VINEYARD MID-ATLANTIC

CONSTRUCTION AND OPERATIONS PLAN

VOLUME II APPENDIX

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Appendix II-U Preliminary Fisheries Monitoring Plan

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Prepared for:
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Revision	Date	Description
0	September 2024	Initial submission.
0	January 2025	Resubmitted without revisions.

Description of Vineyard Mid-Atlantic Preliminary Fisheries Monitoring Plan

1 Fisheries Monitoring Plan

A draft preliminary fisheries monitoring plan for pre-, during, and post-construction fisheries surveys has been developed for Vineyard Mid-Atlantic in accordance with the recommendations set forth in Bureau of Ocean Energy Management's (BOEM) (2023) *Guidelines for Providing Information on Fisheries for Renewable Energy Development on the Atlantic Outer Continental Shelf*, which is designed to:

- Identify and confirm which dominant benthic, demersal, and pelagic species are using the project site, and the season(s) these species may be present where development is proposed;

- Establish a pre-construction baseline which may be used to assess whether detectable changes associated with proposed activities occurred in post-construction abundance and distribution of fisheries;

- Collect additional information aimed at reducing uncertainty associated with baseline estimates and/or to inform the interpretation of research results; and

- Develop an approach to quantify any substantial changes in the distribution and abundance of fisheries associated with proposed activities.

Additional documents and guidance considered when developing the plan include the Regional Wildlife Science Collaborative for Offshore Wind's (RWSC's) Integrated Science Plan for Offshore Wind, Wildlife, and Habitat in U.S. Atlantic Waters (RWSC 2024); Responsible Offshore Science Alliance's (ROSA's) 2021 Offshore Wind Project Monitoring Framework and Guidelines (ROSA 2021); and the National Oceanic and Atmospheric Administration [NOAA] Fisheries and BOEM Federal Survey Mitigation Implementation Strategy-Northeast U.S. Region (Hare et al. 2022). The preliminary fisheries survey protocols (described further below) are based on protocols originally developed for Vineyard Wind 1 (Lease Area OCS-A 0501) in collaboration with the University of Massachusetts Dartmouth School for Marine Science & Technology (SMAST) and incorporate input from more than 75 commercial and recreational fishermen as well as academic and government resource agencies, including the National Marine Fisheries Service (NMFS) (also known as NOAA Fisheries). The planned fisheries surveys for Lease Area OCS-A 0544 (Lease Area) are anticipated to follow similar protocols, however surveys methods and target species will be adopted to be more compatible with the Mid-Atlantic region. A preliminary list of potential surveys is included in in Table 1 below. The number of surveys to be conducted is expected to be a subset of those listed. Further refinement will be based on future research and agency and stakeholder feedback. Fisheries monitoring surveys are anticipated to be carried out by qualified scientists.

Table 1 Preliminary List of Potential Fisheries Monitoring Surveys

Anticipated Fisheries Survey Activity[1]	Description	Gear Type	Expected Take	Risk Assessment and Mitigation Measures
Trawl Survey	A seasonal trawl survey may be used, following the Northeast Area Monitoring and Assessment Program (NEAMAP) survey protocol to sample fish and invertebrate abundance, distribution, population structure, and community composition in the Lease Area and control area. A trawl survey would target species of note including longfin squid, Atlantic mackerel, Atlantic herring, and other demersal species.	Trawl Net fitted with appropriate excluder devices	None	Minimal risk. Marine mammal monitoring will be conducted prior to deployment, during survey, and during retrieval of nets (see Section 2.0). The survey vessel will follow mitigation measures as discussed in Section 2.0.
Baited Remoted Underwater Video (BRUV)	BRUV is a non-extractive sampling method using baited cameras to target a diverse range of species in a variety of habitats. This method may be used in the Lease Area due to the ability to target reef-oriented species like seabass, as well as bait-attracted species like sharks. Video would be recorded and processed by species identification software.	High resolution camera rigged with a vertical line and buoy to facilitate retrieval.	None	Minimal risk given the mitigation measures that will be implemented, as discussed in Section 2.0.

Table 1 Preliminary List of Potential Fisheries Monitoring Surveys (Continued)

Anticipated Fisheries Survey Activity[1]	Description	Gear Type	Expected Take	Risk Assessment and Mitigation Measures
Highly Migratory Species (HMS) Acoustic Telemetry	Acoustic telemetry may be used to observe movement of HMS in the lease area. Acoustic receivers may be placed in arrays on the seafloor within the Lease Area. Receivers have no surface buoys and are connected to mooring systems weighing 75 pounds and extending 2-3 meters off the seafloor. Methods will be used to reduce the risk of interactions with mobile fishing gear. HMS (marlins, tunas, sharks, sturgeon) would be tagged. Acoustic receivers detect tagged animals in the area, allowing for the observation of HMS as they move in and out of the lease area, both seasonally and over time (for pre- and post-construction observations).	Acoustic Receivers, Pop-up buoy mooring.	None	Minimal risk. Survey vessel will follow mitigation measures as discussed in Section 2.0.
Drop Camera Survey	An underwater camera survey to assess benthic fish and invertebrates may be used to better understand benthic habitat, macrofaunal community characteristics and substrate habitat. Using this method, spatial and temporal impacts on these communities can be observed with minimum disturbance to the seafloor.	Pyramid mounted with high-resolution cameras	None	Minimal risk. Survey vessel will follow vessel mitigation measures as discussed in Section 2.0.

Table 1 Preliminary List of Potential Fisheries Monitoring Surveys (Continued)

Anticipated Fisheries Survey Activity[1]	Description	Gear Type	Expected Take	Risk Assessment and Mitigation Measures
Hydraulic Surf Clam Dredge	A dredge, especially designed for surveying within WEAs, may be used for surf clam sampling within the Lease Area. This dredge will be calibrated to the NOAA federal dredge survey, specially designed for surveying within the Lease Area with a narrower build and tighter bar spacing. This survey also provides a greater representation of the population, catching more juvenile recruits and larger clams than the federal survey methods (Munroe et al. 2023).	Hydraulic Surf Clam Dredge as designed by fishing industry and researchers (Munroe et al. 2023).	None	Minimal risk. Survey vessel will follow vessel mitigation measures as discussed in Section 2.0.
Ecosystem Monitoring (EcoMon) Survey	Along with water column samples, Bongo net tows may be used to estimate zooplankton and ichthyoplankton by taxon. The core objective of the EcoMon survey is to monitor biological, physical, and chemical oceanographic conditions on the Northeast U.S. Continental Shelf in support of stock assessments and ecosystem science. The EcoMon program has established long-term datasets using standard methods to ensure the consistency of data across the time series. EcoMon data is used by researchers and federal agencies. This survey method is also being employed by NOAA Fisheries as part of their Survey Mitigation Plan (NOAA Fisheries 2023).	Bongo nets tows, likely paired with another survey method (i.e. trawl)	None	Minimal risk. Survey vessel will follow vessel mitigation measures as discussed in Section 2.0.

Note:
1. The potential fisheries monitoring surveys will be modified based on further study and agency and stakeholder feedback.

2.0 Mitigation Measures

To protect marine mammals, all fisheries monitoring surveys for Vineyard Mid-Atlantic will follow the mitigation measures described below.

2.1 Training

Vineyard Mid-Atlantic will provide Site Induction Training to all vessel personnel, construction personnel, survey personnel, and the marine mammal monitoring team prior to the start of all in-water construction activities and as new personnel, as listed above, join Vineyard Mid-Atlantic.

- All vessel personnel, construction personnel, survey personnel, and the marine mammal monitoring team will receive Protected Species Identification and Reporting training, Marine Trash and Debris Prevention training, Fisheries Protocols training, Dedicated Visual Observer (VO) training, Vessel Speed and Vessel Strike Avoidance training, and Communications training.

- The training will be recorded on a course log sheet to document the training. The course log sheet will be reported to NMFS.

- The third-party Protected Species Observer (PSO) and Passive Acoustic Monitoring (PAM) analyst provider(s) will provide a suite of formal observer and analyst training. In addition to the Vineyard Mid-Atlantic Site Induction Training, all PSOs and PAM analysts will receive a standard suite of training from the PSO and PAM analyst provider, which may include, but is not necessarily limited to PSO Certification training and project-specific construction training. The standard training will also include a two-day refresher training course with the respective PSO and PAM analyst provider and at least one Vineyard Mid-Atlantic Project Compliance representative present prior to the start of in-water construction activities each year.

- All PSO and PAM analysts, PSO and PAM provider Project Leads and Project Managers, will participate in a Vineyard Mid-Atlantic led Rehearsal of Concept (ROC) style drill with Vineyard Mid-Atlantic Compliance and relevant engineering personnel prior to the start of in-water activities. ROC drills will be designed to test the knowledge of all project personnel to ensure in-depth understanding of all permit requirements.

2.2 Fisheries Monitoring Surveys Mitigation Measures

- Survey gear will be deployed as soon as possible once the vessel arrives on station.

- Gear will not be deployed if there is a risk of interaction with marine mammals.

- Marine mammal monitoring will be conducted within 1 nautical mile (NM) from the planned survey location by the trained vessel captain, a member of the scientific crew,

or the dedicated VO for at least 15 minutes prior to deploying gear, throughout the duration of gear deployment (unless on-demand gear), and for 15 minutes after haul back.

- Unless using on-demand gear, visual marine mammal monitoring effort will be conducted during the entire period of time that gear is in the water (i.e., throughout gear deployment, fishing, and retrieval).

- Gear may be deployed after 15 minutes of no marine mammal sightings within 1 NM (1,852 m) of the sampling station.

- If a marine mammal(s) is sighted within 1 NM (1,852 m) of the planned location and 15 minutes before gear deployment, the gear deployment will be suspended until there are no sightings of marine mammals for at least 30 minutes within 1 NM of the sampling station or the vessel operator will move the vessel away from the marine mammal to a different section of the sampling area. If, after moving on, marine mammal(s) are still visible from the vessel, the vessel operator will move again or skip the station.

- If a marine mammal is at risk of interacting with deployed gear, all gear will be immediately removed from the water. If marine mammals are sighted before the gear is fully removed from the water, the vessel will slow its speed and maneuver the vessel away from the animals to minimize potential interactions with the observed animal.

- All fisheries monitoring gear will be fully cleaned and repaired (if damaged) prior to each use/deployment.

- All fixed gear will comply with the Atlantic Large Whale Take Reduction Plan regulation (50 CFR § 229.32) during fisheries monitoring surveys.

- Trawl tows will not exceed a maximum of 20-minute trawl time.

- Gear will be emptied as close to the deck/sorting area and as quickly as possible after retrieval.

- All fisheries survey-related lines will have a breaking strength of less than 1,700 pounds (lbs), which can be accomplished using whole buoy lines or buoy lines with weak inserts that result in having an overall breaking strength of 1,700 lbs.

- Vineyard Mid-Atlantic anticipates committing to the use of on-demand gear[1] for all fixed fishing surveys. Vineyard Mid-Atlantic will investigate safe and effective on

[1] On-demand gear, also called "ropeless" systems, use far less rope in the water than traditional gear designs. The main characteristic of on-demand gear is that it does not need a rope attached to a buoy at the water's surface to locate and haul (retrieve) gear. See: https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-mammal-protection/developing-viable-demand-gear-systems.

demand gear technology with the goal of eliminating all vertical lines from fixed fishing gear surveys.

- For vertical line surveys, buoy lines will be weighted and will not float at the surface of the water. Buoy lines will utilize weak links that cleanly break leaving behind the bitter end of the line that is free of any knots.

- Buoys, toggles, or other floatation devices will not be connected to groundlines. All groundlines will consist of sinking lines only.

- All in-water survey gear, including buoys, will be labeled with the scientific permit number or identification (ID) as Vineyard Mid-Atlantic's research gear. All labels and markings on the gear, buoys, and buoy lines will also be compliant with the applicable regulations and all buoy markings will comply with instructions received from the NOAA's Greater Atlantic Regional Fisheries Office.

- All survey gear will be removed from the water whenever not in active survey use (i.e., no wet storage).

- All reasonable efforts that do not comprise human safety will be undertaken to recover gear.

3 References

[BOEM] Bureau of Ocean Energy Management. 2023. Guidelines for Providing Information on Fisheries for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585. 22 p. https://www.boem.gov/sites/default/files/documents/about-boem/Fishery-Survey-Guidelines.pdf.

Hare JA, Blyth BJ, Ford KH, Hooker BR, Jensen BM, Lipsky A, Nachman C, Pfeiffer L, Rasser M, Renshaw K. 2022. NOAA Fisheries and BOEM federal survey mitigation implementation strategy—Northeast U.S. Region. NOAA Technical Memorandum 292. Woods Hole, MA. 33 pp. https://repository.library.noaa.gov/view/noaa/47925.

Munroe D, Morson J, Borsetti S, Hennen D. 2023. Sampling high biomass but rare benthic animals: Methods for surveying commercial clam stocks using a hydraulic dredge. *Fish. Res.* Vol. 258 https://doi.org/10.1016/j.fishres.2022.106538.

[NOAA] National Oceanic and Atmospheric Administration Fisheries. 2023. Ecosystem Monitoring Survey Mitigation Plan. https://www.fisheries.noaa.gov/s3/2024-04/EcoMon-Survey-Mitigation-Plan.pdf.

[ROSA] Responsible Offshore Science Alliance. 2021. Offshore Wind Project Monitoring Framework and Guidelines. 57p.

[RWSC] Regional Wildlife Science Collaborative for Offshore Wind. 2024. Integrated Science Plan for Offshore Wind, Wildlife, and Habitat in U.S. Atlantic Waters. Version 1.0. https://rwsc.org/science-plan. Accessed 04-23-2024.