal Development Permit Application Materials**:*

Application and Application File for Coastal Development Permit No. 9-16-0384

***CEQA Documents for Project**:*

Los Angeles Department of Water and Power (2016). *Sylmar Ground Return System Replacement Project Final Environmental Impact Report* (State Clearinghouse No. 2010091044), July 2016.

Los Angeles Department of Water and Power (2016). *Sylmar Ground Return System Replacement Project Draft Environmental Impact Report* (State Clearinghouse No. 2010091044), March 2016.

***Other Reports and Resources**:*

BERR (2008). Review of Cabling Techniques and Environmental Effects Applicable to the Offshore Wind Farm Industry. Department of Business Enterprise & Regulatory Reform. January 2008.

Burns & McDonnell Engineering Company, Inc. (2016). *Assessment of the Existing Sylmar Ground Return System Marine Electrode in Santa Monica Bay.* Prepared for POWER Engineers, Inc., Project No. 82701, January 8, 2016.

City of Los Angeles (2003). *Marine Monitoring in Santa Monica Bay: Biennial Assessment Report for the Period July 2001 through December 2002*. City of Los Angeles Environmental Monitoring Division.

Fisher, C. and M. Slater (2010). Effects of electromagnetic fields on marine species: A literature review. Prepared on behalf of the Oregon Wave Energy Trust. Report 0905-00-001. September 2010.

Fugro Consultants, Inc. (2012). *Geophysical Survey Report – LADWP CAT2010, Sylmar Electrode Studies and Design Upgrade Subsea Cable Installation, Santa Monica Basin, California*. Prepared for Burns & McDonnell Engineering Co., June 11, 2012.

Heezen, B.C. (1957). Whales entangled in deep sea cables. *Deep-Sea Research* 4: 105-114.

International Electrochemical Commission (IEC) (2007). Design of Earth Electrode Stations for High-Voltage Direct Current (HVDC) Links. IEC Technical Standard 62344. General guidelines for the design of ground electrodes for high-voltage direct current (HVDC) links. ISBN 2-8318-9094-2, 2007.

Nedwell, J.R., Langworthy, J., and Howell, D. (2003). Assessment of sub-sea acoustic noise and vibration from offshore wind turbines and its impact on marine wildlife; initial measurements of underwater construction of offshore windfarms, and comparison with background noise. Report No. 544R0424, produced for the Collaborative for Offshore Wind Research Into the Environment.

Nedwell, J. R., Turnpenny, A.W.H., Lovell, J. Parvin, S.J., Workman, R. and Spinks, J.A.L. (2007). A validation of the dBht as a measure of the behavioral and auditory effects of underwater noise. Subacoustech Report No. 534R1231.

Schiff, K. (2000). Sediment chemistry on the mainland shelf of the Southern California Bight. *Marine Pollution Bulletin* 40: 267-276.

Weston Solutions, Inc. (2012a). *Assessment of Marine Resources in the Vicinity of the Sylmar Ground Return System Undersea Electrode: Draft Report.* Prep. for Burns & McDonnell Engineering Company, June 2012.

Weston Solutions, Inc. (2012b). *Assessment of Marine Resources in the Vicinity of the Sylmar Ground Return System Undersea Electrode – Literature and Existing Data Review of Human Activities and Infrastructure, Marine Biota, and the Surrounding Environment: Final Report.* Prepared for Los Angeles Department of Water and Power, June 2012.

Wood, M.P. and L. Carter (2008). Whale entanglements with submarine telecommunication cables. *IEEE Journal of Oceanic Engineering* 33: 445-450.

Appendix B: Final EIR Best Management Practices
Incorporated into CDP# 9-16-0384 in Special Condition 3

BMP-2: Pre-Construction Survey

A pre-construction survey utilizing a remotely operated vehicle (ROV) would be conducted to ensure that Project facilities (buried cables and electrode array) would be located within soft-bottom conditions, which is necessary for facilities installation but would also ensure avoidance of rocky reef and kelp habitat.

BMP-3: Archaeological Resources

Should previously unknown archaeological resources be found during project construction activities, all activities shall cease in the immediate area of the discovered resource. A project archaeologist shall be retained to first determine whether the resource discovered is a unique archaeological resource pursuant to Section 21083.2(g) of the California Public Resources Code (PRC) or a historical resource pursuant to Section 15064.5(a) of the CEQA Guidelines. If the archaeological resource is determined to be a unique archaeological resource or a historical resource, the archaeologist shall recommend disposition of the site and formulate a mitigation plan in consultation with LADWP and CSLC that satisfies the requirements of Section 21083.2 of the PRC and/or Section 15064.5 of the CEQA Guidelines. The final disposition of archaeological, historical, and paleontological resources recovered on State lands under the jurisdiction of the CSLC must be approved by the CSLC. If the archaeologist determines that the archaeological resource is not a unique archaeological resource or historical resource, the site will be recorded and the site form submitted to the California Historical Resource Information System (CHRIS) at the South Central Coastal Information Center (SCCIC). The archaeologist shall prepare a report of the results of any study prepared following accepted professional practice and guidelines of the California Office of Historic Preservation. Copies of the report shall be submitted to the CHRIS at the SCCIC.

BMP-4: Human Remains

In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are found, the County Coroner shall be notified within 24 hours of the discovery. No further disturbance of the site or any nearby area reasonably suspected to overlie other remains shall occur until the Coroner has determined, within two working days of notification of the discovery, the appropriate treatment and disposition of the human remains. If the Coroner determines that the remains are or are believed to be Native American, the Coroner shall notify the Native American Heritage Commission (NAHC) in Sacramento within 48 hours. In accordance with PRC Section 5097.98, the NAHC must immediately notify those persons it believes to be the most likely descended from the deceased Native American. The descendants shall complete an inspection of the site within 48 hours of being granted access. The designated Native American representative shall then determine, in consultation with LADWP, the disposition of the human remains.

BMP-5: Marine Location Markings

The position of the electrode array will be marked using surface buoys, and the United States Coast Guard (USCG) and other responsible entities will be notified of the position and as-built characteristics of the electrode array and underwater cables.

BMP-6: Issuance of Notices

Advance notice of construction activities shall be provided to local recreational and commercial boaters and fisherman through the USCG Notice to Mariners regarding the restrictions in the use of the Project area with sufficient lead-time for affected persons to plan for alternate times and places to perform offshore activities. In addition, LADWP shall post notices in the harbor master's offices at least 15 days in advance of in-water construction activities.

BMP-7: Hazardous Materials

As required by the Clean Air Act, Section 401 of the Clean Water Act, the Toxic Substance Control Act, and the Hazardous Materials Transportation Act, all vehicles, vessels, and equipment must be in proper working condition to avoid fugitive emissions or accidental release of motor oil, fuel, antifreeze, hydraulic fluid, grease, or other hazardous materials. To reduce potential for accidental spills and discharges that could impact water and sediment quality during construction, the following are recommended:

- Discharge of hazardous materials during construction activities into the Project area shall be prohibited.
- A comprehensive spill prevention control and countermeasure plan shall be developed that documents management practices that will be enacted to limit the potential for accidental spills.
- An environmental protection plan shall be developed that addresses issues related to storage and handling of fuel, waste disposal, equipment and vessel operation, and field policies.
- All debris and trash shall be disposed of in appropriate trash containers on land or on construction barges by the end of each construction day.

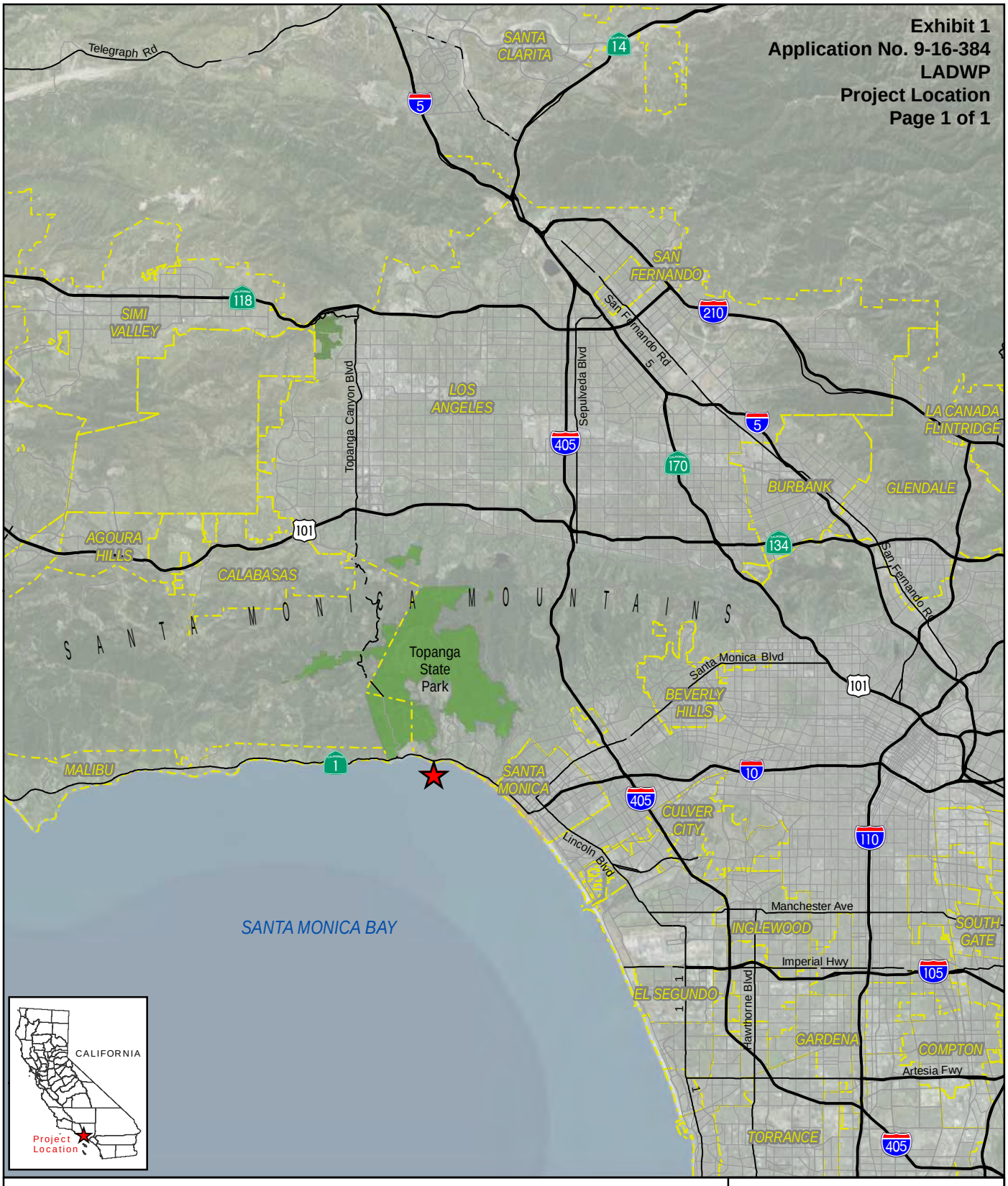


Exhibit 1
Application No. 9-16-384
LADWP
Project Location
Page 1 of 1
Telegraph Rd
SANTA CLARITA
14
5
SAN FERNANDO
210
San Fernando Rd
118
SIMI VALLEY
Topanga Canyon Blvd
LOS ANGELES
Sepulveda Blvd
405
170
5
LA CANADA FLINTRIDGE
BURBANK
GLENDALE
101
AGOURA HILLS
CALABASAS
134
San Fernando Rd
S A N T A M O N I C A M O U N T A I N S
Topanga State Park
Santa Monica Blvd
101
BEVERLY HILLS
MALIBU
1
SANTA MONICA
10
405
CULVER CITY
110
Lincoln Blvd
Manchester Ave
INGLEWOOD
SOUTH GATE
SANTA MONICA BAY
Imperial Hwy
105
EL SEGUNDO
Hawthorne Blvd
GARDENA
COMPTON
Artesia Fwy
TORRANCE
405
CALIFORNIA
Project Location
Project Location
Miles
0 1 2 3 4 5
FIGURE 2-1
REGIONAL LOCATION
SYLMAR GROUND RETURN
SYSTEM REPLACEMENT PROJECT
POWER ENGINEERS
LA DWP
Date: 9/2/2015 Path: H:\127116\DD\GIS\Apps\RDEIR\Figure_2-1_Regional_Location.mxd

Date: 9/4/2015 Path: H:\127116\DDGIS\Apps\RDEIR\Figure_2-2_Existing_Sylmar_Ground_Return_System.mxd

FIGURE 2-2
EXISTING SYLMAR GROUND RETURN SYSTEM

SYLMAR GROUND RETURN SYSTEM REPLACEMENT PROJECT

POWER ENGINEERS

LA DWP

Date: 2/26/2016 Path: H:\127116\DD\GIS\Apps\RDEIR\Figure_2-3_Proposed_and_Existing_Marine_Facility_Location.mxd

Exhibit 3
Application No. 9-16-384
LADWP
Proposed Replacement System
Page 1 of 1

- Proposed Marine Cables
- Existing Marine Cables
- Existing Conduit

0 2,500 Feet

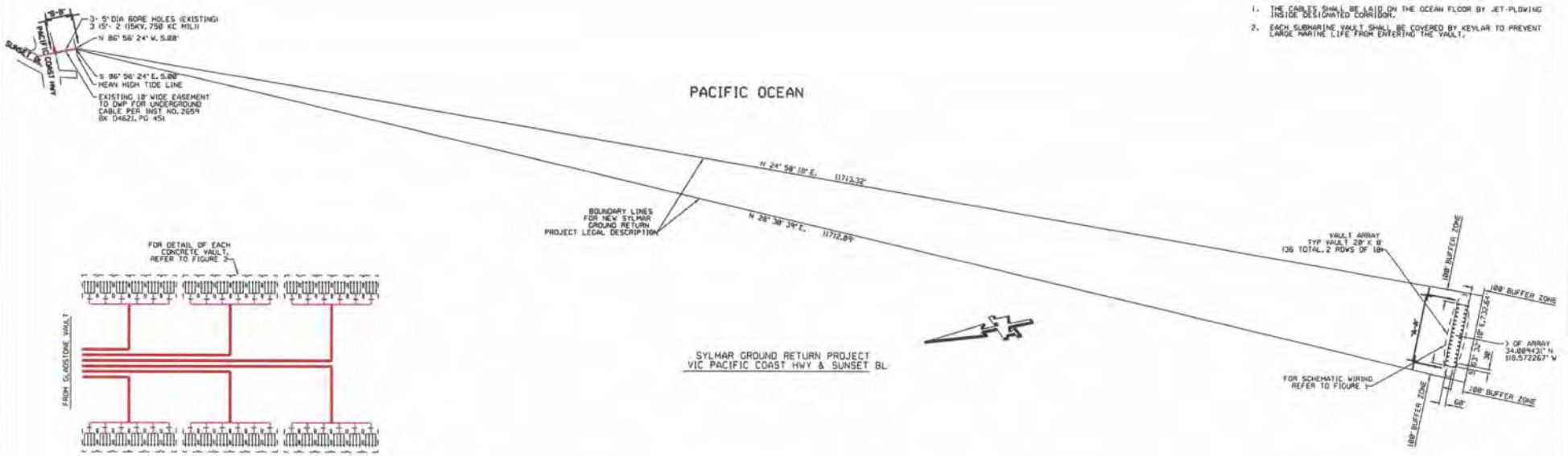
FIGURE 2-3
PROPOSED AND EXISTING
MARINE FACILITY LOCATION

SYLMAR GROUND RETURN
SYSTEM REPLACEMENT PROJECT

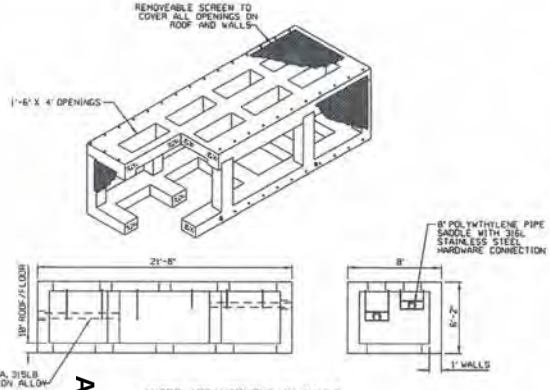
POWER ENGINEERS

LA DWP

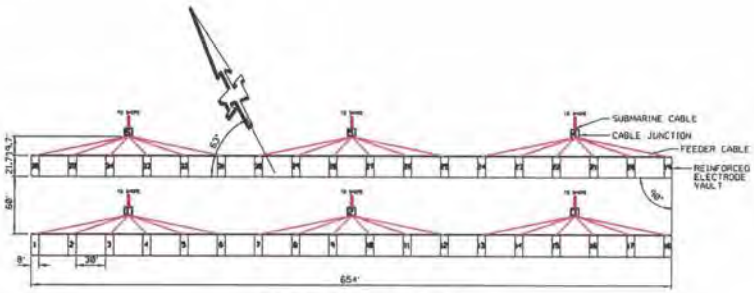
NOTES:
1. THE CABLES SHALL BE LAID ON THE OCEAN FLOOR BY JET-PLOWING INSIDE DESIGNATED CORRIDOR.
2. EACH SUBMARINE VAULT SHALL BE COVERED BY KEVLAR TO PREVENT LARGE MARINE LIFE FROM ENTERING THE VAULT.



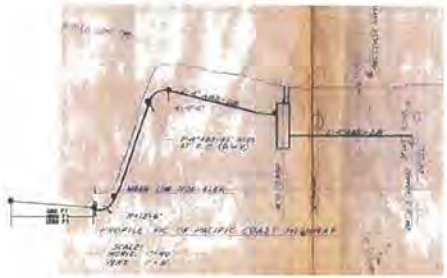
SUBMARINE AND FEEDER CABLES
FIGURE 1



ANODE ARRANGEMENT IN VAULT
FIGURE 2



SEA ELECTRODE ARRAY LAYOUT
SECTION 'A-A'



EXCERPT FROM LADWP DRAWING H-8699 OF EXISTING 5' INSIDE DIAMETER CONDUIT SECTION VIEW
SECTION 'B-B'

EXPECTED CONSTRUCTION COMPLETION 11-30-17

NO.	BY	DATE	APP'D	REVISION DESCRIPTION

CITY OF LOS ANGELES
DEPARTMENT OF WATER AND POWER
POWER SYSTEM ENGINEERING

DESIGN: S. FRIEDLANDER
DRAFTING: DEH
CHECKED:
DATE: 3/14/16

SYLMAR GROUND RETURN PROJECT
VIC PACIFIC COAST HWY & SUNSET BL

15H8020 SHEET 1 OF 1

Exhibit 4
Appl. No. 9-16-0384
LADWP
Project Plans
Page 1 of 3

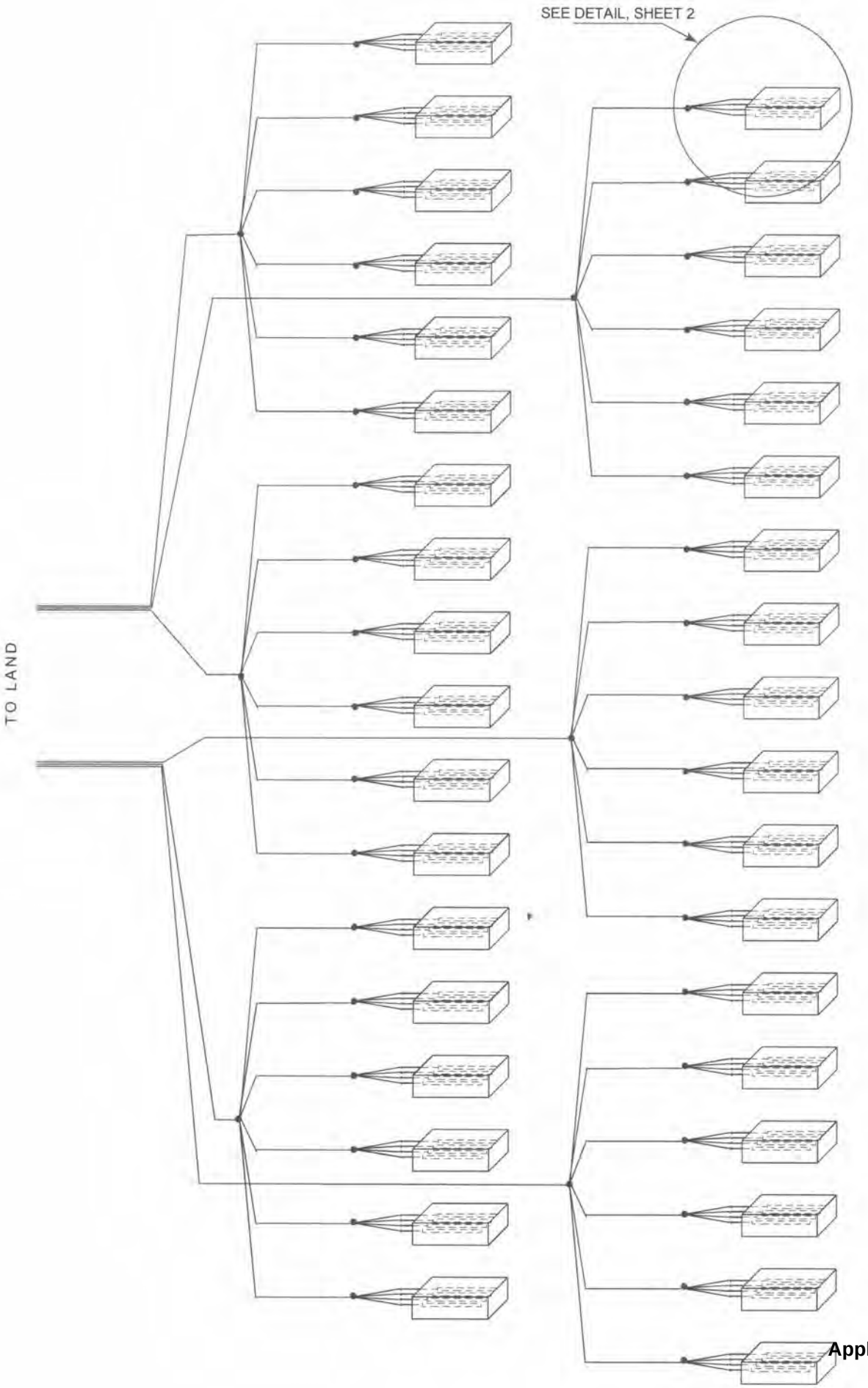


Exhibit 4
Appl. No. 9-16-0384
LADWP
Project Plans
Page 2 of 3

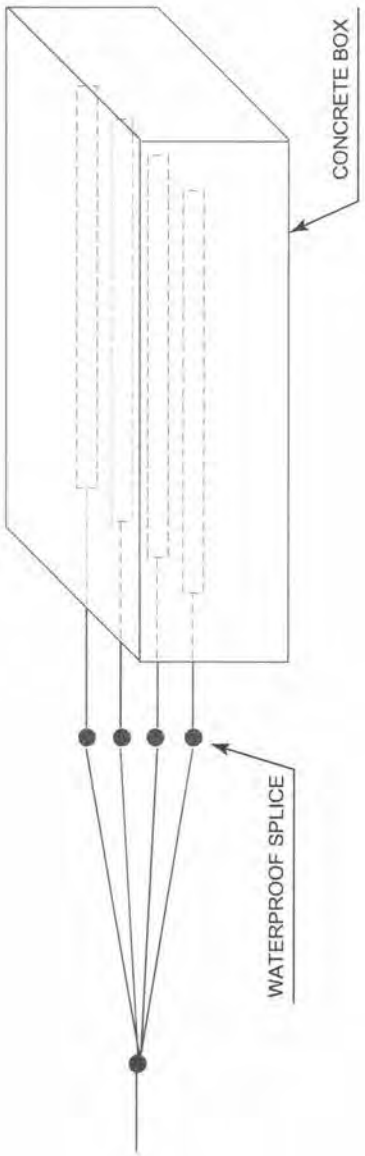


Exhibit 4
Appl. No. 9-16-0384
LADWP
Project Plans
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Exhibit 5
Application No. 9-16-384
LADWP
Project Siting & Marine Resources
Page 1 of 1

Date: 11/3/2015 Path: H:\127116\DD\GIS\Apps\RDEIR\Figure_2-5_Project_Siting.mxd

- Proposed Marine Cables
- Existing Conduit
- Area of Rock Outcropping
- Canopy Kelp
- 2-Mile Radius of Electrode Array

0 — 3,000 Feet

FIGURE 2-5
PROJECT SITING

SYLMAR GROUND RETURN
SYSTEM REPLACEMENT PROJECT

POWER ENGINEERS

LA DWP

Source: NOAA, "Areas Designated as Habitat Areas of Particular Concern (HAPC) for Amendment 19 (Essential Fish Habitat) to the Pacific Coast Groundfish Fishery Management Plan," 2005.
Fugro, Geophysical Suvey Report, LADWP CAT2010, 2012.

Exhibit 6
Appl. No. 9-16-0384
LADWP
Commercial Fishing Restricted Area
Page 1 of 1

Date: 11/13/2015 Path: H:\127116DDIGIS\Apps\EIR_BMFigure_3.6-4_Commercial_Fishing_Restricted_Area.mxd

- Existing Marine Cables
- Proposed Marine Cables
- District 19A Commercial Fishing Restricted Area

0 4 Miles

FIGURE 3.6-4
COMMERCIAL FISHING
RESTRICTED AREA

SYLMAR GROUND RETURN
SYSTEM REPLACEMENT PROJECT

POWER ENGINEERS

LA DWP