United States Department of the Interior
BUREAU OF OCEAN ENERGY MANAGEMENT
Pacific OCS Region
760 Paseo Camarillo, Suite 102
Camarillo, CA 93010-6064

DEC 1 7 2019

Ms. Penny Ruvelas
Branch Chief, Protected Resources Division
National Marine Fisheries Service
501 West Ocean Boulevard, Suite 4200
Long Beach, CA 98002-4213

Dear Ms. Ruvelas,

Informal Section 7 Consultation: Point Arguello Field Platforms - Well Conductor Casing Removal Project

Our e-mail submission of a proposed species list to Laura McCue in your office on September 16, 2019 requested an informal section 7 consultation pursuant to the Endangered Species Act (ESA), as amended. Following Ms. McCue's acceptance of the proposed species list, the Bureau of Ocean Energy Management (BOEM) and the Bureau of Safety and Environmental Enforcement (BSEE) hereby submit the attached biological evaluation titled "Point Arguello Field Platforms - Well Conductor Casing Removal Project" for your consideration.

Based on the analysis in the attached evaluation, we have determined that the proposed actions may affect, but are not likely to adversely affect, the ESA-listed species and critical habitat units described in Table 1. We seek your concurrence with our determinations.

Table 1: Summary of Determinations for NMFS ESA Listed Species in the Project Area

Common name	**Scientific Name**	**Potential Impacting Factors**	**Determination for Conductor Removal Activities**	**Effects to Critical Habitat**
Blue whale*	*Balaenoptera musculus*	Vessel strike and sound	Not Likely to Adversely Affect	N/A
Fin whale*	*Balaenoptera physalus*	Vessel strike and sound	Not Likely to Adversely Affect	N/A
Humpback whale*	*Megaptera novaeangliae*	Vessel strike and sound	Not Likely to Adversely Affect	N/A
Sei whale*	*Balaenoptera borealis*	Vessel strike and sound	Not Likely to Adversely Affect	N/A
Sperm whale*	*Physeter macrocephalus*	Vessel strike and sound	Not Likely to Adversely Affect	N/A
Guadalupe fur seal*	*Arctocephalus townsendi*	Vessel strike and sound	Not Likely to Adversely Affect	N/A

Common name	**Scientific Name**	**Potential Impacting Factors**	**Determination for Conductor Removal Activities**	**Effects to Critical Habitat**
Leatherback sea turtle	*Dermochelys coriacea*	Vessel strike and sound	Not Likely to Adversely Affect	No
Loggerhead sea turtle*	*Caretta caretta*	Vessel strike and sound	Not Likely to Adversely Affect	N/A
Scalloped hammerhead shark*	*Sphyrna lewini*	Sound	Not Likely to Adversely Affect	N/A
Steelhead trout	*Oncorhynchus mykiss*	Sound	Not Likely to Adversely Affect	No
Green sturgeon	*Acipenser medirostris*	Sound	Not Likely to Adversely Affect	No
Black abalone	*Haliotis cracherodii*	Sound	Not Likely to Adversely Affect	No

We thank you for your consideration and look forward to your response. Please contact Dr. Desray Reeb at desray.reeb@boem.gov, or 805-384-6396 for any questions related this biological evaluation.

Sincerely,

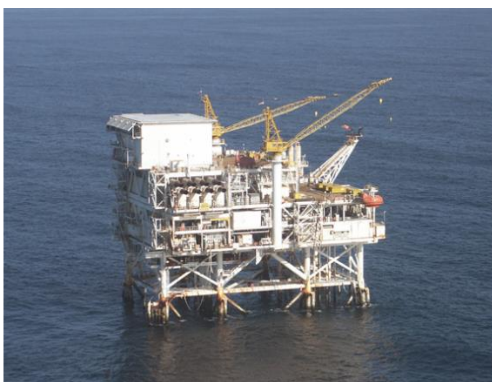
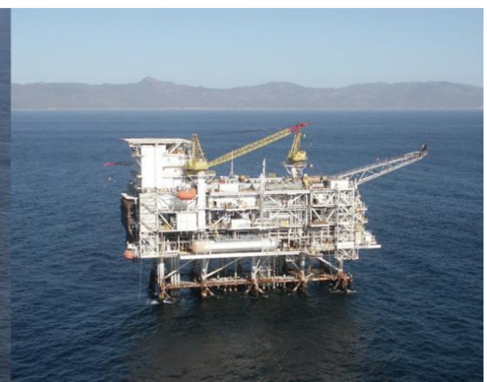
Richard Yarde
Regional Supervisor
Office of Environment

Enclosure:
FMOG Biological Evaluation

Point Arguello Field Platforms
Well Conductor Casing Removal Project

Biological Evaluation
Endangered and Threatened Species

November 2019


Prepared for the National Marine Fisheries Service
In Accordance with Section 7(c) of the Endangered Species Act of 1973, as Amended

INTRODUCTION AND BACKGROUND

The Point Arguello facilities are located on the outer continental shelf (OCS) of the Santa Barbara Channel in the Southern California Planning area (Figure 1).

Freeport-McMoRan Oil & Gas (Freeport) intends to submit Applications for Permit to Modify (APM's) to the Bureau of Safety and Environmental Enforcement (BSEE) to execute the removal of well conductors as part of the permanent abandonment of the Point Arguello Field wells. Well conductor removal operations will occur on the three Point Arguello Field platforms Harvest, Hermosa, and Hidalgo. The applicant is proposing to conduct removal operations of 62 conductors (Hidalgo (14), Harvest (19) and Hermosa (29)) in two phases; I. Initial Conductor Casing Cutting/Proving, and II. Conductor Casing Extraction. See Table 1 for total number of conductors on each platform. Please note that there are eight curved sleeves on Platform Harvest, which were pre-installed in the jacket and are welded to the bottom of the jacket. These sleeves will be removed during a later phase and are not being analyzed within the scope of this environmental review.

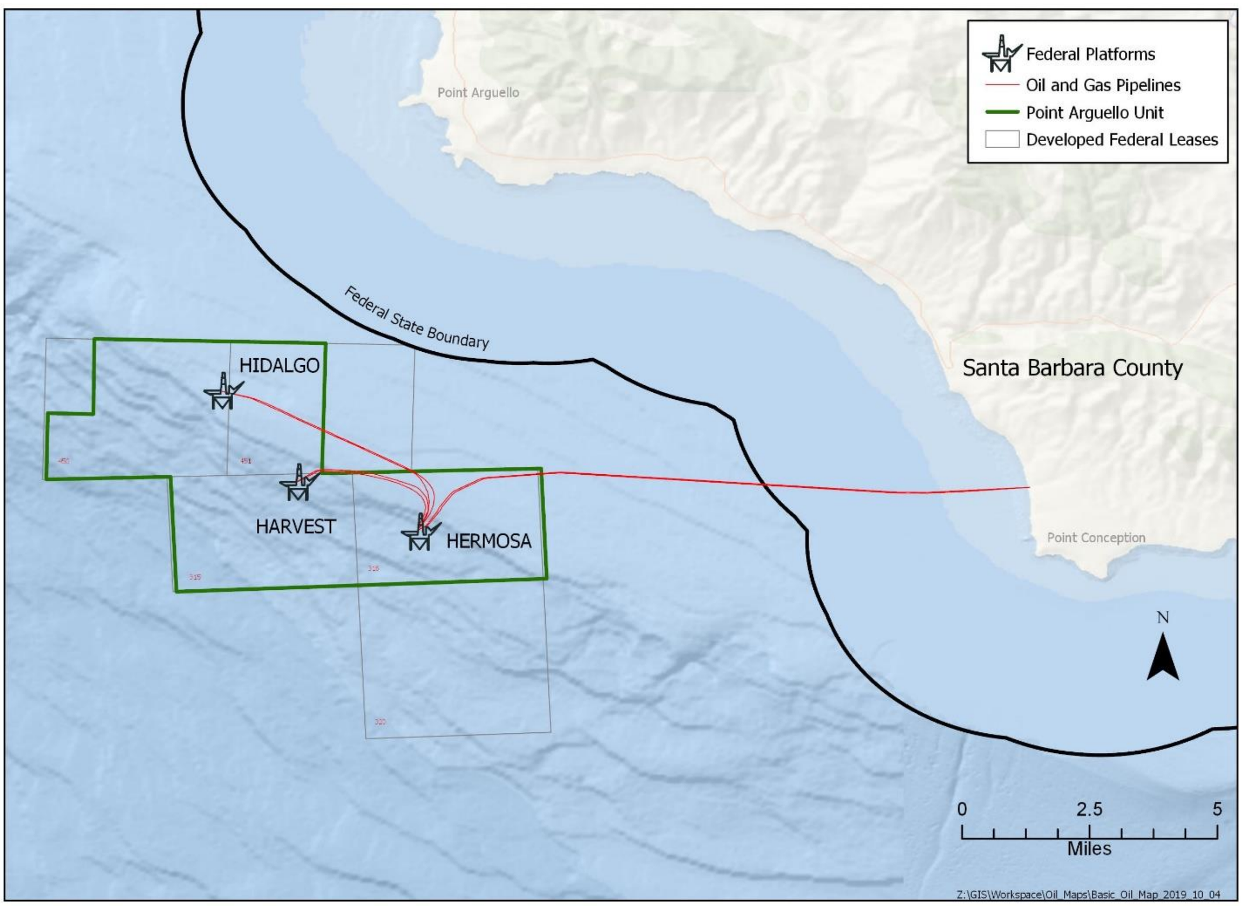


Figure 1. Location of Point Arguello Field wells

Table 1. Number of well conductors to be removed

Platform	Conductors to be Removed	Water Depth (ft)	Total Length (ft)	Diameter (inches)	Total Number of Conductors
Hidalgo	14	430	515	24	17
Harvest	19	675	760	24	29
Hermosa	29	603	688	24	34

DESCRIPTION OF THE PROPOSED ACTION

Freeport is anticipating starting phase one at the end of December 2019 and concluding work in June 2020. The initial phase is the cutting and proving of all the conductors on each platform in the order as shown in Table 1. Phase Two, well conductor extraction, will be done in the same order as Phase One.

<u>Phase One</u>

The first phase will not begin until after all wells on a platform have been temporarily abandoned, per BSEE regulations, including an assessment of the wellhead and well bore to ensure there is no pressure in the well. Equipment and materials will be transported to Port Hueneme, loaded onto work/supply vessels, and transported to Platform Hidalgo. Onshore mobilization is expected to last one week.

The first phase of conductor removal will be to cut the well conductors (and any intermediate casings) in each identified well on a platform. This will be referred to as the initial cut. This initial cut will be made from inside the conductor at a location at least 15 feet below the mudline (or other depth as approved by BSEE). Freeport will use an abrasive cutting method for the initial cut. This involves pumping a workover fluid, which will be a mixture of seawater and abrasive material, at high pressure, with precision tools to cut through the conductor piping as well as any intermediate strings of casings that are present. Freeport currently plans to utilize garnet abrasive grains.

As part of the initial cutting operation below mudline, each well conductor will be vertically lifted (approximately six to 15 inches) to prove that a complete cut was achieved. After the initial cuts are proven for all wells on a specific platform, the equipment for making the initial cut will be moved to the next platform, continuing until the operation is complete.

Operations Time for Phase One

- 15 hours to cut and prove 1 conductor
- 39 days to cut and prove 62 conductors

<u>Phase Two</u>

In the second phase, the conductor pipe will be pulled up from the top with a built-for-purpose hydraulic hoisting unit and cut into 45-foot segments with a mechanical cutting tool from the platform. It will take 2 hours to pull out each segment. Freeport will mobilize a separate well extraction system to pull, cut, and handle pipe segments for ultimate disposition. The well extraction system consists of:

- Well extraction tower with a base of approximately 31ft x 26 ft, and a height of approximately 56 ft.
- Diamond wire saws and/or guillotine saws
- Cleaning nozzle system at lower deck. This will be an integrated system powered by on-deck electric high-pressure pumps with a clamshell design capable of surrounding the circumference of the pipe. As the pipe is lifted the cleaning system will apply water through engineered nozzles to remove any remaining marine growth.
- Electric hydraulic power unit
- Skidding Package
- Drilling system to drill handling pin holes in conductor pipe segments
- Spare system parts

AFFECTED ENVIRONMENT

General Background

There are approximately 31 species of marine mammal species known to occur frequently in Southern California waters surrounding the project area, including 7 baleen whale, 19 toothed whale and dolphin species, 5 species of seals and sea lions and the southern sea otter (Table 1). In addition, leatherback and loggerhead sea turtles, scalloped hammerhead shark, black abalone, steelhead trout, and green sturgeon are also listed species that may occur in the project area. Detailed species descriptions, including state, habitat ranges, population trends and predator/prey interactions are provided in the Argonne National Laboratory report (Argonne National Laboratory, 2019), and hereby incorporated by reference.

All marine mammals that occur in the project area are protected under the Marine Mammal Protection Act (MMPA). In addition, eight of the species are listed under the Endangered Species Act (ESA) (Table 1). The blue, fin, sei, humpback, North Pacific right, and sperm whales are endangered; while the Guadalupe fur seal and the southern sea otter are threatened. All of the federally listed species are under the jurisdiction of the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS), except the southern sea otter, which is under the jurisdiction of the United States Fish and Wildlife Service.

NMFS concurred that there are 14 species of marine mammals that are unlikely to be present in the project area due to the project area being outside of these species current and expected range of normal occurrence (L. McCue email dated September 19, 2019). Species unlikely to be present in the project area are marked with a '**+**' in Table 1. These species, as well as non-ESA listed species will not be considered further in this document.

Table 1: Protected marine species anticipated to occur in Southern California waters

Common name	Scientific Name	Stock	ESA/MMPA Status
Baleen whales			
Blue whale	*Balaenoptera musculus*	Eastern North Pacific	Endangered/Depleted
Bryde's whale +	*Balaenoptera edeni*	Eastern Tropical Pacific	-
Fin whale	*Balaenoptera physalus*	California, Oregon, and Washington	Endangered/Depleted
North Pacific gray whale	*Eschrichtius robustus*	Eastern North Pacific	-
North Pacific gray whale +	*Eschrichtius robustus*	Western North Pacific	Endangered/Depleted
Humpback whale	*Megaptera novaeangliae*	California, Oregon, and Washington (Central American DPS and Mexican DPS)	Endangered/Depleted
Minke whale	*Balaenoptera acutorostrata*	California, Oregon, and Washington	-
North Pacific right whale +	*Eubalaena japonica*	Eastern North Pacific	Endangered
Sei whale	*Balaenoptera borealis*	Eastern North Pacific	Endangered/Depleted
Toothed and beaked whales			
Sperm whale	*Physeter macrocephalus*	California, Oregon, and Washington	Endangered/Depleted
Dwarf sperm whale +	*Kogia sima*	California, Oregon, and Washington	-
Pygmy sperm whale +	*Kogia breviceps*	California, Oregon, and Washington	-
Baird's beaked whale +	*Berardius bairdii*	California, Oregon, and Washington	-
Blainville's beaked whale +	*Mesoplodon densirostris*	California, Oregon, and Washington	-
Cuvier's beaked whale +	*Ziphius cavirostris*	California, Oregon, and Washington	-
Mesoplodont beaked whales*+	*Mesoplodon spp.*	California, Oregon, and Washington	-
Killer whale	*Orcinus orca*	Eastern North Pacific Offshore	-
Killer whale	*Orcinus orca*	Eastern North Pacific Transient/ West Coast Transient[1]	-
Short-finned pilot whale +	*Globicephala macrorhynchus*	California, Oregon, and Washington	-
Risso's dolphin	*Grampus griseus*	California, Oregon, and Washington	-

Common name	**Scientific Name**	**Stock**	**ESA/MMPA Status**
Toothed and beaked whales continued			
Rough-toothed dolphin +	*Steno bredanensis*	N/A[2]	-
Northern right whale dolphin	*Lissodelphis borealis*	California, Oregon, and Washington	-
Bottlenose dolphin	*Tursiops truncatus*	California Coastal	-
Bottlenose dolphin +	*Tursiops truncatus*	California, Oregon, and Washington	-
Long-beaked common dolphin	*Delphinus capensis*	California	-
Short-beaked common dolphin	*Dephinus delphis*	California, Oregon, and Washington	-
Striped dolphin +	*Stenella longirostris*	California, Oregon, and Washington	-
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	California, Oregon, and Washington	-
Dall's porpoise	*Phocoenoides dalli*	California, Oregon, and Washington	-
Harbor porpoise	*Phocoena phocoena*	Morro Bay stock	
Sea lions and seals			
California sea lion	*Zalophus californianus*	U.S. Stock	-
Harbor seal	*Phoca vitulina*	California	-
Northern elephant seal	*Mirounga angustirostris*	California	-
Guadalupe fur seal	*Arctocephalus townsendi*	Mexico to California	Threatened/Depleted
Steller sea lion +	*Eumetopias jubatus*	Eastern DPS	Threatened
Northern fur seal	*Callorhinus ursinus*	California	-
Sea Turtles			
Leatherback sea turtle	*Dermochelys coriacea*	Throughout range	Endangered
Loggerhead sea turtle	*Caretta caretta*	North Pacific DPS	Endangered
Green sea turtle +	*Chelonia mydas*	Eastern Pacific and Central North Pacific DPS'	Endangered/Threatened
Olive Ridley sea turtle[3] +	*Lepidochelys olivacea*	Mexico's Pacific coast breeding populations	Endangered
Marine fish			
Scalloped hammerhead shark	*Sphyrna lewini*	Eastern Pacific DPS	Endangered
Marine Invertebrates			
Black abalone	*Haliotis cracherodii*	Throughout range	Endangered

Common name	Scientific Name	Stock	ESA/MMPA Status
White abalone[3] +	*Haliotis sorenseni*	Throughout range	Endangered
Salmonids			
Steelhead	*Oncorhynchus mykiss*	Southern California DPS	Endangered
Steelhead	*Oncorhynchus mykiss*	South-Central California DPS	Threatened
Anadromous fish			
Green sturgeon	*Acipenser medirostris*	Southern DPS	Threatened

*The six Mesoplodont beaked whale species in Southern California are (*M. densirostris, M. carlhubbsi, M. ginkgodens, M. perrini, M. peruvianus, M. stejnegeri*).

[1] This stock is mentioned briefly in the Pacific Stock Assessment Report (Carretta et al., 2018; Carretta et al., 2017) and referred to as the "Eastern North Pacific Transient" stock, however, the Alaska Stock Assessment Report contains assessments of all transient killer whale stocks in the Pacific and the Alaska Stock Assessment Report refers to this same stock as the "West Coast Transient" stock (Muto et al., 2017a; Muto et al., 2017b).

[2] Rough-toothed dolphin has a range known to include the waters off Southern California but there is no recognized stock for the U.S West Coast.

THREATS TO PROTECTED SPECIES

The effects from the proposed activities that have the potential to adversely affect listed species are underwater noise and vessel operations and are discussed below. In addition, the Northeast Pacific Marine Heatwave (NPMH) environmental phenomenon occurring in the Pacific Ocean is included due to the potential interplay between the proposed activities and the NPMH. How this may affect protected species is analyzed under the Impacts/Effects Analysis of the Proposed Action section below.

Noise

Marine mammals use sound for vital biological functions, including socialization, foraging, responding to predators, and orientation. It has been documented that some anthropogenic noise can cause marine mammals to leave a habitat, impair their ability to communicate, and/or cause physiological stress (Courbis and Timmel, 2009; Erbe, 2002; Erbe et al., 2016; Gabriele et al., 2018; Heenehan et al., 2016; Heenehan et al., 2017; Hildebrand, 2009; Rolland et al., 2012; Tyack et al., 2011; Tyne et al., 2017; Williams et al., 2014). Noise can cause behavioral disturbances, mask other sounds including their own vocalizations, may result in injury and in some cases, may result in behaviors that ultimately lead to death (Erbe et al., 2014; Erbe et al., 2016; National Research Council, 2003, 2005; Nowacek et al., 2007; Southall et al., 2009; Sullivan & Torres, 2018; Tyack, 2009; Würsig & Richardson, 2009). Anthropogenic noise is generated from a variety of sources including, commercial shipping, offshore energy exploration and extraction, commercial and recreational fishing/vesseling, as well as naval and research activities.

The response of marine mammals to sound depends on a range of factors including: (1) the Sound Pressure Level (SPL) (frequency, duration, and novelty of the sound); (2) the physical and behavioral state of the animal at the time of perception; and (3) the ambient acoustic features of the environment (Hildebrand 2004; Nowacek et al. 2004; Southall et al. 2011).

While many anthropogenic sounds above ambient levels have the potential to be audible, animals have different hearing abilities which directly affect their sensitivities to certain types of sound. For a sound to be potentially disturbing, it must be able to be heard by the animal. Sea turtles generally hear sounds 50 Hz to 2 kHz, baleen whales 7 Hz to 35 kHz, and sperm whales 150 Hz to 160 kHz. Steelhead trout, green sturgeon and various shark species are low frequency generalists with best hearing below 1,000 Hz (Table 2).

Table 2: Hearing ranges of ESA-listed Species in the Project Area (NMFS, 2016)

Species or Group	Hearing Range	References
Sea turtles	50 Hz to 2 kHz	Dow Piniak et al. 2012; Ketten and Bartol 2006; Lenhardt et al. 1996; Lenhardt 1994; McCauley et al. 2000a; McCauley et al. 2000b; Moein 1994; O'Hara and Wilcox 1990
Green Sturgeon	100 Hz to 800 Hz	Lovell et al. 2005; Meyer et al. 2010; Meyer and Popper 2002
Steelhead Trout	< 380 Hz	Hawkins and Johnstone 1978
Scalloped hammerhead Shark	10 Hz to 1.5 kHz*	Kritzler and Wood, 1961; Casper and Mann, 2006
Baleen Whale	7 Hz to 35 kHz	NMFS, 2018**
Sperm Whale	150 Hz to 160 kHz	NMFS, 2018**
Guadalupe Fur Seal	60 Hz to 39 kHz	NMFS, 2018

*This hearing range represents available data on multiple shark species

**Not including, but recognizing, some changes recently described by Southall et al., 2019

Many invertebrates, and especially those with hard body parts, can generate sounds. The significance of these sounds is poorly understood for many species and it is not known if the sounds serve a function in the lives of the animals or whether they are purely incidental (Normandeau, 2012). Amongst the mollusks, populations of the common mussel *Mytilus* give rise to a crackling sound (Normandeau, 2012) and scallops make cracking sounds (Lucia et al., 2012). Additionally, *Mytilus edulis* mussels show sensitivity to substrate-borne vibration in relation to anthropogenically-generated noises like pile-driving and blasting (Roberts et al., 2015).

Vessel Interactions

Vessel strike-induced injury or mortality is one of the primary threats to marine mammal populations worldwide and especially for baleen whales on the West Coast of the United States (Redfern et al., 219; Peel et al., 2018). Mortality is a more significant concern for species that occupy areas with high levels of traffic since the likelihood of encounter is greater (Currie et al., 2017; Rockwood et al., 2017; Van der Hoop et al., 2013; Van der Hoop et al., 2015). For example, while some risk of a vessel strike exists for all the U.S. West Coast waters, 74 percent of blue whale, 82 percent of humpback whale, and 65 percent of fin whale known vessel strike mortalities occur in the shipping lanes associated with the ports of San Francisco and Los Angeles/Long Beach (Rockwood et al., 2017).

Moving shipping lanes, speed reductions, the expansion of areas-to-be-avoided and on-board observers are mitigations that have been employed to reduce the risk of vessel interactions with marine mammals (Redfern et al., 2019; Laist et al., 2014; Vanderlaan et al., 2009; 2008).

Environmental Changes

The West Coast of the U.S. is currently experiencing a new marine heatwave, designated the Northeast Pacific Marine Heatwave (NPMH) of 2019 (https://www.fisheries.noaa.gov/feature-story/new-marine-heatwave-emerges-west-coast-resembles-blob). In 2013, a region of highly anomalous warm ocean anomalies (i.e., a marine heatwave), colloquially known as "the Blob," developed in the surface ocean of the northeast Pacific (Bond et al., 2015). The new expanse of unusually warm water is following the same pattern of development as "the Blob" and stretches from Alaska south to California.

Dramatic range shifts of species at all trophic levels (Sanford et al., 2019; Morgan et al., 2019; Cavole et al., 2016; Peterson et al., 2017), a coast-wide outbreak of toxic algae (McCabe et al., 2016), mass strandings of marine mammals and seabirds (Cavole et al., 2016), as well as changes in relative abundance in some species (Morgan et al., 2019), were just some of the widespread ecological consequences brought on by this unprecedented physical anomaly.
NMFS is tracking the NPMH and current forecasts show the heat wave moderating but continuing for months.

IMPACT/EFFECTS ANALYSIS OF THE PROPOSED ACTION

In this section, we consider first the potential impact producing factors of conductor removal, namely noise and vessel traffic and discuss environmental change. The overall effects on these potential impact producing factors on NMFS ESA-listed species is determined. Thereafter, an analysis of the potential effects of the proposed action on individual ESA-listed species that occur in the project area is provided. A summary of our determinations for NMFS ESA-listed species is presented in Table 3.

Analysis of project-related noise

Conductor cutting and removal

This project is not expected to generate noise greater in intensity than that which has occurred over the life of the project, including drilling jobs. Therefore, the overall noise associated with this project (including vessel noise) is anticipated to be in line with ambient/existing noise levels. During conductor removal, the abrasive cutting tool is lowered inside the casing strings to a point that is 15 feet below the seafloor surface or "mudline" and it will only be operated at that point. Any 'in-water' noise generated by the cutting tool will be radiated sound caused by vibration of the conductor, which is expected to attenuate to ambient noise levels close to the platform.
In-air sound source levels are as follows:

- Diesel driven air compressor: 76 dBA
- Abrasive cutting tool, 15-feet below the mud-line, inside the conductor casing: 92dBA
- Pneumatic drilling system: 65 dBA
- Pneumatic/electric hydraulic cutting system 83 dBA
- Diamond wire/guillotine saws: Approximately 71 dBA (Pangerc et al., 2016)

The abrasive cutting tool is lowered inside the casing strings to a point that is 15 feet below the seafloor surface or "mudline" and will only be operated at that point. This application should therefore not be subjected to an "in-water" sound source level since it will be underground, and there is no water column operation involved in this project. However, to fully analyze any possible sound transmitted into the water column via radiation or vibration through the conductor, an equivalent in-water source level is calculated below.

The cutting tool has a sound level of 92dBA re 20µPa in air. In order to convert this in-air measurement a conversion factor of 26 dB [20×log(20/1)] is used resulting in a source level of 118 dB re 1µPa @ 1m. However, to account for water density and sound speed in water, 35.5 dB must be added (118 +35.5) resulting in a value of 154 dB re 1 µPa @1m.

Since the mechanical noise is a continuous sound source, the behavioral disturbance (Level B) threshold for marine mammals is 120 dB re 1µPa @ 1m (70 FR 1871, *Marine Mammal Hearing*). In order to calculate the distance (range) at which the source at 154 dB re 1µPa @ 1m will reach 120 dB re 1µPa @ 1m:

- Assuming spherical spreading (20*Log(range)) for water depths <200m
- 154-120 = 34 dB is the transmission loss required from the source level to the threshold
- $R = 10^{(\text{delta TL}/20)}$ or Range = $10^{(34/20)}$ = 50 meters

From the location of the cutting tool, the acoustic threshold for behavioral disturbance (Level B) will be reached at 50 meters. However, considering that the cutting will be taking place 15 feet below the sediment line, any radiated noise is likely to attenuate more quickly suggesting that the Level B acoustic threshold will be reached closer than 50 meters to the sound source.

Sound source level is not the only element of the noise to consider when analyzing impacts to protected species. This type of mechanical noise falls within the 500-8000 Hz frequency bands, with most of the energy at 1000 Hz (Occupational Safety and Health Administration, 2013; Pappachan et al., 2017) and will be detectable by ESA-listed whale species. However, as for the source level, since the cutting will be conducted 15 feet below the sediment line, the higher (5-20 kHz) frequencies will be quickly attenuated into the sediment further reducing the amount of sound radiated into the water.

Although the sound generated is likely to be above ambient sound levels, it is unlikely that ESA-listed species would stay within the 25-50 m ensonification zone to be continuously exposed to these sounds. Additionally, considering the overall reduced spatial and temporal overlap with these species (see the Occurrences, Effects and Determinations section below), BOEM has determined that although the sound generated during conductor removal may affect, it is not likely to adversely affect, ESA-listed species.

Vessel Traffic
The project-related vessel traffic is summarized in the Analysis of Project-related Vessel Traffic section below, amounting to a total of 70 round trips over the 6 months, approximately one trip every three days, mainly between the platforms and the Port of Long Beach. The Port of Long Beach, Draft Master Plan Air Emission Inventory (POLB, 2019) states that 7000 vessel transits occur annually amounting to 19 transits per day. The incremental addition of project-related vessel traffic noise to the existing soundscape is therefore expected to be negligible.

Analysis of Project-related Vessel Traffic
The *Harvey Challenger* is the primary vessel planned for use for this project. This vessel currently supports normal platform operations and is permitted for use by the Santa Barbara

County Air Pollution Control District. The vessel is owned and operated by Harvey Gulf International Marine; it began operating in the OCS California area in January 2019 after transiting from Louisiana/Gulf of Mexico. Its Port of Registry is New Orleans, LA. The length is 220 ft overall, with a 1424 gross tonnage, and the cruising speed is limited to 10 knots. The vessel has two 1911 brake horsepower (bhp) Tier 3 caterpillar 3512C main engines and two 1474 bhp Tier 3 Caterpillar C32 generators driving electric motors for dynamic positioning. The *Masco Endeavor* is not planned for these activities, though may be used as needed for a supply vessel in place of the Challenger. The vessels are prohibited from being used simultaneously. These vessels use Port Hueneme as their current docking location. As provided for in the Boat Monitoring and Reporting Plan, the mean and maximum speeds of the vessels are between 12-14 knots. The vessel typically makes one trip per week to the field for servicing the Arguello platforms. This would continue through the conductor removal project.

The following trips are planned specifically for the conductor removal project:

- Initial mobilization of conductor cutting equipment from Port Hueneme to Platform Hidalgo (late December 2019);
- Inter-platform transit of conductor cutting equipment from Hidalgo to Hermosa (mid-January 2020) and later Hermosa to Harvest (mid-February 2020);
- Return of cutting equipment to Port Hueneme from Harvest (mid-March 2020);
- Two resupply trips per platform during the cutting phase from Port Hueneme to platforms, approximately six trips overall (early Jan 2020, mid-Feb 2020, early Mar 2020, early Apr 2020);
- Initial mobilization of conductor removal equipment from Port Hueneme to Platform Hidalgo mid-January);
- Inter-platform transit of conductor removal equipment from Hidalgo to Hermosa (mid-February) and later Hermosa to Harvest (late-April);
- Return of cutting removal equipment to Port Hueneme from Harvest (early June); and
- One trip approximately every three days during conductor removal phase from platforms to Long Beach for disposal of conductor and casing material (Jan - June).
- Total trips for cutting and removal project:
  - Port Hueneme to platforms, six round trips
  - Inter-platform, four trips
  - Platforms to Long Beach, 60 round trips

Since inception, vessel trips to Point Arguello platforms depart Port Hueneme near 0000 hours to take advantage of favorable sea conditions; this practice is expected to continue for this project. Freeport is actively participating in the Joint Oil/Fisheries Liaison Office (JOFLO). The staff from JOFLO have been briefed on the project and have previously met with vessel support staff to ensure clear understanding of the approved vessel traffic corridors, marine mammal and fishing operation avoidance.

The crew of the *Harvey Challenger* has been trained with the Wildlife and Fisheries Training video generated by Pacific Offshore Operators, LLC. Limiting vessel cruising speed to 10 knots is also an element of the marine mammal avoidance goals.
Normal work crew transportation is planned to be accomplished via helicopter. A separate crew vessel is not planned for use during the project. If weather (fog) prevented travel of work crews

between platforms via helicopter, the crew could be transferred via supply vessel, if it was available and weather conditions and sea states were within safe limits. To our knowledge, over the past decades of operation, there have been no incidents of whales being struck by industry support vessels.

The supply vessel will be using the same National Traffic Separation Scheme that large ocean-going vessels use to transit the coastline en route to/from the Port of Long Beach. Within the area offshore Santa Barbara County, an established vessel corridor to transit to and from the home port of Port Hueneme is also used. Using these corridors while employing the standard avoidance procedures contained in the BSEE supported wildlife and fisheries training program, including separation distances from protected species per NMFS guidance (https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines) and the vessel speed reduction noted above, minimizes the potential for impacts to marine mammals during project-related vessel operations. Additionally, considering the overall reduced spatial and temporal overlap with these species (see the Occurrences, Effects and Determinations section below), BOEM has determined that vessel traffic as part of the proposed action may affect, but is not likely to adversely affect, ESA-listed and other marine mammal species.

Analysis of Climate and Environmental Changes

The global climate is warming and is having impacts on some populations of marine mammals by causing shifts in distribution to match physiological tolerance or through changes in prey distribution (Garcia-Aguilar et al., 2018; Jefferson & Schulman-Janiger, 2018; National Oceanic and Atmospheric Administration, 2015c, 2018b; Silber et al., 2017; Shirasago-Germán et al., 2015; Doney et al., 2012; Salvadeo et al., 2010; Simmonds & Eliott, 2009; Peterson et al., 2006).

The Marine Heatwave of 2013 ("the Blob") and the current NPMH of 2019 (https://www.fisheries.noaa.gov/feature-story/new-marine-heatwave-emerges-west-coast-resembles-blob) are regions of highly anomalous warm ocean water that develop in the surface ocean of the northeast Pacific (Bond et al., 2015).

As discussed above, these anomalies may cause ESA-listed species, depending on the species to move closer, and stay longer inshore for those seeking warmer waters (e.g., loggerhead sea turtles; Eguchi, 2018) or offshore for those seeking cooler waters (e.g., blue whales; Calambokidis et al, 2009a). An increase in strandings in various species may occur due to prey shifts, as was seen in 2013-2014 event described above.

The proposed action has no effect on these climatological phenomena. Although there is a potential that certain species may increase in abundance near or in the project area during the proposed action, considering the effects analysis above and the localized and short-term nature of the proposed activities, we have determined that the proposed action may affect but is not likely to adversely affect ESA-listed species.

NMFS ESA-Listed Species and Critical Habitat – Occurrence, Effects and Determinations

In this section, we consider the potential effects of conductor removal on individual NMFS ESA-listed species.

The following are among the general observations noted from the California Cooperative oceanic Fisheries Investigations surveys for 2012 through 2017 (Campbell et al., 2014; Debich et al., 2017; Hildebrand et al. 2018):

- During winter and spring, most baleen whale sightings occur in waters of the continental shelf;
- During summer, there are more baleen sightings along the continental slope and offshore waters;
- During fall, baleen whale sightings are concentrated in the Channel Islands region;
- Winter cruises had the highest species diversity for mysticetes and odontocetes.

Table 3: Summary of Determinations for NMFS ESA Listed Species in the Project Area

Common name	Scientific Name	Potential Impacting Factors	Determination for Conductor Removal Activities	Effects to Critical Habitat	Comments
Blue whale*	*Balaenoptera musculus*	Vessel strike and sound	Not Likely to Adversely Affect	N/A	Limited exposure; Little Temporal Overlap
Fin whale*	*Balaenoptera physalus*	Vessel strike and sound	Not Likely to Adversely Affect	N/A	See discussion below
Humpback whale*	*Megaptera novaeangliae*	Vessel strike and sound	Not Likely to Adversely Affect	N/A	See discussion below
Sei whale*	*Balaenoptera borealis*	Vessel strike and sound	Not Likely to Adversely Affect	N/A	No Spatial Overlap
Sperm whale*	*Physeter macrocephalus*	Vessel strike and sound	Not Likely to Adversely Affect	N/A	Limited exposure; Little or No Spatial Overlap
Guadalupe fur seal*	*Arctocephalus townsendi*	Vessel strike and sound	Not Likely to Adversely Affect	N/A	Limited exposure; Little Spatial Overlap
Leatherback sea turtle	*Dermochelys coriacea*	Vessel strike and sound	Not Likely to Adversely Affect	No	Limited exposure; Little Spatial or Temporal Overlap
Loggerhead sea turtle*	*Caretta caretta*	Vessel strike and sound	Not Likely to Adversely Affect	N/A	Limited exposure; Little or No Spatial Overlap
Scalloped hammerhead shark*	*Sphyrna lewini*	Sound	Not Likely to Adversely Affect	N/A	Limited exposure; Little or No Spatial Overlap

Common name	Scientific Name	Potential Impacting Factors	Determination for Conductor Removal Activities	Effects to Critical Habitat	Comments
Steelhead trout	*Oncorhynchus mykiss*	Sound	Not Likely to Adversely Affect	No	Limited exposure; Little or No Spatial Overlap
Green sturgeon	*Acipenser medirostris*	Sound	Not Likely to Adversely Affect	No	Limited exposure; Little or No Spatial Overlap
Black abalone	*Haliotis cracherodii*	Sound	Not Likely to Adversely Affect	No	Limited exposure; Little or No Spatial Overlap

*Critical habitat has not been designated for these species.

Blue whales (*Balaenoptera musculus*)

Habitat models derived from line-transect survey data collected between 1991 and 2009 offshore the U.S. West Coast, predicted relatively high densities of blue whales off southern California during summer and fall (Barlow et al., 2009; Becker et al., 2010; Becker et al., 2016; Forney et al., 2012). This is supported by year-round survey data collected off Southern California from 2004-2013 which showed that the majority of blue whales were sighted in summer and fall, with only single sightings in winter and spring (Campbell et al., 2015). Tagging data from blue whales in Southern California waters indicate the area of highest use for blue whales was between Point Dume and Mugu Canyon (south of the project area), out to approximately 30 km from shore (Mate et al., 2015).

Nine feeding areas have been identified for blue whales off the U.S. West Coast (Calambokidis et al., 2015). The project area overlaps with only the Point Conception/Arguello feeding area where the primary occurrence of blue whales occurs from June to October (Figure 2). This feeding area generally has lower densitities of blue whales compared to the 8 higher density feeding areas to the south (Calambokidis et al., 2015). The blue whale feeding areas identified in waters extending from Point Conception to the Mexico border represent only a fraction of the total area within those waters where habitat models predict high densities of blue whales (Calambokidis et al., 2015).

The proposed action is anticipated to occur from December-June, a timeframe when lowest densities of blue whales are anticipated to occur in the project area. Considering the analysis of effects described above, blue whales may be affected, but are not likely to be adversely affected by the proposed action.

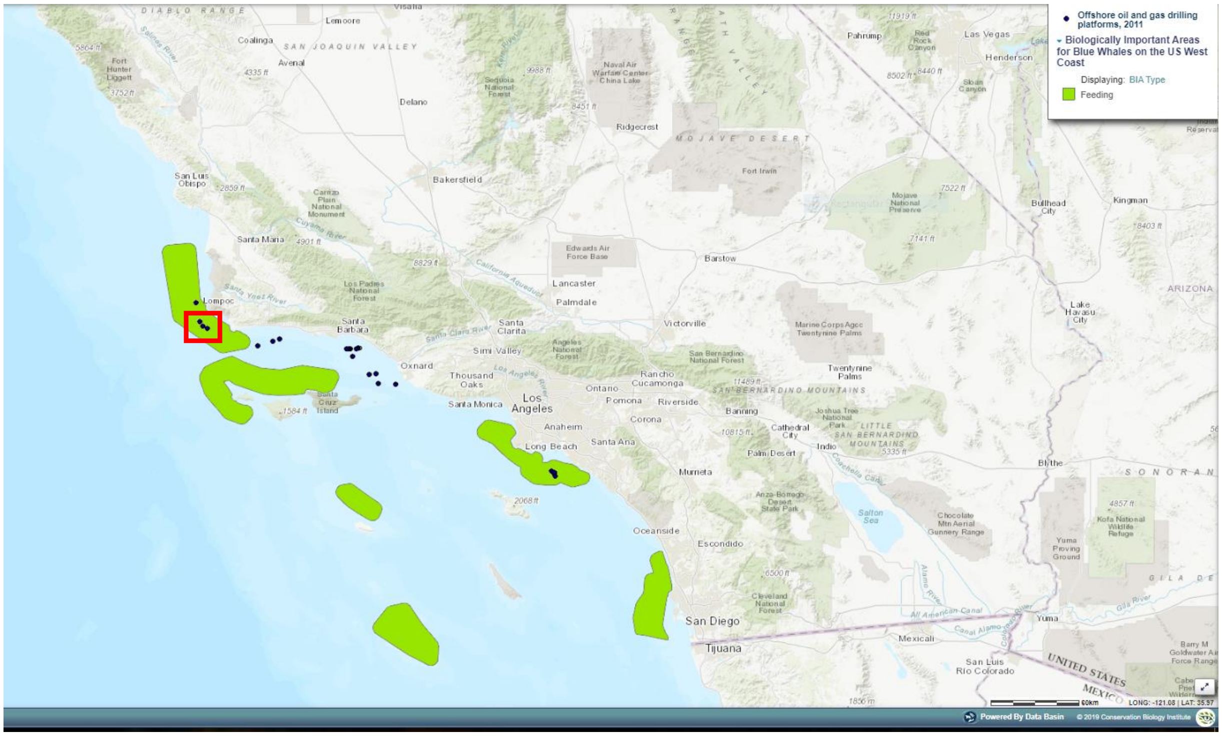


Figure 2. Blue whale biologically important feed areas in southern California (Calambokidis et al; 2015) showing some overlap with the action area (red).

Fin whale (*Balaenoptera physalus*)

The fin whale is listed as depleted under the MMPA and endangered under the ESA throughout its range, but there is no designated critical habitat for this species. Fin whales are not known to have a specific habitat and are highly adaptable, following prey, typically off the continental shelf (Azzellino et al., 2008; Panigada et al., 2008; Scales et al., 2017). Off the U.S. West Coast, fin whales typically congregate in areas of high productivity, allowing for extended periods of localized residency that are not consistent with the general baleen whale migration model (Scales et al., 2017). Based on predictive habitat-based density models derived from line-transect survey data collected between 1991 and 2009 off the U.S. West Coast, relatively high densities of fin whales are predicted off Southern California during the summer and fall (Barlow et al., 2009; Becker et al., 2010; Becker et al., 2012a; Becker et al., 2016; Forney et al., 2012). Aggregations of fin whales are present year-round in southern and central California (Campbell et al., 2015; Douglas et al., 2014; Forney et al., 1995; Forney and Barlow, 1998; Jefferson et al., 2014; Scales et al., 2017), although their distribution shows seasonal shifts.

Fin whales may occur in the project area during proposed action activities, but in lower densities since most of the proposed action takes place during winter and spring. Additionally, considering the analysis of effects described above, fin whales may be affected, but are not likely to be adversely affected by the proposed action.

Humpback whale (*Megaptera novaeangliae*)

The California, Oregon, Washington stock of humpback whales is present in Southern

California as they migrate northward from their winter breeding grounds in Mexico and Central America and then again when migrating southward in their return from feeding areas along the U.S West Coast, British Colombia, and Alaska (Carretta et al., 2019; Calambokidis et al., 2017). Peak occurrence during migration in Southern California occurs from December through June (Calambokidis et al., 2015). The California, Oregon, and Washington stock of humpback whales may use the waters within Southern California as a summer feeding ground, however the action area does not overlap with any of the biologically important feeding areas identified for humpback whales (Calambokidis et al., 2015) (see Figure 3).

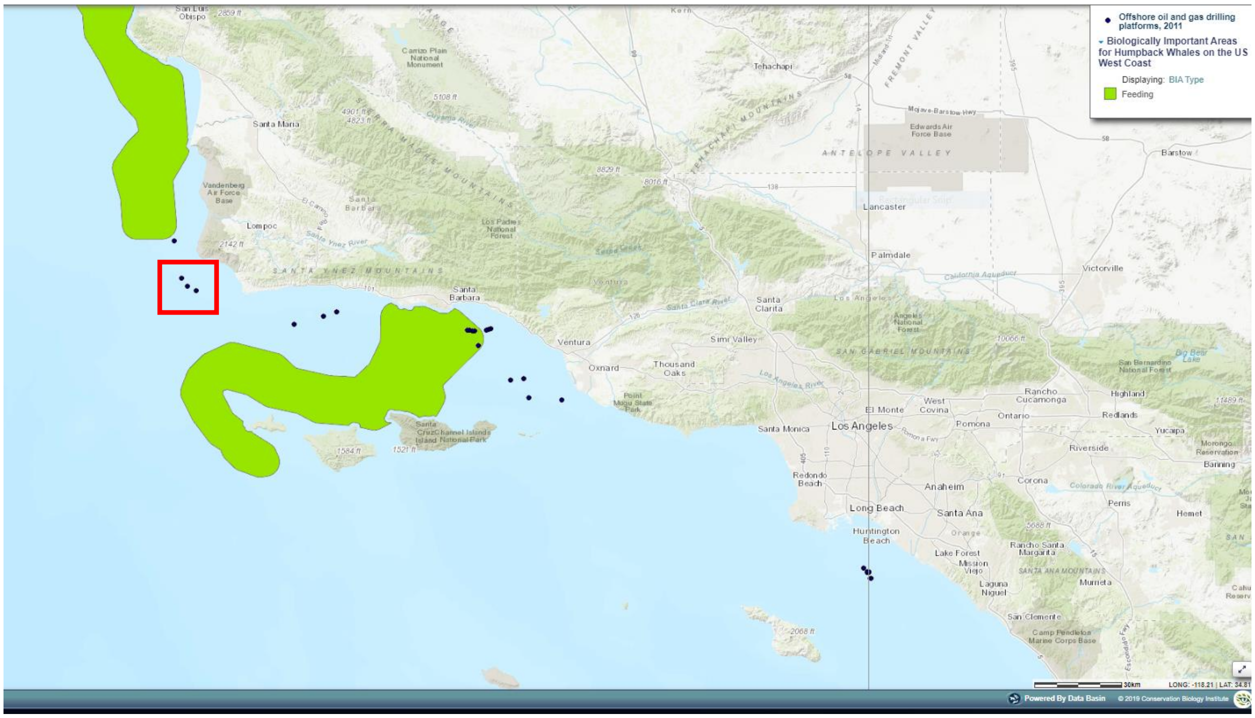


Figure 3: Humpback whale biologically important feeding areas in southern California (Calambokidis et al., 2015) showing no overlap with the action area (red square).

Humpback whales are likely to be migrating through the action area but considering the effects analysis described above, the proposed action may affect but is not likely to adversely affect humpback whales.

Sei whales (*Balaenoptera borealis*)

Sei whales are distributed in offshore waters of southern California (Carretta et al., 2017c). During systematic ship surveys conducted off the U.S. West Coast in summer and fall between 1991 and 2008 (Barlow, 2010), a total of 10 sei whale sightings were made with an additional 14 groups sighted during a 2014 survey (Barlow, 2016). Sei whales were not seen in the California Bight during 15 aerial surveys conducted from 2008 through 2012 (Smultea et al., 2014) or during any systematic ship surveys conducted by NMFS (Barlow, 2010; 2016).

Sei whales are unlikely to occur in the action area and are therefore not likely to be adversely affected by the proposed action.

Sperm whales (*Physeter macrocephalus*)

Based on habitat models derived from line-transect survey data collected between 1991 and 2008 off the U.S. West Coast, sperm whales seem to preferentially occur in deeper waters (Barlow et al., 2009; Becker et al., 2010; Becker et al., 2012a; Forney et al., 2012). During quarterly ship surveys conducted off southern California between 2004 and 2008, there were a total of 20 sperm whale sightings, the majority (12) occurring in summer in waters greater than 2,000 m deep (Douglas et al., 2014). During 18 aerial surveys conducted in the Southern California Bight from 2008 through 2012, only one sperm whale group was observed (Smultea et al., 2014).

Sperm whales are unlikely to occur in the action area and are therefore not likely to be adversely affected by the proposed action.

Guadalupe fur seal (*Arctocephalus townsendi*)

Guadalupe fur seals pup and breed mainly at Isla Guadalupe, Mexico. In 1997, a second rookery was discovered at Isla Benito del Este, Baja California (Maravilla-Chavez and Lowry 1999) and a pup was born at San Miguel Island, California (Melin and DeLong 1999). Since 2008, individual adult females, subadult males, and between one and three pups have been observed annually on San Miguel Island (NMFS, unpublished data in Carretta et al., 2018).

Guadalupe fur seals may occur in the action area and may be affected but are not likely to be adversely affected by the proposed action.

Leatherback sea turtle (*Dermochelys coriacea*)

Leatherback turtles tagged after nesting in July at Jamursba-Medi arrived in waters off California and Oregon during July-August (Benson et al., 2007a; 2011) coincident with the development of seasonal aggregations of jellyfish (Shenker, 1984; Suchman and Brodeur, 2005; Graham, 2009). Other studies similarly have documented leatherback sightings along the Pacific coast of North America during the summer and fall months, when large aggregations of jellyfish form (Bowlby, 1994; Starbird et al., 1993; Benson et al., 2007b; Graham, 2009).

NMFS published a final rule designating critical habitat for leatherback sea turtles in 2012 (NMFS, 2012). This critical habitat contains the main feeding habitat for leatherback sea turtles and stretches along the California coast from Point Arena to Point Arguello east of the 3,000 meter depth contour; and 25,004 square miles (64,760 square km) stretching from Cape Flattery, Washington to Cape Blanco, Oregon east of the 2,000 meter depth contour.

Leatherbacks are rarely seen offshore southern California. The proposed action will take place from December to June with very little seasonal overlap with leatherback sea turtle occurrence. Designated critical habitat for leatherback sea turtles does not overlap with proposed action area. As such, and together with the above-mentioned effects analysis, BOEM has determined that the proposed action may affect, but is not likely to adversely affect, leatherback sea turtles. The proposed action will not result in the destruction or adverse modification of designated critical habitat for this species.

Loggerhead sea turtle (*Caretta caretta*)

Only the North Pacific Ocean distinct population segment of loggerhead turtles occur within the proposed action area, however, mixing is known to occur between other populations in the Pacific and Indian Oceans, enabling a limited amount of gene flow with other distinct population segments (Gaos, 2011). In waters off the U.S. West Coast, most records of loggerhead sightings, stranding events, and incidental bycatch have been of juveniles documented from the nearshore waters of Southern California (Eguchi, 2018). In general, sea turtle sightings increase during the summer, peaking from July to September off southern California and southwestern Baja California. Additional aerial surveys conducted by NMFS Southwest Fisheries Science Center in the Southern California Bight resulted in 215 loggerhead sea turtle sightings over the course of one month in the fall of 2015, compared to 0 being seen during aerial surveys in 2011 (Eguchi, 2018). Analyses of shipboard survey data as well as sighting and stranding records complement these aerial survey data and further support that loggerheads are present along the southern California coast most commonly during warm water conditions (Eguchi, 2018). During El Niño events, foraging loggerheads from Mexican waters may expand their range north into Southern California waters.

Although loggerheads may occur in the proposed action area, they generally occur further south or further offshore than the proposed action area (Eguchi, 2018). Additionally, the proposed action activities will be occurring from December to June which is out of cycle for when loggerhead occurrence peaks off southern California. Considering the above, as well as the effects analysis described above, loggerheads may be affected by the proposed action but are not likely to be adversely affected.

Scalloped hammerhead shark (*Sphyrna lewini*)

The Eastern Pacific DPS of scalloped hammerhead shark is listed as endangered under the ESA (79 FR 38213). This species is considered rare in southern California, although sightings in the summer and fall during El Niño events have been recorded (http://www.planetexperts.com/heralds-el-nino-harbingers-climate-change/).

Given this species relative scarcity in California and the effects analysis described above, we have determined that the proposed action may affect but is not likely to adversely affect scalloped hammerhead sharks.

Steelhead Trout (*Oncorhynchus mykiss*)

The Southern California Evolutionarily Significant Unit (ESU) of west coast steelhead is listed as endangered (63 FR 32996). Critical habitat for the Southern California steelhead includes multiple rivers between the Santa Maria River and San Mateo Creek (70 FR 52487).

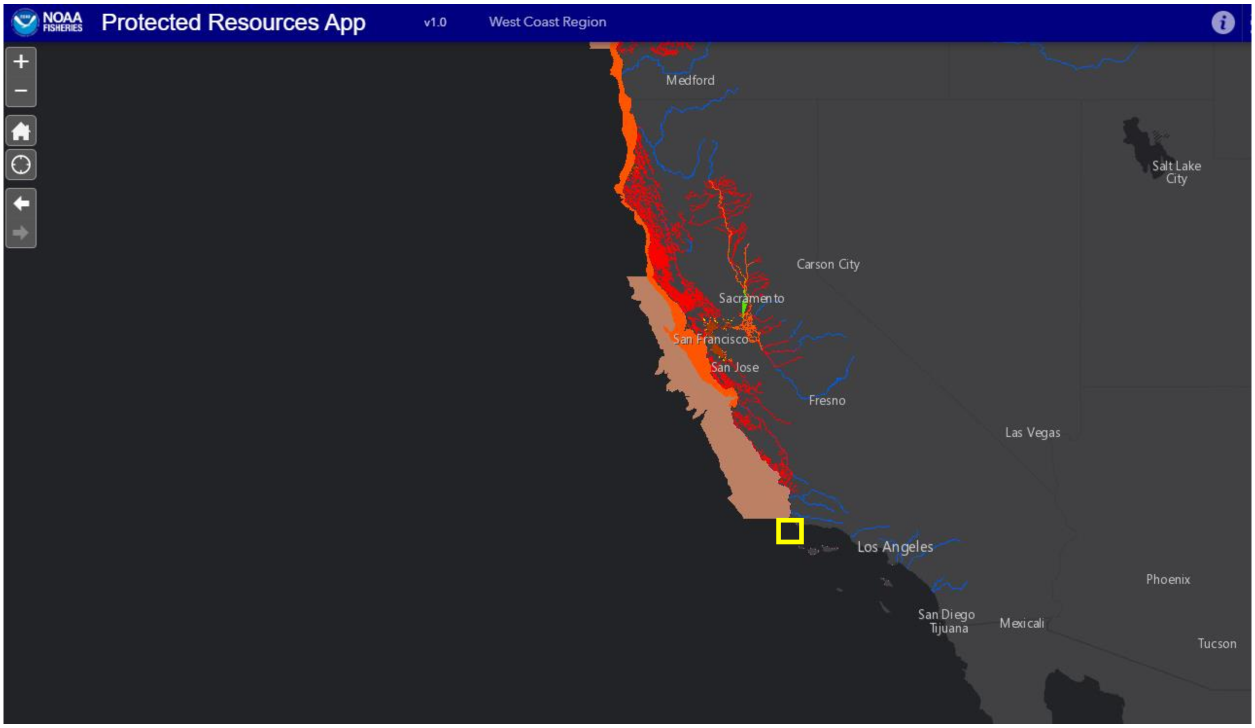


Figure 4. Steelhead Trout distribution, abundance and critical habitat along the U.S. West Coast (NMFS, 2019), with the proposed action area shown in the yellow box (not to scale).

Steelhead trout are found in low numbers in the proposed action area (Figure 4) and the proposed action area has very little, if any, spatial overlap with steelhead trout distribution and no overlap with critical habitat. This, together with the effects analysis described above, support the determination that the proposed action may affect but is not likely to adversely affect steelhead trout. The proposed action will not result in the destruction or adverse modification of designated critical habitat for this species.

Green Sturgeon (*Acipenser medirostris*)

The southern DPS is listed as threatened under the ESA (50 CFR 223.102). As adults, both green sturgeon migrate seasonally along the U.S. West Coast. They congregate in bays and estuaries in Washington, Oregon, and California during the summer and fall months. During winter and spring months they congregate off northern Vancouver Island in British Columbia, Canada (https://www.fisheries.noaa.gov/species/green-sturgeon). In marine waters, designated critical habitat is at the 60 fathom (110 meters) depth isobath from Monterey Bay to the U.S.-Canada border (50 CFR 226).

There is very little, if any, spatial and temporal overlap with green sturgeon distribution and no overlap with critical habitat and the proposed action area. This, in addition to the effects analysis described above, lead us to the determination that although the proposed action may affect green sturgeon it is not likely to adversely affect green sturgeon. The proposed action will not result in the destruction or adverse modification of designated critical habitat for this species.

Black Abalone (*Haliotis cracherodii*)
Black abalone are listed as endangered throughout their range (74 FR 1937). In addition, most of the rocky subtidal and intertidal areas of the mainland California coastline south of Del Mar Landing Ecological Reserve to Government Point, the shoreline of the Channel Islands, and portions of the California coastline south of Point Conception have been listed as critical habitat for the black abalone (NOAA, 2011). Black abalone abundance stabilized during 2011-2015 following the significant decline in abundance found between 1992 and 2005 (Miner et al., 2015). However, new abalone recruitment appears to be minimal in the region.

Considering the nature of the proposed action, the effects determination described above and the fact that low numbers of black abalone occur in the rocky intertidal and subtidal marine habitats, we have determined that the proposed action may affect but is not likely to adversely affect black abalone. The proposed action will not result in the destruction or adverse modification of designated critical habitat for this species.

MITIGATION AND MONITORING
As noted above, the following mitigative measures will be undertaken to minimize any potential impacts to protected species:

- The supply boat will be using the same NTSS that large ocean-going vessels use to transit the coastline en route to/from the Port of Long Beach.
- Within the area offshore Santa Barbara County, an established vessel corridor to transit to and from the home port of Port Hueneme will be used.
- Employ Standard avoidance procedures contained in BOEM’s approved wildlife and fisheries training program that include piloting vessels monitor and keeping vigilant watch for protected species and following NMFS guidance to remain at least 100 m away from all whale species, and 50 m away from dolphins and sea turtles.
- Transit vessel speed is limited to 10 knots.

Employing the above mitigations minimizes the potential for impacts with marine mammals during project-related vessel operations.

CONCLUSION
Upon review of the most recent information on the status of NMFS threatened/endangered ESA-listed species and the proposed action being conductor removal, BOEM and BSEE conclude that NMFS ESA-listed species may be affected, but are not likely to be adversely affected, by the proposed action. The Bureaus are committed to continued coordination with NMFS on future activities and additional consultation as the need arises.

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