United States Department of the Interior
BUREAU OF OCEAN ENERGY MANAGEMENT
Pacific OCS Region
770 Paseo Camarillo, 2nd Floor
Camarillo, CA 93010-6064

September 4, 2014

7300

Memorandum

To: Regional Supervisor, Office of Strategic Resources

From: Regional Supervisor, Office of Environment

Subject: Finding of No Significant Impact (FONSI), ExxonMobil Production Company's 2014 Proposal – Offshore Power Distribution System Project (OPSRB Phase 2) (Leases OCS-P 0182 and OCS-P 0190, Santa Ynez Unit, Santa Barbara Channel, Offshore Santa Barbara County)

The Bureau of Ocean Energy Management, Pacific OCS Region Office of Environment prepared the attached Environmental Assessment (EA) on ExxonMobil Production Company's (ExxonMobil) proposal to improve the reliability of the Offshore Power Distribution System (OPSR-B Phase 2). Based on this assessment, we have determined that the proposed retrieval and replacement of two subsea power cables, as described, will not result in significant environmental impacts. However, while mitigations are provided to minimize effects to the environment, they are not necessary to avoid significant impacts to the environment.

The Proposed Action. The BOEM Office of Strategic Resources (OSR) determined via letter to ExxonMobil on April 23, 2014, that the activities described in the OPSR-B Phase 2 project constituted a revision to the approved Development and Production Plan (DPP) for the Santa Ynez Unit. BOEM shall, based on the review and findings incorporated within this Environmental Assessment (EA), issue a FONSI and subsequent approval on the project and approve a revision to the SYU DPP.

ExxonMobil Production Company's (ExxonMobil) proposal is to replace two of three existing power cables, recover one cable in federal waters and install new electrical equipment for the replacement power cables. ExxonMobil's proposal is to conduct the retrieval and installation of the power cables using a dynamically positioned Cable Installation Vessel, which will not require anchors in federal waters. The proposed offshore cable retrieval and installation component of the project is expected to take up to 2 months.

Summary of Impact Analyses and Conclusions. In the analysis conducted to evaluate the potential environmental impacts of the proposed action, BOEM determined that the following environmental resources potentially could be affected: Air Quality, Water Quality, Benthic Resources, Fish and Essential Fish Habitat, Marine and Coastal Birds, Marine Mammals, Commercial Fishing and Environmental Justice. BOEM assessed the project's potential effects on these resources and performed an analysis of the expected impacts from the proposed project when added incrementally to past, present and reasonably foreseeable projects. BOEM concluded that potential impacts on all resources that could be affected during the ExxonMobil

Marine and Coastal Birds: Artificial lighting associated with night operations could attract marine birds to the project area, several of which may have special-status designations. Effects to birds will be minimized by implementing the lighting mitigation measures identified in the EA. Due to the short duration, location and the time of year the project will be carried out, it is unlikely that any marine bird species will be affected by project-related noise. The implementation of mitigation measures identified in this EA to reduce the effects of artificial lighting on coastal and marine birds is expected to result in these effects being insignificant.

Marine Mammals: The impacts to marine mammals from the proposed power cable laying activities from the risk of vessel strike, entanglement and noise is considered highly unlikely and insignificant. With the commitments by ExxonMobil to provide mitigation measures to protect marine mammals from underwater noise, collisions and entanglements, the proposed project would not result in increased risks, and the proposed action will not have significant impacts on marine mammals.

Commercial Fishing: The effects of the proposed power cable installation activities on major commercial fisheries are considered insignificant and are not expected to result in space-use conflicts or lost fishing time or gear with the mitigations and notifications identified in the EA. ExxonMobil's commitment to notify the U.S. Coast Guard and the Joint Oil/Fisheries Liaison Office prior to initiating activities will further ensure there will be no significant impacts on commercial fishing.

Environmental Justice: The potential impacts to minority and low-income populations from the proposed project are considered to be negligible based on the limited scope and duration of the proposed project; no disproportionately high and adverse human health or environmental effects will occur to minority or low-income populations.

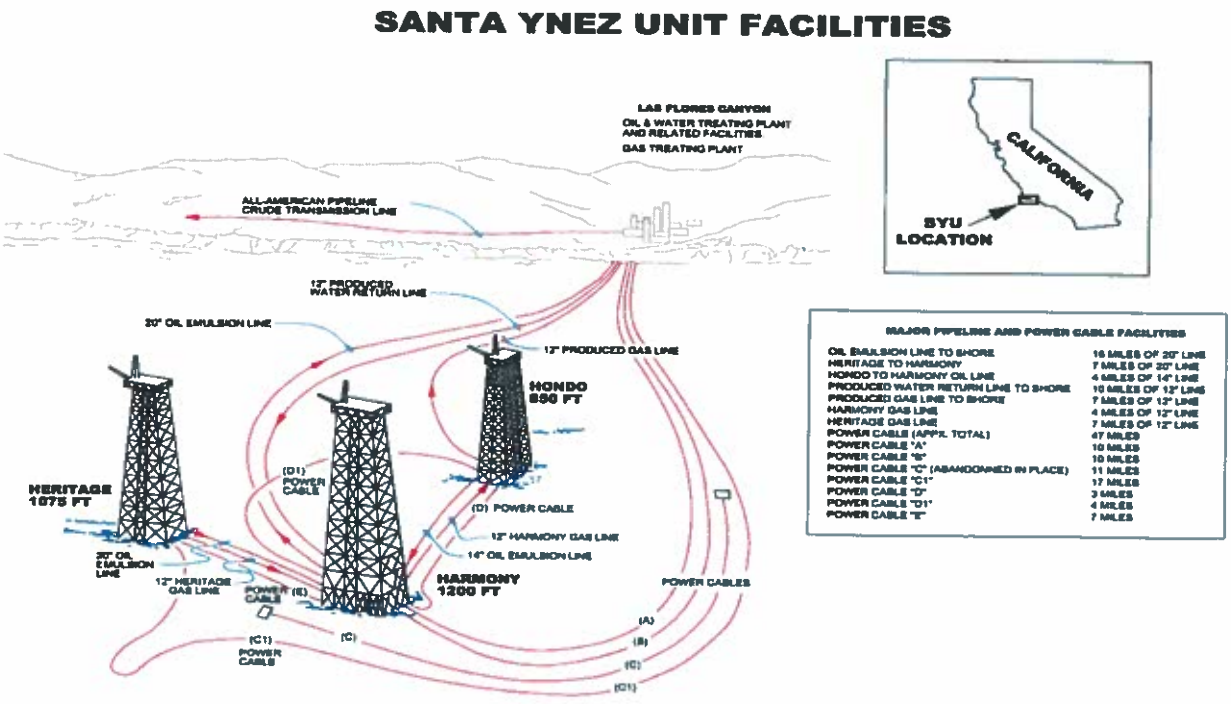
Environmental Assessment

ExxonMobil Production Company's

Santa Ynez Unit

Offshore Power System Reliability-B

(OPSR-B) Project



September 4, 2014

Environmental Assessment (Final)
September xx, 2014

Proposed Action:	Bureau of Ocean Energy Management Concurrence with ExxonMobil's Development and Production Plan Revision Proposal to Replace Two Subsea Power Cables in the Santa Ynez Unit
Operator:	ExxonMobil Production Company
Area:	Lease OCS-P 0182, Santa Ynez Unit, offshore Santa Barbara County, California
Responsible Agency:	Bureau of Ocean Energy Management Pacific OCS Region Office of Environment

Abstract: The Bureau of Ocean Energy Management's (BOEM's) proposed action is to concur with ExxonMobil Production Company's (ExxonMobil) proposal to replace two of three existing power cables, recover one cable in federal waters and install of new electrical equipment for the replacement power cables. ExxonMobil's proposal is to conduct the retrieval and installation of the power cables using a dynamically positioned cable installation vessel (CIV) that will not require anchors in federal waters. The proposed offshore cable retrieval and installation component of the project is expected to take up to 2 months. Environmental resources examined in this Environmental Assessment (EA) are: Air Quality, Water Quality, Benthic Resources, Fish and Essential Fish Habitat, Marine and Coastal Birds, Marine Mammals, Commercial Fishing and Environmental Justice. The primary potential impacting agents are: air emissions, sedimentation, discharges from the repair vessel, turbidity, lighting and noise and space-use conflicts. Projects and activities considered in the cumulative analysis include: on-going federal oil and gas projects, offshore tankering and other shipping, commercial fishing and point source and nonpoint source discharges. No significant impacts are anticipated as a result of the proposed action.

Related Environmental Documents[1]

- ExxonMobil. 2009. Santa Ynez Unit C1CR-2 Cable Repair Activity. Contains Project Description, Mitigations, Environmental Report, and Equipment Descriptions. June 23, 2009.
- Minerals Management Service. (MMS). 2008. Environmental Assessment, ExxonMobil Production Company's Santa Ynez Unit Cable C1 Repair.
- Santa Barbara County and Minerals Management Service. (SBC and MMS). 2003. Mitigated Negative Declaration/Environmental Assessment (MND/EA), ExxonMobil Offshore Power System Repair Project (02-ND-35).

In addition to the project description (ExxonMobil, 2014), ExxonMobil submitted video documentation containing a remotely operated vehicle survey of the seafloor including sonar sweeps, which were used to detect seafloor anomalies such as hard bottom. A map was also submitted which depicted the project area, the proposed location of the laydown area in the

[1] See References Cited

existing pipeline and cable corridor, known hard bottom areas, the location of the existing cables and pipelines and other features.

The EA is available via the following ways:

On the Web: http://www.boem.gov/Pacific-Region

By Mail: Bureau of Ocean Energy Management
Attn: ExxonMobil OPSRB EA (2014)
Office of Environment
770 Paseo Camarillo
Camarillo, CA 93010-6064

For further information contact: David Panzer, Chief, Environmental Analysis Section, BOEM Office of Environment, 770 Paseo Camarillo, Camarillo, CA 93010-6064; Phone: 805.389.7850; email: david.panzer@boem.gov

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1.0 INTRODUCTION

1.1 The Proposed Action

On May 15, 2014, ExxonMobil Production Company (hereafter referred to as ExxonMobil) submitted an application for the Santa Ynez Unit (SYU) Offshore Power System Reliability-B (OPSR-B) Phase 2 project for its SYU operations to the Bureau of Ocean Energy Management (BOEM) Office of Strategic Resources (OSR). BOEM OSR determined via letter to ExxonMobil on April 23, 2014, that the activities described in the OPSR-B Phase 2 project constituted a revision to the approved Development and Production Plan (DPP) for the Santa Ynez Unit. The proposed action involves replacing existing Cable A (or B) which provides electrical power from Las Flores Canyon (LFC) to Platform Harmony with Cable A2 (or B2). Additionally, Cable C1 from LFC to Platform Heritage will be replaced with Cable F2 from LFC to Platform Harmony and Cable G2 from Platform Harmony to Platform Heritage. The out-of-service Cable A (or B) and Cable C1 will be retrieved in state waters from the onshore point at the southern end of LFC to the state-federal jurisdictional boundary (3 miles from shore). The project will utilize a cable installation vessel (CIV) that will be dynamically positioned and will not require the use of anchors.

In order to prepare for the proposed project BOEM[2] required ExxonMobil to conduct geophysical/archaeological surveys to identify potential geological hazards and geophysical profiling as well as to determine any archaeological resources. BOEM prepared a Categorical Exclusion Review (CER) in 2011 (BOEMRE, 2011) on these surveys and approved them on August 23, 2011. ExxonMobil then submitted for approval in 2013 a plan (known as Phase 1) that involved modifications to the electrical systems on Platforms Harmony and Heritage as well as installation of new I-tubes on the legs of the platforms. The Bureau of Safety and Environmental Enforcement (BSEE) prepared an Environmental Assessment (EA) (BSEE, 2013) analyzing the project, concluded that no significant impacts were anticipated and issued a Finding of No Significant Impact (FONSI) for the project on April 18, 2013, with approval to conduct those activities. Phase 1 activities commenced in June 2013 and are expected to be completed in the 1st Quarter 2015. Lastly, a CER was conducted on May 28, 2014, (BOEM, 2014) to evaluate the use of a remotely operated vehicle (ROV) to remove sediment covering the cables adjacent to the J-tubes on Platform Harmony as this activity was not evaluated in the Phase 1 EA. Additionally, as a part of the review for Phase 2, BOEM requested that BSEE conduct a technical review of the proposed revision to the SYU DPP. BSEE did so, replying via email on August 4, 2014, that the project met all their regulatory requirements.

1.2 Purpose and Need

BOEM balances orderly and optimal energy resource development with protection of the human, marine and coastal environment consistent with the requirements of the 1978 Outer Continental Shelf Lands Act (OCSLA), as amended. The OCSLA directs the Secretary of the Department of the Interior to establish policies and procedures that expedite exploration and development of the

[2] In July 2011, the Minerals Management Service was renamed the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE). On October 1, 2011, BOEMRE was reorganized into the Bureau of Ocean Energy Management (BOEM) and the Bureau of Safety and Environmental Enforcement (BSEE). For ease of reference, the new bureau names, BOEM and BSEE, will be used in this document even if the topic under discussion occurred prior to October 1, 2011. However, documents referenced will use the name of the bureau that existed at the time the document was finalized and published.

OCS in order to achieve national energy goals, assure national security, reduce dependence on foreign sources and maintain a favorable balance of payments in world trade. The Secretary's responsibilities under OCSLA have been delegated to BOEM, BSEE and the Office of Natural Resources Revenue. In addition, this project continues to reduce dependence on foreign energy sources that has led to an unfavorable balance of payments and a less secure national economy. A secondary benefit is the collection of royalties, bonuses and rents. These monetary benefits represent a significant source of revenue for the federal government.

ExxonMobil's need is to upgrade and increase reliability of the offshore power distribution system to the SYU to allow the continued development and production of oil and gas resources from the SYU. ExxonMobil's purpose is to continue production of oil and gas from Platform Heritage as well as the entire SYU and achieve an equitable return on investment.

1.3 Decisions to be Made by BOEM and Other Agencies

BOEM: BOEM must decide whether the proposed DPP revisions involving the ExxonMobil SYU OPSR-B Phase 2 cable replacement activities occurring in federal waters are technically and environmentally sound, including proposed mitigations submitted by ExxonMobil as part of the project application and any additional or modified mitigations applied by BOEM, BSEE and other local, state and federal agencies to the project. BOEM can approve, deny or direct the operator to modify its proposed DPP revisions. BOEM shall, based on the review and findings incorporated within the Environmental Assessment, issue a FONSI and subsequent approval on the project and approve a revision to the SYU DPP, which was first approved in 1984.

U.S. Army Corps of Engineers (USACE): USACE must decide whether to issue a Rivers and Harbors Act Section 10 authorization. This will authorize ExxonMobil to conduct work within, or which will affect, navigable waters of the United States, in this case the Santa Barbara Channel. BOEM provided USACE with information on the bureau's consultations with National Marine Fisheries Service (NMFS) to enable USACE to issue a Rivers and Harbors Act Section 10 authorization (see Section 4, Consultation, Coordination and Communication).

National Marine Fisheries Service: The NMFS must decide whether the proposed project would have an effect on Essential Fish Habitat (EFH). BOEM provided a project description and analysis of the project to NMFS on July 21, 2014, via email and subsequent telephone conversation. BOEM informally requested a concurrence from NMFS with BOEM's conclusion that the proposed ExxonMobil OPSR-B Phase 2 power cable replacement project activities would be temporary and have minimal adverse effects on EFH. An email was received from NMFS on July 25, 2014, stating their concurrence with the BOEM assessment of impacts to EFH, and no additional conservation measures are required to avoid, minimize or otherwise offset the impacts to EFH (see Section 4, Consultation, Coordination and Communication).

State Historic Preservation Officer (SHPO): The proposed action meets the definition of an undertaking under Section 106 of the National Historic Preservation Act (NHPA). The SHPO provided a formal consultation for the original SYU construction in 1993 and informally consulted on the first cable repair project in 2002 and again in 2008 and 2009. However, because the federal waters portion of the area of potential effect (APE) for this undertaking on the OCS is located within an area that has been heavily disturbed from previous construction activities and archaeological surveys conducted in 2011 and 2012 did not identify any potential submerged cultural resource features within the APE on the OCS, no further review under Section 106 is required.

Santa Barbara County Air Pollution Control District (SBCAPCD): SBCAPCD must decide how the proposed project would affect the air quality of Santa Barbara County and then determine conformance with the existing PTO for the SYU. SBCAPCD has determined that cable laying projects are exempt from requirements under Rule 202.F.7 if the project is under the 25 tons/year threshold. ExxonMobil has submitted a permit application to SBCAPCD to demonstrate anticipated actual emissions for the project will be below the 25-ton threshold (see Section 4, Consultation, Coordination and Communication).

Connection with the California State Lands Commission's (CSLC) Action

CSLC shall decide whether to issue an amendment to ExxonMobil's existing General Lease – Right-of-Way Use No. PRC 7163.1 to allow for project implementation in State of California submerged lands and waters. CSLC shall provide discretionary approval of the requested amendments to the general lease and previous amendments relating to provisions involving the three power cables (A, B and C) associated with the SYU in the Santa Barbara Channel. CSLC has the authority to deny a requested lease, permit or other approval that may cause either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment. CSLC prepared a Mitigated Negative Declaration (MND) as the lead agency under the California Environmental Quality Act (CEQA) to analyze and disclose the potential environmental effects associated with the ExxonMobil SYU OPSR-B Phase 2 project. The MND was issued for public comment on May 30, 2014, and finalized on July 28, 2014.

This EA specifically covers the federal waters portion of the project. As such, there are distinctions between the National Environmental Policy Act (NEPA) and the CEQA processes and approaches to environmental protection. For example, the MND emphasizes potential environmental effects occurring close to shore, such as construction lighting and noise that affects people on the beach or on the highway. In contrast, the EA examines the same impacting factors but only, for example, as they may affect seabirds offshore. Similarly, due to differing policy approaches, the MND and EA may apply mitigations differently to the same impacting factor and environmental resource (e.g., marine mammal observers are not required by BOEM but are by CSLC). Because this EA is silent on the environmental mitigations required by the CSLC in the MND, the extent of direct conflict is minimal between these approaches. That is, if BOEM does not require a specific mitigation which is required by the CSLC, ExxonMobil may still carry out that mitigation in federal waters. Furthermore, the federal government can neither require ExxonMobil to carry out mitigations contained in the MND (in state waters) nor enforce ExxonMobil's compliance with them. However, in cooperation with BSEE, BOEM will ensure that ExxonMobil complies with the mitigations given in this EA for federal waters.

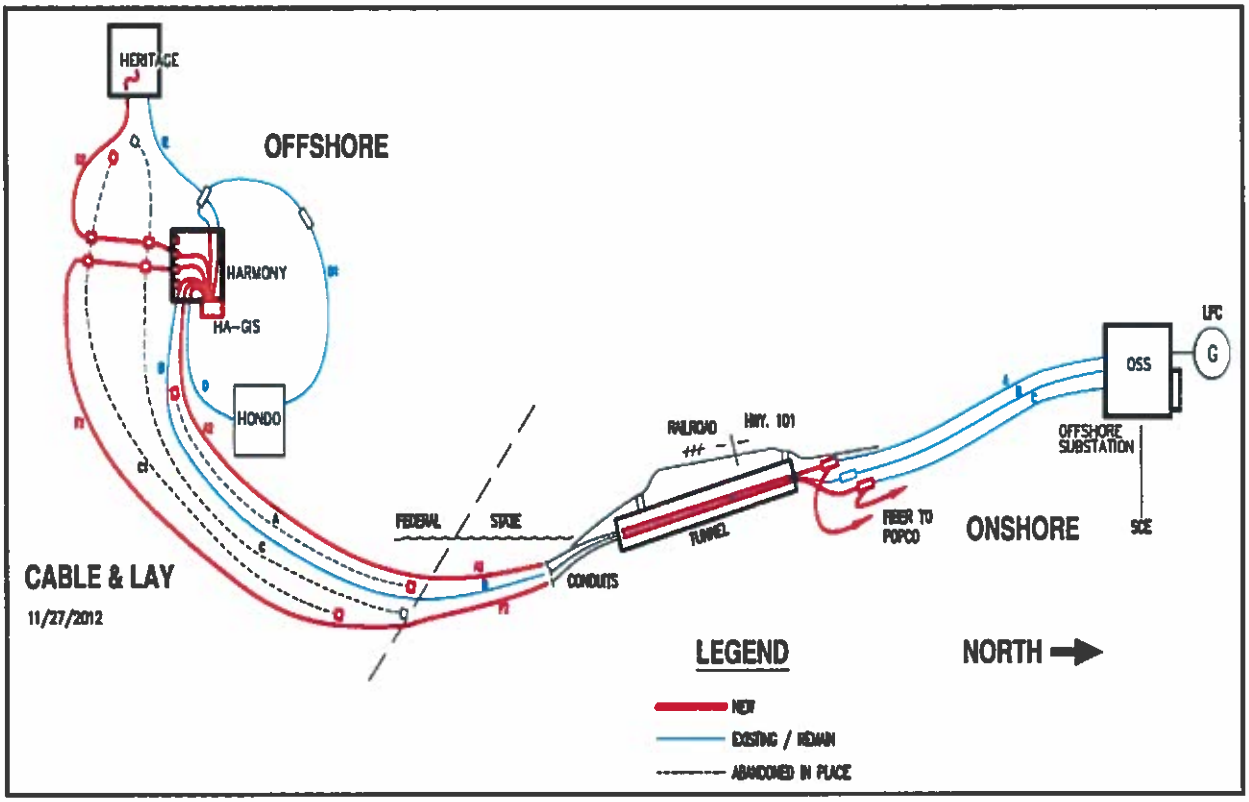
1.4 Description of the Proposed Project

1.4.1 Background Information and Description of Existing Facilities

ExxonMobil's SYU offshore facilities include three OCS platforms—Hondo, Harmony and Heritage—and a series of connecting pipelines and power cables. Six offshore power cables provide electricity to and between the three platforms (Figure 1.1). Three power cables (A, B and C1) provide power to the platforms from the LFC substation and cogeneration facility. Cables A and B connect to Platform Harmony, while Cable C1 connects to Platform Heritage. Cables D and D1 provide power from Harmony to Hondo, while Cable E connects Harmony to Heritage. Cable C1 was installed in 2003 from LFC to Platform Heritage following the failure of cable C. The failed Cable C was removed from the onshore splice to the state lands/OCS boundary and

from Platform Heritage to a point some several hundred feet to the south of the platform. The remaining section of Cable C in the OCS has been left in place until the decommissioning of the SYU offshore facilities occurs. The new Cable C1 was installed from the splice in LFC to Platform Heritage.

Figure 1.1 Santa Ynez Unit OPSR-B Project Components.



Red Cables A2 (or B2), F2 and G2 will be installed replacement cables. Blue Cables B (or A), D, D1 and E are existing cables that will remain in operation. Black dashed Cables A (or B), C1 and C will be abandoned in place. Cables A (or B) and C1 will be retrieved in tunnel, conduits, state waters and adjacent to platforms. (Source: ExxonMobil 2013a)

In November 2007, a cable insulation failure occurred in Cable C1. After a short power outage and temporary production disruption on Platform Heritage, the power to the platform was restored by isolating the failed circuit and switching power to Cable E, which runs from Platform Harmony to Platform Heritage. In October 2008, Cable C1 was repaired by removing the faulted section and installing a new cable section with two subsea splices. Similarly, in April 2009, Cable C1 again experienced a fault in one of the three phases. After a short power outage and temporary production disruption on Platform Heritage, the power to the platform was restored by isolating the failed circuit and switching power to Cable E, after which Cable C1 was again repaired. Both of these repair projects were assessed by BOEM and BSEE under NEPA via EAs (MMS, 2008; 2009)

Circuit C1 (land cable and submarine Cable C1) begins as a buried, land-based cable (approximately 5,100 ft (1,554 m) long) and transitions to a submarine cable approximately 200 ft (61 m) north of the cable/pipeline tunnel that extends beneath Highway 101 and the railroad tracks about 800 ft (244 m) north of the shoreline at the south end of LFC. The south end of the tunnel contains a 12 in (0.3 m) diameter conduit for the cable that is buried across the beach and surf zone and ends approximately 1,000 ft (305 m) away in about 25 ft (8 m) water depth. From

the end of the conduit, the cable is laid directly on the seafloor to the J-tube on Platform Heritage.

1.4.2 Project Description

The OPSR-B Phase 2 project includes the replacement of two of the three existing onshore LFC-to-platform power cables, retrieval of cables in state waters with the retrieval of two cable sections adjacent to Platforms Harmony and Heritage with an option to recover additional cable from Harmony to allow for unrestricted installation of the replacement cable in federal waters (Figure 1.2). All of the cables will be installed with a dynamically positioned CIV that will not require anchors. A ROV will be used to monitor selected phases of the subsea installation operations.

The OPSR-B Phase 2 Project Principal Elements

1. Retrieving a 5 mile (8 km) section of power Cable A (or B) and C1 from an onshore point at the southern end of LFC to the state-federal boundary (approximately at the OCS shelf break).
2. Retrieving a 1-6 mile (1.6-9.6 km) section of power Cable A (or B) at and adjacent to Platform Harmony. An additional section of Cable A (or B) may be retrieved from the state-federal boundary to the platform to allow for more unrestricted route access for installing the replacement cable.
3. Retrieving a 1-2 mile (1.6-3.2 km) section of power Cable C1 adjacent to Platform Heritage.
4. Installing 10.3 miles (16.6 kilometers) of replacement power Cable A2 (or B2) between Platform Harmony and the southern end of the onshore LFCPF.
5. Installing 11.2 miles (18.0 kilometers) of replacement power Cable F2 between Platform Harmony and the southern end of the onshore LFCPF. (The selected route will be chosen after detailed review of survey data and installation plans.)
6. Installing 7.3 miles (11.7 kilometers) of replacement power Cable G2 between Platform Harmony and Platform Heritage. (The selected route will be chosen after detailed review of survey data and installation plans.)

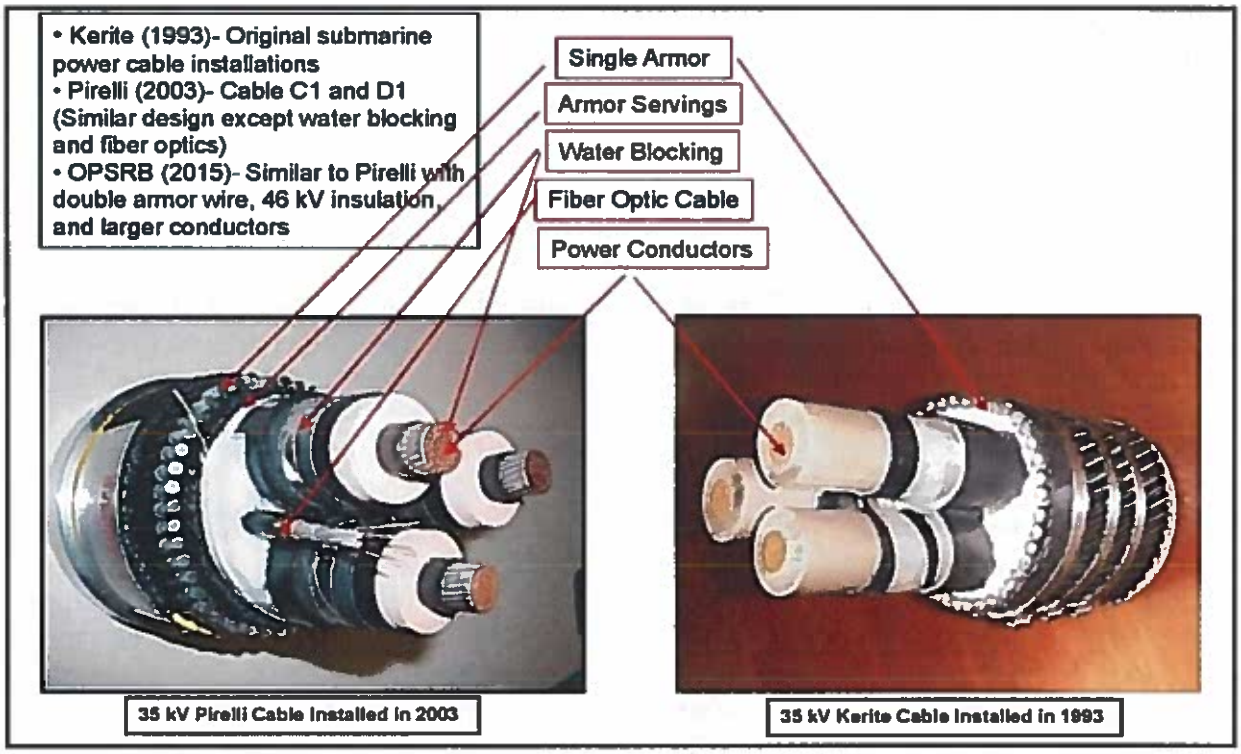
The OPSR-B Phase 2 Project-Specific Components

At Platform Harmony, three risers (two new I-Tubes and one existing J-Tube) will be available for installation of Cables F2, G2 and A2 (or B2). During final construction planning, the decision will be made as to which riser to use for each submarine cable. The proposed installation plan is based on laying each replacement cable with no crossings of in-service or other replacement cables; however, a replacement cable may need to be laid across another in-service or other replacement cable near Platform Harmony due to the requirement to use an alternative riser. At Platform Heritage, the existing Cable C1 J-Tube will be reused for installation of Cable G2.

For Cables A2 (or B2) and F2 at Platform Harmony, a gauging pig and/or other cleaning device will be pulled through each riser to verify that there are no restrictions prior to pulling the replacement cable up the platform riser. On the platform, the selected cleaning device will be installed ahead of the platform winch wire. The platform winch wire and device will be pulled through the platform riser to the CIV by the vessel winch and inspected. During these operations, the CIV will be positioned adjacent to the platform. After these operations are completed, the replacement cable (F2 and A2 [or B2] in separate operations) will have a pulling head attached.

The ROV deployed from the CIV will assist in the transfer of the platform winch line in the platform riser to the CIV winch line where the platform winch line will be attached to the cable pull head. The platform winch will then pull the cable up the riser as it is being released by the CIV. The cable will be secured on the platform to a cable-hanging assembly. After inspection and testing, the submarine cable will then be spliced to the topsides power cables and fiber optic cables on the platform.

Figure 1.2 Power Cable Components.



Source: ExxonMobil, 2013a

The CIV will then lay the replacement power cable on the ocean bottom from the platform to the nearshore area in the identified route. Cable F2, when installed in the long I-Tube, will include an unsupported catenary from the end of the tube to the touchdown point. Additional cable protection system components such as bend stiffeners or vortex-induced vibration reducers (if required) could be installed at the bottom of the riser. Maintenance of the catenary shape could require the installation of bags containing sand or other material at the Cable F2 catenary touchdown near Platform Harmony. Cables installed in the existing J-tubes will be laid directly on the sea floor after exiting the bell mouths. A special protective duct technology product (URADUCT) will be applied to the replacement cable in the areas where an in-service, replacement or out-of-service cable is crossed to ensure the maintenance of an appropriate separation between the cables, as well as provide impact and abrasion protection.

State Waters Activities.[3] The cable installation route will include the crossing of the POPCO gas pipeline in approximately 75 ft water depth. At the pipeline crossing, concrete blocks were

[3] This and the following two paragraphs describe activities that occur in state waters. The description is included to provide continuity for reader since the activities themselves are not included in the environmental analyses of this EA.

installed below the power cables to separate the pipeline from the cables and above the installed cables to hold the cables in place. Prior to installation of the replacement cables, divers will have cleared the area and removed the concrete blocks above the out-of-service cable. The replacement cables will be laid in the same general area as the retrieved out-of-service cable using the existing separation from the pipeline. As the replacement cables are being installed, divers or an ROV will verify that the cables are in the correct location.

After installation of the cables, one of two alternative approaches will be used to cover the installed cables with concrete blocks (or mats). In the first approach, divers would replace any out-of-position blocks and then move blocks from the temporary storage area to a location above the installed cables. If any additional blocks are required to cover the openings, they would be of similar size and shape and obtained from the dive support vessel. In the second approach, the CIV would return to the area and use an ROV, potentially with diver support, to replace any out-of-position blocks or remove them via sling to a vessel. The CIV supported by an ROV or divers would then place an articulated concrete mat on top of the replacement cable openings. An ROV or divers will monitor the placement and verify the position of the mat.

As the vessel approaches the conduit terminus area, the length of replacement cable to traverse the distance to the LFCPF splice point will be measured. The cable will be cut, the end prepared and floats attached to the cable as it is reeled overboard. Divers will be used to remove the conduit plug, excavate any material that may have refilled the area around the conduit terminus using the same procedures as before. The divers will also help guide the cable into the conduit opening and monitor the pulling activity. The cable length will be floated on the ocean surface. Divers will attach the previously installed winch wire from the winch at the LFCPF to the pull head at the cut end of the floating submarine cable. The winch will pull the replacement submarine cable from the CIV through the conduit and tunnel to the splice location where the splice between the land-based onshore and submarine cables will be performed. The cable is only expected to touch the sea bottom in the area immediately in front of the conduit (approximately 25 to 50 feet). Divers will remove the floats on the cable close to the conduit terminus and on the final straight section. Small motor craft will aid in the installation by maintaining the floating cable in the proper orientation and collecting the removed floats. After installation, divers or an ROV will determine the installed position of the cable in the nearshore area.

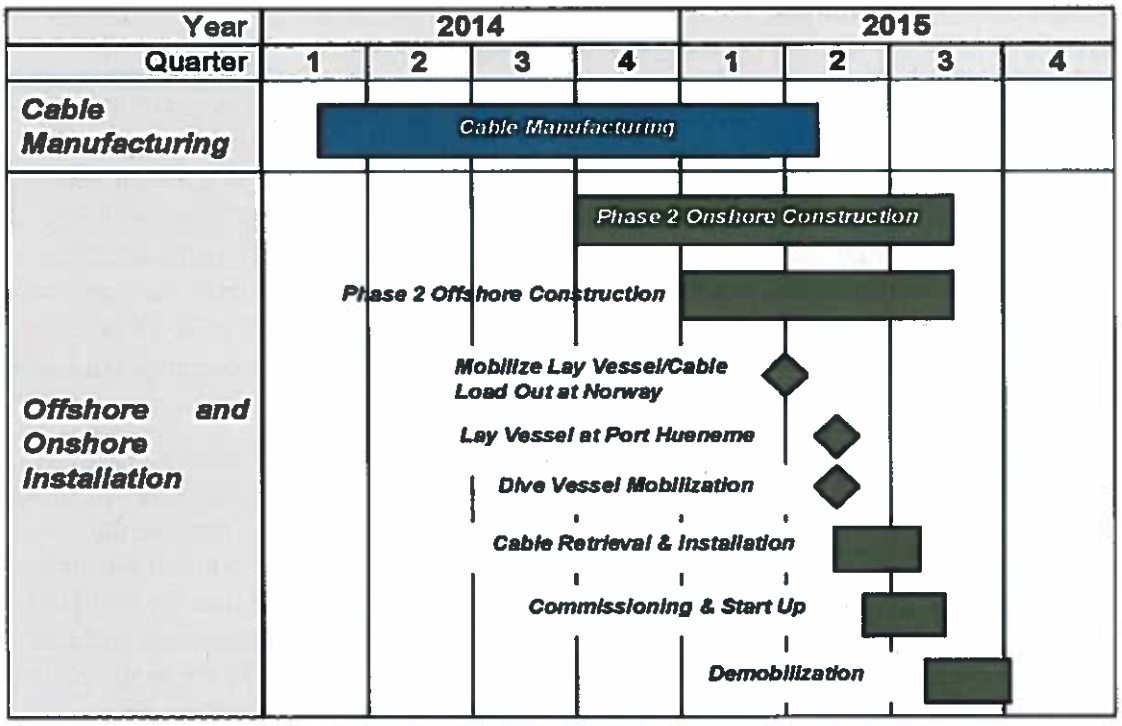
The newly installed cables will be tested prior to making final cable connections. Upon completion of the testing of the cable and cable interconnection to the switchgear, energization preparations will begin. Energization plans will be reviewed, the cables will be energized, and platform power distribution systems will be properly configured for load balance. In close coordination with production operations, circuit energization and power flow monitoring will begin as the platform load is transferred to the new cables.

Project Construction Schedule. Under the current schedule, the retrieval of the out-of-service onshore segments and installation activities is expected to begin by late 2014 and continue through 2015 (Fig. 1.3). The offshore cable retrieval and installation activities utilizing marine vessels will occur over about a two-month period during 2Q2015 to 3Q2015.

The work associated with the excavation and trenching will generally be conducted during daytime shifts (12 to 14 hours/day). Work associated with the retrieval and installation of the

cables as well as the splicing is expected to be conducted on a 24-hour-per-day basis. The work associated with offshore construction will also be conducted on a 24-hour-per-day basis.

Figure 1.3 OPSR-B Phase 2 Project Components.



Source: ExxonMobil, 2013a

1.5 Scope of Environmental Resources

Environmental Resources Included in the EA. The BOEM followed a multi-step process in conducting the environmental analysis presented in this EA. The first step involved conducting an initial screening analysis to determine the resources that are in the project area and potentially could be impacted by the proposed activities. This was accomplished by reviewing the marine and coastal resources that were considered in the Santa Ynez Unit Development and Production Plan (Exxon. 1982a); Environmental Report supporting the Development and Production Plan for the Santa Ynez Unit Development (Exxon. 1982b); the original 1984 FEIS-EIR Exxon Santa Ynez Unit (MMS, 1985); SYU Modification EA which was a DPP revision to the original SYU DPP to use a dynamically positioned vessel to install cable (MMS,1991); and the 2003 MND/EA (SBC and MMS, 2003) which described the repair and laying of the Cable C1. Resources were also identified from the 2005 EA written for the repair of the Platform Hillhouse-to-shore power cable (MMS, 2005). Based on this examination and review of the proposed project, BOEM determined that the following environmental resources could be potentially impacted:

- Air Quality: Potential impacts to due to emissions from CIV, support vessels and associated equipment.
- Water Quality: Potential impacts to due to disturbance of sediments during the cable retrieving and laying processes and discharges of wastes from the repair and support vessels.
- Benthic Resources: Potential impacts due to disturbance of seafloor habitats.

- Marine Mammals: Potential impacts due to underwater noise generated by cable retrieval and installation activities, the risk of entanglement in a mooring line or in the deployed cable, or of a collision between a marine mammal and a vessel.
- Marine and Coastal Birds: Potential impacts due to project-generated noise and artificial lighting associated with the CIV.
- Fish Resources and Essential Fish Habitat: Potential impacts due to bottom disturbance and increased turbidity from cable installation activities and electromagnetic fields.
- Commercial Fishing: Potential impacts due to (a) preclusion from fishing grounds during cable installation activities, (b) damage and loss of fishing gear, and (c) lost fishing time due to (a) and/or (b).
- Environmental Justice: Required by Presidential Executive Order.

Environmental Resources Not Included in the EA. BOEM also determined which environmental resources would not be potentially impacted from the cable installation activities. The following resources were not included for analysis in this EA because they are not in the project area and/or would not be affected by the activities: Cultural Resources, Marine Turtles, Intertidal Resources, Marine Transportation, Wetlands, Refuges, Preserves and Marine Sanctuaries and Recreation and Tourism.

1.6 Projects and Activities Considered in the Cumulative Analysis

A cumulative impact analysis has two parts: (1) development of a cumulative scenario specific to the proposed project area and an assessment of cumulative impacts from past, present and reasonably foreseeable projects, and (2) an analysis of the expected impacts from the proposed project when added incrementally to the cumulative scenario developed in (1) above. This section provides a brief description of projects that were considered in the analysis of cumulative impacts in this EA. Each project or other anthropogenic or natural event with which the proposed project could have cumulative impacts was evaluated using the following criteria (40 CFR 1508.7):

- The project/event should be *reasonably foreseeable*, which is defined as those for which formal applications have been approved, submitted or are pending; and
- The project/event could have *impacts in space (geographically)* that co-occur with the proposed project; or
- The project/event could have *impacts in time (temporally)* that co-occur with the proposed project.

Two types of projects were considered: (1) approved and pending energy projects, and (2) other non-energy projects and activities that occur or may occur in the vicinity of the SYU OPSR-B Phase 2 cable project. All of the projects described are located in the Santa Barbara Channel offshore Santa Barbara County.

Federal Offshore Energy Projects. Future oil and gas activities on existing federal OCS leases are described below but are limited to activities occurring on existing platforms. No new offshore energy projects are reasonably foreseeable this time.

Activities Occurring on Existing Platforms: There are 23 oil and gas platforms located on the federal OCS. Nineteen of the platforms are located off the coasts of Santa Barbara and Ventura counties. Activities that could overlap with the proposed project are limited to drilling on Platform Harmony as well as routine production operations at the Santa Ynez Unit platforms

(Hondo, Harmony and Heritage) and accidental oil spills from these platforms. Routine operations involve air emissions, discharges of permitted effluents and transportation of personnel and supplies by crew and supply boats and helicopters. Accidental oil spills may occur during the short timeframe of the proposed project and will be responded to according to ExxonMobil's approved Oil Spill Response Plan.

State Offshore Energy Projects. There are three state offshore energy projects in various stages of application. None extend into federal waters or are expected to overlap temporally with the proposed project due to its short-term nature (an estimated 25 days including transit time) and so are not considered further in this analysis. The projects are:

- Resumption of State Lease PRC-421 Development – Installation of new production equipment and reactivation of the oil well on Pier 421-2 and reactivation of the former injection well on Pier 421-1 for disposal of wastewater and natural gas.
- Venoco PRC 3150 Oil and Gas Development Project (Paredon Project) – Development of State Leases 3150 and 3133 using extended-reach drilling from the existing Carpinteria Oil and Gas Processing Facility in the City of Carpinteria.
- Carpinteria Field Re-Development Project – As proposed, Carone Petroleum Corporation (Carone) and Pacific Operators Offshore LLC are seeking approval from the CSLC and BOEM to redevelop State Leases PRC 4000, PRC 7911 and PRC 3133 using extended-reach drilling (ERD) technology to drill wells from federal Platform Hogan.

Non-Energy Projects and Activities

Shipping Activity. Traffic through the Santa Barbara Channel originates at the Ports of Los Angeles and Long Beach and Port Hueneme and from the anchorages of Gaviota, Santa Barbara, Carpinteria, Ventura, Mandalay Beach and El Segundo (ADL, 1985). Approximately 93 percent of the vessels in the Santa Barbara Channel use the Vessel Traffic Separation Scheme (VTSS) (U.S. Navy, 2002). This is an internationally sanctioned set of traffic lanes established for marine safety. The lanes in the Channel are one nautical mile (nm) (1.8 km) wide and the separation zone is two nm (3.6 km). The estimated annual traffic through the Santa Barbara Channel VTSS is 6,000 vessel movements. The Santa Barbara Channel is also extensively used by smaller commercial, fishing and recreational vessels. Accidents and the subsequent spillage of fuel oil is a possibility for vessels transiting the Santa Barbara Channel but no significant spillage has occurred since the VTSS was established.

Commercial Fishing. Commercial fishing occurs at various locations off the coast of southern and central California. The area is biologically productive and there are favorable habitats for commercially important fish species. Fish populations in southern and central California waters support important commercial and recreational fisheries; more than 100 species appear in the landings. The high productivity of the area is conducive to commercial fishing of most gear types, including trawl, hook and line, troll, purse seine, trap and drift and set gill net. Crab and lobster traps are fished heavily in state waters near the project area. Many fishers in the area do not fish for a single species or use only one gear type, but switch fisheries during any given year depending on market demand, prices, harvest regulations, weather conditions and fish availability.

Marine Protected Areas. The 1999 Marine Life Protection Act (MLPA) directed the State of California to design and manage a network of marine protected areas (MPA) in order to protect marine life and habitats, marine ecosystems and marine natural heritage, as well as improve

recreational, educational and study opportunities provided by marine ecosystems. This process has resulted in replacement of the previous system of reserves and ecological reserves that were not standard in regulation or nomenclature. MPAs include state marine reserves, state marine parks and state marine conservation areas that confer different levels of restrictions on recreational and commercial fishing (CDFG, 2008a).

Point Source Discharges. The nearest point source discharge to the proposed project area is from the Goleta waste water treatment plant, approximately 20 miles eastward of the project location. This plant collects and treats wastewater from the cities of Goleta, Santa Barbara and other outlying communities. The plant discharges 4.7 million gallons per day of wastewater at a mixed primary/secondary level of treatment (Southern California Coastal Water Research Project (SCCWRP, 2003)). The outfall runs about one mile out to sea and rests on the seafloor about 95 ft (29 m) beneath the ocean surface.

Nonpoint Source Discharges. The nearest potential sources of nonpoint source pollution are the numerous small and intermittently flowing streams running out of the coastal range along the mainland side of the Santa Barbara Channel. River runoff is difficult to quantify and is seasonally variable. The Santa Ynez River plume, carrying sedimentary material and pollutants, sometimes flows eastward around Point Conception depositing material in the project area, particularly during periods of high flow. Pollutants carried by the plume would be well-diluted but perhaps still detectable by the time of arrival in the project area. Pollutants that could be associated with rivers and streams in the area are predominantly agriculturally based and may include dairy and ranching-related pollutants (for example, animal wastes) and pesticides.

1.7 Environmental Protection Measures Included in the Analysis

Table 1.1 lists the potential impacts, impacting agents, mitigation measures and the residual impact levels expected after the mitigation has been applied. In all cases, the residual impact levels are insignificant.

To track the implementation of the mitigation proposed by ExxonMobil and additional mitigation required by BOEM for the OPSR-B Phase 2 cable replacement project, ExxonMobil will be required to develop a Compliance Monitoring Plan prior to commencement of the proposed activities. The purpose of this requirement is to assure diligent and good-faith compliance with the mitigation measures considered in this Environmental Assessment and in the BOEM approval letter for Exxon's Proposed OPSR-B Phase 2 Project. Exxon will submit copies of the compliance plan to BOEM's Regional Supervisor, Office of Strategic Resources for review and approval by the start of abandonment activities.

The Compliance Monitoring Plan is required to be submitted to BOEM no later than 30 days prior to commencement of the proposed activities and will:

1. Ensure that all required environmental mitigations are accurately identified and described;
2. Identify effective monitoring approaches for implementation of the plan;
3. Ensure that monitoring personnel identified in the compliance plan are properly trained and that this training is documented in the plan;
4. Demonstrate how environmental mitigations will be measured and documented in terms of effectiveness;

5. Include a tracking system and schedule (including specific due dates for deliverable reports, plans, etc.) for all environmental mitigations required for the project; and

In addition, a master list of environmental mitigations will be maintained including due dates and compliance documentation related to the proposed activities.

A post-installation Compliance Summary confirming completion of the work will be submitted to BOEM within 60 days of project completion and will:

- Include a list of the actions and mitigation measures to reduce environmental impact and how compliance with each action/measure was achieved;
- Describe any field changes to the design and execution plans along with justification for the changes;
- Report any accidents or spills affecting OCS waters and corrective measures taken; and
- Relate any other extraordinary conditions that occurred during the course of the installation activities.

Table 1.1. Potential Impacts, Impacting Agents, Mitigation Measures and Residual Impact Level.

Description of Potential Impacts	Impacting Agents	Environmental Protection Measures to Avoid or Minimize Impacts from the Project	Residual Impact Level
Oil Spills Potentially affecting water quality and marine animals	• Spilled oil	*Source: ExxonMobil* • ExxonMobil shall prepare a project-specific addendum to the SYU Oil Spill Response Plan (OSRP) that clearly identifies responsibilities of contractor and ExxonMobil personnel. The plan shall list and identify the location of oil spill response equipment and response times for deployment. The addendum shall be submitted to the BSEE, SLC and SBC prior to commencement of cable installation and retrieval operations. • Contractors shall maintain all petroleum products in contained areas and practice good housekeeping. • All project-related materials shall be loaded at port, to the extent possible. • ExxonMobil shall provide oil spill response training for project and contract personnel. • All vessels will have the appropriate spill response equipment onboard. • Petroleum-fueled equipment on the main deck of all vessels will have drip pans or other means of collecting dripped petroleum, which will be collected and treated with onboard equipment. • All vessels shall be refueled at designated ports or per the prepared refueling plan. • ExxonMobil shall prepare a Critical Operations and Curtailment Plan. • ExxonMobil shall prepare a Cable Release Prevention Plan.	Insignificant
Air Quality Potential violation of ambient air quality standards due to emissions during project activities	• NO_x emissions due to the use of propulsion and stationary combustion equipment	*Source: ExxonMobil* • ExxonMobil shall implement the project in accordance with an Emissions Reporting Plan. Limit total actual project actual emissions from the retrieval and installation of the power cables to less than 25 tons of any affected pollutant in a 12-month period, as defined primarily by SBCAPCD Rules 202.F.7 and 202.D.16. • Determine, on a daily basis, fuel use and emissions from the retrieval and installation of the power cable to verify compliance with SBCAPCD rules and regulations. • Require installation vessels and internal combustion engines to use ultra-low	Insignificant

Description of Potential Impacts	Impacting Agents	Environmental Protection Measures to Avoid or Minimize Impacts from the Project	Residual Impact Level
		sulfur fuel (15 ppm S). • Prepare a contingency plan for the scenario where the total project emissions of any affected pollutant, except CO, are projected to exceed 80% of the above 25 ton/year limit. *Source: BOEM* • Daily Emissions Reports – ExxonMobil to provide daily emissions reports during the course of the offshore cable retrieval and installation activities (within 25 miles of SYU facilities) to BSEE and SBCAPCD. • Post-project Emissions Report – At the conclusion of the repair activities, prepare and submit a report to the SBCAPCD (copy BSEE) summarizing the total actual repair activity emissions.	
Water Quality Degradation of water quality from increased turbidity and discharge of effluents from project vessels	• Increase in sediment and organic material in water column during the repair procedures	*Source: ExxonMobil* • If required, ExxonMobil shall provide results of samples taken of the seawater in the existing J-tubes and other information to EPA in order to receive permission to conduct flushing. *Source: BOEM* • Contractors shall use a dynamically positioned vessel to retrieve and install power cables.	Insignificant
Benthic Resources Degradation of benthic habitat from manipulating the cable on the seafloor	• Potential increase in turbidity in the water column during the repair procedures • Direct physical disturbance to seafloor habitats including both soft and hard bottom	*Source: ExxonMobil* • Contractors shall use a dynamically positioned vessel to retrieve and install power cables. • ExxonMobil shall require contractors to utilize an ROV to monitor and videotape selected portions of the installation activities during the cable lay operations. If the ROV observes a rocky outcrop, the ROV shall assist the dynamically positioned vessel in adjusting its route to avoid a feature, whenever it is feasible to do so. Activities that shall be videotaped with a copy provided to agencies include cable lying along the route in water depths were rocky habitat is suspected. • ExxonMobil shall provide, under safe conditions, the permitting agencies access to the site, during installation and installation-related activities, including but not limited to, the cable laying vessel and support vessels.	Insignificant Insignificant

Description of Potential Impacts	Impacting Agents	Environmental Protection Measures to Avoid or Minimize Impacts from the Project	Residual Impact Level
		Agency biologists may observe the extent, distribution and type of habitat that could be present near anchors or in the path of the proposed power cable. In the event that rocky habitat is observed during cable installation, the applicant shall adjust its anchors or operations, if at all possible, to avoid the habitat or notify the appropriate regulatory agencies for further direction if rocky habitat is unavoidable. All agency personnel on ExxonMobil contracted vessels shall be advised of and adhere to ExxonMobil safety requirements. • ExxonMobil shall conduct a post-construction ROV video survey, with voice overlay, along the length of the completed cable installation in federal waters to verify the as-built condition of the cable. Such survey shall also include the entirety of the area affected by the proposed project, including all anchor locations, to confirm seafloor cleanup and site restoration.	
Fishes and EFH Disturbance of fishes and their habitat	• Bottom disturbance and increased turbidity	*Source: BOEM* • ExxonMobil shall select contractors who shall use a dynamically positioned vessel to retrieve and install the replacement power cables from nearshore to Platform Harmony and between Platforms Harmony and Heritage. • ExxonMobil shall require contractors, whenever feasible, to utilize appropriate installation techniques that minimize or avoid environmental impacts such as turbidity. • ExxonMobil shall require contractors to utilize an ROV to monitor and videotape selected portions of the installation activities during the cable lay operations. If the ROV observes a rocky outcrop, the ROV shall assist the dynamically positioned vessel in adjusting its route to avoid a feature, whenever it is feasible to do so. Activities that shall be videotaped with a copy provided to agencies include cable lying along the route in water depths were rocky habitat is suspected. • ExxonMobil shall provide, under safe conditions, the permitting agencies access to the site, during installation and installation-related activities, including but not limited to, the cable laying vessel and support vessels. Agency biologists may observe the extent, distribution and type of habitat that could be present near moorings or in the path of the proposed power cable. In the event that rocky habitat is observed during cable installation, the applicant shall adjust its moorings or operations, if at all possible, to	Insignificant

Description of Potential Impacts	Impacting Agents	Environmental Protection Measures to Avoid or Minimize Impacts from the Project	Residual Impact Level
		avoid the habitat or notify the appropriate regulatory agencies for further direction if rocky habitat is unavoidable. All agency personnel on ExxonMobil contracted vessels shall be advised of and adhere to ExxonMobil safety requirements.	
	• Electromagnetic fields	None	Not applicable

Marine Mammals
 	
Underwater noise generated by vessels and other cable installation and retrieval activities
 	
Presence of project-related vessels which could increase the risk of entanglement in an anchor line or in the deployed cable
 	
Collision between a marine mammal and a vessel
	• Injury to a marine mammal	*Source: ExxonMobil*
		• Applicant shall prepare and implement a marine mammal monitoring plan (MMMP) during cable retrieval and installation operations. The plan shall include the following elements:
		  • A minimum of two NMFS-qualified marine mammal observers shall be located on the CIV to conduct observations, with at least one observer on duty during all cable installation activities.
		  • Shipboard observers shall submit a daily sighting report to NMFS and BSEE. This report shall be used to determine whether observable effects to marine mammals are occurring.
		  • The observers shall have the appropriate safety and monitoring equipment to conduct their activities (including night-vision equipment).
		  • The observers shall set a 1,640-ft (500-m) radius hazard zone around the CIV for the protection of large marine mammals (i.e., whales) and shall have the authority to stop any activity if it appears likely that a whale could enter the hazard zone.
		  • Applicant shall immediately contact the Santa Barbara Marine Mammal Center for assistance should a marine mammal be observed to be in distress. In the event that a whale becomes entangled in any cables or lines, the observer shall notify the Santa Barbara Marine Mammal Center and required agencies, so appropriate response measures can be implemented. Similarly, if any take involving harassment or harm to a marine mammal occurs, the observer shall immediately notify the required regulatory agencies.
		  • The vessel captain shall have the final authority on vessel operations to ensure the safety of the vessel, its equipment, and the people on board and shall cooperate with the observers to minimize the potential for damage to marine mammals or the environment. The vessel captain and
			Insignificant

Description of Potential Impacts	Impacting Agents	Environmental Protection Measures to Avoid or Minimize Impacts from the Project	Residual Impact Level
		ExxonMobil project management shall be responsible for ensuring that the OPSR-B MMMP is implemented. • A report summarizing the results of the monitoring activities shall be completed following completion of these activities and submitted to the required agencies. The plan shall be submitted for review to BSEE/BOEM prior to commencement of installation activities. • Applicant shall provide awareness training on the most common types of marine mammals likely to be encountered in the project area and the types of activities that have the most potential for affecting the animals to all project-related personnel and vessel crew prior to the start of installation activities. In addition, the applicant shall require all offshore personnel to view the BOEM-approved Wildlife and Fisheries Training video.	
Marine and Coastal Birds Disturbance of birds by lighting and noise	• Project-generated noise/disturbance • Artificial lighting associated with the cable laying vessel	*Source: ExxonMobil* • Lighting will be directed inboard and downward to reduce the potential for seabirds to be attracted to the work area. • When feasible, all vessel cabin windows will be equipped with shades, blinds or shields that block internal light during nighttime operations. • The onboard monitor will routinely inspect lighted vessels for birds that may have been attracted to the lighted vessels. • If an injured bird is discovered on a vessel, the bird will be transported on the next returning work vessel to an approved wildlife care facility. *Source: BOEM* • ExxonMobil shall make every effort to maintain a distance of 300 feet from aggregations of feeding or resting marine birds. • ExxonMobil shall minimize attraction of predatory and scavenging birds that could prey upon small seabirds attracted to lights (e.g., murrelets, storm-petrels) by carefully containing and removing garbage and food waste on the vessel. • ExxonMobil shall maintain a log of all birds found onboard vessels which are incapacitated (dead or alive) and noting the status and health of birds upon retrieval and release. The log will be provided to BOEM when the project has been completed.	Insignificant

Description of Potential Impacts	Impacting Agents	Environmental Protection Measures to Avoid or Minimize Impacts from the Project	Residual Impact Level
Commercial Fishing Cable repair vessel and associated traffic may preclude fishers from fishing grounds or generate space-use conflicts	• Preclusion and/or space-use conflicts	*Source: ExxonMobil* • ExxonMobil shall keep the JOFLO in Santa Barbara informed of construction activities as they progress. • ExxonMobil shall require all offshore personnel to view the Wildlife and Fisheries Training video and receive wildlife and fisheries training. • ExxonMobil shall file a timely advisory with the local U.S. Coast Guard District office, with a copy to the Long Beach Office of the State Lands Commission, for publication in the Local Notice to Mariners and shall place a similar notification in all Santa Barbara Channel ports that support commercial fishing vessels at least 15 days prior to the commencement of construction activities. • ExxonMobil shall continue to consult with JOFLO and commercial fishermen, as appropriate, during the planning stages and construction to identify and mitigate any unanticipated impacts regarding the OPSR-B project. If the JOFLO determines that conflicts with commercial fishing operations in the SYU area develop during this project, ExxonMobil shall make all reasonable efforts to satisfactorily resolve any issues with affected fishermen. Possible resolutions may include physical modification of identified problem areas on the replacement cables, the establishment of temporary preclusion zones, or off-site, out-of-kind, measures. Evidence of consultations shall be provided to the BSEE, SLC and SBC. • ExxonMobil shall include training on vessel traffic corridors in all pre-construction meetings with project contractors and their personnel.	Insignificant
Repaired cable, lost equipment or other items ("marine debris") and project-related vessel traffic could cause loss or damage to commercial fishing gear	• Damage or loss of fishing gear	• ExxonMobil shall review design concepts and installation procedures with JOFLO to minimize impacts to commercial fishing to the maximum extent possible. • ExxonMobil shall require the contractor to recover any fan channel support, if used, prior to demobilization in the event they escape. • ExxonMobil shall require contractors, to the extent reasonable and feasible, to recover all items lost overboard during activities associated with the proposed project. Logs shall be maintained on the cable installation and support vessels that identify the date, time, location, depth and description	Insignificant

Description of Potential Impacts	Impacting Agents	Environmental Protection Measures to Avoid or Minimize Impacts from the Project	Residual Impact Level
		of all items lost overboard.	
Environmental Justice Disproportionate effects on low income and/or minority populations	• Traffic from passenger vehicles and trucks	None	Not applicable

Plans and Reports		*Source: BOEM*
		• A Compliance Monitoring Plan shall be required no later than 30 days prior to commencement of the proposed activities and will:
		  • Ensure that all required environmental mitigations are accurately identified and described.
		  • Identify effective monitoring approaches for implementation of the plan.
		  • Ensure that monitoring personnel identified in the compliance plan are properly trained and that this training is documented in the plan.
		  • Demonstrate how environmental mitigations will be measured and documented in terms of effectiveness.
		  • Include a tracking system and schedule (including specific due dates for deliverable reports, plans, etc.) for all environmental mitigations required for the project.
		  • A master list of environmental mitigations will be maintained including due dates and compliance documentation related to the proposed activities.
		• A Post-installation report shall be required no later than 60 days of project completion confirming completion of the work in accordance with the following:
		  • Compliance Summary that includes a listing of the actions and mitigation measures to reduce environmental impact how each action/measure was complied with.
		  • Design and execution plans with a description of any field changes, with justification for the changes.
		  • Any accidents or spills affecting the OCS waters and the corrective measures taken.
		  • Any other extraordinary conditions that occurred during the course of
			Not applicable

Description of Potential Impacts	Impacting Agents	Environmental Protection Measures to Avoid or Minimize Impacts from the Project	Residual Impact Level
		the installation activities.	

2.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND IMPACT ANALYSIS

The following environmental assessment focuses on potential project impacts involving the ExxonMobil SYU OPSR-B Phase 2 cable replacement activities occurring in federal waters and whether the proposed DPP revisions are technically and environmentally sound. The CSLC developed a Mitigated Negative Declaration (MND) for the OPSR-B Phase 2 project consistent with the cable retrieval and installation activities occurring in state waters (0-3 miles). That document should be referred to regarding activities in state waters.

2.1 OIL SPILLS

The operation of the primary CIV and the supply and crew vessels supporting the cable retrieval and installation activities involves the use of petroleum hydrocarbons, including small volumes of lubricating oils, hydraulic fluids and waste oils. Spillage of these materials on any vessel could result in their release to the marine environment. The CIV maintains an oil spill response plan and will have spill containment and cleanup equipment on board in the event of local deck spills. If an oil spill to the ocean occurs from the vessel, ExxonMobil will respond and assist the vessel in accordance with its BSEE-approved Oil Spill Response Plan (OSRP) for Pacific OCS Operations. Response procedures for an incident include mobilization of an Onsite Response Team at the platforms and, if necessary, deployment of vessels from Clean Seas, LLC.

The incidental spillage of lubricating oil, hydraulic fluids and waste oil would result in an insignificant impact to the marine environment due to the small volume of such spills, the onsite oil spill response capability and other spill response resources in the immediate area. A large oil spill is not expected from this project because anchors will not be used near any large sources of oil such as the pipeline between Platforms Heritage and Harmony.

Further, ExxonMobil has committed that project vessels will refuel at Port Hueneme. However, due to the short duration (an estimated 1-2 months) of the proposed project, refueling of the primary CIV should not be necessary. Equipment and small boat refueling, if necessary, can be carried out onboard the primary CIV vessel in accordance with vessel procedures and with spill containment equipment immediately available.

Mitigation Measures. Although impacts from oil spills are not expected, ExxonMobil submitted the following mitigation measure as a part of the proposed project which will further reduce and minimize any potential for oil spill impacts from the proposed project:

- ExxonMobil shall prepare a project-specific addendum to the SYU OSRP that clearly identifies responsibilities of contractor and ExxonMobil personnel. The plan shall list and identify the location of oil spill response equipment and response times for deployment. The addendum shall be submitted to the BSEE, SLC and SBC prior to commencement of cable installation and retrieval operations.

2.1.1 Conclusions

Due to the short project time-frame, the lack of a source for a large oil spill and the capability of a response to a spill of any size by ExxonMobil's on-site spill response organization, no impacts from oil spills are expected and oil spills are not further analyzed in this document.

2.2 AIR QUALITY

2.2.1 Affected Environment

The climate, meteorology, air quality and air quality trends of the Santa Barbara County area have been described in detail in several planning and environmental documents and are best summarized in the Santa Barbara County 2010 Clean Air Plan (SBCAPCD, 2010). Santa Barbara County can be described as having a Mediterranean climate characterized by warm, dry summers and cooler mildly damp winters. The unique combination of prevailing wind conditions that are generated by a persistent offshore high pressure system and the topography of coastal mountains result in variations of airflow which are conducive to the formation and retention of air pollutants.

The federal government has established ambient air quality standards to protect public health (primary standards) and, in addition, has established secondary standards to protect public welfare. The State of California has established separate, more stringent ambient air quality standards to protect human health and welfare. California and national standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulate matter 10 microns (PM_{10}), suspended particulate matter 2.5 microns ($PM_{2.5}$) and lead. In addition, California has standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles.

The federal attainment status of Santa Barbara County is found in 40 CFR 81.305. Currently, Santa Barbara County is in attainment of all the National Ambient Air Quality Standards (NAAQS), including the federal 8-hour ozone standard. Santa Barbara County is considered nonattainment for the California Ambient Air Quality Standards (CAAQS) 8-hour ozone and the PM_{10} 24-hour and annual arithmetic mean air quality standards. The attainment status is considered unclassifiable/attainment for the federal $PM_{2.5}$ standard and unclassifiable for the state $PM_{2.5}$ standard.

Section 328 of the 1990 Clean Air Act Amendments (CAAA) transferred authority for air quality on the OCS to the EPA. On September 4, 1992, the EPA Administrator promulgated requirements (40 CFR Part 55) to control air pollution from OCS sources to attain and maintain federal and state air quality standards and to comply with CAAA provisions for the Prevention of Significant Deterioration. The promulgated regulations require OCS sources to comply with applicable onshore air quality rules in the corresponding onshore area (COA). EPA delegated authority to the SBCAPCD on November 5, 1993 to implement and enforce the requirements of 40 CFR Part 55. The full transfer of authority to SBCAPCD to regulate OCS air emissions pursuant to 40 CFR Part 55 transpired on September 4, 1994. ExxonMobil's proposed OPSR-B Phase 2 cable replacement project is located in the OCS, offshore Santa Barbara County within the South Central Coast Air Basin. The SYU offshore facilities include three OCS platforms – Hondo, Harmony and Heritage and a series of connecting pipelines and power cables. All three platforms are currently permitted and within the jurisdiction of the SBCAPCD.

Greenhouse gases (GHGs) are defined as any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include, but are not limited to, water vapor, carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). These greenhouse gases lead to the trapping and buildup of heat in the atmosphere near the earth's surface, commonly known as the Greenhouse Effect. The primary source of GHG in the United States is energy-use related activities, which include fuel combustion, as well as energy production, transmission, storage and distribution.

These energy-related activities generated 85 percent of the total U.S. emissions on a carbon equivalent basis in 1998 and 86 percent in 2004. Fossil fuel combustion represents the vast majority of the energy-related GHG emissions, with CO_2 being the primary GHG (EPA, 2005).

2.2.2 Impact Analysis

Significance Criteria. The following significance criteria would apply as provided in the Scope and Content of Air Quality Sections in Environmental Documents prepared by SBCAPCD (2008). A proposed project will not have a significant air quality effect on the environment if operation of the project will:

- Emit (from all project sources) less than the daily trigger for offsets in the SBCAPCD New Source Review Rule for any pollutant; and
- Not cause or contribute to a violation of any CAAQS or NAAQS (except O_3); and
- Be consistent with the latest adopted Federal and State air quality plans for Santa Barbara County.

Impacting Factors. The primary regulated pollutants of concern in Santa Barbara County are oxides of nitrogen (NO_x) and reactive organic compounds (ROC). Both NO_x and ROC are considered precursors to ozone formation, for which Santa Barbara County is presently in attainment. The major pollutant of concern associated with projects of this type and duration is NO_x emissions, due to the primary impact agents of propulsion and stationary combustion equipment.

Several environmental documents associated with the offshore activities in the SYU have been prepared by BOEM and other agencies and provide background discussions of air quality impacts. Included below are a synopsis of the original SYU project activities and the most recent ExxonMobil C1CR2 cable repair project in 2009. Various Authority to Construct (ATC) permits and PTOs have been additionally issued by the SBCAPCD regarding SYU modifications and operations and may be further referenced by contacting SBCAPCD offices.

- Original SYU DPP submitted by Exxon (Exxon, 1982a). The Environmental Report (Exxon, 1982b) submitted at the same time as the DPP performed an analysis of air quality as required by BOEM regulations.
- Environmental Impact Statement/Environmental Impact Report (EIS/EIR) on the effects of the DPP and potential alternatives (SAI, 1984a). An air quality analysis on the proposed OCS development and potential alternatives was also prepared (SAI, 1984b).
- ExxonMobil Offshore Power System Repair Project Mitigated Negative Declaration/Environmental Assessment (MND/EA) (SBC and MMS, 2003). The MND/EA was prepared in coordination with the Santa Barbara County Energy Division to evaluate the environmental impacts of replacing the failed power cable C with power cable C1 to supply electricity from Los Flores Canyon to Platform Heritage. The document concluded that the project was a construction project and exempt from SBCAPCD permits. Air quality mitigation included limitations on total project emissions, fuel use and emission calculations, and fuel sulfur content limits. ExxonMobil was additionally required to contribute financial support to SBCAPCD to compensate for emission increases.
- ExxonMobil Santa Ynez Unit Cable C1 Repair Project Environmental Assessment (MMS, 2008). The EA was prepared to evaluate the environmental impacts for the repair

of a fault in the C1 cable that runs from Platform Heritage to shore and provides electricity and communications for the platform. The repair project was successfully completed in October of 2008 and the project was limited to less than 10 tons of NOx emissions.

- ExxonMobil Santa Ynez Unit Cable C1 Repair Project Environmental Assessment (MMS, 2009). The EA was prepared to evaluate the environmental impacts to conduct an at-sea repair of a failure in the C1 cable. The cable repair was conducted in waters adjacent to ExxonMobil's Platform Heritage and was successfully completed in October of 2009.

OPSR-B Phase 2 Cable Replacement Impacts. The OPSR-B Phase 2 project includes the replacement of two of the three existing onshore Las Flores Canyon Processing Facility (LFCPF)-to-platform power cables (~ 29 miles (47 km)) and the retrieval of all cables in state waters with the retrieval of two cable sections with an option to recover additional cable in federal waters to allow for unrestricted installation of the replacement cable (~ 12-18 miles; 19.3-29 km). The project will utilize a CIV which will be dynamically positioned and will not require the use of anchors to retrieve and install the replacement cables. Additional vessels include a support tug, crew transfer boat and one or more diver support vessels. Phase 2 offshore cable retrieval and installation activities utilizing marine vessels will occur over about a 2 month period during the 2nd and 3rd quarter of 2015.

The SBCAPCD has determined that marine vessels used in cable laying projects are exempt from requirements under Rule 202.F.7 if the total project emissions are under a 25 ton/year threshold in a 12 month period. Cable laying projects exempted under Rule 202.F.7 are not required to comply with Best Available Control Technology (BACT) or provide emission offsets per SBCAPCD Rule 804. As such, the project is exempted from the New Source Review provisions of Regulation VIII and thus the project will not result in a net emission increase (NEI). The NEI calculation is used to determine whether certain requirements must be applied to a project (e.g., offsets, AQIA, PSD and BACT). ExxonMobil has submitted an ATC/PTO permit application to the SBCAPCD to demonstrate anticipated actual emissions for the project will be below the 25 ton threshold. Estimated emissions from the power cable replacement activities are contained in Table 2.2.1.

Mitigation Measures. ExxonMobil has committed to comply with the following regulatory requirements of the SBCAPCD to reduce and minimize impacts to air quality:

- ExxonMobil shall implement the project in accordance with an Emissions Reporting Plan. Limit total actual project actual emissions from the retrieval and installation of the power cables to less than 25 tons of any affected pollutant in a 12-month period, as defined primarily by SBCAPCD Rules 202.F.7 and 202.D.16.
- Determine, on a daily basis, fuel use and emissions from the retrieval and installation of the power cable to verify compliance with SBCAPCD rules and regulations.
- Require installation vessels and internal combustion engines to use ultra-low sulfur fuel (15 ppm S).
- Prepare a contingency plan for the scenario where the total project emissions of any affected pollutant, except CO, are projected to exceed 80% of the above 25 ton/year limit.

Table 2.2.1. Estimated ExxonMobil OPSR-B Phase 2 Cable Replacement Emissions.

Equipment Category	NO_X	ROC	CO	SO_X	PM	PM_{10}
Peak Hourly (lbs/hr)						
CIV	25.64	25.41	27.17	0.07	4.69	4.50
Support Vessels	49.94	5.46	30.64	0.04	3.18	3.06
Total Peak Hourly	**75.58**	**30.87**	**57.81**	**0.11**	**7.87**	**7.56**
Peak Daily (lbs/day)						
CIV	587.94	607.73	646.14	1.56	110.54	106.12
Support Vessels	1,198.45	131.07	735.26	1.04	76.41	73.35
Total Peak Daily	**1,786.39**	**738.79**	**1,381.40**	**2.60**	**186.95**	**179.47**
Peak Quarterly (tpq)						
CIV	18.59	19.36	20.56	0.05	3.51	3.37
Support Vessels	6.40	0.64	3.13	0.00	0.42	0.40
Total Quarterly	**24.99**	**20.00**	**24.15**	**0.05**	**3.93**	**3.78**
Peak Annual (tpy)						
CIV	18.59	19.36	20.56	0.05	3.51	3.37
Support Vessels	6.40	0.64	3.13	0.00	0.42	0.40
Total Annual	**24.99**	**20.00**	**24.15**	**0.05**	**3.93**	**3.78**

In addition to the ExxonMobil-proposed measures, the following monitoring measures are required to ensure compliance with applicable provisions of the project:

- Daily Emissions Reports – ExxonMobil to provide daily emissions reports during the course of the offshore cable retrieval and installation activities (within 25 miles of SYU facilities) to BSEE and SBCAPCD.
- Post-project Emissions Report – At the conclusion of the repair activities, prepare and submit a report to the SBCAPCD (copy BSEE) summarizing the total actual repair activity emissions.

Greenhouse Gas Emissions. Currently there are no formal regulations for establishing construction thresholds for greenhouse gas emissions at the local level in Santa Barbara County. However, the Council of Environmental Quality (CEQ) provided draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions which provided a 25,000 ton CO_2e threshold for addressing project specific implications to global climate change (CEQ, 2010). CEQ does not propose this reference point as an indicator of a level of GHG emissions that may significantly affect the quality of the human environment, as that term is used by NEPA, but notes that it serves as a minimum standard for reporting emissions under the Clean Air Act. In addition, the California Office of Planning and Research (OPR) prepared a technical advisory for addressing climate change issues (OPR, 2008). In both documents the recommended approach is for lead agencies to make good faith efforts based on available information to calculate or estimate GHG emissions and determine significance. Should an impact be determined by the lead agency to be significant, then measures should be made to avoid, reduce or otherwise mitigate the impacts. As

discussed in Section 4.5.3.1 Code of Federal Regulations, the Mandatory Reporting of Greenhouse Gases Rule (EPA, 2009) gives guidance to large producers of GHG emissions on how to properly report their GHG emissions. This document provides guidance for calculating GHG emissions for stationary sources, but does not have any guidance for mobile sources of GHG.

For this analysis, BOEM utilized the 25,000 ton threshold of CO_2E consistent with the CEQ guidance for addressing the project specific implications on global climate change. The emission sources associated with the proposed project are internal combustion engines, with the predominant GHG emitted being carbon dioxide (CO_2). GHG emissions are calculated based on estimated fuel usage for those engines. Emission factors were taken from California's GHG Emissions Inventory, which is available on the California Air Resources Board website. The estimated greenhouse gas emissions from the cable retrieval and replacement activities are estimated to produce a total of 3,907.31 metric tons (MT) CO_2E. The greenhouse gas estimate provided by the applicant for the proposed project construction is presented in Table 2.2.2.

Table 2.2.2. Cable Installation Greenhouse Gas Emission Estimates (metric tons/year).

Source	CO_2 Emissions	CH_4 Emissions	N_2O Emissions	CO_2E^1
Cable Retrieval & Installation	4,235.05	10.44	0.07	3,907.31

1 CO_2E conversion factors were provided in California's GHG Inventory, 2008.
2 GHG emissions calculated using CARB's OFFROAD Model and emission factors provided in the California GHG Inventory available at http://www.arb.ca.gov/cc/inventory/doc/doc_index.php.

Thus, the projected greenhouse gas emission estimates for the OPSR-B Phase 2 cable replacement project are less than the established BOEM policy thresholds for addressing the project specific contributions to global climate change and are therefore not considered to be a significant contributor to global climate change.

2.2.3 Conclusion

The data presented in the Table 2.2.2 indicate that the expected emissions for the cable replacement activities will be less than emission levels exempted from requirements of SBCAPCD Rule 202.F.7 for cable laying operations. ExxonMobil submitted an ATC/PTO application per the exemption described in Rule 202.F.7 to specify a Potential to Emit up to 25 tons to ensure compliance with the exemption thresholds required in the rule. A Fuel Measurement Plan was additionally submitted to verify the provided information will be less than the exemption thresholds.

As such, the permitted and actual emissions for the SYU facilities will not change as a result of the cable replacement activities. With the commitment by ExxonMobil to comply with all rules and regulations of the SBCAPCD, demonstrated compliance with the exemption criteria contained in Rule 202.F.7 and additional monitoring measures applied by BOEM and CSLC, the project is will not result any exceedances of either the California or federal ambient air quality standards from equipment and vessels needed to retrieve and replace the power cables. Therefore, there are no exceedances of the CAAQS, NAAQS or National PSD Increment Standards expected with this project and no change in public health risks associated with the SYU facilities that are currently below the SBCAPCD health risk notification thresholds. The cable retrieval and replacement activities are not expected to generate any significant number of worker commute trips and supply/equipment delivery trips within Santa Barbara County.

Based on these considerations and the implementation of the reporting mitigation measures described above, the impacts of the ExxonMobil OPSR-B Phase 2 cable replacement project on air quality are expected to be temporary and insignificant.

2.2.4 Cumulative Analysis

Section 1.6 describes the assumptions and lists the projects considered in the cumulative analysis for the ExxonMobil OPSR-B Phase 2 cable replacement project. Potential sources of cumulative air quality impacts in the project area which overlap both spatially *and* temporally include emissions from on-going and proposed oil and gas activities in federal waters and offshore shipping and tankering operations. All of the cumulative projects and activities considered in this document occur in the South Central Coast Air Basin composed of San Luis Obispo, Santa Barbara and Ventura Counties. For this analysis, it is assumed that due to the prevailing onshore wind conditions, the geographic scope for cumulative air quality impacts will be those projects or actions which exist or are pending or approved in the northern Santa Barbara Channel and southern Santa Barbara County.

Oil and Gas Projects. Federal OCS oil and gas activities considered in this analysis include only the drilling of new wells on existing Pacific OCS platforms. No other activities (e.g., well abandonment and future platform decommissioning) are expected to occur for the duration of the OPSR-B Phase 2 cable replacement project.

On-going Oil and Gas Activities. The existing energy-related projects considered in federal waters include air emissions from the SYU Platforms Hondo, Harmony and Heritage and the Point Arguello Unit Platforms Harvest, Hermosa and Hidalgo. The existing platforms identified within the vicinity of the proposed project are within the jurisdiction of the SBCAPCD and all have current PTOs. The emission sources from those facilities have been controlled and fully offset and are in full compliance with SBCAPCD Rules and Regulations. To date, the SYU Expansion Project emissions of NO_x and ROC have been well below permitted levels and no exceedances of the NO_2 standard have occurred at applicable monitoring sites during the highest emission intensive phases of the offshore activities (usually construction). Thus, the additional incremental emissions levels expected with the proposed project are not expected to have a cumulative air quality impact with existing controlled and fully offset federal oil and gas activities.

Non-Oil and Gas Projects and Activities

Marine Shipping and Tankering. The other emission sources considered in this analysis are shipping and tankering operations. Emissions from marine vessels traversing the Santa Barbara Channel are not regulated by federal, state, or local air authorities and may combine with emissions from the proposed project to affect onshore air quality. Approximately 80 percent of the vessels calling on the Ports of Los Angeles and Long Beach are of foreign registry and most use engines produced outside the United States (CARB, 2000).

The 2007 emission inventory for Santa Barbara County estimates that NO_x emissions from ships and commercial boats on the OCS account for approximately 49.26 tons per day of NO_x, or about 56 percent of the total NO_x inventory for the county. Maritime shipping on the OCS also accounts for approximately 3 tons of PM per day. Regulatory efforts are in development through the U.S. EPA, International Maritime Organization and California Air Resources Board to control emissions and engines associated with marine shipping and tankering. As emissions from

the proposed project are exempted per SBCAPCD Rules and Regulations and have no increase in NEI, cumulative air quality impacts of marine shipping and tankering will not change with the proposed project.

Greenhouse Gas Emissions. Construction-related GHG emissions associated with the proposed cable replacement project when combined with emissions throughout the area, Santa Barbara County, and California world may incrementally have a potential to contribute to climate change. Locally, industrial, commercial and residential projects in the project area contribute to cumulative impacts due to the release of GHG emissions. The Draft GHG Emissions Inventory (CARB, 2008) estimated that the annual CO_2E for all GHGs produced in California in 2004 was 468.8 million metric tons. Therefore, the GHG associated with construction related emissions (3,907.31 $MTCO_2E$ would represent a negligible percentage of the annual GHG emissions produced statewide.

Cumulative Conclusion. The potential for the incremental emissions increase associated with the ExxonMobil OPSR-B Phase 2 cable replacement project to cumulatively impact regional air quality is considered to be insignificant. The emissions associated with the cable retrieval and replacement activities has been determined to be exempted by SBCAPCD Rule 202.F.7 and are not expected to contribute significantly to the potential impact to regional air quality that may be expected from existing offshore oil and gas activities and marine shipping and tankering emissions.

2.2.5 Overall Conclusions

The potential impacts to onshore air quality resulting from emissions from vessels and equipment used in the ExxonMobil OPSR-B Phase 2 cable replacement project is considered to be insignificant based on the significance criteria utilized in this analysis. Thus, the potential for violations of the ambient air standards from the proposed project are considered to be negligible, through existing regulatory provisions and permit requirements presently in place for the SYU facilities. Overall, the potential impacts to air quality resulting from the proposed activities are considered to be insignificant and in compliance with the SBCAPCD Rules and Regulations to the maximum extent feasible.

2.3 WATER QUALITY

2.3.1 Affected Environment

This section describes the marine water quality and sediments in the Santa Barbara Channel, where the cable replacement activities will occur. The water quality resources in this region have been previously described in the MND/EA written for the 2003 cable repair project (SBC and MMS, 2003) and by Minerals Management Service (MMS, 2001). Some water quality characteristics, such as dissolved oxygen and water clarity, are of fundamental importance to the health of marine life. Other parameters, such as temperature and salinity, provide information about circulation patterns; these factors can also influence organisms and contaminant fate. Water quality parameters typical for the Santa Barbara Channel are given in Table 2.3.1.

Sources of Pollution. Sources of marine pollution in the Santa Barbara Channel include publicly owned treatment works (municipal sewage) and river runoff (MMS, 2001). The nearest point source discharge to the proposed project area is from the Goleta waste water treatment plant, approximately 20 miles eastward of the project location. This plant collects and treats wastewater from the cities of Goleta, Santa Barbara and other outlying communities. The plant discharges 4.7

million gallons per day of wastewater at a mixed primary/secondary level of treatment (SCCWRP, 2003). The outfall runs about one mile out to sea and rests on the seafloor about 95 ft (29 m) beneath the ocean surface.

The nearest potential sources of nonpoint source pollution are the numerous small and intermittently flowing streams running out of the coastal range along the mainland of the Santa Barbara Channel. River runoff is difficult to quantify and is seasonally variable. Sedimentary material from the Santa Ynez River may sometimes flow south and east around Point Conception and be deposited in the project area, particularly during periods of high flow at which time the pollutants carried by the plume would be well-diluted but perhaps still detectable. Pollutants associated with these rivers are predominantly agriculturally based and may include dairy and ranching-related pollutants (for example, animal wastes) and pesticides.

Overall, water quality in the project area may be characterized as good. This is due to the lack of nearby point or nonpoint pollution sources such as sewage outfalls, urban-associated storm drains and major river outflow.

2.3.2 Impact Analysis

Significance Criteria. A significant impact on water quality is:

- Any liquid effluent or solid material discharged to the marine receiving waters (ocean) that causes changes in standard water quality parameters (Table 2.3.1) resulting in unreasonable degradation to the water quality.[4]
- An increase in sedimentation above the normal range and which is persistent and not dispersed by natural processes within a few days.

Impacting Factors. Water quality may be temporarily affected by the sediment raised from the seafloor during cable excavation, removal and installation:

- Water jetting to uncover some portions of the cable;
- Removal and cleaning of cable near Platform Heritage and Harmony;
- Potential removal and cleaning of cable from the state/federal boundary to Platform Harmony;
- Flushing and pigging of J-tubes;
- Installation of new cable between Platforms Harmony and Heritage and Platform Harmony and the state/federal boundary; and
- Installation of concrete mats.

Based upon the previous ExxonMobil cable repair projects, which entailed similar procedures, disturbed sediment will be composed of sand, silt and clay (SBC and MMS, 2003). Bottom currents, which average 0.3 to 0.6 ft/sec (10 to 20 cm/sec), would gradually spread the sediments down-current allowing the suspended particles to eventually settle. These activities would increase turbidity within the project area which would dissipate once the project is complete. During the repair of the ExxonMobil Cable C1 in 2008 (MMS, 2008), turbidity was intermittent and limited to a visible plume that lasted approximately 10 minutes. It is anticipated that a

[4] EPA regulations at 40 CFR 125.121(e)(1-3) state, "unreasonable degradation of the marine environment means: (1) Significant adverse changes in ecosystem diversity, productivity and stability of the biological community within the area of discharge and surrounding biological communities; (2) Threat to human health through direct exposure to pollutants or through consumption of exposed aquatic organisms; (3) Loss of esthetic, recreational, scientific or economic values which is unreasonable in relation to the benefit derived from the discharge."

turbidity plume associated with the proposed project would have a similar effect on water quality. The increase in turbidity from the proposed project would be short-term, localized and insignificant.

Table 2.3.1 Key Water Quality Parameters

Parameter	Characteristics
Temperature	At surface ranges from 14.5 °Celsius (C) in December-April to 19 °C in July-September (Daily et al. 1993)
Salinity	33.4-33.6 parts per thousand (Daily et al. 1993)
Dissolved oxygen	5.5-6 milliliters per liter (ml/L) at the surface, decreasing with depth to 2 ml/L at 200 m; below 350 m, as low as 1 ml/L; upwelling can bring this oxygen-poor water to the surface waters, especially from April to July (Lynn et al. 1982; Daily et al. 1993; Hickey 1993)
pH	Range from about 7.869 to 8.266 at Pt. Conception (Hofmann et al. 2011).
Nutrients	Important for primary production; include nitrogen, phosphorus and silicon; Depleted near the surface but increasing with depth (Southern California Coastal Water Research Project [SCCWRP] 1973; Eganhouse and Venkatesan 1993).
Surface light transmittance	Visual transparency along the coast for all seasons varies from less than 6m to more than 15m (SCCWRP 1973).
Trace metals	The levels of metals in the waters of the Southern California bight are within ranges reported for seawater in various areas around the world (SCCWRP 1973).
Organics	May enter the marine environment from municipal and industrial wastewater discharges, runoff, natural oil seeps and offshore oil and gas operations.

Some sediment would adhere to the cable on its way to the surface, leaving a gradually decreasing trail of sediment in the water column that will be dissipated by currents. Portions of the failed cable will be cleaned of sediment and encrusting marine growth before it is sent ashore for disposal. This will cause a small and temporary cloud of turbidity at the sea surface which will dissipate quickly once the cleaning process is completed. Impacts to water quality from this process will be negligible.

Cable Installation Vessel Discharges. The proposed repair activities will utilize a CIV that will discharge ballast, bilge, cooling water and sanitary wastes. These types of routine discharges, regulated by the U.S. Coast Guard (USCG) via the Federal Water Pollution Control Act, ensure that vessel effluents such as sewage and cooling water do not leave a sheen or other foreign material on navigable waters. Ballast and bilge waters will be treated by the vessel's onboard oil separation system which is designed and operated to meet the USCG-required limit of 15 ppm oil in the effluent. Similarly, the sewage treatment plant onboard the vessel is USCG-approved and is designed and operated to meet the USCG-required limits. Surface currents, wind and waves will combine to dissipate these effluents. All the repair vessel discharges will be conducted in accordance with applicable USCG regulations and will not have a significant impact on the water quality of the project area during the short time the project occurs.

Mitigation Measures. ExxonMobil submitted the following mitigation measure as a part of the proposed project to further reduce and minimize impacts to water quality:

- Contractors shall use a dynamically positioned vessel to retrieve and install power cables.

2.3.3 Conclusion

The impacting agents that could affect water quality are increases in turbidity and the discharge of treated effluents from the CIV. Based on the significance criteria for water quality established for this EA, neither of these agents will cause a significant impact because no unreasonable degradation to the water quality due to turbidity or discharges will occur.

2.3.4 Cumulative Impacts

Section 1.6 describes the projects considered in the cumulative analysis for the proposed project. Possible sources of cumulative impacts to water quality in the project area include on-going oil and gas activities in Federal waters and point and nonpoint pollution sources.

Federal Offshore Oil and Gas Projects.

Activities Occurring on Existing Platforms: Of the oil and gas platforms located near the project area, only drilling on Platform Harmony as well as routine production operations (discharges of permitted effluents) at the SYU platforms (Hondo, Harmony and Heritage) and accidental oil spills from these platforms could overlap temporally and spatially with the proposed project. A cumulative impact on water quality is not expected because of the short-term nature of the project and the small amount of sediment that would be raised from the seafloor during manipulation of the cable.

Non-Energy Projects and Activities

Point Source and Nonpoint Source Discharges: Sewage and other discharges from the vessels used for the proposed project will contribute a negligible quantity to the pollution from the Goleta wastewater treatment plant, the only existing point source of pollution in the area and to any pollution from the numerous small and intermittently flowing streams running out of the coastal range along the mainland side of the Santa Barbara Channel. The temporary increase in turbidity from project activities will not result in a significant incremental increase to existing turbidity sources such as that coming from river runoff during storms.

Cumulative Conclusion. Significant cumulative impacts to water quality are not expected from the proposed project when added to other activities in the area.

2.3.5 Overall Conclusions

The potential impacts to water quality from the proposed project are considered to be insignificant based on the significance criteria utilized in this analysis. This is due to the short timeframe of the project, the small volume of discharges from the CIV and the increase in turbidity which will be short term and localized. Water quality will return to natural conditions after project completion. Additionally, the incremental increase of the proposed action to cumulative impacts is negligible. Overall, the potential impacts to water quality resulting from the proposed project are considered to be insignificant and mitigated to the maximum extent feasible.

2.4 BENTHIC RESOURCES

2.4.1 Affected Environment

The environmental setting for benthic resources for this project are within a cable and pipeline corridor that is 650 ft wide and extends from the state/federal three-mile boundary in about 300 ft (94 m) of water to a maximum depth of 1,300 ft (396 m) near Platforms Harmony and Heritage. The cable corridor runs through multiple seafloor habitat types where distinct assemblages are

associated with changes in sediment type and depth (Fauchald and Jones, 1979). The two major habitat types are consolidated sediments (rocky outcrops) and unconsolidated sediments (soft bottom). Rocky outcrops are rare in this region (Greene et al., 2004), but can contain high numbers of species and can be more strongly affected by sedimentation and physical disturbance. Both habitat types have been sampled extensively in the project area due to the history of cable and pipeline construction within this seafloor corridor.

Soft Bottom Habitat. Through the benefit of multiple regional surveys in the Southern California Bight (Allen et al., 2011; Ranasinghe et al., 2012), soft bottom habitat can be further distinguished by depth into four distinct invertebrate and fish communities: inner (5 – 30 m), middle (31 – 120 m) and outer (121 – 200 m) continental shelf, and the upper continental slope (201 – 500 m). The seafloor habitat in water depths of 50 ft (15 m) to the platforms in 800 to 1200 ft (244 – 366 m) is described (Fauchald and Jones, 1979; MMS, 2001) as uniform silty sand or sandy silt.

Invertebrate and fish assemblages recorded in the project area are representative of assemblages in the Santa Barbara Channel. Large benthic invertebrate species found in the project area are characterized by urchins, sea stars, shrimp, sea pens and sea cucumbers (Chambers Consultants and Planners, 1983; ExxonMobil 2008; 2012b), whereas polychaete worms, clams and amphipods characterize the infauna (SAIC, 1984). The deeper water sedimentary habitat-associated macroepibiota is characterized by the two seapen species, *Acanthoptilum gracile* and *Stylatula elongata*; the sea cucumber *Parastichopus californicus*; and the pink sea urchin *Allocentrotus fragile*. Echinoderms dominated all other phyla sighted in a 2008 ROV survey of the C1 cable route in upper slope depths (ExxonMobil, 2008); with sea cucumbers (Holothuroidea) and sea stars (Asteroidea and Ophiuroidea) frequently observed. These survey results are largely consistent with trawl results from a 2008 regional survey (Allen et al., 2011). A notable exception is that urchins made up over 50% abundance of catch in the regional survey using the trawl but were rarely observed with ROVs in 2008.

Rocky Outcrop Habitat. Rocky outcrop (hard bottom) habitats are uncommon in deep waters of southern California (SAIC, 1985). These habitats can support biologically diverse communities (Diener and Lissner, 1995) and are sensitive to impacts from oil and gas operations because of the slow recovery rates of some invertebrate species (Lissner et al. 1991; Battelle, 1991). There are three known rocky areas in the corridor, although no high-relief, chemosynthetic or deepwater coral communities, all considered sensitive, have been documented.

In federal waters deeper than 90 m (300 ft), isolated rocky features have been documented in two areas overlapping with the pipeline/power cable corridor (SAIC, 1984; SBC and MMS, 2003). The first area is approximately 1 mile (< 2 km) northeast of Platform Hondo between isobaths 265 to 450 ft (80 to 137 m) known as the Shelf Break Area. The second area is south of Platform Heritage in approximately 338 m (1100 ft). Rocky outcrops were clearly visible from high resolution geophysical data (side-scan sonar; ExxonMobil, 2002b; 2011b); however visual surveys in the Shelf Break (internal pipeline surveys; ExxonMobil, 2012b) and south Heritage areas (ExxonMobil, 2008; BOEMRE, 2011; ExxonMobil, 2012b) indicate much of the area is covered by sandy sediment. There is evidence of superficially buried rocks observed due to the presence of a common anemone (*Metridium* sp.) protruding from an otherwise sandy bottom. Of the rocky outcrops found in these areas, almost all were low relief ranging from flat to < 2 ft (< 1 m). Two features examined south of Platform Heritage were ridges 5 and 3 ft (1.5 and 0.9 m) high. The ridges were populated with basket stars and urchins but no obligate hard bottom

species were seen. More recent visual surveys support older reports (MMS, 1984; SBC and MMS, 2003) of species including the solitary coral *Paracyathus stearnsii*; the anemones *Metridium sp.* and *Corynactis californica*; the crinoid *Florometra serritissima*; the sea star *Mediaster aequalis*; and various species of hydroids, tube worms and bryozoans. In addition, rocky areas provided shelter/habitat for some species of rockfish (*Sebastes* spp.) and crabs (e.g., Galatheidae and *Cancer anthonyi*).

2.4.2 Impact Analysis

Significance Criteria. The impact analysis for the benthic environment in this document adopts significance criteria developed for all biological resources. An impact from the proposed project is significant if it is likely to cause any of the following:

- A measurable change in population abundance and/or species composition beyond normal variability.
- Substantially limit reproductive capacity through losses of individuals or habitat.
- Substantially limit or fragment range and movement (geographical distribution and normal route of movement).
- A measurable loss or irreversible modification of habitat in several localized areas or 10 percent of the habitat in the affected area.

For an impact to be locally significant, the size of the localized area would be relatively small compared to an ecologically equivalent area in the immediate region. The threshold for significance is determined by scientific judgment and considers the relative importance of the habitat and/or species affected.

Impacts of regional significance are judged by the same criteria as for local significance, except that the impacts may cause a change in the ecological function within several localized areas or a single large area. The amount of affected area relative to that available in the region is determined in the same way as for locally significant impacts. This determination considers the importance of the species and/or habitat affected and its relative sensitivity to environmental perturbations.

Impacting Factors. Potential impacting factors on fishes and Essential Fish Habitat from the proposed activities include (1) sediment resuspension and (2) physical disturbance and alteration of seafloor habitats and biota. Activities associated with the proposed project that could cause these impacting factors are: removing and cleaning of cables, installing the new cables, and placing concrete mats and sand bags. Removing cable will cause sediments to resuspend in the water column (turbidity). Laying new cable, concrete mats and sand bags will cause turbidity in the water column, disturb or damage seafloor species and alter the seafloor habitat.

Sediment Resuspension. Activities contacting the seafloor in sandy and silty sediment will cause sediment to resuspend which could cause benthic biota to experience physical irritation, clog feeding structures, reduce available light and be subject to increased sediment deposition. Sediment resuspension (turbidity) will occur within several hundred feet of the project area including both soft and hard bottom. ExxonMobil (2013) lists in Table WQ-3 the sources, locations and estimated quantities of sediment that would be resuspended during the proposed project.

Installation of new cables, mats and sand bags would disturb a small amount of sediment on the bottom and cause intermittent plumes (see Section 2.3). Excavation work is planned in discrete

areas adjacent to Platforms Harmony and Heritage which would generate larger sediment plumes. Ocean currents allow a plume to spread down-current from the contact point followed by a gradual settling of the particulate matter to the seafloor. Visual observations from previous cable projects near the platforms (ExxonMobil, 2008) showed the plume caused from laying cable typically cleared in less than 10 minutes with no detectable sedimentation.

Communities found on rocky outcrops can be more sensitive to turbidity than soft bottom communities. Studies of resuspended sediments of 1,073 yd^3 (820 m^3) in the region showed that clay-silt at low current velocities took 56 hours to sink (SAIC and MEC, 1995a). Previous studies in the project area found that species are subjected to frequent and large natural fluxes in turbidity and are well adapted to this environment (Lissner et al., 1987; Diener and Lissner, 1995).

Overall, the proposed project is expected to result in minimal, temporary and localized increases in turbidity. Considering the anticipated levels of activity, the effects of turbidity on bottom assemblages is expected to be localized, temporary and cause negligible impacts.

Physical Disturbance and Alteration of Seafloor Habitats and Biota. Disturbance of the seafloor includes harm to animals near or on the cable when the cable is retrieved and installed and to the placement of mats and sandbags. Direct disturbance to animals on the seafloor would occur in soft bottom habitat in the immediate area of the cable or related devices landing on the seafloor. Animals most likely to be crushed or moved due to cable and ROV manipulations are a few slow-moving creatures, such as urchins and sea cucumbers, within a few feet of the cable. These animals are very common, with a broad range throughout southern California. The 2008 ROV survey showed exposed portions of the cable were sparsely fouled with anemones and bryozoans. Rockfish, flatfish and sea cucumbers were often seen resting next to the cable. Observable trenches in the sediment next to or under the cable infrequently occur between 1 and 4 ft deep (< 1 m) in excavated areas or areas were the cable has moved in fine muds. Cable movements appeared to be gentle and no injury was observed. These observations agree with a quantitative study of a cable offshore of Monterey which concluded that biological impacts from the presence of the cable were minimal (Kogan et al., 2006).

Hard bottom communities can be crushed and take longer to recover (Lissner et al., 1987) than soft bottom area from cable laying and moving over a rocky outcrop area. There is a natural rocky habitat feature within the cable route that is expected to be crossed by the replacement cables. This feature is located at the Shelf Break Area in approximately 270 ft (72 m) of water. The feature is approximately 1600 ft long (490 m) and between 25 and 50 feet wide (8-16 m) with a maximum relief of 3 ft (1 m). The installation of the replacement cable through this hard bottom area will cover approximately 25 ft^2 (2.4 m^2). No rare obligate or long-lived sessile organisms have been detected in multiple surveys and ExxonMobil has committed to utilizing an ROV during cable deployment to ensure it does not harm those types of animals. The cable and associated mats and sandbags will increase the "hard" surfaces likely to be utilized by the same fouling community as seen in 2008. Disturbances from this project are localized and minimal; therefore the proposed project would have negligible loss of soft bottom habitat or changes to soft bottom species abundance and composition.

Mitigation Measures. ExxonMobil submitted the following mitigation measures as a part of the proposed project to further reduce and minimize impacts to the benthic environment:

- ExxonMobil shall select contractors who shall use a dynamically positioned vessel to retrieve and install the replacement power cables from nearshore to Platform Harmony and between Platforms Harmony and Heritage.
- ExxonMobil shall require contractors, whenever feasible, to utilize appropriate installation techniques that minimize or avoid environmental impacts such as turbidity.
- ExxonMobil shall require contractors to utilize an ROV to monitor and videotape selected portions of the installation activities during the cable lay operations. If the ROV observes a rocky outcrop, the ROV shall assist the dynamically positioned vessel in adjusting its route to avoid a feature, whenever it is feasible to do so. Activities that shall be videotaped, with a copy provided to agencies, include cable lying along the route in water depths where rocky habitat is suspected.
- ExxonMobil shall provide, under safe conditions, the permitting agencies access to the site, during installation and installation-related activities, including but not limited to, the cable laying vessel and support vessels. Agency biologists may observe the extent, distribution and type of habitat that could be present in the path of the proposed power cable. In the event that rocky habitat is observed during cable installation, the applicant shall adjust its operations, if at all possible, to avoid the habitat or notify the appropriate regulatory agencies for further direction if rocky habitat is unavoidable. All agency personnel on ExxonMobil-contracted vessels shall be advised of and adhere to ExxonMobil safety requirements.
- ExxonMobil shall conduct a post-construction ROV or diver video survey, with voice overlay, along the length of the completed cable installation in federal waters to verify the as-built condition of the cable. Such survey shall also include the entirety of the area affected by the proposed project, including all anchor locations (if any), to confirm seafloor cleanup and site restoration.

2.4.3 Conclusion

Due to the area of the benthos affected and the ubiquitous nature of both the soft bottom habitat and the benthic species in the project area, the proposed project activities would cause insignificant impacts over a localized area on soft bottom habitats. Impacts to hard bottom habitats will be insignificant due to the localized and temporary turbidity conditions, as well as the use of an ROV around the Shelf Break Area.

Increases in turbidity would be expected to be highly localized and temporary, causing insignificant impacts. Impacts on the benthic environment from cables and concrete mats being placed on the bottom would be expected to be insignificant. Impacts from the new cable overlying 25 ft^2 (2.4 m^2) a single hard bottom feature at the shelf-break would be expected to be insignificant based on the lack of sensitive species and relatively small amount of the total surface area of the feature overlain by the cable. According to the significance criteria established for this document, the impacts on the benthic environment from the proposed project would be expected to be insignificant and mitigated to the maximum extent feasible.

2.4.4 Cumulative Analysis

Section 1.6 describes the projects considered in the cumulative analysis for this project. Possible sources of cumulative impacts to benthic resources include ongoing federal offshore energy projects and non-energy projects and activities including commercial fishing operations and non-anthropogenic and anthropogenic sources of sediment and contaminants. The California

Department of Fish and Wildlife (CDFW) Marine Region identified (Leet et al., 2001) several fishing and non-fishing activities that may cause adverse impacts to benthic communities along the Pacific Coast. Major issues are the impact of environmental events like El Niño on animal and plant species, overharvest of species such as abalone and near shore rockfish, interactions between fisheries and marine mammals, pollution from human activities and competition among user groups, both consumptive and non-consumptive. Cumulative impacts on offshore benthic habitats and communities could cause degradation of sensitive and rare offshore hard bottom habitat and biological communities in the region west of Santa Barbara County. The communities associated with high-relief rocky outcrops are rare in the western Santa Barbara Channel due to the preponderance of soft bottom. The rarity of these communities, in effect, causes them to be sensitive.

Federal Offshore Energy Projects. No new federal offshore energy projects are reasonably foreseeable at this time. In addition, cumulative studies on sustained turbidity from drilling adjacent to rocky outcrop communities in southern California (SAIC and MEC, 1995b) have not shown significant impacts to the animals present.

The seafloor in the project area is where all pipelines and cables are routed from the platforms to onshore facilities as described in the original EIS/EIR (MMS, 1984). As such, this corridor has been the site of multiple construction projects including the original pipeline and cable installation, Cable C1 lay in 2003, two repairs to Cable C1 in 2008 and 2009 and one pipeline repair in 2010. Near both Platforms Harmony and Heritage, anode sleds have been installed on the seafloor. ROV surveys reveal that seafloor cables, mats, sandbags and anode sleds are typically partially buried (ExxonMobil 2001; 2008) in soft sediments. Installations prior to 2003 used more and larger anchors causing impacts indicated by multiple drag marks visible in the corridor. Recent projects have utilized dynamically positioned vessels and only two observable impacts have occurred. The first is a trench about 15 ft long, 5 ft wide and 4 ft deep (4.6, 1.5 and 1.2 m) adjacent to Cable C1. It appeared that cable movement on the muddy seafloor enabled the trench to form.. Secondly, a barge anchor was dropped outside of the cable corridor about 2 miles south-southwest of Platform Heritage in 1500 ft (470 m) water depth causing a deep depression in soft sediments. There is no evidence of damage to any sensitive communities over the history of the SYU development.

The proposed project does not significantly add any cumulative impacts to benthic resources because of the small amount of sediment that would be raised from the seafloor and the small footprint relative to the ubiquitous soft bottom habitat.

Non-Energy Projects and Activities. Activities that overlap project impacts to benthic resources include commercial fishing and nonpoint source discharges.

Commercial fishing. Commercial fishing, which may include trawling and trapping, impact the benthic environment by altering the habitat and removing species. Commercial fishing occurs regularly in the area as evidenced by multiple sable fish and crab traps on the seafloor adjacent to the cables and pipelines. Disturbance of the seafloor during the cable installation project are negligible and represent an insignificant increase of cumulative impacts to benthic resources.

Nonpoint source discharges. During winter storms, the volume of nonpoint discharges in the form of coastal runoff to creeks and rivers increases and the resulting plumes can reach the project area. These plumes can expose soft bottom habitats in the project area to periods of increased water turbidity. These existing turbidity sources are of greater duration and intensity

than the turbidity that would arise from this project. Increases in turbidity from this project represent an insignificant incremental increase of cumulative impacts to benthic resources.

Cumulative Conclusion. Activities from this project represent an insignificant incremental increase of cumulative impacts to benthic resources. Sources of cumulative impacts to the benthos from this project include increased turbidity and bottom disturbance from retrieval and installation of the cable. The largest sources of turbidity in the project area would come during storms which, when combined with the temporary and short-term increase in turbidity from the project, will result in an insignificant cumulative impact to benthic resources. The proposed project activities would cause locally insignificant impacts (e.g., highly localized, temporary turbidity conditions and crossing 25 ft^2 (2.4 m^2) of a rocky feature at the shelf-break) on the benthic environment. Significant cumulative impacts to the benthic environment are not expected from the proposed project when added to other activities in the area.

In conclusion, this project is not expected to add significantly to cumulative impacts on the benthic environment in the Santa Barbara Channel.

2.4.5 Overall Conclusions

The potential impacts to benthic organisms and their habitats from the proposed project are considered to be insignificant based on the significance criteria utilized in this analysis. This is due to the intermittent and local benthic disturbances from cable, laying of anchors, mats and sandbags, and the temporary increase in turbidity. This project is not expected to add significantly to cumulative impacts on the benthic environment in the Santa Barbara Channel. Overall, the potential impacts to benthic resources resulting from this project are considered to be insignificant and mitigated to the maximum extent feasible.

2.5 FISHES AND ESSENTIAL FISH HABITAT

2.5.1 Affected Environment

At least 554 species of California marine fishes inhabit or visit California waters (Miller and Lea, 1972). The high species richness is probably due to the complex bathymetry, convergence of several water masses and changeable environmental conditions. The Santa Barbara Channel fish assemblage is characteristic of warm-temperate species of the Californian or San Diegan Province (Horn and Allen, 1978; Pondella et al. 2005; Stephens et al. 2006; Love et al. 2003). Soft sediments and hard substrate characterize the habitat within and nearby the project area. Fishes which are commonly found on soft sediments include English sole, stripetail rockfish, queenfish, white croaker, California halibut, Pacific sanddab, speckled sanddab and a variety of surfperches (Love et al., 1986, Allen et al., 2007). A number of rockfish species (Genus *Sebastes*) are associated with all rock outcrops on the continental shelf and slope (Love et al., 2002; 2009). At shallower rock outcrops and oil and gas platforms, surfperches, wrasses, greenlings, seabasses and damselfish become common (Love et al., 2003).

Of the marine fishes that could potentially occur in the Santa Barbara Channel, three (tidewater goby, southern California steelhead and green sturgeon) are listed as threatened or endangered under the Endangered Species Act (ESA; Table 2.5.1). The endangered tidewater goby (*Eucyclogobius newberryi*) is found in shallow coastal lagoons, stream mouths and shallow areas of bays in low salinity waters from Del Norte County south to San Diego County (Lafferty et al., 1999a). Tidewater goby larvae lack a marine phase and adult gobies are restricted to low salinity environments and cannot live offshore in marine habitats for very long. However, Lafferty et al.,

(1999b) postulate that connectivity among the isolated wetland goby populations probably occurs via episodic dispersal of adults during severe storm events.

The endangered southern California steelhead Evolutionarily Significant Unit (ESU) occupies coastal watersheds from the Santa Maria River (which defines the boundary between San Luis Obispo and Santa Barbara Counties) to the southern extent of its range, which includes the project area. Being anadromous fish, young steelhead remain in fresh water anywhere from less than 1 year to 3 years and then migrate to the sea where they quickly move offshore and begin an epipelagic existence for 1 to 4 years before returning to their natal stream to spawn (Light et al., 1989, Burgner et al., 1992).

The threatened green sturgeon (*Acipenser medirostris*) inhabits fresh water during early life history stages and then switches to nearshore coastal marine waters, bays and estuaries at later stages (Moyle, 2002; Erickson and Hightower, 2007; Erickson and Webb, 2007). Although there is one unusual record of a green sturgeon catch recorded near Bahía de San Quintin in Baja California, Mexico, during a cold water year (Rosales-Casián and Almeda-Jáuregui, 2009), the population center of this fish is considered to lie northward of the project area. The most southerly spawning habitat for green sturgeon is the Sacramento River and the critical habitat for the Southern distinct population segment lies hundreds of kilometers north of the project area, near Monterey Bay (Biological Review Team, 2005).

Table 2.5.1 Threatened or Endangered Fish Species

Common Name	Scientific Name	Status
Green sturgeon	*Acipenser medirostris*	Federally Threatened
Tidewater goby	*Eucyclogobius newberryi*	Federally Endangered
Southern steelhead	*Oncorhynchus mykiss*	Federally Endangered

The Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U.S.C. 1801 *et seq.*) as amended by the Sustainable Fisheries Act on October 11, 1996, describes essential fish habitat (EFH) as: "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." EFH pertains to habitat "required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem." A healthy ecosystem is defined as: an "ecosystem where ecologically productive capacity is maintained, diversity of the flora and fauna is preserved and the ecosystem retains the ability to regulate itself. Such an ecosystem should be similar to comparable, undisturbed ecosystems with regard to standing crop, productivity, nutrient dynamics, trophic structure, species richness, stability, resilience, contamination levels and the frequency of diseased organisms." The Pacific Fishery Management Council (PFMC) has identified EFH for over 100 species of fish it manages under four Fishery Management Plans (FMPs): 1) Coastal Pelagics Fishery Management Plan; 2) Pacific Salmon Fishery Management Plan; 3) Pacific Groundfish Fishery Management Plan; and 4) Highly Migratory Species Fishery Management Plan. Many of the species managed by the PFMC can be found within the project area sometime during their life cycle.

2.5.2 Impact Assessment

Given the life histories of the three ESA-listed fish species, it is unlikely they would occur in the project area within federal waters and so are not considered further in this EA.

Significance Criteria. An impact from the proposed project is significant if it is likely to cause any of the following:

- A measurable change in population abundance and/or species composition beyond normal variability. For threatened and endangered species, this includes any change in population that is likely to hinder the recovery of a species.
- Displacement of a major part of a population from either feeding or breeding areas, or from migration routes for a biologically important length of time (one or more spawning or migration seasons).
- A measureable loss or irreversible modification of habitat in several localized areas in 10 percent of the habitat in the affected area. An example of a significant change in habitat would be one that prevents the re-establishment of pre-disturbance biological communities over a significant portion of their range. Loss or irreversible modification of special habitats protected by Federal, State, or local laws or regulations is considered significant.
- Disturbance resulting in biologically important effects on behavior patterns.

Impacting Factors. Potential impacting factors on fishes and Essential Fish Habitat from the proposed activities include (1) bottom disturbance and increased turbidity and (2) electromagnetic fields.

Bottom Disturbance/Turbidity. Disturbance to seafloor sediments may occur during project activities. Disturbance may cause sediments and benthic organic material to be introduced into the water column and may also increase local turbidity levels. Direct effects from sediment suspension and increased turbidity on fish populations may include exposure to contaminants, changes in feeding rates, reduction in predator-avoidance ability, or smothering of feeding and respiratory organs (Wilber and Clarke 2001; Utne-Palm, 2002; Au et al., 2004). To avoid these consequences, fishes may choose to relocate until water clarity returns to levels similar to pre-disturbance conditions. Indirect effects on fish populations from sediment suspension and increased turbidity may occur by harming the populations of prey species on which the fishes depend (Airoldi, 2003). Biological response to these potential impacts is often a function of concentration and exposure duration (Newcombe and Jensen, 1996). The proposed activities are predicted to generate only minimal and short term impacts to benthic habitats (see Section 2.4) and cause a negligible increase in suspended materials over a short time frame (see Section 2.3). Therefore, using the criteria established above, proposed activities associated with the project will not have significant impacts to fishes or Essential Fish Habitat.

Electromagnetic Fields. The 35 kV submarine AC power cable may emit electric and magnetic fields (EMFs) when used to power ongoing operations. Electric fields can be blocked by conducting materials and thus can be wholly contained within the cable if suitable shielding is used (Valberg, 2005). The magnetic field cannot be contained within the cable and will interact and alter the geomagnetic field at a local scale. The area of interaction manifests as a cylindrical swath, centered on the power cable. The degree of disturbance declines with an inverse square relationship with distance from the source (the cable core). Because transmission of electricity occurs via alternating current (AC), the magnetic field resulting from an energized power cable will reverse polarity approximately 60 times per second (60 Hz), generating a time-averaged magnitude of zero change in the background field.

The potential ecological impacts of EMFs from submarine power cables on marine organisms have been described in earlier studies (Gill et al., 2005; Ohman et al. 2007; Boehlert et al., 2008). Some of the marine fishes that may be able to detect anomalies in the local magnetic field include elasmobranchs (sharks, rays and skates), chimeras, hagfishes, lampreys and sturgeons (Gill et al., 2005; Miller, 2005). Consequently, various aspects of their behavior may be disrupted from operation of the power cable. Sharks and their taxonomic allies detect electric fields via specialized sensory structures called the ampullae of Lorenzini (Kalmijn 1966). Besides directly sensing electric fields, these sensory structures may be able detect magnetic field anomalies through the application of Faraday's law of induction.

Field observations provide information to assess potential effects. The most relevant experimental data originate from a mesocosm study performed by Gill et al. (2009). They monitored the behavior of sensitive fishes (elasmobranchs) in response to an electromagnetic field that mimicked what might be expected to emanate from an energized submarine AC power cable. The study demonstrated that, while some individual fish appeared to change their behavior in response to the power cable's EMF (by changing their activity levels near the cable), unequivocal evidence to demonstrate an ability to detect anthropogenic EMF anomalies failed to emerge. This detection ability is a necessary first step in demonstrating that there could be ecologically significant effects in the marine environment from submarine power cables. Gill et al. (2009) concluded "There is no evidence from the present study to suggest any positive or negative effect on elasmobranchs of the EMF encountered," but noted that further study is needed. BOEM is currently funding an ongoing scientific study entitled "Renewable Energy in situ Power Cable Observation" which is comparing the fish and invertebrate assemblages between energized and unenergized submarine power cables in the Santa Ynez Unit. Although the field work and final report have not been completed, no significant differences have been noted to date.

Therefore, based on the experimental study performed by Gill et al. (2009) and using the criteria established above, proposed activities associated with the project will not have significant impacts to fishes or Essential Fish Habitat.

Mitigation Measures. ExxonMobil submitted the following mitigation measures as a part of the proposed project to further reduce and minimize impacts to fish and essential fish habitat:

- ExxonMobil shall select contractors who shall use a DP vessel to retrieve and install the replacement power cables from nearshore to Platform Harmony and between Platforms Harmony and Heritage.
- ExxonMobil shall require contractors, whenever feasible, to utilize appropriate installation techniques that minimize or avoid environmental impacts such as turbidity.
- ExxonMobil shall require contractors to utilize an ROV to monitor and videotape selected portions of the installation activities during the cable lay operations. If the ROV observes a rocky outcrop, the ROV shall assist the DP vessel in adjusting its route to avoid a feature, whenever it is feasible to do so. Activities that shall be videotaped with a copy provided to agencies include cable laying along the route in water depths were rocky habitat is suspected.
- ExxonMobil shall provide, under safe conditions, the permitting agencies access to the site, during installation and installation-related activities, including but not limited to, the

cable laying vessel and support vessels. All agency personnel on ExxonMobil contracted vessels shall be advised of and adhere to ExxonMobil safety requirements.

2.5.3 Conclusion

Based on the significance criteria established above, proposed activities in federal waters that are associated with the project will not have significant impacts to fishes or Essential Fish Habitat.

2.5.4 Cumulative Analysis

Section 1.6 describes the projects and activities considered in the cumulative analysis for the proposed cable installation project. Possible sources of cumulative impacts specific to fishes and EFH are those that degrade water quality via increased turbidity. Sources of cumulative impacts include on-going and proposed oil and gas activities in federal and state waters and nonpoint sources of ocean discharges. Potential cumulative impacts are discussed below.

Federal and State Offshore Energy Projects. The cumulative effects of federal structures and development activities can be found in previous environmental documents (MMS, 1995; 2001). No new federal offshore energy projects are reasonably foreseeable at this time. Proposed activities for this project are not expected to overlap temporally with any foreseeable offshore energy activities in state waters.

Non-Energy Projects and Activities.

Nonpoint Source Discharges. Water quality in the Santa Barbara Channel can be impacted by terrestrial runoff, especially during storm events. The nearest nonpoint sources of pollution are rivers and creeks which empty into the ocean along the mainland coast of the Channel. Because these waterways flow intermittently, most of the pollution enters the ocean in the winter months, particularly during "first flush", when the highest levels for pollution would occur. Relevant to fish populations, pollutants that could be associated with these river plumes include metals (e.g., zinc, copper, lead, nickel and cadmium) and polyaromatic hydrocarbons. The short-term presence of the cable lay and support vessels will not incrementally add to the level of pollution that is already present in the project area and will not incrementally add to the existing level of natural sedimentation in the project area.

Cumulative Conclusion. The impact from bottom disturbance/turbidity from the proposed activities would only contribute an incremental and non-significant impact to fishes and EFH.

2.5.5 Overall Conclusions

The potential impacts to fishes and EFH from the proposed project are considered to be insignificant based on the significance criteria used in this analysis.

2.6 MARINE AND COASTAL BIRDS

2.6.1 Affected Environment

The marine and coastal bird population off southern California is both diverse and complex, being composed of as many as 195 species (Baird, 1993). This community of birds has been described in detail in previous studies and environmental documents (e.g., Sowls et al., 1980; Briggs et al., 1981; 1987; Hunt et al., 1981; Carter et al., 1992; Baird, 1993; Mason et al., 2007). Of the many different types of birds that occur in this area, the group that is generally the most sensitive to the potential impacts of OCS development is marine birds. While some of these breed in the area, others may spend their non-breeding or "wintering" period there or pass

through during migration. Common varieties of marine bird species that inhabit or migrate through the Santa Barbara Channel include ducks, loons, grebes, shearwaters, storm-petrels, pelicans, cormorants, gulls, terns and alcids.

Nearshore species such as loons, grebes and scoters generally occupy relatively shallow waters close to shore. While in southern California, these species spend almost their entire time on the water surface. In southern California, nearshore species occur in highest numbers during the winter months; relatively few remain during the summer.

Pelagic species, including shearwaters, fulmars, phalaropes, jaegers and a variety of alcids, generally occupy deeper waters than nearshore species and may be found far from shore. These species spend much of their time on the water surface or diving for food and are very vulnerable to oil spills. Although the period of highest density varies from species to species, with the exception of five alcid species, none of these pelagic birds breeds in southern California.

Breeding species in the vicinity of the proposed project area nest mainly on the Channel Islands, although a few also nest on the mainland. From 1989-1991, the total breeding seabird population on the Channel Islands was estimated at over 100,000 birds of 14 species (Carter et al., 1992). Location, numbers of nests and at-sea densities vary greatly from species to species.

Generally, marine bird densities north of Point Conception are highest in May and are highest in January from Point Conception south. These densities are, however, based on the springtime seabird breeding populations on the northern Channel Islands and on the abundance of overwintering birds within that area. Generally, birds that are the most common in the winter months within the project region are: California Gull (*Larus californicus*), Western Gull (*L. occidentalis*), Western Grebe (*Aechmophorus occidentalis*), Cassin's Auklet (*Ptychoramphus aleuticus*) and Surf Scoter (*Melanitta perspicillata*). Sooty Shearwaters (*Puffinus griseus*), Western Gulls, Pigeon Guillemots (*Cepphus columba*), cormorants and California Brown Pelicans (*Pelecanus occidentalis*) were most abundant in spring, summer and fall (Mason et al. 2007; Kaplan et al. 2010).

Several bird species that have the potential to occur within the project area have been afforded protected status by the state and/or federal governments due to declining populations and/or habitats. In addition, all native birds within the area are protected by the Migratory Bird Treaty Act of 1918, which is enforced by the U.S. Fish and Wildlife Service (USFWS). Table 2.6.1 lists the special-status marine bird species that could be found within the vicinity of the proposed activities.

Table 2.6.1. Special-Status Marine and Coastal Birds Within or Near the Project Area.

Common Name	Scientific Name	Federal Status	State Status
Brant	*Branta bernicla*		SSC
Black-footed Albatross	*Phoebastria nigripes*	BCC	
Short-tailed Albatross	*Phoebastria albatrus*	E	SSC
Pink-footed Shearwater	*Puffinus creatopus*	BCC	
Black-vented Shearwater	*Puffinus opisthomelas*	BCC	
Ashy Storm-Petrel	*Oceanodroma homochroa*	BCC	SSC
Black Storm-Petrel	*Oceanodroma melania*		SSC
Brown Pelican	*Pelecanus occidentalis*	DE	DE
Double-crested Cormorant	*Phalacrocorax auritus*		TW

Common Name	Scientific Name	Federal Status	State Status
California Gull	*Larus californicus*		TW
California Least Tern	*Sternula antillarum browni*	E	E
Elegant Tern	*Thalasseus elegans*		TW
Marbled Murrelet	*Brachyramphus marmoratus*	T	E
Scripps's Murrelet	*Synthliboramphus scrippsi*	C, BCC	T
Guadalupe Murrelet	*Synthliboramphus hypoleucus*	C, BCC	T
Cassin's Auklet	*Ptychoramphus aleuticus*	BCC	SSC
Rhinoceros Auklet	*Cerorhinca monocerata*		TW
Tufted Puffin	*Fratercula cirrhata*		SSC

Status: E – Endangered T – Threatened
DE – Delisted (formerly Endangered) C – Candidate
BCC – Bird of Conservation Concern SSC – Species of Special Concern
TW – Taxa to Watch

Marine Birds

Listed Species. Five species of listed birds may occur in the project area: California Least Tern (*Sternula antillarum browni*), Marbled Murrelet (*Brachyramphus marmoratus*), Scripps's Murrelet (*Synthliboramphus scrippsi*), Guadalupe Murrelet (*Synthliboramphus hypoleucus*) and Short-tailed Albatross (*Phoebastria albatrus*). Of these only the Scripps's Murrelet may occur year-round in the project area, but especially from January to September. The California Least Tern would primarily be transient during migration seasons and present as a breeding species along the coast from late April through September. The Marbled Murrelet is most likely to occur as a wintering species from mid-November to mid-April; however, the species is rare south of Point Conception. The Short-tailed Albatross has been only rarely sighted off southern California.

Special Status Species. In addition to federal and state listed species, there are 12 additional special status species that could occur in the project area. Special status species are birds designated as special status, sensitive, or declining species by state or federal agencies. Several of these species breed locally on the Channel Islands or along the coastal mainland and forage at sea throughout the Southern California Bight including the Ashy Storm-Petrel (*Oceanodroma homochroa*), Black Storm-Petrel (*Oceanodroma melania*), Double-crested Cormorant (*Phalacrocorax auritus*), Elegant Tern, Cassin's Auklet, Rhinoceros Auklet (*Cerorhinca monocerata*) and Tufted Puffin (*Fratercula cirrhata*). Another suite of species breed south of California off Mexico, South America or in the South Pacific, but spend a considerable portion of time in waters off southern California during their non-breeding seasons including the Black-footed Albatross (*Phoebastria nigripes*), Pink-footed Shearwater (*Puffinus creatopus*) and Black-vented Shearwater (*Puffinus opisthomelas*). Other species that migrate south to the vicinity of the project area during the fall and winter include the Brant (*Branta bernicla*) and the California Gull.

2.6.2 Impact Analysis

The proposed project as described in Section 1.1 has the potential to impact coastal and marine birds. Several of these species are likely to occur in the vicinity of the project area during the proposed construction period (second and third quarter, 2015). Birds in the ocean environment have a dynamic distribution that is affected by ocean temperatures, currents, prey distribution and season. Their distribution and abundance in the project area would largely be affected by

these factors. The strictly coastal distribution of birds in state waters are discussed and analyzed in the Mitigated Negative Declaration (MND) for the OPSR-B Phase 2 project activities issued by the California State Lands Commission (CSLC, 2014) and will not be further analyzed in this document. The threat of an oil spill is considered negligible based on the project design and mitigation measures included in the project description.

Significance Criteria. A significant impact on bird species is:

- Any interaction with project vessels that results in direct mortality of, or injury to, a federal or state listed species.
- Any interaction with project vessels that results in direct mortality of, or injury to, a special-status species if it adversely affects the species conservation status.
- A measurable change in population abundance beyond normal variability that is likely to hinder the recovery of a listed or special-status species.
- Displacement of a major part of the population of a special-status (or individuals in the case of listed species) from either feeding or breeding areas, or from migration routes for a biologically important length of time.
- Disturbance resulting in biologically important effects on behavior patterns. Minor changes in behavior (e.g., a bird moving out of the path of an approaching boat) are not considered biologically important.

Impacting Factors. Impacting factors that may affect marine birds from the proposed cable activity include (1) project-generated noise and (2) artificial lighting associated with the cable laying vessel.

Federal and State Listed Species. Four federal or state listed species have the potential to occur in the project area. The California Least Tern is not expected to occur in the vicinity of the project site at the platforms. The only known breeding colony of California Least Terns near the project area is located on Vandenberg Air Force Base where 18 pairs nested in 2012 (Lehman 2014). The species was extirpated from historical nesting sites along the south coast of Santa Barbara County by the 1950s; however, nesting was recently documented at the Coal Oil Point Preserve near Devereux Slough in 2004, 2006 and 2007 (Lehman 2014). The proposed project area is over 11 miles from Coal Oil Point and water depths of the project site range between 350 feet to 1,200 feet. While California Least Terns forage in the ocean during the breeding season, most of this occurs within 1 mile of shore and rarely does foraging occur out to 2 miles (Atwood and Minsky, 1983). Consequently, breeding California Least Terns are not likely to forage in waters at that depth or that distance from shore. Little is known about the use of areas farther offshore by California Least Terns, but it is thought that some individuals migrate offshore of California (as far as 20 miles offshore or more) based on observations off southern California (Pereksta, pers comm.) and off the coast of Mexico in early spring (Howell and Engel, 1993). Individuals migrating offshore could transit through the area during the proposed project activities, but it is unlikely that they would be adversely affected by the proposed activities.

Based on the current construction window of second and third quarter 2015, Scripps's Murrelets could occur within the vicinity of the project site. Scripps's Murrelets may be dispersing away from breeding areas with fledglings at that time of year and could occur in the vicinity of the project site. If any are in the project area, they have the potential to be attracted by vessel lighting during night operations. The Guadalupe Murrelet (formerly conspecific with the Scripps's Murrelet and known collectively as the "Xantus's Murrelet") breeds off central Baja California

and is a rare visitor to the Santa Barbara Channel. This species disperses northward after breeding with records off southern California occurring from July-October, but most occur well offshore beyond the project area and thus it is unlikely that they would be adversely affected by the proposed activities.

The Marbled Murrelet should not be present during the construction window as it occurs when the species is at or in the vicinity of its breeding sites well north of the project area. This bird is rare in southern California and is only found during the non-breeding season (mid-November to mid-April) in the Southern California Bight. Therefore, it is unlikely to occur near the platforms during construction and not be affected by the proposed activities.

Because of project-specific mitigations (see below) and a determination by BOEM that no effects will occur to federally listed species, no consultation with the USFWS is required for this project.

Most Short-tailed Albatross found off California in recent years have been during the fall and early winter with a few records in late winter and early spring (California Birds Record Committee, 2007). Spring and summer are among the least likely times for dispersing individuals of this species to be found along the southern California coast, although one of the few recent records in the vicinity of the proposed project was from the north side of Santa Cruz Island on 6 July 2005 (California Birds Record Committee, 2007). The species is not expected to occur in the vicinity of the project site due to its rarity in the project vicinity and will not be affected by the proposed activities.

Special Status Bird Species. A number of other special status marine bird species have the potential to occur in the project area during construction activities. Several of these species occur year-round like the Double-crested Cormorant, Brown Pelican, California Gull and Cassin's Auklet; although they can be more common during some seasons than others. Species that could occur during the project window include the Black-footed Albatross, Pink-footed Shearwater, Ashy Storm-Petrel, Black Storm-Petrel, Elegant Tern and Tufted Puffin.

Noise Effects. Noise created from transiting vessels may exceed the threshold of potential effect for most birds, resulting in the potential for a flight response. Noise sources associated with the proposed project will include equipment such as vessels, winches, generators and ROV equipment. Noise associated with construction activities on the platforms (e.g., cable pulls through I- and J-tubes) will be temporary and localized and are not expected to interfere with sensitive status bird species above the water surface. Noise resulting from operation of construction equipment below-surface will be short-term in duration and the construction activities are not considered a high noise-producing activity. Below-surface project activities will result in some increase in underwater noise levels; however, it is anticipated that these temporary increases would not result in significant sound pressure levels. In addition to equipment, vessel traffic from the support vessels and crew boats will increase noise levels during project activities.

Vessel noise at a specific location is transitory; slowly increasing as a vessel approaches and decreasing as it passes. Because of the transitory nature of this noise and the mobility of marine birds it is unlikely that a marine bird would suffer an injury or death from vessel noise. In addition, it is expected that the visual presence of the vessels will elicit a response from birds in the area before noise does (USFWS, 2006).

The project area is not near any marine bird breeding colonies where nesting birds could suffer greater noise-related effects than those foraging or transiting through the project area near the platforms. Therefore, noise impacts to listed and other special status marine bird species are not expected to be significant. The amount of noise produced is further reduced due to the reduction in construction vessels and the short timeframe required for installation of the cable.

Lighting Effects. Many nocturnal seabird species are highly attracted to artificial light from vessels and offshore oil and gas platforms, especially shearwaters, petrels and storm-petrels. Intense source points of artificial lighting on the ocean can attract marine birds from very large catchment areas (Wiese et al., 2001). Effects from artificial light include disorientation, mortality due to collisions with lighted structures, interruption of natural behaviors and increased risk of predation.

The species that are potentially the most vulnerable to attraction to artificial lighting in marine environments are nocturnal species whose populations are small and fragmented (Montevecchi, 2006). Three special status species off southern California that may be especially vulnerable are the Scripps's and Guadalupe Murrelets and Ashy Storm-Petrel; all of which have been attracted to artificial light sources along the coast and offshore of southern California and Mexico (Carter et al., 2000 and Jehl and Bond, 1975). Fledgling storm-petrels, shearwaters and some alcids are more attracted to artificial lights than are adults and are particularly vulnerable during the fall when they are dispersing away from their natal areas.

The platforms will continue to be lit as usual for compliance with USCG navigational hazard requirements during project activities to assure safe operations. Based on field observations encompassing a broad range of temporal, geographic, astronomical and meteorological parameters undertaken in a recent study off southern California, there appears to be little or no adverse effects of Pacific OCS production platforms' lighting or structural features on migratory birds and their movements (Johnson et al., 2011). In addition, recent nocturnal surveys for Ashy Storm-Petrels and Scripps's Murrelets at offshore oil platforms off southern California did not detect any light attraction events involving these species (Hamer et al., 2014 *in press*). However, neither of these studies evaluated the addition of other sources of intense light on the Pacific OCS including brightly lit vessels.

Nighttime marine construction is anticipated and therefore lit project vessels are expected to be present along the cable routes or while transiting between the port and the site. There is a potential for the vessel lighting associated with the project to attract listed and special status marine birds to the area. However, the implementation of the following mitigation measures should reduce the possibility of adverse effects from light attraction.

Mitigation Measures. The following mitigation measures will further reduce and minimize impacts to marine and coastal birds:

- Lighting will be directed inboard and downward to reduce the potential for seabirds to be attracted to the work area.
- When feasible, all vessel cabin windows will be equipped with shades, blinds or shields that block internal light during nighttime operations.
- The onboard monitor will routinely inspect lighted vessels for birds that may have been attracted to the lighted vessels.
- If an injured bird is discovered on a vessel, the bird will be transported on the next returning work vessel to an approved wildlife care facility.

- Make every effort to maintain a distance of 300 feet from aggregations of feeding or resting marine birds.
- Minimize attraction of predatory and scavenging birds that could prey upon small seabirds attracted to lights (e.g., murrelets, storm-petrels) by carefully containing and removing garbage and food waste on the vessel.
- A log of all birds found onboard vessels will be maintained with the status and health of birds on retrieval and release. The log will be provided to BOEM when the project has been completed.

2.6.3 Conclusion

Considering both the affected environment and the potential impacting factors of the proposed action, this project will have no significant impacts to marine birds and no effects to federally listed species. The state listed Scripps's Murrelet could occur in the vicinity of the proposed project and, if present, could be attracted to the area at night by project-related lighting. However, based on the short duration of the project and the proposed mitigations to reduce the effects of artificial lighting on birds, we believe that effects to the species will not be significant.

2.6.4 Cumulative Analysis

Section 1.6 describes the projects and activities considered in the cumulative analysis for the proposed project. Possible sources of cumulative impacts specific to marine birds are those that introduce more artificial lighting and generate excessive noise levels near nesting, roosting and feeding areas. Sources of cumulative impacts include ongoing and proposed oil and gas activities in federal and state waters, marine shipping and tankering and commercial fishing vessels that use bright lights to attract fish or squid to the surface. Potential cumulative impacts are discussed below.

Cumulative impacts related to ongoing offshore oil and gas activities that may have long-term effects on marine birds are oil spills, operations-generated noise and night lighting. These impacts have occurred or may occur from existing federal and state projects. The platforms off southern California are far enough from marine bird nesting areas that attenuated noise should not reach levels that could disturb nesting activities. If noise near the platforms reached excessive levels, birds will likely avoid the area and are not likely to suffer harm as a result. While there is a potential for artificial lighting effects as a result of the proposed project, the short duration, project location, limited number of vessels and the project-specific mitigations should ensure that the project does not result in an increase to cumulative impacts.

Cumulative Conclusion. The impact from artificial lighting and project-generated noise from the proposed activities would only contribute an incremental and insignificant impact to marine birds.

2.6.5 Overall Conclusions

Due to the short duration, location and the time of year the project will be implemented, it is unlikely that any marine bird species will be affected by project-related noise. Artificial lighting associated with night operations could attract marine birds to the project area, several of which have special-status designations. While the potential for marine birds to be attracted to the area is unpredictable and highly influenced by weather, time of year and species-specific factors, the implementation of mitigation measures identified in this EA to reduce the effects of artificial lighting on coastal and marine birds is expected to result in these effects being insignificant.

2.7 MARINE MAMMALS

2.7.1 Affected Environment

At least 29 species of marine mammals inhabit or visit California waters. These include five species of pinnipeds (seals and sea lions), 23 species of cetaceans (whales, porpoises and dolphins) and the southern sea otter (Allen, et al., 2011).

Pinnipeds breed on the Channel Islands and on offshore rocks and isolated beaches along the mainland coast; thousands also move through the area during their annual migrations. Cetaceans use area waters as year-round habitat, seasonal foraging grounds, or annual migration pathways. The sea otter is a year-round resident of the nearshore waters, primarily north of Gaviota in Santa Barbara County.

Two species of pinnipeds, California sea lions (*Zalophus californianus*) and harbor seals (*Phoca vitulina*), commonly occur in the Santa Barbara Channel and nearshore waters of California. San Miguel Island is the major southern California rookery for California sea lions and they are the most frequently encountered marine mammal in southern California waters (Bonnell and Dailey, 1993; Koski et al., 1998; Carretta et al., 2013). Sea lions haul out on the lower decks and structures of OCS platforms and on associated mooring buoys. Harbor seals haul out on nearshore rocks and beaches along the mainland coast and on the northern Channel Islands. Mainland haul out sites near the project area are located near the Carpinteria Pier, Dos Pueblos, Ellwood Pier, Point Conception and Rocky Point (Hanan et al., 1992). Individual harbor seals are often sighted in waters near the OCS platforms.

Northern elephant seals (*Mirounga angustirostris*) and northern fur seals (*Callorhinus ursinus*) also breed on San Miguel Island, but are uncommon in project area waters (Bonnell and Dailey, 1993). Elephant seals range widely at sea and spend much of their time underwater (Le Boeuf et al., 1989, 2000; DeLong et al., 1992). Fur seals forage in deeper waters beyond the continental shelf, generally 20 nautical miles (40 kilometers) or more from shore (Bonnell et al., 1983; Bonnell and Dailey, 1993).

The small odontocetes, or toothed whales, most often seen in the project area are common dolphins (*Delphinus capensis* and *D. delphis*), Dall's porpoise (*Phocoenoides dalli*), Risso's dolphin (*Grampus griseus*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*) and bottlenose dolphin (*Tursiops truncatus*) (Bonnell and Daily, 1993; Carretta et al., 2013). Common dolphins, the most abundant cetaceans off California, move through the southern California waters in groups of up to several thousand animals. Bottlenose dolphins are most commonly encountered along the shoreline.

The gray whale (*Eschrichtius robustus*) migrates through southern California waters twice a year, to and from the Mexican breeding lagoons and feeding grounds in the Bering Sea. The southbound migration of gray whales through the Southern California Bight begins in December and lasts through February; the northbound migration is more prolonged, lasting from February through May with a peak in March (Leatherwood, 1974; Bonnell and Dailey, 1993; Rugh et al., 1999).The northward migration occurs in two "waves" (Dohl et al., 1981; Herzing and Mate, 1984; Poole, 1984). The first, composed mainly of whales other than cows with calves, begins moving northward in February (Braham, 1984). The second, cow/calf phase of the spring migration generally peaks 7 to 9 weeks after the peak of the first (Herzing and Mate, 1984;

Poole, 1984). Although individual animals may be sighted throughout the year, gray whales are generally absent from southern California waters from August through November.

Minke whales (*Balaenoptera acutorostrata*), the smallest of the baleen whales, occur year-round in southern California waters (Dohl et al., 1983; Carretta et al., 2013), where they are often sighted near the northern Channel Islands (Leatherwood et al., 1987; Bonnell and Dailey, 1993; Koski et al.,1998).

Eight marine mammal species found in southern California waters are listed as threatened or endangered under the Endangered Species Act. These include six whales (blue, humpback, fin, sei, right and sperm whales), one pinniped (Guadalupe fur seal) and the southern sea otter.

The blue whale (*Balaenoptera musculus*) and humpback whale (*Megaptera novaeangliae*), usually forage in the western Santa Barbara Channel and southern Santa Maria Basin during summer and fall (Calambokidis et al., 1990; Calambokidis, 1995; Reeves et al., 1998; Mate et al., 1999). Fin whales are also present in the Channel during summer but they are generally are distributed further offshore and south of the northern Channel Islands (Leatherwood et al., 1987; Bonnell and Dailey, 1993). Sei and northern right whales are rare in California waters (Barlow et al., 1997). Sperm whales (*Physeter macrocephalus*) are present offshore California year-round, with peak abundance from April to mid-June and again from late August through November (Dohl et al., 1981, 1983; Carretta et al., 2013). Sperm whales are primarily a pelagic species and are generally found offshore in waters with depths of greater than 3,200 feet (1,000 meters) (Bonnell and Dailey, 1993; Gosho et al., 1984).

The Guadalupe fur seal *(Arctocephalus townsendi*) is not commonly seen in southern California waters (Stewart et al., 1987b; Bonnell and Dailey, 1993; DeLong and Melin, 2000). Southern sea otters (*Enhydra lutris nereis*) range in nearshore waters from San Mateo County in the north to Santa Barbara County in the south (FWS, 2012).

General population estimates of marine mammals found in the Southern California Bight are described in stock assessment reports prepared by the National Marine Fisheries Service (Carretta et al. 2013). Site specific observations of marine mammals along the proposed cable route were conducted in 2003, 2011 and 2012.

Previous projects conducted in the SYU have included the requirement for marine mammal observers. While the projects have occurred in varying seasons, their observations are an indication of the proportionate numbers and variety of marine mammals that can occur in the project area. Summaries of these observations are given below.

Marine mammal observers (Marine Mammal Consulting Group) onboard the Cable Vessel (CV) *Giulio Verne* during the 15-day October-November 2003 installation of the C-1 power cable recorded over 3,000 individuals representing five species. Common dolphins (all identified as the long-beaked species *C. capensis*) were most abundant species reported during the project (MMCG, 2003) with over 2,500 individuals recorded. Other species observed included Pacific white-sided dolphin (310 individuals), Dall's porpoise (22 individuals) and one Minke whale, while two sightings of unidentified whales and 424 sea lions were also recorded.

Similar marine mammal observations were recorded by Padre Associates during geophysical surveys along the SYU pipeline/power cable corridors (Padre Associates, Inc. 2011, 2012). A total of 1,712 individual marine mammals representing seven taxa were recorded including; common dolphin (1,211 individuals), California sea lion, California gray whale (2 individuals),

bottlenose dolphin (6 individuals), killer whale (5 individuals), Pacific harbor seal and southern sea otter, as well as 25 unidentified dolphins, 454 sea lions and 4 harbor seals.

2.7.2 Impact Analysis

The impact analysis for the marine biological resources in this document adopts significance criteria developed for all biological resources, including threatened and endangered species. An impact from the proposed project is significant if it is likely to cause any of the following:

- A measurable change in population abundance and/or species composition beyond natural variability. For threatened and endangered species, this includes any change in population that is likely to hinder the recovery of a species.
- Displacement of a major part of the population from either feeding or breeding areas or from migration routes for a biologically important length of time.
- A substantial loss or irreversible modification of habitat in several localized areas or in 10 percent of the habitat in the affected area.
- Disturbance resulting in biologically important effects on behavior patterns. For marine mammals (including threatened and endangered species), the phrase "biologically important length of time" is assumed to mean one season or more. Depending on the species and the circumstances, a season could be a breeding season (e.g., California sea lion breeding season), feeding or foraging season (e.g., blue whale feeding period off southern California), or a migratory period (e.g., gray whale migration).

Impacting Factors. The two sources of marine mammal impacts are (1) underwater noise generated by vessels and other cable installation and retrieval activities and (2) the presence of project-related vessels which could increase the risk of entanglement in an anchor line or in the deployed cable, or of a collision between a marine mammal and a vessel.

Noise Disturbance: Available information on the potential impact of noise and other OCS-related disturbances on marine mammals was reviewed by Geraci and St. Aubin (1980, 1985); Terhune (1981); Gales (1982); Malme et al. (1989); Richardson and Malme (1993); and Richardson et al. (1991, 1995).

Vessels are the major contributors to overall background noise in the sea (Richardson et al., 1995). Sound levels and frequency characteristics are roughly related to ship size and speed. The dominant sound source is propeller cavitation, although propeller "singing," propulsion machinery and other sources (auxiliary machinery, flow noise, wake bubbles) also contribute. Vessel noise is a combination of narrowband tones at specific frequencies and broadband noise. For vessels the approximate size of crew and supply boats, tones dominate up to about 50 Hz. Broadband components may extend up to 100 kHz, but they peak much lower, at between 50 and 150 Hz. These sounds are within the frequency range of sounds produced and known or assumed to be heard by marine mammals, with highest levels concentrated at the low frequencies that are assumed to be most audible to large baleen whales, such as the gray whale.

The source levels and frequency ranges of sounds produced by cable- and pipe-laying vessels have not been measured directly. However, diesel-powered vessels of the approximate size of the lay vessel can be expected to generate sounds at broadband source levels above 180 dB, with most of the energy below 200 Hz (Richardson et al., 1995) at the source. The use of thrusters to dynamically position the CIV would not be expected to change the overall noise level, because

the thrusters are operated from the central engines, which operate continuously throughout the laying process.

Richardson et al. (1995) also gives estimated source levels of 156 dB for a 53-foot (16-meter) long crew boat (with a 90-Hz dominant tone) and 159 dB for a 112-foot (34-meter) long twin diesel (630 Hz, 1/3 octave). Broadband source levels for small, supply boat-sized ships 180 to 179 feet (55 to 85 meters) in length are between 170 and 180 dB. Most of the sound energy produced by vessels of this size is at frequencies below 500 Hz. Many of the larger commercial fishing vessels that operate off southern California fall into this class.

Three crew boats typically are in the SYU area at any time and crew boats normally make 2-3 round trips per day between the SYU platforms and Ellwood Pier. ExxonMobil estimates that there will be no need for additional crew boat trips during the OPSR-B project period. In addition, one supply boat typically is in the field at any time and supply boats normally make a trip every other day between the SYU platforms and Port Hueneme. ExxonMobil estimates that there will be no need for additional supply boat trips during the OPSR-B project period.

Overall, the proposed project would be expected to result in a minor increase in area vessel activity. Three to four vessels would be involved in the cable installation: a DP CIV, a support tug and one or two dive support vessels. Several support skiffs would also be deployed in the nearshore area during the project.

In general, pinnipeds and sea otters often show considerable tolerance of vessels. Sea lions, in particular, are known to tolerate close and frequent approaches by boats (Richardson et al., 1995).

Odontocetes, or toothed whales, also often tolerate vessel traffic, but may react at long distances if confined (e.g., in shallow water) or previously harassed (Richardson et al., 1995). Depending on the circumstances, reactions may vary greatly, even within species. Although the avoidance of vessels by odontocetes has been demonstrated to result in temporary displacement, there is no evidence that long-term or permanent abandonment of areas has occurred. Sperm whales may react to the approach of vessels with course changes and shallow dives (Reeves, 1992) and startle reactions have been observed (Whitehead et al., 1990; Richardson et al., 1995).

As summarized in Richardson et al. (1995), there have been specific studies of reactions to vessels by several species of baleen whales, including gray (e.g., Wyrick, 1954; Dahlheim et al., 1984; Jones and Swartz, 1984), humpback (e.g., Bauer and Herman, 1986; Watkins, 1986; Baker and Herman, 1989), bowhead (e.g., Richardson and Malme, 1993) and right whales (e.g., Robinson, 1979; Payne et al., 1983). There is limited information on other species. Low-level sounds from distant or stationary vessels often seem to be ignored by baleen whales (Richardson et al., 1995). The level of avoidance exhibited appears related to the speed and direction of the approaching vessel. Observed reactions of marine mammals range from slow and inconspicuous avoidance maneuvers to instantaneous and rapid evasive movements. Baleen whales have been observed to travel several kilometers from their original position in response to a straight-line pass by a vessel (Richardson et al., 1995).

Few quantitative data are available on the effects of dredging or trenching and marine construction noise on marine mammals (Richardson et al., 1995). However, the observations given below, while more qualitative in nature, provide information that indicates that, in general, marine mammals do not exhibit overt behavior changes in response to the presence of vessels.

During the Exxon offshore pipelines and power cables project in 1991/1992, a marine mammal monitoring program was conducted by biologists from and under contract to the Santa Barbara Museum of Natural History (SBMNH, 1992). The monitoring program was conducted between December 1991 and March 1992, during the gray whale migration. Although no entanglement, physical contact, or overt startle reactions were observed during the monitoring study, gray whales were observed to alter course in apparent reaction to construction activities (SBMNH, 1992). Animals moved through the project area throughout the project period and there was no evidence that the construction activities interfered with the gray whale migration.

Installation of power cable C-1 was completed over a 15-day period in late October to early November 2003. Onboard marine mammal observers recorded all marine mammals that were visible throughout the cable removal and installation. As reported in MMCG (2003) no large whales approached the DP cable lay vessel closer than 1 nautical mile (<2 kilometers) and no noise-related effects were recorded. Padre Associates, Inc. (2011, 2012) reported that with institution of mitigations prescribed in the project-specific Marine Wildlife Contingency Plan, no negative effects from noise generated by the geophysical equipment and survey vessels were observed.

Although it is possible that cetaceans, including gray whales, could respond to noise produced by the CIV and associated support vessels with short-term changes in swimming speed, increased intervals between blows and small deflections in course and that they would resume normal course and speed after passing the source of the sound, recent observations suggest it unlikely.

Entanglement/Collision. Proposed equipment and vessel activity in the project area also increases the probability that a marine mammal might become entangled in an anchor line and drown or that a boat might hit an animal. Mooring lines and ROV support lines may also present some risk of entanglement. However, there have been no documented cases of marine mammal entanglement in anchor or mooring lines during operations on the Pacific OCS. The MMCG (2003) reports that no whales approached the cable lay vessel closer than 1 nautical mile (<2 kilometers) and no entanglement of marine mammals were recorded.

The DP vessel would not anchor within the project area except for an emergency. Given the limited scope of this anchoring activity in time and space and the small associated risk, no impacts would be expected from anchor line entanglement.

Based on experiences in southern California, accidental collisions between cetaceans and support vessel traffic are unlikely events. Although large cetaceans have been struck by freighters or tankers and sometimes by small recreational boats (Carretta et al., 2013), no such incidents have been reported with crew or supply boats off California (MMS, unpubl. data). Cable installation vessels move very slowly during cable deployment operations and are even less likely to present a collision risk to large cetaceans. Only one possible incident of this type has been reported; in January 2001, an injured gray whale calf was sighted in the vicinity of a fiber-optic cable laying operation off Morro Bay (Burton and Harvey, 2001). While the cause of its injuries could not be ascertained, the animal was observed swimming within a few meters of the DP cable lay vessel.

Pinnipeds are very nimble and considered very unlikely to be struck by vessels. However, the single documented instance of a collision between a marine mammal and a support vessel involved a pinniped: an adult male elephant seal was struck and presumably killed by a supply vessel in OCS waters in the Santa Barbara Channel in June 1999.

In their 1984 Biological Opinion on the plan for proposed oil and gas development and production activities in the SYU, the National Marine Fisheries Service (NMFS) concluded that the probability of a collision between vessels and marine mammals was so low that no significant impacts on mammal populations were expected (SAI, 1984). Since the only large vessel involved with this project will be the CIV itself, the risk of vessel collision with large cetaceans is expected to be very small. The risk of vessel collision is further reduced by the fact that, with the exception of mobilization/demobilization activities, the CIV would be moving extremely slowly as the cable is being retrieved or deployed.

Actions specified in the project-specific Marine Wildlife Contingency Plans for the 2003 C-1 cable installation and the plans for the 2011 and 2012 marine geophysical surveys included slowing vessel speed, altering direction of travel and not crossing the path of whales. No vessel/mammal interactions were recorded by onboard observers during either of those projects (MMCG, 2003, Padre Associates, Inc. 2011, 2012). If the cable retrieval and installation activities overlap with the gray whale migration season, it would be expected that whales will continue to move through the project area, exhibiting the minor reactions observed during the 1991/92 pipelines and power cables project.

Mitigation Measures. ExxonMobil submitted the following mitigation measures as a part of the proposed project to further reduce and minimize impacts to marine mammals:

- Applicant shall prepare and implement a marine mammal monitoring plan (MMMP) during cable retrieval and installation operations. The plan shall include the following elements:
  - A minimum of two NMFS-qualified marine mammal observers shall be located on the CIV to conduct observations, with at least one observer on duty during all cable installation activities.
  - Shipboard observers shall submit a daily sighting report to NMFS and BSEE. This report shall be used to determine whether observable effects to marine mammals are occurring.
  - The observers shall have the appropriate safety and monitoring equipment to conduct their activities (including night-vision equipment).
  - The observers shall set a 1,640-ft (500 m) radius hazard zone around the CIV for the protection of large marine mammals (i.e., whales) and shall have the authority to stop any activity if it appears likely that a whale could enter the hazard zone.
- Applicant shall immediately contact the Santa Barbara Marine Mammal Center for assistance should a marine mammal be observed to be in distress. In the event that a whale becomes entangled in any cables or lines, the observer shall notify the Santa Barbara Marine Mammal Center and required agencies, so appropriate response measures can be implemented. Similarly, if any take involving harassment or harm to a marine mammal occurs, the observer shall immediately notify the required regulatory agencies.
- The vessel captain shall have the final authority on vessel operations to ensure the safety of the vessel, its equipment and the people on board and shall cooperate with the observers to minimize the potential for damage to marine mammals or the environment. The vessel captain and ExxonMobil project management shall be responsible for ensuring that the OPSR-B MMMP is implemented.
- A report summarizing the results of the monitoring activities shall be completed following completion of these activities and submitted to the required agencies. The plan

shall be submitted for review to BSEE/BOEM prior to commencement of installation activities.

- Applicant shall provide awareness training on the most common types of marine mammals likely to be encountered in the project area and the types of activities that have the most potential for affecting the animals to all project-related personnel and vessel crew prior to the start of installation activities. In addition, the applicant shall require all offshore personnel to view the BOEM-approved Wildlife and Fisheries Training video.

2.7.3 Conclusion

Observable effects of noise and disturbance on marine mammals from the proposed project, including on-platform operations and cable retrieval and installation operations would be expected to be restricted to possible temporary changes in direction of movement during cable retrieval and installation operations. Given the projected levels of equipment and activity and the timing of activities, the effects of noise and disturbance on marine mammals from this project would be expected to be insignificant. Likewise the risk of entanglement or collision with a project vessel is unlikely to occur given past experience, lack of opportunities for entanglement and the slow speed of the cable laying vessel. The mitigation measures proposed by the applicant are above and beyond what is necessary to ensure safe operations with respect to marine mammals although basic marine mammal awareness training utilizing the approved Wildlife and Fisheries Training video and monitoring reports should be required.

2.7.4 Cumulative Analysis

Section 1.6 describes the projects and activities considered in the cumulative analysis for the proposed project. Sources of cumulative impacts to marine mammals include ongoing and proposed oil and gas activities in Federal and State waters, marine shipping and tankering and commercial fishing vessels.

Multiple sources of noise and disturbance, including stationary oil and gas activities (construction, drilling and production), ship and boat noise, aircraft and seismic survey noise, occur in the Santa Barbara Channel and nearby waters. Although some oil and gas activities off southern California, such as construction and seismic surveys, have declined over the last decade, overall vessel traffic, including commercial, military and private vessels, is increasing.

These increasing levels of noise and disturbance could result in more frequent masking of marine mammal communications, behavioral disruption and short-term displacement. In other areas, there is some evidence for long-term displacement of marine mammals due to disturbance, particularly in relatively confined bodies of water (summarized in Richardson et al., 1995).

However, marine mammal populations in California waters have generally been growing in recent decades (Bonnell and Dailey, 1993; Carretta et al., 2013) despite a gradual increase in a wide variety of human activities in the area. There is no evidence that these activities have resulted in adverse impacts on marine mammal populations. Given the low levels of noise and disturbance associated with the proposed cable installation activities and based on real-time observations during cable laying operations within the SYU in 2003 (MMCG, 2003), this project would not be expected to add significantly to cumulative impacts on marine mammals in the Santa Barbara Channel. This is expected to be true even if the project activities overlap with the gray whale migration through the area. In their analysis of the impacts of OCS activities on gray whales prepared in support of the determination to remove the species from the list of threatened

and endangered species, NMFS (1992) concluded that the cumulative impacts from oil and gas activities may have the potential to adversely affect the eastern North Pacific gray whale stock, but that these impacts are not likely to jeopardize its continued existence either through direct exposure or through the loss of food resources. None of the other potential sources of cumulative impacts will have a significant effect on marine mammals.

Cumulative Conclusion. The impact from the activities associated with this project would only contribute an incremental and insignificant impact to marine mammals.

2.7.5 Overall Conclusion

The risk that marine mammals will be struck by vessels, become entangled and be affected by noise is considered highly unlikely. With the mitigations included in the analysis in this EA to protect marine mammals from these factors, the proposed project would not result in increased risks and the proposed action will not have significant impacts on marine mammals.

2.8 COMMERCIAL FISHING

2.8.1 Affected Environment

Commercial fishing activities in the Santa Barbara Channel have been described in previous works and are also incorporated here by reference (SAI, 1984; MMS, 2001; Culver et al., 2007; Kronman, 2013). The proposed project activities lay within the CDFW fishing blocks (FB) 655 and 656 within the Santa Barbara Channel, located offshore Santa Barbara County, California. This region contains a diverse assemblage of finfish, shellfish and other invertebrates, many of which are commercially exploited (Section 2.5; CDFW, 2008; 2009; 2010; 2011; 2012).

In recent years, fishers primarily landed their catch made within blocks 655 and 656 at five major ports: Port Hueneme, San Pedro, Santa Barbara Harbor, Terminal Island and Ventura (CFIS, 2014). The spatial extent of these ports is thereby used to interpret regional significance for potential impacts from the proposed cable installation project. On average, about 1% of the weight and value of the regional catch was made in FB 655 and 656 (Table 2.8.1).

Table 2.8.1 Summary of Commercial Fishery Landings, 2008 – 2012

Year	Project Area Landings: FB 655 and 656		Regional Landings[1]		% of Regional Landings from Project Area	
	Pounds	Value	Pounds	Value	Pounds	Value
2008	481,184	$444,007	175,942,084	$45,989,964	0.27	0.97
2009	378,690	$485,367	257,655,433	$73,543,570	0.15	0.66
2010	2,364,984	$856,185	322,338,797	$81,992,082	0.73	1.04
2011	4,866,344	$1,463,277	287,664,475	$82,628,977	1.69	1.77
2012	3,727,222	$1,651,545	234,984,931	$74,966,554	1.59	2.20
Mean	**2,363,685**	**$980,076**	255,717,144	$71,824,229	0.89	1.33

1 Regional Landings were summed from the 5 major ports relevant to FB 655 and 656: Port Hueneme, San Pedro, Santa Barbara Harbor, Terminal Island and Ventura (CDFW, 2008; 2009; 2010; 2011; 2012)

Because of the diversity and seasonality of the various fisheries within the Channel, the region is typically fished with several different gear types capable of targeting multiple species. Based on data from 2008-2012, fisheries that could overlap with the project timeframe (the second and third quarter of the calendar year) include: (1) purse or drum seines for coastal pelagic species

such as anchovy, bonito, mackerel, squid and sardine; (2) trawls for halibut, prawn and sea cucumber; (3) hook-and-line/longlines for cabezon, rockfishes, halibut, shark and white seabass; (4) traps for crab, hagfish, sablefish and whelk; and (5) drift/set gillnets for white seabass and shark (Table 2.8.2).

Table 2.8.2 Important Ports and Commercial Fisheries within Project Area

Major Regional Port	Mean Annual Landings 2008 – 2012 within FB 655 and 656		Commercial Fisheries that Overlap with Project Area and Timeframe (2nd and 3rd Quarter of Calendar Year)
	Pounds	Value	
Port Hueneme	1,049,337	$280,378	Seine - coastal pelagic species
San Pedro	74,658	$26,611	Seine - coastal pelagic species
Santa Barbara Harbor	204,837	$406,983	Gill net (drift) - white seabass and shark Hook-and-line - groundfish, white seabass Trap - crab, hagfish, prawn, whelk Trawl - halibut, prawn, sea cucumber
Terminal Island	20,770	$19,223	Seine - coastal pelagic species
Ventura	1,012,678	$265,718	Seine - coastal pelagic species Trawl - halibut, prawn

2.8.2 Impact Assessment

Significance Criteria. An impact from the proposed project is significant if it is likely to cause any of the following:

- Loss of more than 10 percent (by value or weight) of any major fishery that occurs within the project area for one or more seasons;
- Loss of more than 10 percent of fishing grounds of any major fishery that occurs within the project area for one or more seasons.

Impacting Factors. The impacting factors associated with this project that may affect the commercial fishing industry include *space-use conflicts* that preclude fishing from the project area during construction or operations; creation of *subsea obstructions*, such as new submarine cables, anchor scars, or lost debris that could damage or entangle fishing gear when fishing resumes after the project is completed; *vessel traffic* that could damage fishing gear (e.g. vessel propellers destroy lines and floats attached to fishing gear) causing an economic impact to fishers and in turn cause a reduction in weight or value of landings and; *effects on fished populations or essential fish habitat* through project activities that change productivity or species diversity.

Space-use conflicts. As described in Section 1.4, one CIV and up to three support vessels would be active in the project area and may preclude fishing activities up to two months during the second and third quarters of 2015. In federal waters, the CIV contracted by ExxonMobil to conduct offshore activities will use DP to maintain station and thus no anchoring is expected during the cable installation activities. The absence of anchoring will result in a very small preclusion footprint compared to the available fishing grounds in the region. Because the CIV will be slow moving or stationary, fishers will be able to avoid any potential operational conflicts. New submarine cables emplaced on the seabed will be contained within the current pipeline and cable corridor, so no further preclusion during the operations phase would be expected over that which was previously analyzed in the original development and production plan for the Santa Ynez Unit (MMS, 1984). Given the significance criteria, space-use conflicts

associated with the project are expected to be negligible for the fishing fleet overall, although a small number of fishers may be disproportionately impacted.

Subsea obstructions. The construction activities associated with the proposed project have the potential to generate seafloor obstructions that could impact commercial fishing, particularly trawling, in the project area. These obstructions could result from the new power cables and project-associated items lost overboard. With the use of a DP vessel, no anchoring will occur on the OCS. New submarine cables emplaced on the seabed will be contained within the current pipeline and cable corridor, so no further additional obstructions would be expected over that which was previously analyzed in the original development and production plan for the Santa Ynez Unit (SAI, 1984). Additional environmental actions proposed by ExxonMobil during the project (see below) will reduce or retrieve lost items would decrease the level of impact from obstructions to negligible.

Vessel traffic conflicts. As described in the Section 1.4, ExxonMobil expects that 3-4 vessels would be involved in the cable retrieval and installation. There is no expected increase in crew boat use associated with personnel transfer to and from the site. Impacts to fishing gear will be reduced to negligible due to the use of vessel traffic corridors negotiated with the local fishing fleet.

Effects on fished populations or essential fish habitat. Potential project impacts on fishes and essential fish habitat are discussed in Section 2.6; no significant impacts are expected.

Mitigation Measures. ExxonMobil submitted the following mitigation measures as a part of the proposed project to further reduce and minimize impacts to commercial fishing:

- ExxonMobil shall require all project-related vessels utilize the vessel traffic corridors established by the Joint Oil/Fisheries Office (JOFLO).
- ExxonMobil shall keep the JOFLO in Santa Barbara informed of construction activities as they progress.
- ExxonMobil shall require all offshore personnel to view the Wildlife and Fisheries Training video and receive wildlife and fisheries training.
- ExxonMobil shall file a timely advisory with the local USCG District office, with a copy to the Long Beach Office of the State Lands Commission, for publication in the Local Notice to Mariners and shall place a similar notification in all Santa Barbara Channel ports that support commercial fishing vessels at least 15 days prior to the commencement of construction activities.
- ExxonMobil shall continue to consult with JOFLO and commercial fishermen, as appropriate, during the planning stages and construction to identify and mitigate any unanticipated impacts regarding the OPSR-B project. If the JOFLO determines that conflicts with commercial fishing operations in the SYU area develop during this project, ExxonMobil shall make all reasonable efforts to satisfactorily resolve any issues with affected fishermen. Possible resolutions may include physical modification of identified problem areas on the replacement cables, the establishment of temporary preclusion zones, or off-site, out-of-kind, measures. Evidence of consultations shall be provided to the BSEE, SLC and SBC.
- ExxonMobil shall review design concepts and installation procedures with JOFLO to minimize impacts to commercial fishing to the maximum extent possible.

- ExxonMobil shall require the contractor to recover any fan channel support, if used, prior to demobilization in the event they escape.
- ExxonMobil shall require contractors, to the extent reasonable and feasible, to recover all items lost overboard during activities associated with the proposed project. Logs shall be maintained on the cable installation and support vessels that identify the date, time, location, depth and description of all items lost overboard.
- ExxonMobil shall include training on vessel traffic corridors in all pre-construction meetings with project contractors and their personnel.

2.8.3 Conclusion

Considering the very small preclusion area that cannot be fished, the short duration of the project, the actions proposed to reduce subsea obstructions and the use of vessel traffic corridors, the impact on commercial fishing from this project is expected to be insignificant.

2.8.4 Cumulative Analysis

Section 1.6 describes the projects and activities considered in the cumulative analysis for the proposed cable installation project. Possible sources of cumulative impacts specific to commercial fishing are those that cause space-use and preclusion conflicts and include on-going and proposed oil and gas activities and marine protected area (MPA) closures. Potential cumulative impacts are discussed below.

Federal and State Offshore Energy Projects. The cumulative effects of federal structures and development activities can be found in previous environmental documents (MMS, 1995; 2001). Proposed activities for this project are not expected to overlap temporally with any foreseeable offshore energy activities in state waters. The proposed project does not significantly add to the currently existing preclusion or other conflicts to commercial fisheries, including existing federal platforms, because the duration of the project is very brief, the project area is only lightly fished and the preclusion area is very small compared to the available fishing grounds.

Culver et al. (2007) summarized other factors and activities identified by 86 commercial fishers in the Santa Barbara Channel area that affect their industry. Top-ranking concerns included MPA closures, operating costs, competition from foreign and domestics markets and marine mammal interactions. Oil and gas industry activities were not listed as factors likely to impact the future of local commercial fisheries and foreseeable activities from the proposed activities will not increase the duration, intensity, or scope of impacts from these other activities.

Non-Energy Projects and Activities.

MPA closures. A number of MPA closures exist in or nearby the project area which limit fishing activity (Frimodig et al., 2008; CDFW, 2014). Due to the light fishing activity and current fishing regulations in the project area, the short duration of the proposed project will not add significant preclusion impacts to regional commercial fishing activities.

Cumulative Conclusion. The proposed project does not significantly add to the cumulative preclusion impacts generated by oil and gas projects and MPA closures to commercial fisheries due to the low levels of fishing activity in the project area, the short duration of the repair activities and because the preclusion area is very small compared to the available fishing grounds.

2.8.5 Overall Conclusions

The potential impacts to commercial fishing from the proposed project are considered to be insignificant based on the significance criteria used in this analysis. This is because no or a very small amount of space-use conflict or fishing gear damage from sub-sea hazards or project-associated marine vessels is expected. No significant incremental increase to cumulative impacts is expected. Overall, the potential impacts to commercial fishing resulting from the proposed project are considered to be insignificant and mitigated to the maximum extent feasible.

2.9 ENVIRONMENTAL JUSTICE

2.9.1 Affected Environment

On February 11, 1994, President Clinton issued Executive Order 12898 to focus the attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities. In a Presidential memorandum accompanying Executive Order 12898, President Clinton directed federal agencies to analyze the environmental effects, including the human health, economic and social effects, of federal actions, including effects on minority communities and low-income communities, when such analysis is required by the passage of NEPA in 1969. The Presidential memorandum further directs that mitigation measures outlined or analyzed in an environmental assessment, environmental impact statement, or record of decision, whenever feasible, should address significant and adverse environmental effects of proposed Federal actions on minority communities and low-income communities.

On December 10, 1997, the CEQ issued guidance on environmental justice under NEPA. This guidance includes a principle that agencies should consider the composition of the affected area to determine whether minority populations, low-income populations, or Indian tribes are present in the area affected by the proposed action and if so whether there may be disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, or Indian tribes. The CEQ guidance also includes definitions of minority populations and low-income populations for the purposes of environmental justice analysis under NEPA.

To determine whether there are minority populations or low-income populations present in the area affected by the proposed OPSR-B Phase 2 project, demographic information was obtained from the U.S. Census Bureau on the coastal areas from which project operations would be staged. Mobilizations and demobilizations of equipment and personnel for the offshore portion of Phase 2 will occur from Port Hueneme in the City of Port Hueneme and personnel required for the offshore portion of Phase 2 work will be transported to and from Platforms Harmony and Heritage from Ellwood Pier in the City of Goleta. Demographic information for the City of Port Hueneme, City of Goleta and Ventura County is summarized in Table 2.9.1.

The City of Port Hueneme has a minority population greater than 50%—a threshold identified by the CEQ—and a low-income population greater than the low-income population of the encompassing county. Based on this demographic information and CEQ guidance criteria, there are minority populations and low-income populations present in the area potentially affected by the proposed OPSR-B Phase 2 project and an analysis of whether there may be disproportionately high and adverse human health or environmental effects on those populations is required.

Table 2.9.1 Minority Populations and Low-Income Populations in Proximity to OPSR-B Phase 2 Onshore Staging Areas.

Demographic Measure	City of Port Hueneme	City of Goleta	Ventura County	Santa Barbara County
Percentage minority[1] race population[2]	66.4%	46.4%	51.3%	52.1%
Percentage of population below poverty level[3]	16.5%	7.4%	10.3%	15.3%

[1] The 2010 census brief, "Overview of Race and Hispanic Origin: 2010" refers to "minority" as people who reported their ethnicity and race as something other than non-Hispanic White alone in the 2010 Census. This definition differs from the CEQ definition of "minority," which was not used for this analysis because U.S. Census race categories changed starting with the 2000 decennial Census and so the Census data on minority races no longer matched CEQ categorizations.
[2] Source: U.S. Census Bureau, 2010 Census, Profile of General Population and Housing Characteristics.
[3] Source: U.S. Census Bureau, 2012 American Community Survey 1-Year Estimates, Poverty Status in the Past 12 Months.

2.9.2 Impact Analysis

Because the 1994 Presidential Executive Order and the subsequent CEQ guidance directs federal agencies to consider effects to minority and low income communities from federally permitted projects, no significance criteria are used for this analysis. However, as shown below, we do account for the portions of the project that could affect the communities in the project area and determine if there is a need to provide mitigations to ameliorate the effects. Thus, analysis for environmental justice in this document considers whether the proposed project results in disproportionately high and adverse human health or environmental effects on minority populations or low-income populations.

Factors to Consider. The factor associated with the OPSR-B Phase 2 project that could have an adverse effect on the minority and low-income populations in the City of Port Hueneme is an increase in onshore traffic from passenger vehicles and trucks. Such an increase could cause minority and low-income populations to experience an inequitable amount of traffic.

Traffic from Passenger Vehicles and Trucks. The scope of activity generated by the proposed project includes a temporary, minimal increase in vehicle traffic in the coastal areas from which project operations would be staged. Based on the scope of the proposed OPSR-B Phase 2 project, it is estimated that worker commute trips and supply/equipment delivery trips would contribute approximately 30-40 additional workforce trips. In addition, there would be an estimated 3-5 truck trips per day involved with the transport of supplies and an estimated 20-30 total truck trips associated with transporting the retrieved cable from Port Hueneme in Ventura County to a recycle facility. Trips to recycle cable would not be expected to all occur on the same day. Worker commute trips and supply/equipment delivery trip impacts would be considered to be minimal due to the short duration of the project (1-2 months). Considering this level of activity and increase in traffic, effects to the City of Port Hueneme minority and low-income populations are expected to be negligible.

Mitigation Measures. No mitigations pertaining to environmental justice are proposed.

2.9.3 Conclusion

Considering the limited scope of the project, its short duration and the minimal increase in vehicle and truck traffic that would occur, it is expected that there will be no disproportionately

high and adverse human health or environmental effects on minority populations or low-income populations.

2.9.4 Cumulative Analysis

Given the limited scope and duration of the OPSR-B Phase 2 project, no cumulative impacts are expected.

Cumulative Conclusion. The proposed project represents a negligible incremental increase to the overall cumulative effect for environmental justice.

2.9.5 Overall Conclusions

The potential effects to minority populations and low-income populations from the proposed project are considered to be negligible. This is due to the minimal increase in passenger and truck traffic which may result from the proposed project. No cumulative impacts are expected. Overall, the effects to the community considered in this analysis from the proposed OPSR-B Phase 2 project are considered to be negligible.

3.0 ALTERNATIVES TO THE PROPOSED PROJECT

3.1 No Project Alternative

Under this alternative, ExxonMobil would not replace the current offshore power distribution system and would continue to utilize the existing circuits. Without the replacement of the existing cables and given the history of submarine cable faults in the SYU, the reliability of the SYU electrical distribution system could compromise the production of oil and natural gas resources from those platforms. None of the impacts expected to result from cable retrieval and installation activities associated with the proposed action would occur. The purpose and need for the proposed action would not be achieved.

The use of power cables to energize offshore platforms is allowed by federal, state and county governments and has been the preferred power supply method for several facilities on the Pacific OCS to minimize impacts to air quality. The reliability of the primary electrical distribution system supporting the SYU facilities would continue to be hampered by the aging electrical infrastructure and could affect future operations resulting in loss of the main power source, rendering the SYU platforms incapable of producing oil and natural gas resources. Thus, replacement of the submarine power cables servicing the SYU is critical to continued operations at Platforms Harmony and Heritage.

4.0 CONSULTATION, COORDINATION AND COMMUNICATION

This section describes the consultation and coordination process conducted by BOEM in the development of this EA as well as key points of communication with other agencies and between ExxonMobil and other agencies. The process was designed to disseminate and share information among interested parties, promote dialogue and communication among those parties and facilitate interagency planning and coordination.

Three types of consultation, coordination and communication were undertaken for this EA:

1. Informal consultations with NMFS related to EFH;
2. Coordination and communication with other federal, state and local agencies; and
3. Other key communications.

Informal Consultation with NMFS. Informal consultations on EFH assessment and review was conducted per the Magnuson-Stevens Fishery Conservation and Management Act. BOEM provided information to NOAA's National Marine Fisheries Service (NMFS) on a July 21, 2014 via e-mail and subsequent telephone conversation with a project description and analysis of the project. BOEM informally requested concurrence from NMFS with BOEM's conclusion that the proposed ExxonMobil OPSR-B Phase 2 power cable replacement project would have minimal adverse effects on EFH and no additional EFH conservation measures are proposed. An e-mail was received from NMFS on July 25, 2014 stating their concurrence with the BOEM assessment of impacts to EFH and no additional conservation measures are required.

Coordination and Communication with other Federal, State and Local Agencies. The following agencies shall require permits from ExxonMobil. The permitting processes involved coordination and communication with BOEM.

Army Corps of Engineers (USACE). BOEM provided USACE with information on consultations with NMFS so that USACE could issue a Rivers and Harbors Act Section 10 authorization (Section 1.3). BOEM provided USACE the NMFS project concurrence regarding EFH on August 6, 2014.

Santa Barbara County Air Pollution Control District (SBCAPCD). ExxonMobil submitted to SBCAPCD an Authority to Construct/Permit to Operate permit application in support of the exemption described in Rule 202.F.7 to specify a Potential to Emit up to 25 tons to ensure compliance with the exemption thresholds required in the rule. A Fuel Measurement Plan was additionally submitted to SBCAPCD to verify the exemption thresholds will not be exceeded.

State Historic Preservation Office (SHPO). The proposed action meets the definition of an undertaking under Section 106 of the National Historic Preservation Act (NHPA). SHPO provided a formal consultation for the original SYU construction in 1993 and informally consulted on the first cable repair project in 2002 and again in 2008. In a letter dated October 26, 2009, SHPO concurred with BOEM's determination that the proposed project would not affect historic properties.

The federal waters portion of the area of potential effect (APE) for this undertaking on the outer continental shelf (OCS) is located within an area that has been heavily disturbed from previous construction activities. Additionally, archaeological surveys conducted in 2011 and 2012 did not identify any potential submerged cultural resource features within the APE on the OCS. Since the proposed action will occur in an existing cable and pipeline corridor and the archaeological investigations conducted in support of this effort did not identify any potential cultural resources

on the OCS, no further review under Section 106 is required. The applicant is reminded under 30 CFR 250.194(c) that if any archaeological resource is discovered while conducting operations, activity must immediately halt within the area of discovery and the discovery must be reported to the BOEM Regional Director.

Other Key Communications. The California State Lands Commission (CSLC) issued a Notice of Public Review and Intent to Adopt a Mitigated Negative Declaration (MND) as Lead Agency under CEQA in response to an application submitted by ExxonMobil for the SYU OPSR-B Phase 2 project on May 30, 2014. Communications have been ongoing with CSLC during development of the MND and subsequent issuance for public review prior to being considered for adoption to ensure consistency between the state and federal environmental reviews of the project. The MND was approved by the CSLC at its meeting on August 15, 2014.

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6.0 REFERENCES

Airoldi, L. 2003. The effects of sedimentation on rocky coast assemblages. Oceanography and Marine Biology Annual Review 41:161-236.

Allen, M.J., D. Cadien, et al. 2011. Southern California Bight 2008 Regional Monitoring Program: Volume IV. Demersal Fishes and Megabenthic Invertebrates. Costa Mesa, CA., Southern California Coastal Water Research Project.

Allen, M.J., T. Mikel, D. Cadien, J.E. Kalman, E.T. Jarvis, K.C. Schiff, D.W. Diehl, S.L. Moore, S. Walther, G. Deets, C. Cash, S. Watts, D.J. Pondella II, V. Raco-Rands, C. Thomas, R. Gartman, L. Sabin, W. Power, A.K. Groce and J.L. Armstrong. 2007. Southern California Bight 2003 Regional Monitoring Program: IV. Demersal Fishes and Megabenthic Invertebrates. Southern California Coastal Water Research Project. Costa Mesa, CA.

Arthur D. Little, Inc. (ADL). 1987. Exxon Santa Ynez Unit Project Supplemental EIR (Prepared for County of Santa Barbara).

Atwood, J.L. and D.E. Minsky. 1983. Least tern foraging ecology at three major California breeding colonies. Western Birds 14:57-72.

Au, D. W.T., C.A. Pollino, R.S.S. Wu, P.K. S. Shin, S.T.F. Lau and J.Y.M. Tang. 2004. Chronic effects of suspended solids on gill structure, osmoregulation, growth and triiodothyronine in juvenile green grouper *Epinephelus coioides*. Marine Ecology Progress Series 266:255-264.

Baird, P.H. 1993. Birds. Pages 541-603 in: M.D. Dailey, D.J. Reish and J.W. Anderson (eds.). Ecology of the Southern California Bight: A Synthesis and Interpretation. University of California Press. Berkeley, CA.

Battelle. 1991. California OCS Phase II Monitoring Program. Final Report. Report submitted to the U.S. Department of the Interior, Minerals Management Service under contract No. 14-12-0001-30262. MMS OCS Study 91-0083.

Biological Review Team. 2005. Green Sturgeon (*Acipenser medirostris*) Status Review Update. Santa Cruz Laboratory, Southwest Fisheries Science Center, NOAA Fisheries.

Boehlert, G. W., G.R. McMurray and C.E. Tortorici (editors). 2008. Ecological effects of wave energy in the Pacific Northwest. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS-F/SPO-92, 174 p.

Briggs, K.T., E.W. Chu, D.B. Lewis, W.B. Tyler, R.L. Pitman and G.L. Hunt, Jr. 1981. Distribution, numbers and seasonal status of seabirds of the Southern California Bight. Pp. 1-399, Book I, Part 111. Investigators' reports, summary of marine mammal and seabird surveys of the Southern California Bight area, 1975- 1978. Publ. #PB-8 1-248-205, U.S. National Tech. Info Serv., Springfield, VA.

Briggs, K.T., W.B. Tyler, D.B. Lewis and D.R. Carlson. 1987. Bird communities at sea off California: 1975-1983. Studies in Avian Biology No. 11. 73 pp.

Bureau of Ocean Energy Management. 2014. Categorical Exclusion Review (CER) – ExxonMobil ROV-Excavation to Uncover Power Cables at Platform Harmony. June 2014.

Bureau of Ocean Energy Management Regulation and Enforcement (BOEMRE). 2011. Categorical Exclusion Review (CER) –ExxonMobil Production Company, Santa Ynez Unit Offshore Power System Reliability Project, Pre-Project Geophysical/Archeological Survey. August 2011.

BOEMRE. 2011. Pacific OCS Region. Final Environmental Assessment. Platform Heritage Impressed Current Cathodic Protection System Installation. SYU ExxonMobil. May 13, 2011.

Bureau of Safety and Environmental Enforcement. 2013. Environmental Assessment (EA) – ExxonMobil Santa Ynez Unit Offshore Power System Reliability Project-B Platform Modifications. April 2013.

Burgner, R.L., J.T. Light, L. Margolis, T. Okazaki, A. Tautz and S. Ito. 1992. Distribution and origins of steelhead trout (*Oncorhynchus mykiss*) in offshore waters of the North Pacific Ocean. International North Pacific Fisheries Commission Bulletin 51. 92 pp.

CARB. 2000. California Air Resources Board, Off-Road Mobile Source Emission Reduction Program – Marine Vessels. http://www.arb.ca.gov/msprog/offroad/marinevess/marinevess.htm

CARB. 2008. California Air Resources Board, Draft GHG Emission Inventory

California Birds Record Committee (Hamilton, R.A., M.A. Patten and R.A. Erickson, (editors). 2007. Rare Birds of California. Western Field Ornithologists. Camarillo, CA.

California Department of Fish and Wildlife (CDFW). 2008. Final 2008 California Commercial Landings. https://www.dfg.ca.gov/marine/landings/landings08.asp, referenced June 15, 2014.

CDFW. 2009. Final 2009 California Commercial Landings. https://www.dfg.ca.gov/marine/landings/landings09.asp, referenced June 15, 2014.

CDFW. 2010. Final 2010 California Commercial Landings. https://www.dfg.ca.gov/marine/landings/landings10.asp, referenced June 15, 2014.

CDFW. 2011. Final 2011 California Commercial Landings. https://www.dfg.ca.gov/marine/landings/landings11.asp, referenced June 15, 2014.

CDFW. 2012. Final 2012 California Commercial Landings. https://www.dfg.ca.gov/marine/landings/landings12.asp, referenced June 15, 2014.

CDFW. 2014. California's Marine Protected Area (MPA) Network. http://www.dfg.ca.gov/marine/mpa/mpa_summary.asp, referenced July 16, 2014.

California Fishery Information System. 2014. Fishing block 655 and 656 landings from 2008 to 2012. Received April 24, 2014 from the California Department of Fish and Wildlife.

California Office of Planning and Research (OPR). 2008. California Office of Planning and Research. Technical Advisory for Addressing Climate Change Issues.

California State Lands Commission. 2014. Mitigated Negative Declaration. ExxonMobil Santa Ynez Unit (SYU) Offshore Power System Reliability – B Phase 2 Project. May 2014, 268pp.

Carter, H.R., D.L. Whitworth, J.Y. Takekawa, T.W. Keeney and P.R. Kelly. 2000. At-sea threats to Xantus' Murrelets (*Synthliboramphus hypoleucus*) in the Southern California Bight, in: Proceedings of the fifth California Islands symposium, 29 March to 1 April 1999 (D.R. Browne, K.L. Mitchell and H.W. Chaney, eds.), pp. 435-447. U.S. Minerals Management Service, Pacific Outer Continental Shelf Region, Camarillo, CA.

Carter, H.R., G.J. McChesney, D.L. Jaques, C.S. Strong, M.W. Parker, J.E. Takekawa, D.L. Jory and D.L. Whitworth. 1992. Breeding populations of seabirds in California, 1989-1991. Vols. 1 and 2. Report to US Department of the Interior, Minerals Management Service, Washington, DC. Prepared under Inter-agency Agreement 14-12-001-30456.

Chambers Consultants and Planners. 1983. Benthic survey of Exxon's proposed development sites in the Santa Ynez Unit, October 1983.

Chambers Group, Inc. 1987a. Final Supplemental Environmental Impact Report for the Exxon Santa Ynez Unit Offshore Oil Development Proposal. Prepared for: California State Lands Commission.

Chambers Group, Inc. 1987b. Finalizing Addendum. Final Supplemental Environmental Impact Report of the Exxon Santa Ynez Unit Offshore Oil Development Proposal. Prepared for: California State Lands Commission.

Council of Environmental Quality (CEQ). 1997. Environmental Justice Guidance Under the National Environmental Policy Act. Executive Office of the President, Council on Environmental Quality, Washington, DC.

CEQ. 2010. Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions.

Culver, C.S., J.B. Richards, C.M. Pomeroy. 2007. Commercial Fisheries of the Santa Barbara Channel and Associated Infrastructure Needs. California Sea Grant Extension Program, University of California Extension Program, Publication No. T-062, 101 pp.

Daily, M.D., D.J. Reish and J.W. Anderson (eds.). 1993. Ecology of the Southern California Bight. Berkeley: University of California Press. p. 926.

Diener, D.R. and A.L. Lissner. 1995. Long-term variability of hard-bottom epifaunal communities: effects from offshore oil and gas production and development. In: SAIC and MEC. Appendix D. Monitoring assessment of long-term changes in biological communities in the Santa Maria Basin: Phase III. Final Report OCS Study MMS 95-0049. Submitted to the US Department of the Interior, MMS, Camarillo, CA.

Eganhouse, R.P. and I. Venkatesan. 1993. Chemical oceanography and geochemistry. Pages 71-189 in Dailey, M.D., D. J. Reish and D.W. Anderson (eds.), Ecology of the Southern California Bight: A synthesis and interpretation. University of California Press, Berkeley/Los Angeles.

Environmental Protection Agency. 2009. Draft Mandatory Reporting of Greenhouse Gases Rule.

Erickson, D.L. and J.E. Hightower. 2007. Oceanic distribution and behavior of green sturgeon (*Acipenser medirostris*). *In* Munro, J., J. E. Hightower, K. McKown, K. J. Sulak, A. W.

Kahnle and F. Caron, editors. Anadromous sturgeons: habitats, threats and management. American Fisheries Society Symposium 56: 197-211.

Erickson, D.L. and M.A. H. Webb. 2007. Spawning periodicity, spawning migration and size at maturity of green sturgeon, *Acipenser medirostris*, in the Rogue River, Oregon. Environmental Biology of Fishes 79: 255-268.

Exxon Company. U.S.A (Exxon). 1982a. Development and Production Plan. Santa Ynez Unit Development.

Exxon. 1982b. Environmental Report (Production). Supporting Technical Data. Volume 1. Project Description. Santa Ynez Unit Development.

Exxon. 1985. Santa Ynez Unit Development and Production Plan Update. Submitted to MMS June, 1985.

Exxon. 1987. Santa Ynez Unit Expansion Project. Development and Production Plan. Summary of Key Project Changes Since 1985 DPP Update. September, 1987.

ExxonMobil Production Company (ExxonMobil). 2001. Pre-installation marine biological survey and preliminary impact assessment. Prepared by De Wit, L.A. 9 pp. With appendices, photographs and 1 map.

ExxonMobil.2002a. Expanded marine biological survey. Tier 1 Area. Santa Ynez Unit Offshore Power System Repair Project. Prepared by De Wit, L.A. 9 pp. With 4 appendices, photographs and 4 maps.

ExxonMobil. 2002b. Pre-Lay Cable Route Survey: Platform Heritage to shore including alternate route and Platform Harmony to Platform Hondo. Offshore Santa Barbara, California. Final Report. Side-scan sonar, sub-bottom profiler, magnetometer and bathymetric recordings performed by Fugro West Inc on August 2001. 33 pp., 6 Appendices and Survey Charts.

ExxonMobil. 2008. ROV survey for Cable C-1 repair project.

ExxonMobil. 2011a. Pre-project geophysical/archaeological survey report. Santa Ynez unit offshore power system reliability-b (OPSR-B) project. Santa Barbara Channel, California. November 2011 (Revised December 2011) Prepared by Fugro Consultants, INC. Fugro Job No. 04.64110024. Includes maps and GIS files and sidescan data from Heritage to shore.

ExxonMobil. 2011b. Final technical report pre-project nearshore marine biological survey, OPSR-B project. Prepared by Padre Associates, Inc. Padre job number 1102-0961. December 2011.

ExxonMobil. 2012a. Archaeological assessment of ROV anomaly and geophysical survey data gap areas. Supporting the SYU Offshore Power System Reliability-B Project (OPSR-B), January 2012. Prepared by C&C Technologies Inc. ROV survey conducted November 17 and 22, 2011. Includes photos of targets, ROV logs, maps of ROV survey areas, ROV video, partial electronic tables of targets.

ExxonMobil. 2012b. Final technical report cable crossing locations diver survey, OPSR-B project. Prepared by Padre Associates, Inc. Padre job number 1202-0051. May 2012.

ExxonMobil. 2013a. ExxonMobil Santa Ynez Unit Offshore Power System Reliability – B Project Application, August 21, 2013.

ExxonMobil. 2013b. ExxonMobil OPSR-B Project Application - Attachment E: Environmental Impact Assessment, page 119, Table WQ3.

Fauchald, K. and G.F. Jones. 1979. A survey of five additional southern California study sites. In: Southern California outer continental shelf environmental baseline study, 1976/1977 (Second year) benthic program. Vol. II, Ser. 2, Report 18. Prepared by Science Applications, Inc., La Jolla, CA, for the Bureau of Land Management.

Federal Register Presidential Document. 1994. Executive Order 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, Volume 59, No. 32, FR Doc No. 94-3685. February 11, 1994.

Frimodig, A., M. Horeczko, T. Mason, B. Owens, M. Prall, T. Tillman, S. Wertz. 2008. Review of California Halibut Trawl Fishery in the California Halibut Trawl Grounds. Report to the California Fish and Game Commission. June 27, 2008. (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=36120&inline=true)

Gill A. B., I. Gloyne-Phillips, K.J. Neal, J.A. Kimber. 2005. The potential effects of electromagnetic fields generated by sub-sea power cables associated with offshore wind farm developments on electrically and magnetically sensitive marine organisms – a review. COWRIE, CORIE-EM Field 2-06-2004.

Gill, A.B., Y. Huang, I. Gloyne-Philips, J. Metcalfe, V. Quayle, J. Spencer and V. Wearmouth. 2009. COWRIE 2.0 Electromagnetic Fields (EMF) Phase 2: EMF-sensitive fish response to EM emissions from sub-sea electricity cables of the type used by the offshore renewable energy industry. Commissioned by COWRIE Ltd (project reference COWRIE-EMF-1-06).

Greene, H.G., J.J. Bizzarro, J. Tilden, H. Lopez and M.D. Erdey. 2004. Fisheries Habitat Characterization of the California Continental Margin: Identification, Quantification and Synthesis of Existing Information. Technical Report. California Sea Grant College Program, University of California, La Jolla, California. Publication No.T-053, ISBN 1-888691-12-3.

Hamer, T., M. Reed, E. Colclazier, K. Turner and N. Denis. 2014. Nocturnal Surveys for Ashy Storm-Petrels (*Oceanodroma homochroa*) and Scripps's Murrelets (*Synthliboramphus scrippsi*) at Offshore Oil Production Platforms, Southern California. US Dept. of the Interior, Bureau of Ocean Energy Management, Pacific OCS Region, Camarillo, CA. OCS Study BOEM 2014-013.

Hickey, B.M. 1993. Physical oceanography. In: M.D. Dailey, D.J. Reish and J.W. Anderson [Eds.]. *Ecology of the Southern California Bight: A Synthesis and Interpretation.* Berkeley: University of California Press. pp. 19-70.

Hofmann G.E., J.E. Smith, K.S. Johnson, U. Send, L.A. Levin. 2011. High-Frequency Dynamics of Ocean pH: A Multi-Ecosystem Comparison. PLoS ONE 6(12): e28983. doi:10.1371/journal.pone.0028983

Horn, M.H. and L.G. Allen. 1978. A distributional analysis of California coastal marine fishes. Journal of Biogeography. 5:23-42.

Howell, S.N.G. and S.J. Engel. 1993. Seabird observations off western Mexico. Western Birds 24:167-181.

Humes, K.R., N.A. Jones, and R.R. Ramirez. 2011. Overview of Race and Hispanic Origin: 2010. 2010 Census Brief C2010BR-02.

Hunt, G.L., Jr., R.L. Pitman, M. Naughton, K. Winnett, A Newman, P.R. Kelly and K.T. Briggs. 1981. Distribution, status, reproductive ecology and foraging habits of breeding seabirds. Summary of marine mammal and seabird surveys of the Southern California Bight area, 1975-1978. Publ. #PB-8 1-248-205, U.S. National Tech. Info Serv., Springfield, VA.

Jehl, J.R., Jr. and S.I. Bond. 1975. Morphological variation and species limits in murrelets of the genus *Endomychura*. Transactions of the San Diego Society of Natural History 18:9-24.

Johnson, J.A., J. Storrer, K. Fahy and B. Reitherman. 2011. Determining the Potential Effects of Artificial Lighting From Pacific Outer Continental Shelf (POCS) Region Oil and Gas Facilities on Migrating Birds. Prepared by Applied Marine Sciences, Inc. and Storrer Environmental Services for the U.S. Department of the Interior, Bureau of Ocean Energy Management, Regulations and Enforcement. Camarillo, CA. OCS Study BOEMRE 2011-047. 29 pages + apps.

Kalmijn, A.J. 1966. Electro-perception in shark and rays. Nature 212:1232-1233.

Kaplan, B., C.J. Beegle-Krause, D. French McCay, A. Copping, S. Geerlofs, eds. 2010. Updated Summary of Knowledge: Selected Areas of the Pacific Coast. U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Regulation and Enforcement, Pacific OCS Region, Camarillo, CA. OCS Study BOEMRE 2010-014.

Kogan, I., C.K. Paull. 2006. ATOC/Pioneer Seamount cable after 8 years on the seafloor: Observations, environmental impact. Continental Shelf Research 26(6): 771-787.

Kronman, M. 2013. *From Hooks to Harpoons, the Story of Santa Barbara Channel Fisheries*. Santa Barbara Maritime Museum, 261 pp.

Lafferty, K.D., C.C. Swift and R.F. Ambrose. 1999a. Extirpation and recolonization in a metapopulation of an endangered fish, the tidewater goby. Conservation Biology 13:1447-1453.

Lafferty, K.D., C.C. Swift and R.F. Ambrose. 1999b. Postflood persistence and recolonization of endangered tidewater goby populations. North American Journal of Fisheries Management 19:618-622.

Leet, W.S., C.M. Dewees and C. Haugen (eds). 1992. California's living marine resources: A status report. Sea Grant Extension, University of California at Davis. For the California Department of fish and Game Resources Agency, California Department of Fish and Game (CDFG). 252 pp.

Lehman, P.E. 1994. The Birds of Santa Barbara County, California. Vertebrate Museum, Univ. California, Santa Barbara, CA. 397 pp.

Light, J.T., C.K. Harris and R.L. Burgner. 1989. Ocean distribution and migration of steelhead (Oncorhynchus mykiss, formerly Salmo gairdneri). (Document submitted to the International North Pacific Fisheries Commission.) 50 pp. FRI-UW-8912. Fisheries Research Institute, University of Washington, Seattle.

Lissner, A.L., G.L. Taghon, D.R. Diener, S.C. Schroeter. 1987. Review of Recovery and Recolonization of Hard Substrate Communities of the Outer Continental Shelf. MMS OCS Study 88-0034.

Lissner, A.L., G.L. Taghon, D.R. Diener, S.C. Schroeter and J.D. Dixon. 1991. Recolonization of deep-water hard substrate communities: potential impacts from oil and gas development. Ecological Applications 1:258-267.

Love, M.S., J. Stephens, Jr., P. Morris, M. Singer, M. Sandhu and T. Sciarrotta. 1986. Inshore soft substrata fishes in the Southern California Bight: An overview. California Cooperative Oceanic Fisheries Investigations Report 27:84-106.

Love, M.S., M. Yoklavich and L. Thorsteinson. 2002. The Rockfishes of the Northeast Pacific. University of California Press, Berkeley, California. 422 pp.

Love, M.S., D.M. Schroeder and M.M. Nishimoto. 2003. The Ecological Role of Oil and Gas Production Platforms and Natural Outcrops on Fishes in Southern and Central California: A Synthesis of Information. U. S. Geological Survey, Biological Resources Division, Seattle, Washington, 98104, OCS Study MMS 2003-032.

Love, M.S., M. Yoklavich and D.M. Schroeder. 2009. Demersal fish assemblages in the Southern California Bight based on visual surveys in deep water. Environmental Biology of Fishes 84:55-68.

Lynn, K.J., K.A. Bliss and L.E. Eber. 1982. Vertical and horizontal distributions of seasonal mean temperature, salinity, sigma-t, stability, dynamic height, oxygen and oxygen saturation in the California Current, 1950-1978, Calif. Coop. Oceanic Fish. Invest. Atlas 30. La Jolla, Calif.: Scripps Institution of Oceanography, 513 pp.

Mason, J.W., G.J. McChesney, W.R. McIver, H. R. Carter, J.Y. Takekawa, R.T. Golightly, J. T. Ackerman, D.L. Orthmeyer, W.M. Perry, J. L. Yee, M.O. Pierson and M.D. McCrary. 2007. At-sea distribution and abundance of seabirds off southern California: a 20-year comparison. Studies in Avian Biology, No. 33. 95 pp.

Miller. D.J. and R. Lea. 1972. Guide to the coastal marine fishes of California. California Department of Fish and Game Fish Bulletin, No. 157. 249 pp.

Miller, M.J. 2005. The ecology and functional morphology of feeding of North American sturgeon and paddlefish. *In*: G. T. O. LeBreton, F. W. H. Beamish, R. S. Mckinley (eds) *Sturgeons and Paddlefish of North America*. Springer Netherlands.

Minerals Management Service (MMS). 1985. Record of Decision for Development and Production Plan for the Santa Ynez Unit

MMS. 1988. OCS Environmental Assessment for Santa Ynez Unit Development Project Modifications.

MMS. 1991. OCS Environmental Assessment for Santa Ynez Unit Development Modifications.

MMS. 1994. Environmental Assessment on Exxon's OS&T Vessel Abandonment.

MMS. 1995. Outer Continental Shelf natural gas and oil resource management program: Cumulative Effects 1987-1991. MMS 95-0007.

MMS. 1997. OCS Environmental Assessment on Exxon's Platform Heritage to Platform Harmony Pipeline Project.

MMS. 2001. Draft Environmental Impact Statement for Delineation Drilling Activities in Federal Waters Offshore Santa Barbara County, California. U.S. Department of the Interior, Minerals Management Service, Pacific OCS Region, Camarillo, CA. OCS EIS/EA MMS 2001-046

MMS. 2005. Environmental Assessment on ExxonMobil Repair of the Hillhouse to Shore Power Cable.

MMS. 2008. ExxonMobil Santa Ynez Unit Cable C1 Repair Project Environmental Assessment. October, 2008.

MMS. 2009. ExxonMobil Santa Ynez Unit Cable C2 Repair Project Environmental Assessment. October, 2009.

Montevecchi, W.A. 2006. Influences of artificial light on marine birds. Pages 94-113. in: Rich, C. and T. Longcore (eds.) Ecological Consequences of Artificial Night Lighting. Island Press. Washington, D.C.

Moyle, P.B. 2002. Inland fishes of California. University of California Press, Berkeley, CA.

National Marine Fisheries Service. 2008. White Abalone Recovery Plan (Haliotis sorenseni). National Marine Fisheries Service, Long Beach, CA.

Newcombe, C.P. and J.O.T. Jensen. 1996. Channel suspended sediment and fisheries: A synthesis for quantitative assessment of risk and impact. North American Journal of Fisheries Management 16:693-727.

Ohman, M.C., P. Sigray and H. Westerberg. 2007. Offshore windmills and the effects of electromagnetic fields on fish. Ambio 36:630-633.

Pondella, D.J., II, B.E. Gintert, J.R. Cobb and L.G. Allen. 2005. Biogeography of the nearshore rocky-reef fishes at the southern and Baja California islands. Journal of Biogeography 32: 187-201.

Ranasinghe, J.A., K.C. Schiff, C.A. Brantley, L.L. Lovell, D.B. Cadien, T.K. Mikel, R.G. Velarde, S. Holt and S.C. Johnson. 2012. Southern California Bight 2008 Regional Monitoring Program: VI. Benthic Macrofauna. Southern California Coastal Water Research Project. Costa Mesa, CA. Technical Report 665.

Rosales-Casián, J. and C. Almeda-Jáuregui. 2009. An unusual occurrence of a green sturgeon, Acipenser medirostris, at El Socorro, Baja California, Mexico. CalCOFI Rep. 50:169-171.

Science Applications International Corporation (SAIC). 1984a. Final Environmental Impact Statement/Report for Santa Ynez Unit/Las Flores Canyon Development and Production Plan. Prepared for: US Minerals Management Service, California State Lands Commission and County of Santa Barbara

SAIC. 1984b. Final Environmental Impact Statement/Report. Technical Appendix 1 and 2, Air Quality and Meteorology for Santa Ynez Unit/Las Flores Canyon Development and Production Plan.

SAIC. 1985. Assessment of long-term changes in biological communities in the Santa Maria Basin and western Santa Barbara Channel. Final Report to the U.S. Department of the Interior, Minerals Management Service under Contract No. 14-12-0001-30032.

SAIC and MEC. 1995a. Monitoring Assessment of Long-Term Changes in Biological Communities in the Santa Maria Basis: Phase III, Final Report. Report submitted to the U.S. Department of the Interior, Minerals Management Service/National Biological Service, under contract No. 14-35-0001-30584. MMS OCS Study 95-0049.

SAIC and MEC. 1995b. Monitoring Assessment of Long-Term Changes in Biological Communities in the Santa Maria Basis: Phase III, Final Report. Appendix A: Physical oceanography. Report submitted to the U.S. Department of the Interior, Minerals Management Service/National Biological Service, under contract No. 14-35-0001-30584. MMS OCS Study 95-0049.

Santa Barbara County Air Pollution Control District (SBCAPCD). 1987. Final Decision Document: Authority to Construct Permit Number 5651. Installation and Operation Santa Ynez Unit/Las Flores Canyon Oil and Stripping Gas Treating Facility and Transportation Terminal. Issued to Exxon Company, U.S.A. November 19, 1987.

SBCAPCD. 2008. Scope and Content of Air Quality Sections in Environmental Documents prepared by the Santa Barbara County Air Pollution Control District (SBCAPCD, 2008).

SBCAPCD. 2010. Santa Barbara County 2010 Clean Air Plan prepared by the Santa Barbara County Air Pollution Control District, 2010.

Santa Barbara County and MMS. 2003. Mitigated Negative Declaration/Environmental Assessment (MND/EA), ExxonMobil Offshore Power System Repair Project (02-ND-35).

Southern California Coastal Water Research Project (SCCWRP). 1973. The ecology of the Southern California Bight: Implications for water quality management. Technical Report 010. Southern California Coastal Water Research Project. El Segundo, CA.

Southern California Coastal Water Research Project. 2003. Annual Report, 2001-2002.

Sowls, A.L., A.R. Degange, J.W. Nelson and G.S. Lester. 1980. Catalog of California seabird colonies. U.S. Dept. Interior, Fish and Wildlife Serv. Rpt. FWS/OBS-80-37.

Stephens, J.S., Jr., R. Larson and D.J. Pondella, II. 2006. Rocky Reefs and Kelp Beds. Chapter 9 in *The Ecology of Marine Fishes: California and Adjacent Waters* (ed.s L. G. Allen, D. J. Pondella, II and M. Horn) pp. 227-252. University of California Press, Los Angeles.

United States Census Bureau (U.S. Census). 2010. Profile of General Population and Housing Characteristics - 2010 Census. http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml, referenced July 18, 2014.

U.S. Census. 2012. Poverty Status in the Past 12 Months - 2012 American Community Survey 1-Year Estimates. http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_12_1YR_S1701&prodType=table, referenced July 18, 2014.

U.S. Environmental Protection Agency. 2005. Inventory of U.S. Greenhouse Gases Emissions and Sinks. April, 2005.

U.S. Fish and Wildlife Service. 2006. Memorandum: Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California. Arcata, CA.

U.S. Navy. 2002. Vessel Traffic Separation Scheme.

Utne-Palm, A.C. 2002. Visual feeding of fish in a turbid environment: Physical and behavioral aspects. Marine and Freshwater Behavior and Physiology 35:111-128.

Valberg. 2005. Memorandum addressing electric and magnetic field (EMF) questions, draft. Cape Wind Energy Project Nantucket Sound.

Wiese, F.K., W.A. Montevecchi, G.K. Davoren, F. Huettmann, A.W. Diamond and J. Linke. 2001. Seabirds at risk around offshore oil platforms in the north-west Atlantic. Marine Pollution Bulletin 42:1285-1290.

Wilber, D.H. and D.G. Clarke. 2001. Biological effects of suspended sediments: A review of suspended sediment impacts on fish and shellfish with relation to dredging activities in estuaries. North American Journal of Fisheries Management 21:855-875.