APPENDIX D

Typical Environmental Protection Mitigation Measures and Best Management Practices

This section lists the Typical Mitigation Measures and Best Management Practices (BMPs) BOEM assumes operators will follow when conducting actions on or near the Outer Continental Shelf (OCS) (summarized in **Table D-1**). The BMPs to minimize or eliminate potential impacts to protected species, including Endangered Species Act (ESA)-listed species of marine mammals and sea turtles, were developed by the Bureau of Ocean Energy Management (BOEM).

Table D.1 Environmental Protection and Safety Measures

Description of Potential Impacts	Impact-Producing Factors	Environmental Protection Measures to Avoid or Minimize Impacts from the Proposed Project
Water Quality Impacts to water quality from Project discharges	Discharges Debris	• Under the CWA it is unlawful for any person to discharge any pollutant from a point-source into navigable waters without a permit under its provisions. The EPA regulates discharges incidental to the normal operation of all non-recreational, non-military vessels greater than 24 m (79 ft) in length into U.S. waters, under Section 402 of the CWA (EPA 2013 Vessel General Permit (VGP)). • Small vessels and fishing vessels of any size must follow ballast water discharge requirements established in the EPA 2013 VGP and the USCG ballast water regulations at 33 CFR 151.10. • Adherence to applicable permits and regulatory requirements for vessel discharges by local authorities, State of California, USCG, and EPA • Vessel operators will comply with pollution regulations outlined in 33 CFR 151.51-77 so only accidental loss of trash and debris is anticipated.
Marine Mammals and Sea Turtles Disturbance of marine mammals by vessel traffic and noise	Noise Vessel strikes Entanglement	Minimize interactions with protected marine mammal species including, but not limited to, the following measures: • 1,000 m monitoring zone by approved third-party protected species observers around vessels operating boomer, sparkers, or bubble gun equipment • 500 m exclusion zone for ESA-listed whale species around each vessel operating boomer, sparker, or bubble gun equipment • 30-minute visual clearance of a 1000 m monitoring zone prior to use of noise-producing survey equipment • When technically feasible, a “ramp up” of the electromechanical survey equipment occurs at the start or re-start of geophysical survey activities • Submission of an Alternative Monitoring Plan detailing monitoring methodology that will be used during nighttime and low-visibility conditions Use of Vessel Strike Avoidance Measures including, but not limited to, the following measures: • All vessels limited to vessel speed of 10 knots along the California Coast. • Maintain a vigilant watch for all protected marine species and slow down, stop, or alter course • Minimum separation distance of 500 m from all whales around all vessels

		• All crew members responsible for navigation duties must receive site-specific training on protected species sighting/reporting and vessel strike avoidance measures. Prevent entanglement or entrainment of listed species including, but not limited to, the following measures: • Use of best available mooring systems • Reduce entanglement risk by using: shortest practicable line length, rubber sleeves, weak-links, chains, cables or similar equipment types that prevent lines from looping, wrapping, or entrapping protected species. • Prompt reporting of entanglement events
Birds and Bats Disturbance or attraction of birds and bats by lighting, trash and debris	Lighting Trash and Debris Attraction	Minimize adverse impacts by managing the type of lighting used including, but not limited to, the following measures: • Use only red flashing strobe-like lights for aviation obstruction lights; must ensure that these aviation obstruction lights emit infrared energy within 675–900 nanometers wavelength to be compatible with Department of Defense night vision goggle equipment. • Any lights used to aid marine navigation by the Lessee during construction, operations and decommissioning of a meteorological tower or buoys must meet USCG requirements for private aids to navigation (Form CG-2554: https://www.dcms.uscg.mil/forms/smdsearch4081/2554/) • Use lighting only when necessary, and the lighting must be hooded downward and directed when possible Use of trash and debris reduction management practices including, but not limited to, substituting paper and ceramic cups and dishes for those made of Styrofoam, recycling offshore trash, and transporting and storing supplies and materials in bulk containers when feasible Use of anti-perching devices on metocean buoys Annual reporting of any dead birds or bats found on vessels and structures
Commercial Fishing Project activities may interfere with fishing	Debris Traffic	Removal of large marine debris objects and decommissioning of instrumentation at end of 5-year term To enhance navigational safety, lessees will develop a SAP that will include site-specific measures including, but not limited to, a Local Notice to Mariners, vessel traffic corridors, lighting specifications, incident contingency plans
Historic Properties	Disturbance	Use of HRG surveys prior to geotechnical testing and sediment sampling to avoid impacts on historical properties including, but not limited to:

Impacts to historic properties on the seafloor		• The geophysical surveys must meet BOEM's minimum standards (see BOEM Archaeological Survey Guidelines) • Analysis by a qualified marine archaeologist who meets both the Secretary of the Interior's Professional Qualifications Standards (48 Federal Register (FR) 44738–44739) and has experience analyzing marine geophysical data • This analysis must include a determination whether any potential archaeological resources are present in the area and the geotechnical (sub-bottom) sampling activities must avoid potential archaeological resources by a minimum of 50 m (164 ft). The avoidance distance must be calculated from the maximum discernible extent of the archaeological resource. In no case may the Lessee's actions impact a potential archaeological resource without BOEM's prior approval Observation of unanticipated finds requirement (30 CFR 585.802)

Typical Mitigation Measures for Protected Marine Species

In line with BOEM's regulatory authorities, the following mitigation measures apply in federal waters. Additionally, all vessels conducting site characterization studies, surveys, metocean buoy installation, maintenance, or decommissioning or any other survey activities will travel at speeds no more than 10 knots during all related activities including vessel transit along the California coast. If future consultation with NMFS, USFWS or other state or federal agency results in different vessel speed requirements, BOEM will work with California Coastal Commission staff to ensure that any new requirements remain consistent and do not diminish the level of resource protection provided by this requirement.

A. Survey Monitoring Plan

Any survey monitoring plan must meet the following minimum requirements specified below, except when complying with these requirements would put the safety of the vessel or crew at risk. Minimize Interactions with Protected Species during Geophysical Survey Operations

To avoid injury of protected marine mammal species and minimize any potential disturbance, the following measures will be implemented for all vessels operating survey equipment in the boomer, sparker, and bubble gun equipment categories, and equipment with similar specifications within these categories.

Required mitigations:

For situational awareness a Monitoring Zone (1,000 meters [m] (3,281 feet [ft] in all directions) for protected species must be monitored around all vessels operating boomer, sparkers, or bubble gun equipment.

1. The Monitoring Zone must be monitored by approved third-party protected species observers (PSOs) at all times and any observed listed species must be recorded (see reporting requirements below).
2. For monitoring around an autonomous surface vessel (ASV), where remote PSO monitoring must occur from the mother vessel, a dual thermal/HD camera must be installed on the mother vessel facing forward and angled in a direction so as to provide a field of view ahead of the vessel and around the ASV. PSOs must be able to monitor the real-time output of the camera on hand-held computer tablets. Images from the cameras must be able to be captured and reviewed to assist in verifying species identification. A monitor must also be installed in the bridge displaying the real-time images from the thermal/HD camera installed on the front of the ASV itself, providing a further forward view of the craft. In addition, night-vision goggles with thermal clip-ons and a handheld spotlight must be provided and used such that PSOs can focus observations in any direction around the mother vessel and/or the ASV.

To minimize exposure to noise that could be disturbing, a 500 m Exclusion Zone for ESA-listed whale species visible at the surface must be established around each vessel operating boomer, sparker, 100 kHz multibeam echosounder (MBES), or bubble gun equipment.

3. The Exclusion Zone(s) must be monitored by third-party PSOs at all times when noise-producing equipment is being operated and all observed listed species must be recorded (see reporting requirements below).

4. If an ESA-listed whale is detected within or entering the respective Exclusion Zone, any noise-producing equipment operating below 180 kHz must be shut off until the minimum separation distance (see vessel strike avoidance below) is re-established and the measures in (5) are carried out.
    a. A PSO must notify the survey crew that a shutdown of all active boomer, sparker, 100 kHz MBES, and bubble gun acoustic sources below 180 kHz is immediately required. The vessel operator and crew must comply immediately with any call for a shutdown by the PSO. Any disagreement or discussion must occur only after shutdown.
5. If the Exclusion Zone(s) cannot be adequately monitored for whale presence (i.e., a PSO determines conditions, including at night or other low-visibility conditions, are such that listed whales cannot be reliably sighted within the Exclusion Zone(s), the survey must be stopped until such time that the Exclusion Zone(s) can be reliably monitored.

Before any noise-producing survey equipment is deployed, the Monitoring Zone (1,000 m (3,281 ft) for all marine mammal species) must be monitored for 30 minutes of pre-clearance observation.

1. If any ESA-listed species is observed within the Monitoring Zone during the 30-minute pre-clearance period, the 30-minute clock must be paused. If the PSO confirms the animal has exited the zone and headed away from the survey vessel, the 30-minute clock that was paused may resume. The pre-clearance clock will reset to 30 minutes if the animal dives or visual contact is otherwise lost.

The Lessee must ensure that, when technically feasible, a “ramp up” of the electromechanical survey equipment occurs at the start or re-start of geophysical survey activities. A ramp up must begin with the power of the smallest acoustic equipment for the geophysical survey at its lowest power output. When technically feasible the power will then be gradually turned up and other acoustic sources added in a way such that the source level would increase gradually.

Following a shutdown for any reason, ramp up of the equipment may begin immediately only if: (a) the shutdown is less than 30 minutes, (b) visual monitoring of the Exclusion Zone(s) continued throughout the shutdown, (c) the animal(s) causing the shutdown was visually followed and confirmed by PSOs to be outside of the Exclusion Zone(s) and heading away from the vessel, and (d) the Exclusion Zone(s) remains clear of all listed species. If all (a, b, c, and d) the conditions are not met, the Monitoring Zone (1,000 m (3,281 ft) for all species) must be monitored for 30 minutes of pre-clearance observation before noise-producing equipment can be turned back on.

In order for geophysical surveys to be conducted at night or during low-visibility conditions, PSOs must be able to effectively monitor the Exclusion Zone(s). No surveys may occur if the Exclusion Zone(s) cannot be reliably monitored for the presence of ESA-listed whales to ensure avoidance of injury to those species.

1. The Lessee must submit an Alternative Monitoring Plan (AMP) to the Bureau of Ocean Energy Management (BOEM) detailing the monitoring methodology that will be used during nighttime and low-visibility conditions and an explanation of how it will be effective at ensuring that the Exclusion Zone(s) can be maintained during nighttime and low-visibility survey operations. The plan must be submitted 60 days before survey operations are set to begin.
2. The plan must include technologies that have the technical feasibility to detect all ESA-listed whales out to 500 m (1,640 ft).

3. PSOs should be trained and experienced with the proposed night vision technology.
4. The AMP must describe how calibration will be performed, for example, by including observations of known objects at set distances and under various lighting conditions. This calibration could be performed during mobilization and periodically throughout the survey operation.
5. PSOs shall make nighttime observations from a platform with no visual barriers, due to the potential for the reflectivity from bridge windows or other structures to interfere with the use of the night vision optics.

If multiple survey vessels are operating within a lease, adjacent lease areas, or exploratory cable routes, a minimum separation distance (to be determined on a survey specific basis, dependent on equipment being used) must be maintained between survey vessels to ensure that sound sources do not overlap.

Any visual observations of listed species by crew or project personnel must be communicated to PSOs on-duty.

During good conditions (e.g., daylight hours; Beaufort scale 3 or less) when survey equipment is not operating, to the maximum extent practicable, PSOs must conduct observations for listed species for comparison of sighting rates and behavior with and without use of active geophysical survey equipment. Any observed listed species must be recorded regardless of any mitigation actions required.

B. Minimize Vessel Interactions with Listed Species

All vessels associated with survey activities (transiting or actively surveying) must comply with the vessel strike avoidance measures specified below. The only exception is when the safety of the vessel or crew necessitates deviation from these requirements. If any such incidents occur, they must be reported as outlined below.

Lessees are directed to NMFS' Marine Life Viewing Guidelines, which highlight the importance of these measures for avoiding impacts to mother/calf pairs (https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines#guidelines-&-distances).

Required mitigations:

6. Vessel captain and crew must maintain a vigilant watch for all protected marine species and slow down, stop their vessel, or alter course, as appropriate, regardless of vessel size, to avoid striking any protected species. The presence of a single individual at the surface may indicate the presence of submerged animals in the vicinity; therefore, precautionary measures should always be exercised.
7. All vessels conducting site characterization studies, surveys, metocean buoy installation, maintenance, or decommissioning or any other survey activities will travel at speeds no more than 10 knots during all related activities including vessel transit along the California coast. If future consultation with NMFS, USFWS or other state or federal agency results in different vessel speed requirements, BOEM will work with California Coastal Commission staff to ensure that any new requirements remain consistent and do not diminish the level of resource protection provided by this requirement.

8. Any time a survey vessel is underway (transiting or surveying), a PSO must monitor a Vessel Strike Avoidance Zone (500 m (1,640 ft) or greater from any sighted whales or other unidentified large marine mammal and 50 m (164 ft) or greater from any other marine protected species visible at the surface (unless the marine mammals are actively approaching the vessel) to ensure detection of that animal in time to take necessary measures to avoid striking the animal. If the survey vessel does not require a PSO for the type of survey equipment used, a trained crew lookout or PSO may be used. For monitoring around the autonomous surface vessels, regardless of the equipment it may be operating, a dual thermal/HD camera must be installed on the mother vessel facing forward and angled in a direction so as to provide a field of view ahead of the vessel and around the ASV. A dedicated operator must be able to monitor the real-time output of the camera on hand-held computer tablets. Images from the cameras must be able to be captured and reviewed to assist in verifying species identification. A monitor must also be installed in the bridge displaying the real-time images from the thermal/high definition (HD) camera installed on the front of the ASV itself, providing a further forward view of the craft.
9. Survey plans must include identification of vessel strike avoidance measures, including procedures for equipment shut down and retrieval, communication between PSOs/crew lookouts, equipment operators, and the captain, and other measures necessary to avoid vessel strike while maintaining vessel and crew safety. If any circumstances are anticipated that may preclude the implementation of this requirement, they must be clearly identified in the survey plan and alternative procedures outlined in the plan to ensure minimum distances are maintained and vessel strikes can be avoided.
10. All vessel crew members must be briefed in the identification of protected marine species that may occur in the survey area and in regulations and best practices for avoiding vessel collisions. Reference materials must be available aboard all project vessels for identification of listed species. The expectation and process for reporting of protected species sighted during surveys must be clearly communicated and posted in highly visible locations aboard all project vessels, so that there is an expectation for reporting to the designated vessel contact (such as the lookout or the vessel captain), as well as a communication channel and process outlined for crew members to do so.
11. A minimum separation distance of 500 m (1,640 ft) from all whales (including unidentified large whales) must be maintained around all surface vessels at all times.
12. If a large whale is identified within 500 m of the forward path of any vessel, the vessel operator must steer a course away from the whale at 10 knots (18.5 km/hr) or less until the 500 m minimum separation distance has been established. Vessels may also shift to idle if feasible.
13. If a large whale is sighted within 200 m (656 ft) of the forward path of a vessel, the vessel operator must reduce speed and shift the engine to neutral. Engines must not be engaged until the whale has moved outside of the vessel's path and beyond 500 m (1,640 ft). If stationary, the vessel must not engage engines until the large whale has moved beyond 500 m.
14. To monitor the Vessel Strike Avoidance Zone, a PSO (or crew lookout if PSOs are not required) must be posted during all times a vessel is underway (transiting or surveying) to monitor for protected species within a 180-degree direction of the forward path of the vessel (90 degrees port to 90 degrees starboard).
    b. If the trained lookout is a vessel crew member, this must be their designated role and primary responsibility while the vessel is underway. Any designated crew lookouts must

receive training on protected species identification, vessel strike minimization procedures, how and when to communicate with the vessel captain, and reporting requirements. All observations must be recorded per reporting requirements.

c. Regardless of monitoring duties, all crew members responsible for navigation duties must receive site-specific training on protected species sighting/reporting and vessel strike avoidance measures.

15. Vessels underway must not divert their course to approach any listed species.
16. Wherever available, the Lessee must ensure all vessel operators check for daily information regarding protected species sighting locations. These media may include, but are not limited to: Channel 16 broadcasts, Whalesafe.com, and the Whale/Ocean Alert App.

C. Entanglement Avoidance

Any mooring systems used during survey activities prevent any potential entanglement or entrainment of listed species, and in the unlikely event that entanglement does occur, ensure proper reporting of entanglement events according to the measures specified below.

Required Mitigations:

17. The Lessee must ensure that any buoys attached to the seafloor use the best available mooring systems. Buoys, lines (chains, cables, or coated rope systems), swivels, shackles, and anchor designs must prevent any potential entanglement of listed species while ensuring the safety and integrity of the structure or device.
18. All mooring lines and ancillary attachment lines must use one or more of the following measures to reduce entanglement risk: shortest practicable line length, rubber sleeves, weak-links, chains, cables or similar equipment types that prevent lines from looping, wrapping, or entrapping protected species.
19. Any equipment must be attached by a line within a rubber sleeve for rigidity. The length of the line must be as short as necessary to meet its intended purpose.
20. If a live or dead marine protected species becomes entangled, the Lessee must immediately contact the applicable stranding network coordinator using the reporting contact details (see Reporting Requirements, section E below) and provide any on-water assistance requested.
21. All buoys must be properly labeled with the Lessee's contact information.

D. Protected Species Observers

The Lessee must use qualified third-party PSOs to observe Monitoring and Exclusion Zones as outlined in the conditions above.

Required Mitigations:

22. All PSOs must have received NMFS approval to act as a PSO for geophysical surveys. The Lessee must provide to BOEM, upon request, documentation of NMFS approval as PSOs for geophysical activities in the Pacific and copies of the most recent training certificates of individual PSOs' successful completion of a commercial PSO training course with an overall examination score of 80% or greater. Instructions and application requirements to become a NMFS- approved PSO

can be found at: https://www.fisheries.noaa.gov/new-england-mid-atlantic/careers-and-opportunities/protected-species-observers.

23. Crew members serving as lookouts must receive training on protected species identification, vessel strike minimization procedures, how and when to communicate with the vessel captain, and reporting requirements.
24. PSOs deployed for geophysical survey activities must be employed by a third-party observer provider. While the vessel is underway, they must have no other tasks other than to conduct observational effort, record data, and communicate with and instruct relevant vessel crew to the presence of protected marine mammal species and associated mitigation requirements. PSOs on duty must be clearly listed on daily data logs for each shift.
    a. Non-third-party observers may be approved by NMFS on a case-by-case basis for limited, specific duties in support of approved third-party PSOs.
25. A minimum of one PSO (assuming condition 5 is met) must be observing for protected marine mammal species at all times when noise-producing equipment is operating, or the survey vessel is actively transiting. The Lessee must include a PSO schedule showing that the number of PSOs used is sufficient to effectively monitor the affected area for the project (e.g., surveys) and record the required data. PSOs must not be on watch for more than 4 consecutive hours, with at least a 2-hour break after a 4-hour watch. PSOs must not work for more than 12 hours in any 24-hour period.
26. Visual monitoring must occur from the most appropriate vantage point on the associated operational platform that allows for 360-degree visual coverage around the vessel. If 360-degree visual coverage is not possible from a single vantage point, multiple PSOs must be on watch to ensure such coverage.
27. The Lessee must ensure that suitable equipment is available to each PSO to adequately observe the full extent of the Monitoring and Exclusion Zones during all vessel operations and meet all reporting requirements.
    a. Visual observations must be conducted using binoculars and the naked eye while free from distractions and in a consistent, systematic, and diligent manner.
    b. Rangefinders (at least one per PSO, plus backups) or reticle binoculars (e.g., 7 x 50) of appropriate quality (at least one per PSO, plus backups) to estimate distances to listed species located in proximity to the vessel and Monitoring and Exclusion Zone(s).
    c. Digital cameras with a telephoto lens that is at least 300 mm or equivalent on a full-frame single lens reflex (SLR). The camera or lens should also have an image stabilization system. The camera system must be used to record sightings and verify species identification whenever possible.
    d. A laptop or tablet to collect and record data electronically.
    e. Global Positioning System (GPS) Units if data collection/reporting software does not have built-in positioning functionality.
    f. PSO data must be collected in accordance with standard data reporting software tools, and electronic data submission standards approved by BOEM and the National Marine Fisheries Service (NMFS) for the particular activity.
    g. Any other tools deemed necessary to adequately perform PSO tasks.

E. Reporting Requirements

To ensure compliance and evaluate effectiveness of mitigation measures, regular reporting of survey activities and information on protected species will be required as follows.

Required Mitigations:

28. Data from all PSO observations must be recorded based on standard PSO collection and reporting requirements. PSOs must use standardized electronic data forms to record data. The following information must be reported electronically in a format approved by BOEM and NMFS:

    Visual Effort:

    a. Vessel name.
    b. Dates of departures and returns to port with port name.
    c. Lease number.
    d. PSO names and affiliations.
    e. PSO ID (if applicable).
    f. PSO location on vessel.
    g. Height of observation deck above water surface.
    h. Visual monitoring equipment used.
    i. Dates and times (Greenwich Mean Time) of survey on/off effort and times corresponding with PSO on/off effort.
    j. Vessel location (latitude/longitude, decimal degrees) when survey effort begins and ends; vessel location at beginning and end of visual PSO duty shifts; recorded at 30-second intervals if obtainable from data collection software.
    k. Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any change.
    l. Water depth (if obtainable from data collection software).
    m. Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including wind speed and direction, Beaufort scale, Beaufort wind force, swell height, swell angle, precipitation, cloud cover, temperature, sun glare, and overall visibility to the horizon.
    n. Factors that may be contributing to impaired observations during each PSO shift change or as needed as environmental conditions change (e.g., vessel traffic, equipment malfunctions).
    o. Survey activity information, such as type of survey equipment in operation, acoustic source power output while in operation, and any other notes of significance (i.e., pre-clearance survey, ramp-up, shutdown, end of operations, etc.).

    Visual Sighting (all Visual Effort fields plus):

a. Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform).
b. Vessel/survey activity at time of sighting.
c. PSO/PSO ID who sighted the animal.
d. Time of sighting.
e. Initial detection method.
f. Sightings cue.
g. Vessel location at time of sighting (decimal degrees).
h. Direction of vessel's travel (compass direction).
i. Direction of animal's travel relative to the vessel.
j. Identification of the animal (e.g., genus/species, lowest possible taxonomic level, or unidentified); also note the composition of the group if there is a mix of species.
k. Species reliability.
l. Radial distance.
m. Distance method.
n. Group size; estimated number of animals (high/low/best).
o. Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.).
p. Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics).
q. Detailed behavior observations (e.g., number of blows, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior).
r. Mitigation Action. Description of any actions implemented in response to the sighting (e.g., delays, shutdown, ramp-up, speed or course alteration, etc.) and time and location of the action.
s. Behavioral Observation to Mitigation.
t. Equipment Operating During Sighting.
u. Source Depth.
v. Source Frequency.
w. Animal's closest point of approach and/or closest distance from the center point of the acoustic source.
x. Time Entered Exclusion Zone.
y. Time Exited Exclusion Zone.
z. Time in Exclusion Zone.

aa. Photos/Video.

29. The PSO Provider or Lessee must submit raw PSO sightings and trackline data by the 15th of each month for the previous calendar month of surveys to BOEM and NMFS (details to be provided). Data must be submitted in Excel spreadsheet format or in another format approved by BOEM and NMFS.

30. The Lessee must submit a monitoring report to BOEM and NMFS within 90 days after completion of yearly survey activities. The report must fully document the methods and monitoring protocols, summarize the data recorded during monitoring, estimate the number of protected species that may have been taken during survey activities; and describe, assess, and compare the effectiveness of monitoring and mitigation measures. PSO raw sightings and trackline data must also be provided with the final monitoring report.

31. In the event of a vessel strike of a protected species by any survey vessel, the Lessee must immediately report the incident to BOEM, NMFS, and the NOAA West Coast Region Stranding Hotline at 1-866-767-6114. The report must include the following information:

    a. Name, telephone, and email or the person providing the report.

    b. The vessel name.

    c. The Lease Number.

    d. Time, date, and location (latitude/longitude) of the incident.

    e. Species identification (if known) or description of the animal(s) involved.

    f. Vessel's speed during and leading up to the incident.

    g. Vessel's course/heading and what operations were being conducted (if applicable).

    h. Status of all sound sources in use.

    i. Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike.

    j. Environmental conditions (wave height, wind speed, light, cloud cover, weather, water depth).

    k. Estimated size and length of animal that was struck.

    l. Description of the behavior of the species immediately preceding and following the strike.

    m. If available, description of the presence and behavior of any other protected species immediately preceding the strike.

    n. Disposition of the animal (e.g., dead, injured but alive, injured and moving, blood or tissue observed in the water, last sighted direction of travel, status unknown, disappeared).

    o. To the extent practicable, photographs or video footage of the animal(s).

32. The Lessee must ensure that sightings of any injured or dead listed species are immediately reported, regardless of whether the injury or death is related to survey operations, to BOEM, NMFS, and the NOAA West Coast stranding hotline at 1-866-767-6114. If an entangled whale is sighted, the Lessee must ensure that NOAA is contacted at 1-877-767-9425 or hail the USCG on Channel 16. If the Lessee's activity is responsible for the injury, entanglement or death, the

Lessee must ensure that the vessel assist in any salvage effort as requested by NMFS. When reporting sightings of injured or dead listed species, the following information must be included:

a. Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable).

b. Species identification (if known) or description of the animal(s) involved.

c. Condition of the animal(s) (including carcass condition if the animal is dead).

d. Observed behaviors of the animal(s), if alive.

e. If available, photographs or video footage of the animal(s).

f. General circumstances under which the animal was discovered.

33. Reporting and Contact Information:

a. Dead and/or Injured Protected Species:

i. NOAA West Coast stranding hotline at 1-866-767-6114 and 562-506-4315.

b. Injurious Takes of Endangered and Threatened Species:

ii. NOAA NMFS Long Beach Office, Protected Resources Division (details to be provided).

iii. BOEM Office of Environment, Pacific Region (details to be provided).

Measures to Minimize Potential Adverse Impacts to Birds

A. To minimize the potential for adverse impacts on birds, BOEM has developed measures to reduce or eliminate the potential risks to or conflicts with specific environmental resources. If leases or grants are issued, BOEM will require the lessee to comply with these measures through lease stipulations and/or as conditions of SAP approval. The following measures are intended to ensure that the potential for adverse impacts on birds is minimized, if not eliminated. The lessee will use only red flashing strobe-like lights for aviation obstruction lights and must ensure that these aviation obstruction lights emit infrared energy within 675–900 nanometers wavelength to be compatible with Department of Defense night vision goggle equipment.

B. Any lights used to aid marine navigation by the Lessee during construction, operations and decommissioning of a meteorological tower or buoys must meet USCG requirements for private aids to navigation (Form CG-2554: https://www.dcms.uscg.mil/forms/smdsearch4081/2554/).

C. For any additional lighting not described in (1) or (2) above, the lessee must use such lighting only when necessary, and the lighting must be hooded downward and directed when possible, to reduce upward illumination and illumination of adjacent waters.

D. An annual report shall be provided to BOEM documenting any dead birds or bats found on vessels and structures during construction, operations, and decommissioning. The report must contain the following information: the name of species, date found, location, a picture to confirm species identity (if possible), and any other relevant information. Carcasses with Federal or research bands must be reported to the U.S. Geological Survey's Bird Band Laboratory, available at https://www.pwrc.usgs.gov/BBL/bblretrv/.

E. Anti-perching devices must be installed on the metocean buoys in order to minimize the attraction of birds.

Measures to Minimize Potential Adverse Impacts to Historic Properties

A. The Lessee may only conduct geotechnical exploration activities, including geotechnical sampling or other direct sampling or investigation techniques, in areas of the leasehold in which an analysis of the results of geophysical surveys have been completed for that area. The geophysical surveys must meet BOEM's minimum standards (see BOEM Archaeological Survey Guidelines), and the analysis must be completed by a qualified marine archaeologist who meets both the Secretary of the Interior's Professional Qualifications Standards (48 Federal Register (FR) 44738–44739) and has experience analyzing marine geophysical data. This analysis must include a determination whether any potential archaeological resources are present in the area and the geotechnical (sub-bottom) sampling activities must avoid potential archaeological resources by a minimum of 50 m (164 ft). The avoidance distance must be calculated from the maximum discernible extent of the archaeological resource. In no case may the Lessee's actions impact a potential archaeological resource without BOEM's prior approval

B. BOEM requires that the lessee observe the unanticipated finds requirements stipulated in 30 CFR 585.802. If the lessee, while conducting activities, discovers a potential archaeological resource while conducting construction activities or other activities, the Lessee must immediately halt all seafloor-disturbing activities within the area of discovery, notify BOEM within 72 hours of the discovery, and keep the location of the discovery confidential and not take any action that may adversely affect the resource until BOEM has made an evaluation and instructed the lessee on how to proceed.

Measures to Minimize Trash and Debris

A. The lessee must practice trash and debris reduction and handling practices to reduce the amount of offshore trash that could potentially be lost into the marine environment. These trash management practices include substituting paper and ceramic cups and dishes for those made of Styrofoam or other extruded polystyrene foam, recycling offshore trash, and transporting and storing supplies and materials in bulk containers when feasible and have resulted in a reduction of accidental loss of trash and debris.

B. All authorizations for shipboard surveys would include guidance for marine debris awareness. The guidance would be similar to BSEE's Notice to Lessees (NTL) No. 2015-G03 ("Marine Trash and Debris Awareness and Elimination") or any NTL that supersedes this NTL.

C. At the end of the 5-year term data collection instrumentation will be decommissioned, and large marine debris objects removed.

D. Vessel operators will comply with pollution regulations outlined in 33 CFR 151.51-77.