Coastal Virginia Offshore Wind

Balance of Plant

Engineering, Procurement, Transportation and Installation Services

Protected Species Observer Plan

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APPENDIX F – FOUNDATION INSTALLATION PROTECTED SPECIES OBSERVER PLAN

PART OF CONSTRUCTION MONITORING & MITIGATION PLAN (CMMP)

DEME Coastal Virginia Offshore Wind (CVOW)-Commercial Construction 2024-2026

Version 10

rpsgroup.com

DOMINION CVOW-C BOEM LEASE OCS-A-0483

Protected Species Observer Plan

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1 GLOSSARY OF TERMS

Term	Definition
Adaptive Mitigation and Monitoring Plan	A stepwise approach to additional measures in the event that the initial field measurements of the SFV indicate that the distances to isopleths of concern are larger than those modelled. See PDMP in CMMP – Appendix C.
Alternative Monitoring Plan	A protected species monitoring plan that must be submitted to BOEM, which details monitoring methodology that will be used during nighttime and low-visibility conditions. See Section 7.
Double Big Bubble Curtain (DBBC)	A pneumatic barrier system that intentionally disturbs the water column to dampen the propagation of sound waves traveling from the sound source equipment by attenuating the noise. See DBBC plan in CMMP – Appendix G.
Clearance Zone (CZ)	The area that must be visually or acoustically clear of protected species prior to starting any sound source that could result in Level A or Level B exposures. This applies to construction sources using approved pre-determined distances.
Dedicated Visual Observer (DVO)	An individual (i.e., PSO or trained crew member) aboard a vessel whose sole responsibilities are to conduct vigilant watch for all marine mammals and slow down, stop their vessel, or alter course (as appropriate) to avoid striking any marine mammal. They will have completed prior training on protected species detection and identification, vessel strike minimization procedures, how and when to communicate with the vessel captain, and reporting requirements.
Harassment Zone (HZ)	Area in which it is determined that marine mammals will be impacted by the sound produced by the sources when active. These zones are specific to each species and hearing group of marine mammals. Any marine mammal within the zone, while the source is active, will be considered a Level A or Level B 'take' pending the exposure decibels and distance.
Level A Harassment Zone	The area within which Level A harassment, defined as the potential to injure a marine mammal, may occur. This includes but is not limited to the area ensonified by a sound source, within which a permanent threshold shift in hearing or other types of injury can occur.
Level B Harassment Zone	The area within which Level B harassment, defined as the potential to disturb (but not injure) a marine mammal, may occur. This includes but is not limited to the area ensonified by a sound source, within which a behavioral disturbance or temporary threshold shift in hearing can occur.
Minimum Visibility Zone (MVZ)	In addition to the clearance and shutdown zones that would be monitored both visually and acoustically, NMFS is proposing to establish a minimum visibility zone to ensure both visual and

Term	Definition
	acoustic methods are used in tandem to detect marine mammals resulting in maximum detection capability.
Mitigation Zone	An area within which mitigation measures must be applied if a protected species is detected. Mitigation zones (MZ) include CZs, SZs, and HZs. The size of the MZ varies between species. This term (MZ) has replaced the previously used terminology, Exclusion zone (EZ).
Near Real-Time	Specifically concerning the speed at which PAM detections are relayed from the acoustic detection buoys to the PAM Analysts, i.e., the delay between a detection event and the receipt of the processed data. This minor delay is caused by the automation and electronic nature of the data processing associated with the remote technology. It does not imply significant delays in the transfer of the data for regulatory reporting purposes, however, the data is not available instantaneously.
PAM Clearance Zone	The area that must be cleared by acoustic monitoring for marine mammals prior to starting any sound source that could result in Level A or Level B exposures.
PAM Monitoring Zone	The area around any sound source that could result in Level A or Level B exposures which is acoustically monitored for the presence of marine mammals.
PAM plan	The technical approach to performing near real-time Passive Acoustic Monitoring (PAM) during pile driving activities for the Coastal Virginia Offshore Wind Commercial (CVOW-C) project. See PAM plan in CMMP – Appendix D.
Pile Driving Monitoring, Mitigation and Management Plan (PDMP)	The technical approach to monitor, mitigate and manage potential impacts to marine mammals and protected species during pile driving operations of the construction activities for the Coastal Virginia Offshore Wind Commercial (CVOW-C) project in accordance with applicable regulatory documents and permits. See CMMP – Appendix C.
Pile driving or piling	The continuous sequence inclusive of vibratory and impact piling to install a monopile or OSS pin pile foundation into the seabed as per following steps: 1. Vibratory piling 2. Transition from vibratory hammer to impact hammer 3. Impact piling soft start 4. Impact piling
Protected Species	May refer to multiple taxa, including ESA-listed marine mammals, marine mammals, sea turtles, and Atlantic sturgeon.
PSO plan	This document, Appendix F in CMMP

Term	Definition
	The technical approach to performing in-situ visual Protected Species Observations (PSO) during pile driving activities for the Coastal Virginia Offshore Wind Commercial (CVOW-C) project.
Separation Distances	The distances from a vessel within which observation of a protected species would require mitigation. The distances and the required mitigations vary between species.
Shutdown Zone (SZ)	The area in which equipment shutdown or other active mitigation measures must be applied, once a source is active, if a protected species is sighted inside the corresponding zone.
Vessel Master (VM)	Vessel captain
Vessel Strike Avoidance (VSA) Monitoring Zone	The area around a vessel that is monitored by PSOs or Visual Observers while the vessel is underway.
Works Manager (WM)	The main point of communication for pile driving operations on board the piling vessel. The Works Manager (WM) will communicate directly with LPSO for planned piling operations, clearance, soft start, shutdown/delays, and post piling. In addition, the WM will assess the stability of a pile in the event that a shutdown is called. In close consultation with the piling vessel Captain, they may determine a shutdown is not feasible because the shutdown combined with impending weather conditions may require the piling vessel to “let go,” which poses an imminent risk of injury or loss of life.

2 ACRONYMS LIST

AMP	Alternative Monitoring Plan
BOEM	Bureau of Ocean Energy Management
CMMP	Construction Mitigation and Monitoring Plan
COP	Construction and Operations Plan
CR	Dominion Energy Client Representative
CVOW-C	Coastal Virginia Offshore Wind
CZ	Clearance Zone
dB	Decibels
DBBC	Double Big Bubble Curtain
DMA	Dynamic Management Area
DEME	DEME Group
DOI	Department of the Interior
DVO	Dedicated Visual Observer
ESA	Endangered Species Act
ft	Feet
GARFO	NMFS Greater Atlantic Regional Fisheries Office
HFC	High Frequency Cetaceans
HSD	Hydro Sound Damper
HZ	Harassment Zone
ITA	Incidental Take Authorization
km	Kilometers
LOA	Letter of Authorization
LFC	Low Frequency Cetaceans
LPSO	Lead Protected Species Observer
m	Meters
MFC	Mid-Frequency Cetaceans

MMPA	Marine Mammal Protection Act
MVZ	Minimum Visibility Zone
NARW	North Atlantic right whale
NAS	Noise Abatement System
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NVD	Night Vision Device
OCS	Outer Continental Shelf
OPR	NMFS Office of Protected Resources
OSS	Offshore Substations
PAM	Passive Acoustic Monitoring
PDMP	Pile Driving Monitoring, Mitigation and Management Plan
PP	Phocid Pinniped
PSO	Protected Species Observer
QHSE	Quality Health Safety and Environment officer
RPS	RPS Group
RWSAS	Right Whale Sighting Advisory Systems
SEL	Sound Exposure Level
SFV	Sound Field Verification
SMA	Seasonal Management Area
SZ	Shutdown Zone
VM	Vessel Master
VSA	Vessel Strike Avoidance
WDA	Wind Development Area
WM	Works Manager
WTG	Wind Turbine Generators

3 INTRODUCTION

Virginia Electric and Power Company conducting business as Dominion Energy Virginia (Dominion Energy) is permitted by the Bureau of Ocean Energy Management (BOEM) to conduct pile driving activities for the Coastal Virginia Offshore Wind (CVOW-C) project in accordance with the approved Construction and Operations Plan (COP). Dominion Energy may take marine mammals incidental to permitted CVOW-C activities under final under Incidental Take Regulations (ITR) and an associated 'Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the Coastal Virginia Offshore Wind Commercial Project Offshore of Virginia' Letter of Authorization (MMPA LOA) pursuant to the Marine Mammal Protection Act (MMPA) by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS).

DEME Offshore US LLC, part of the DEME Group (DEME) has been contracted to install wind turbine generators and the offshore substations (OSS) using pile driving equipment, which is subject to monitoring and mitigation conditions outlined in the Project permits. DEME has contracted RPS Group (RPS) to provide the in-situ visual Protected Species Observer (PSO) assets required to meet permit conditions during the construction phase for the CVOW-C offshore wind farm. Additionally, RPS will provide the near real-time Passive Acoustic Monitoring (PAM) during pile installation. For the latter reference is made to the Passive Acoustic Monitoring plan (PAM plan), a stand-alone plan, annexed to the Construction Mitigation and Monitoring Plan (CMMP).

RPS has developed this PSO plan to ensure that monitoring, mitigation, and vessel strike avoidance (VSA) measures are implemented for marine mammals, sea turtles, and other ESA-listed species for the duration of the pile driving activities.

Additionally, the Sound Field Verification (SFV) Plan is being developed as a stand-alone plan, annexed to the Construction Mitigation and Monitoring Plan (CMMP).

The CVOW-C Project is committed to regulatory compliance and environmental stewardship. The procedures and policies presented in this plan have been developed through an extensive collaborative process with the federal oversight agencies and every effort has been made to integrate the best available science, technology, industry recommendations, and best practices. Construction and Operation Plan (COP) approval terms and conditions have been incorporated in relevant sections of the plan. Every Project-related vessel will have a copy of the COP approval terms and conditions on board as well as compliance and reporting information with easy reference to protocols and contact information. All Project personnel will receive training on compliance protocols and procedures, including the COP approval terms and conditions, prior to commencing work. The CVOW-C Environmental Compliance Coordinators (ECCs) and environmental support staff will conduct thorough review of all data and reports developed during construction activities to ensure Project compliance. The ECC and environmental support staff will also review all situational reporting and ensure that the information is communicated to the oversight agencies as applicable.

3.1 Applicable Regulatory Documents and Permits

The permits applicable to the project operations are mentioned in the introductions of this PSO plan and the overarching CMMP.

3.2 Marine Protected Species

Reference is made to the dedicated CMMP section on Marine Protected Species in the project area as this list is applicable to the overall CVOW project and not only the Foundations installation scope.

4 PROTECTED SPECIES OBSERVERS

4.1 Staffing Plan

During pile driving, a minimum of nine (9) PSOs will be on active duty from before, during and after all pile installation activity concludes; three (3) PSOs on active duty on the pile driving vessel and three (3) on active duty on two (2) dedicated support vessel(s) during standard monitoring; four (4) PSOs on active duty on the pile driving vessel and the support vessels during low visibility conditions when the Alternative Monitoring Plan (AMP) is implemented (Section 7). In order to support this, six (6) PSOs will be stationed aboard the pile driving vessel and six (6) PSOs will be stationed aboard two (2) dedicated PSO vessel(s). Staffing levels are summarized below in Table 1.

Table 1. Number of PSOs for monitoring effort during project

PSO Monitoring During Pile-driving Operations	Number of PSOs			
	Pile-driving Vessel	**Support Vessel 1**	**Support Vessel 2**	**Total Number of PSOs**
Minimum number of PSOs on active watch	3	3	3	9
Total number of PSOs onboard vessel	6	6	6	18

If additional PSOs are required to comply with simultaneous monitoring requirements, for instance, a DMA overlapping the Level B harassment zone or additional AMP monitoring requirements, then those additional PSOs will be added to the team deployed.

For a minimum of three WTG monopiles, and all three OSS foundation installations, Dominion Energy will complete a Sound Field Verification (SFV) for which the results will be immediately reviewed. In the event that the initial field measurements of the SFV indicate that the distances to isopleths of concern are larger than those modelled, additional mitigation outlined by the Enhanced Monitoring & Mitigation Plan (including larger clearance and shutdown zones, additional noise abatement systems (NAS), and/or additional PSOs) will be required and approved by BOEM, BSEE and NMFS prior to the next pile being driven. Reference is made to Section 6.3 in the PDMP.

If CZs and respective SZs are requested to be expanded, additional review and approval of that request will need to occur at the time of such a request. In the event that the request is approved, the Mitigation Zones (MZ) will be expanded to match the actual distances to the isopleths of concern. If any of the MZs are expanded beyond an additional 1,500 m, supplementary PSOs will be deployed on additional platforms (secondary vessel or other), with each observer responsible for maintaining watch in no more than 180° an area with a radius no greater than 1,500 m.

Visual monitoring will be conducted concurrent to real-time PAM operations. A communication plan describing the in-situ communication between the PSO team and remote PAM Operator, mode of communication and decision authority is described in Section 7 of the PDMP.

A Lead PSO (LPSO) will be on duty at all times during pile driving.

4.2 Roles and Responsibilities

Reference is made to the PSO roles and responsibilities as described in the different regulatory permit conditions. The description on how Dominion Energy will comply to these specific PSO roles and responsibilities requirements can be found below.

There are several roles identified for monitoring protected species. These roles are identified below, and all require that assigned individuals must have no tasks other than to conduct observational effort, record observational data, and communicate with relevant operations and vessel crew regarding the presence of protected species and mitigation requirements. All Project personnel will receive environmental training prior to conducting operations offshore. This training will be provided by DE's environmental contractor (Tetra Tech) and printed copy will be available onboard each project vessel for reference. The guide contains the foundation for ensuring environmental regulatory compliance, provides a summary of all federal state and local permits issued in relation to CVOW activities, identify roles and responsibilities of all parties on the Project, establish communication structures and includes a copy of all agency-issued permits and approved plans. A section of the training includes Marine Species Awareness Training which outlines the roles and responsibilities of monitoring for marine species on the Project. Included in this training is a Marine Species Identification Guide which provides visual images, descriptions, and distinguishing characteristics of marine mammals, sea turtles, and ESA-listed fish species. Its purpose is to aid all vessel personnel in identifying protected species if they are observed in the vicinity of the project area.

LPSO

- At least one LPSO will be on duty at all times, located on the pile driving and dedicated PSO vessel.
- LPSOs will have prior approval from NMFS as an unconditionally approved PSO.
- Demonstrate prior experience working as a PSO in offshore environments.
- Coordinate and oversee PSO operations and ensure compliance with monitoring requirements.
- LPSO on the pile-driving vessel will lead operational communications.
- Main point of contact with PAM Operators throughout the day.
- Communicate with the RPS Project Manager who will communicate with DEME/Dominion Energy.
- Monitor various protected species websites (i.e., WhaleAlert App, Whale Map, Right Whale Sighting Advisory System (RWSAS, and https://seaturtlesightings.org/) for awareness. Note that the Sea Turtle Sightings Hotline website covers only sightings in New England waters. This is a source of opportunistic sightings and no sightings do not indicate that there are no turtles. The website is to increase situational awareness during vessel operations.
- Responsible for determining that CZs are fully visible (i.e., are not obscured by darkness, rain, fog, etc.) for at least 30 minutes immediately prior to pile driving.
- Visually monitor, detect, and identify protected species and determine distance to pile driving vessel.
- Record and report protected species sightings, incidents, construction activities and environmental conditions according to the MMPA LOA.
- Monitor and advise on pile driving and vessel operations for compliance with the environmental requirements for the MMPA LOA.
- Communicate with the crew to implement mitigation actions as required by environmental protocols (including vessel strike maneuvers, delays to initiation and shutdown of pile driving activities).
- Participate in daily meetings and drills with crew when appropriate.
- Communicate sightings of protected species to the Works Manager (WM) and Dominion Energy Client Representative (CR).

PSO

- Located on the pile driving and dedicated PSO vessels.
- Visually monitor, detect, and identify protected species.
- Record and report according to the MMPA LOA.
- Monitor and advise on sound source and vessel operations for compliance with the environmental requirements for the MMPA LOA.

- Communicate with the crew to implement mitigation actions as required by environmental protocols (including vessel strike maneuvers, delays to initiation and shutdown of pile driving activities).
- Participate in daily operation meetings with crew when appropriate.
- Communicate sightings of protected species to the LPSO who will contact the WM

Relevant Operations and Vessel Crew

- Includes, but not limited to vessel captain, Works Manager (WM), quality health safety and environment officer (QHSE), deck crew.
- Communicate operations to PSO team.
- Maintain a vigilant watch for and report any protected species detections to the PSO.
- Execute mitigation as recommended by PSO.

Dominion Energy

- Report any decision not to shutdown pile-driving equipment to BOEM, NMFS and BSEE within 24 hours of the decision.
- Will report any observed takes resulting in injury or mortality to BOEM, BSEE and NMFS immediately.
- Within 24 hours of detection, must report to BOEM the sighting of all marine mammals and/or sea turtles in the respective SZ that results in a shutdown or a power-down.
- Report dead or injured sea turtles to NMFS as soon as feasible, and within 24 hours to BOEM and BSEE.
- Will immediately report any injured or dead protected species to NOAA Fisheries Marine Mammal and Sea Turtles Stranding and Entanglement Hotline[1], the NOAA's Dolphin and Whale 911 App, or for sturgeon, *noaa.sturg911@noaa.gov* (978) 281-9328, *https://www.fisheries.noaa.gov/new-england-mid-atlantic/endangered-species-conservation/report-stranded-injured-or-dead-sturgeon*.

4.3 PSO Requirements

Reference is made to the PSO requirements as described in the different regulatory permit conditions and the CMMP section on all project specific PSO/PAM Requirements. For the pile driving activities Dominion Energy will comply to below specific PSO requirements.

All PSOs will be provided by a third party and must be approved by NMFS. Dominion Energy will submit the resumes of the of PSOs necessary to commence the project to NMFS Office of Protected Resources (OPR) for approval at least 60 days prior to the first day of in-water construction activities requiring PSOs. Resumes would need to include the dates of training and any prior NMFS approval as well as the dates and description of their last PSO experience and must be accompanied by information documenting their successful completion of an acceptable training course. NMFS would allow three weeks to approve PSOs from the time that the necessary information is received by NMFS after which any PSOs that meet the minimum requirements would automatically be considered approved.

All PSOs will have completed a protected species observer training course that meets NOAA Fisheries recommendations (NOAA Technical Memorandum NMFS-OPR-49, 2013). The PSO field team will have a designated Lead PSO (LPSO) who would have prior experience observing mysticetes, odontocetes, and pinnipeds in the northwestern Atlantic Ocean on other offshore projects requiring PSOs. Any remaining PSOs will have previous experience observing marine mammals during projects and must have the ability to work

[1] The Sea Turtle Sightings Hotline website covers only sightings in New England waters. This is a source of opportunistic sightings and no sightings do not indicate that there are no turtles. The website is to increase situational awareness during vessel operations.

with all required and relevant software and equipment, and at least one will have a minimum of 90 days of at-sea experience working in an offshore environment. New and/or inexperienced PSOs would be paired with an experienced PSO to ensure that the quality of marine mammal observations and data recording is kept consistent (MMPA LOA).

4.4 Protected Species Training Requirements

Reference is made to the to the PSO/PAM training requirements as described in the different regulatory permit conditions and the CMMP section on all project specific PSO/PAM Requirements. For the pile driving activities Dominion Energy will comply to below specific protected species training requirements.

PSOs and/or PAM Operators must have completed a commercial PSO training program for the Atlantic with an overall examination score of 80 percent or greater (Baker et. al 2013) within the last five years. RPS will provide a project-specific training to all PSOs which will include the MMPA LOA requirements in addition to the communication procedures, and data collection and reporting requirements.

All individuals will be trained in protected species identification prior to the start of in-water construction activities. They will also be trained on the associated regulations and best practices for avoiding vessel collisions to all vessel crew members prior to the start of in-water construction activities, as well as the process for reporting protected species to the designated vessel contact.

All required protected species training and confirmed understanding of the MMPA LOA requirements for Dominion Energy personnel, including vessel crew and captains, and PSOs, will be documented on a training course log sheet and reported to NMFS (PR.ITP.MonitoringReports@noaa.gov) prior to initiation of project activities.

All Project personnel will take the CVOW-C Site Induction Training, which includes all permit required training, and all health and safety training. They will also receive environmental training which will function to establish responsibilities of each party, define chains of command, communication protocols, monitoring procedure overview, and operational procedure overview. Further information regarding environmental training can be found in Section 3.2 of the PDMP. Training is conducted in person, led by a Dominion Energy Compliance Manager as the preferred method, or remote via a Dominion Energy managed platform, where in person trainings are not possible. At the conclusion of the training, attendees are required to sign or acknowledge electronically their responsibility (e.g., as trained DVOs). All environmental training courses expire within 1 year and require re-training. .

Additionally, confirmation of the marine mammal training and understanding of the MMPA LOA requirements will be documented on a training course log sheet and reported to NMFS. All required training for CVOW-C personnel, including vessel crew and captains, and PSOs must be reported to NMFS (PR.ITP.MonitoringReports@noaa.gov) prior to initiation of project activities.

4.5 PSO Minimum Qualifications

- Visual acuity in both eyes (corrected is permissible) sufficient for discernment of moving targets at the water's surface with the ability to estimate the target size and distance (assisted by binoculars).
- Ability to conduct field observations and collect data according to the assigned protocols.
- Sufficient experience with the construction operation to provide for personal safety during observations.
- Writing skills sufficient to document observations.
- Ability to communicate orally, by radio, or in-person, with project personnel to provide real-time information on marine mammals observed in the area, as necessary.
- Successfully attained a bachelor's degree from an accredited college or university OR obtained a waiver for relevant skills acquired through alternate experience.

4.6 PSO schedule

The deployed PSO teams on the pile driving and dedicated PSO vessels regardless of vessel activity and hammer type during operations will follow below schedule conditions:

- PSOs will not exceed 4 consecutive watch hours on duty at any time and will have a minimum 2-hour break between watches.
- PSOs will not exceed a combined watch schedule of more than 12 hours in a 24-hour period.

Visual monitoring schedules for the PSOs are provided in Attachment F-1.

5 VISUAL MONITORING EQUIPMENT

5.1 Normal visibility Monitoring Equipment

The PSOs on duty will monitor for marine protected species using the naked eye, hand-held reticle binoculars (7x) and Big Eye binoculars (25X50; 2.7 view angle; individual ocular focus; height control) to search continuously.

5.1.1 Handheld reticle binoculars

These would be supplied individually by each PSO, will be of variable manufacture, and will be on hand during all active watch periods.

5.1.2 Big Eye binoculars

These would be pedestal-mounted on the deck at the most appropriate vantage point that provides optimal sea surface observation to facilitate the monitoring of minimum distances while considering PSO safety. Two Big Eye binoculars which will be spaced 180 degrees apart to achieve 360 degree coverage around the vessel such that each PSO may utilize them to confirm sightings at greater distances than the standard monitoring equipment allows for. This visual monitoring equipment is deployed with redundancies

Digital single-lens reflex camera equipment will be provided to record sightings and verify species identification. Electronic data recording devices (e.g., laptop) will also be deployed.

5.2 Reduced visibility monitoring equipment

Reference is made to the Alternative Monitoring Plan (AMP) in Section 7 of this document.

During periods of low visibility (e.g., darkness, rain, fog, poor weather conditions etc.), The PSOs on duty will monitor for marine protected species using Morovision PVS-7 Gen 3 PINNACLE night vision goggles, hand-held FLIR monocular for thermal detection, and two fixed FLIR M364 series cameras so PSOs can focus observations on any direction.

Technical specifications on Night Vision Devices (NVD), FLIR M364, and Infra-Red (IR) equipment are included in Attachment F-2.

5.2.1 Handheld Night vision device

Handheld night vision devices will be used in certain low visibility situations (Table 6) where the expected visibility range is described in Table 7. An example of successful use of Handheld Night Vision devices on another US project (Vineyard Wind 1) can be found below.

5.2.2 Fixed Thermal Imaging Cameras

[redacted]. The same configuration of FLIR thermal cameras will be installed on each dedicated PSO vessel. Each camera has a 360-degree continuous pan and a +/- 90-degree tilt functionality. [redacted]

[redacted]

[redacted]

[redacted]

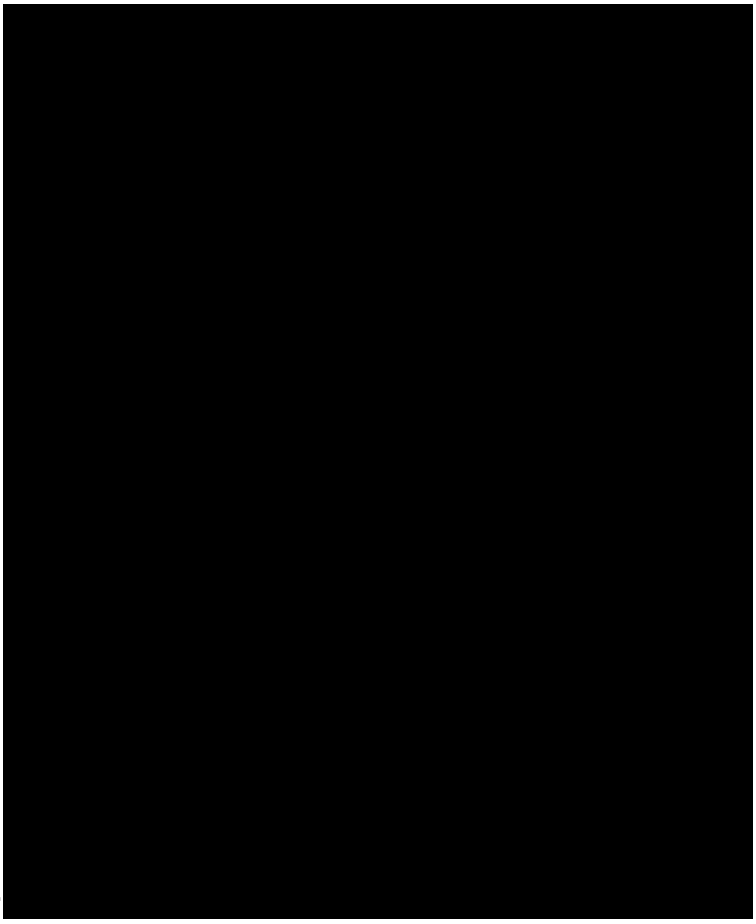


Figure 3.

5.3 Distance estimation and calibration of visual monitoring equipment

Reticle binoculars (handheld and Big Eye) have the capability to localize the distance to detected animals.

Monitoring equipment will be calibrated, during construction monitoring at least once a week using the pile-driving vessel's navigation radar system, by comparing estimated distances to known distances and will be conducted during varying sea states and both at night and during the day. The PSOs on the dedicated PSO vessels will calibrate their equipment using that vessel's navigation radar system.

At night, if reticles cannot be used to localize a detection, distance to detected animals will be determined by comparing the location of the animal to known distances, such as the length of the vessel.

Fixed Thermal FLIR camera, used in accordance with an approved AMP under reduced visibility and mounted as described in Table 2, have a known monitoring range, based on positioning of the vessel with the camera on board, detections made within visibility range will be within a MZ and will be mitigated for.

[redacted]

6 VISUAL MONITORING PROCEDURES

6.1 Monitoring locations

PSO's will conduct visual monitoring in accordance with below monitoring procedures.

- During clearance periods, pile driving activities (vibratory or impact), and post piling, PSOs must be in the best vantage point(s) position in order to ensure 360° visual coverage of the entire clearance and shutdown zones around the observing platform and as much of the Level B harassment zone as possible while still maintaining a safe work environment.
- During vessel transits, PSOs on duty will monitor for protected species within the forward path of the vessel (180-degree arc from 90° port to 90° starboard) located at an appropriate vantage point for ensuring vessels are maintaining appropriate separation distances.
- A minimum of three (3) PSOs will be on duty, each responsible for 120 degrees of visual coverage using standard monitoring equipment (i.e. naked eye, hand-held reticle binoculars) while partially overlapping scanning.

Visual monitoring must be consistent, diligent, and free of distractions for the duration of the watch.

Table 3. PSO visual monitoring locations on each vessel

Vessel	Observation Post	Deck Height (m) from floatation line
[redacted]	Bridge deck	29.98
	Helideck lounge outside	33.72
	Monkey deck	37.62
[redacted]	Bridge deck	19.50
[redacted]	Bridge deck	19.50

[redacted]

Each PSO will be responsible for 120 degrees of visual coverage using standard monitoring equipment (i.e. naked eye, hand-held reticle binoculars) while partially overlapping scanning with the other PSOs.

Procedures for monitoring during reduced visibility, and the monitoring equipment that will be utilized during such conditions, are outlined in the Alternative Monitoring Plan (AMP) in Section 7.

6.1.1 Monitoring from the Pile Driving Vessel

In support of pile driving operations, a team of six (6) PSOs will be stationed onboard the primary monitoring pile driving vessel, a minimum of three (3) PSOs will be actively monitoring for protected species 60 minutes before, during, and 30 minutes after pile driving. The PSOs positioned on this vessel will monitor established MZ surrounding pile driving activity. Each PSO will be responsible for 120 degrees of visual coverage using standard monitoring equipment (i.e. naked eye, hand-held reticle binoculars) while partially overlapping scanning with the other PSOs. The estimated deck height (m) for designated monitoring positions aboard the pile driving vessel is provided in Table 3.

[redacted]

[redacted]

6.1.2 Monitoring from Dedicated PSO Vessels

[redacted]s. Each PSO will be responsible for 120 degrees of visual coverage using standard monitoring equipment (i.e. naked eye, hand-held reticle binoculars) while partially overlapping scanning with the other PSOs. The estimated deck height (m) for designated monitoring positions aboard dedicated PSO vessels are provided in Table 3. Figure 5 depicts the relative position and visual coverage of the dedicated PSO support vessels conducting monitoring 60 minutes prior, during, and 30 minutes after pile driving commences for impact pile driving and vibratory pile driving, respectively.

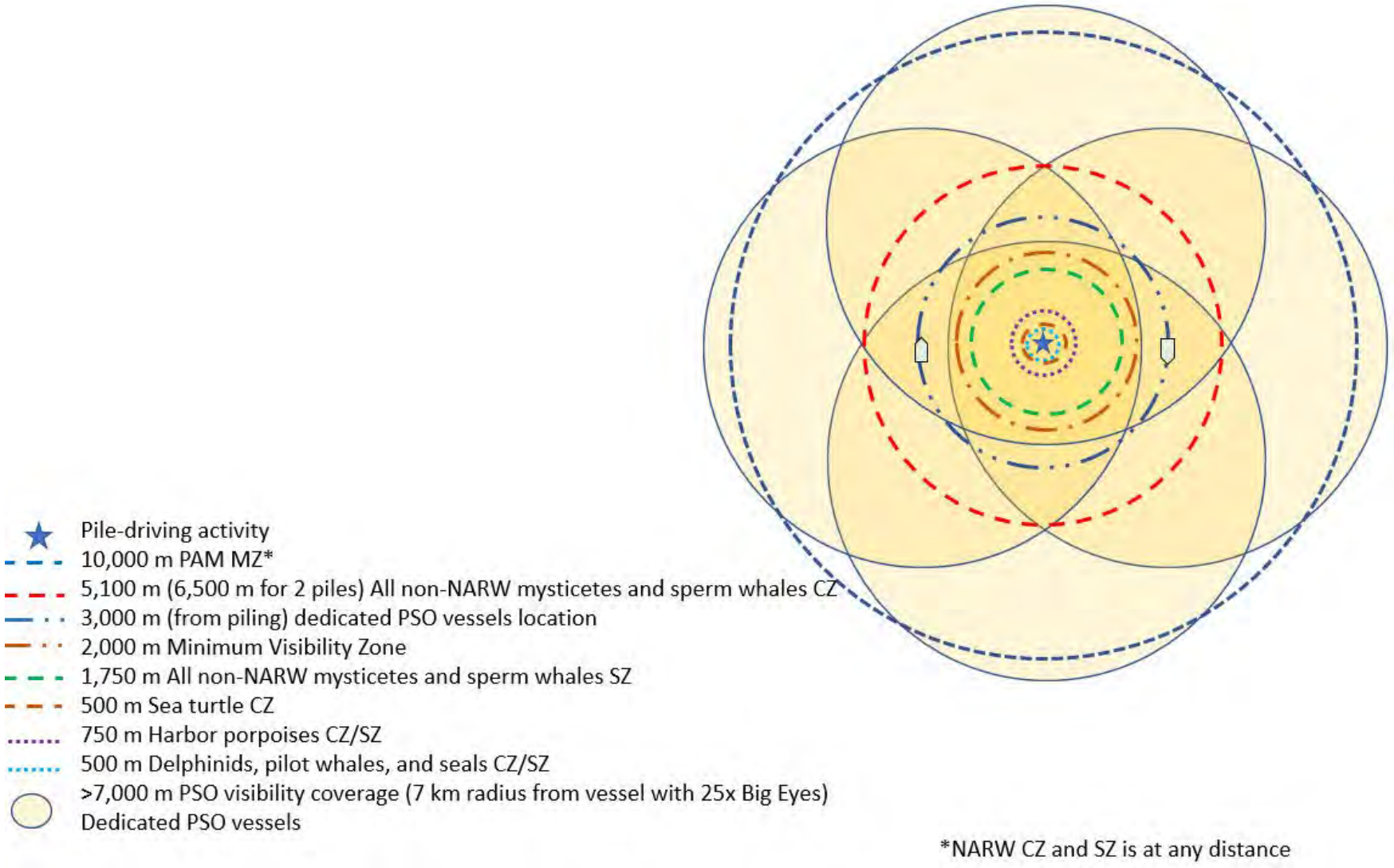


Figure 5. Dedicated support vessel monitoring relative to CZ and SZs for WTG monopile and OSS jacket foundations impact driving (one to two piles per day)

6.2 Visual Search Periods

A minimum visibility zone (MVZ) of 2,000 m will be required for pile driving operations. Prior to initiating pile driving, all clearance zones must be visually confirmed to be free of marine mammals and sea turtles for 60 minutes immediately prior to starting pile driving. PSOs will monitor the clearance zones for 60 minutes prior to the start of vibratory pile driving, following vibratory piling, the PSOs will then monitoring the clearance zones for 60 minutes prior to the start of impact pile driving. Pile driving may only commence when the visual MZs are fully visible (e.g., are not obscured by darkness, rain, fog, etc.) for at least 30 minutes immediately prior to beginning pile driving, as determined by the LPSO, and may not commence within 1 hour following civil sunrise or within 1.5 hours prior to civil sunset (MMPA LOA).

The LPSO must determine when sufficient light exists to allow effective visual monitoring in all cardinal directions. The LPSO must call for a delay until the CZ is visible in all directions. If conditions (e.g., darkness, rain, fog, etc.) prevent the visual detection of protected species in the CZs, CVOW-C will not initiate impact driving activities until the full extent of all CZs are fully visible as determined by the LPSO.

The PSOs on active duty will be monitoring actively aboard the pile driving and dedicated PSO vessels as follows:

- 60 minutes immediately prior to commencing vibratory pile driving for foundation installation,
- During vibratory pile driving activities
- 60 minutes immediately prior to commencing impact pile driving for foundation installation,
- During impact pile driving activities and
- 30 minutes after pile driving activities.

In the event that visibility conditions unexpectedly become poor or reduced, the AMP should be implemented to ensuring the ability to maintain all MZs for all ESA-listed species, to ensure that the full pile driving sequence (inclusive of vibratory piling, hammer transition and impact piling) can be completed. This is required to ensure that the installation is safe and not compromising the health and safety of humans and the environment and/or to avoid pile instability, refusal, or integrity concerns on the project.

Section 4.2 of the PDMP outlines the pile driving process where the expected phases of the pile driving sequence for each pile are as follows:

1. Vibratory piling
2. Vibratory to impact hammer switch
3. Impact piling soft start
4. Full energy impact piling

PSOs will monitor the vibratory CZ from Table 5 in order to provide clearance to initiate vibratory piling. They will then monitor the impact piling CZ (Table 4) during the switch of the vibratory to impact hammer (step 2 above).

In an effort to decrease the potential availability bias that may be present in species abundance studies, the PSOs will conduct observations, as rotation schedules allow with piling activity, for comparison of detection rates and observed behaviors with and without use of the vibratory and impact hammers. PSOs will record observational data using data recording methods and protocols further detailed in Section 8. This data will be recorded as off-effort monitoring data and will be reflected in the weekly and monthly PSO monitoring reports.

6.3 Sighting procedure

If a protected species is observed, the first priority of the PSO (pile driving vessel or dedicated PSO vessel) will be to request that the WM (for pile-driving mitigation) and/or Vessel Operator (for VSA mitigation) complete the necessary mitigation. Note that the PSO all have the authority to request the mitigation actions as outlined in this document, however the WM and Vessel Operator retain the authority to determine whether the action can be implemented without risk to the safety or the vessel or crew.

When a protected species is sighted, in addition to immediately informing the relevant project personnel as described above, the PSO who made the detection will also inform all of the PSOs on their team and the PSOs monitoring from the other project vessels, using the procedures described in 9.1.1. The PSO within the closest proximity to the PSO on the vessel who made the initial sighting will shift monitoring focus to support keeping eyes on the animal(s) in order to collect and document as much information as possible. The remaining third PSO will shift monitoring focus to cover the remainder of the field of view outside of the immediate detection region to ensure that full monitoring coverage is maintained.

PSOs on the other dedicated PSO vessel or pile driving vessel with an overlapping field of view covering the location of the ongoing detection event will also adaptively shift their monitoring coverage and focus areas to increase the coverage surrounding the area of the ongoing detection while maintaining 360-degree coverage around their own vessel.

Monitoring protocols on the pile driving vessel and dedicated PSO vessels described in this section will remain consistent and without variation between vibratory and impact hammer operations.

The WM and/or Vessel Operator must confirm to the PSO that the requested action has been completed or indicate that taking the requested action (including reduced hammer power) cannot be undertaken without a risk to the safety of the vessel and/or crew.

If no mitigation actions are required, PSOs will record and monitor the vessels position (including latitude/longitude, relative bearing, and estimated range to the animal) until the animal dives or moves out of visual range of the observer.

6.4 Delays to Pile Driving Activities

At any time of year, a visual detection of a NARW at any distance by a PSO on the pile driving vessel or dedicated PSO vessel(s) will trigger a delay or shutdown (if possible and safe to do so) in pile driving. This visual distance may exceed the 10 km PAM monitoring zone. Furthermore, at all times of the year, any unidentified whale sighted by a PSO at any distance of the pile must be treated as if it were a NARW.

Upon receipt of a potential NARW detection alert from the PAM buoys, the PAM Operator will assess the pitch tracks and audio data, as necessary, against known parameters of right whale vocalizations, and will confirm the detection when the data meets known parameters. A single potential NARW vocalization constitutes a NARW detection. A confirmed PAM detection of a NARW will be immediately relayed to the LPSO and a shutdown will be requested. Any large or baleen whales sighted or acoustically detected that cannot be confirmed as a non-North Atlantic right whale, will also be treated as if it were a NARW for purposes of mitigation.

For NARW, any visual observation or acoustic detection will trigger a delay to the commencement of pile driving. The clearance zone will only be declared clear if no North Atlantic right whale acoustic or visual detections have occurred within the clearance zone during the 60-minute monitoring period.

If a marine mammal or sea turtle is observed entering or within the relevant CZ prior to the initiation of impact pile driving activities, pile driving must be delayed and will not begin until either:

- the marine mammal(s) has voluntarily left the specific clearance zones and have been visually or acoustically confirmed beyond that CZ

  OR

- when specific time periods have elapsed with no further sightings or acoustic detections have occurred
  - **15 minutes** for small odontocetes
  - **30 minutes** for all other marine mammal species
  - **60 minutes** for sea turtles

Both the clearance search period and the mandatory delay for animals observed within the CZ must be completed before pile driving initiation. The soft start communication procedure is included in further detail in Section 7.2.1 of the PDMP.

6.5 Shutdown Procedures

If a marine mammal or sea turtle is visually observed or acoustically detected entering or within the animal's respective SZ after pile driving has begun, PSOs will request an immediate shutdown of the hammer. If there is any uncertainty regarding identification, PSOs will use the best professional judgement in making the decision to call for a shutdown.

Pile driving will be stopped immediately unless:

- DEME determines shutdown is not practicable due to imminent risk of injury or loss of life to an individual or risk of damage to a vessel that creates risk of injury or loss of life for individuals.

  OR

- The Works Manager determines if there is pile refusal or pile instability.

When a shutdown is called for after pile driving has commenced, the WM on duty must evaluate the following to determine whether shutdown is technically and safely (for human and equipment) feasible:

1. Use site-specific soil data and real-time hammer log information (hammer energy and blow count) to judge whether a stoppage would risk causing piling refusal at re-start of piling.

2. Confirmation that the pile penetration is deep enough to secure pile stability in the interim situation, considering weather statistics for the relevant season and the current weather forecast.

3. Determinations by the WM on duty will be made for each pile as the installation progresses and not for the site as a whole.

In any of these situations, Dominion Energy must reduce hammer energy to the lowest level practicable and the reason(s) for not shutting down must be documented and reported to NMFS.

6.5.1 Restart guidance for following pile driving shutdown for all protected marine species

Following a shutdown, pile driving may not commence, until either:

- the animal has been observed exiting its respective SZ within 30 minutes of the shutdown

  OR

- after an additional time period has elapsed with no further sightings
  - **15 minutes** for small odontocetes
  - **30 minutes** for all other marine mammal species
  - **60 minutes** for sea turtles

If the protected species causing the shutdown is one for which authorization has not been granted, or a species for which authorization has been granted but the authorized take number has been met, then the above procedures apply, but for the larger CZ instead of the SZ is observed entering or within the CZ, pile driving activities must shutdown immediately (when technically feasible as described above). Activities must not resume until the animal has been confirmed to have left the relevant HZ or SZ as applicable, or the observation time period has elapsed with no further sightings.

If a shutdown is requested but not implemented, the decision not to shutdown pile driving operations must be reported to BOEM and NMFS within 24 hours of the decision, with a detailed explanation of the imminent risk presented and the animals potentially impacted as required.

Table 4. Clearance and Shutdown Zones for Impact Pile Driving of Foundations

Species	Clearance Zone (m)		Shutdown Zone (m)	
	One per Day	Two per Day	One per Day	Two per Day
Minimum visibility zone	2,000			
North Atlantic right whale – PAM	at any distance	at any distance	at any distance	at any distance
North Atlantic right whale – visual detection	at any distance	at any distance	at any distance	at any distance
All other Mysticetes (non-NARW) and sperm whales	5,100	6,500	1,750	1,750
Dolphins and pilot whales	500	500	500	500
Harbor porpoise	750	750	750	750
Seals	500	500	500	500
Sea Turtles	1,000	1,000	500	500

Table 5. Clearance and Shutdown Zones for Vibratory Pile Driving of Foundations

Species	Clearance Zone (m)		Shutdown Zone (m)	
	One Per Day	Two per Day	One Per Day	Two per Day
Minimum Visibility Zone	2,000			
North Atlantic right whale – PAM	at any distance	at any distance	at any distance	at any distance
North Atlantic right whale – visual detection	at any distance	at any distance	at any distance	at any distance
All other Mysticetes (non-NARW) and sperm whales	1,000	1,000	1,000	1,000
Dolphins and pilot whales	250	250	250	250
Harbor porpoise	500	500	500	500
Seals	250	250	250	250
Sea Turtles	1,000	1,000	100	100

7 ALTERNATIVE MONITORING PLAN (AMP)

7.1 AMP protocol

The AMP applies during daytime periods of low visibility that begin after pile driving has commenced (e.g., darkness, rain, fog etc.), as determined by the LPSO, who will assess the weather conditions, using their experience in monitoring, and then decide if the respective CZs and SZs are fully visible. This plan includes deploying alternative monitoring technologies (night vision, thermal, infrared, fixed cameras) to the PSOs actively monitoring on visual watches, and use of PAM with the goal of ensuring the ability to maintain all SZs for all ESA-listed species in the event of unexpected, reduced visibility conditions.

[redacted]

[redacted] **equipment available for different monitoring conditions**

[redacted]

This AMP will not be utilized during the 60-minute clearance period before pile driving is initiated. Pile driving might continue after dark, after installation of the same pile has begun during daylight (i.e., 1.5 hours before civil sunset), to ensure that the full pile driving sequence (inclusive of vibratory piling, hammer transition and impact piling) can be completed. This is required to ensure that the installation is safe and not compromising health of humans and the environment and/or to avoid pile instability, refusal or integrity concerns on the project.

All requirements surrounding watch schedule durations and break periods will be adhered to during these periods.

The PSO team and vessel/construction crew will work together to coordinate monitoring to the best of their abilities to minimize any operational downtime during reduced visibility for all construction activities.

If the LPSO determines that the minimum visibility zone is not fully visible, then the LPSO will implement the decreased visibility procedures whereby PSOs must use the alternative technology to assist in monitoring the SZs. The PSOs will use the most appropriate of technologies (night vision, thermal, IR) for the conditions present, the technology that best supports monitoring to the furthest distance possible, see Table 6. [redacted]

[redacted]

[redacted]

[redacted]

7.2 [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted] speed at which the vessel has traveled relative to distance (i.e., wind force and direction, draft, sea weather condition)

8 DATA COLLECTION

8.1 Data details and Informational Tools

All monitoring data (i.e. visual and acoustic detections details such as the date, time, and GIS co-ordinates of the detection) collected by PSO/PAMs will be entered into a combination of Excel datasheets and a data collection software system. The data collection tools will be supported by a real-time notification system to Dominion Energy will allow for data sharing between all project vessels in the event of a protected species detection. Data categories will include Project, Operations, Monitoring Effort, and Detection and will consist of the data identified in this plan.

The Excel data form is configured to Include all of the required data fields as outlined in Appendix D, where the data inputs used will be consistent with those already accepted by NMFS. PSOs on the pile driving vessel will populate with Monitoring Effort data (hourly), and Operations Information (each time there is a change in operations). When a visual or acoustic detection is made, all the detection information (Section 8.2) will be collected and entered into the Excel form. This data will be compiled weekly for weekly and monthly reporting purposes.

8.2 Data Form

PSOs and DVOs will utilize standardized data forms that have been provided to and approved by NMFS. These forms will contain, at minimum, all of the data elements listed below, and data will be recorded in the field daily. A template of the data forms is provided in Attachment F-3.

Project Information

- Project Name
- Lease Number
- State Coastal Zones
- Construction Contractor
- PSO/PAM Contractor

- Vessel Name(s)
- Hammer type used (make and model)
- Reporting start and end dates (YYYY-MM-DD)- (YYYY-MM-DD)
- Visual monitoring equipment used (e.g., bionics, magnification, IR cameras, etc.)
- Distance finding method used
- PSO/PAM names (last, first) and training
- Observation height above sea surface (m)

Operations Information

- Date (YYYY-MM-DD)
- Pile identifier and pile numbers for the day (e.g., pile 2 of day 3)
- Pile locations (latitude and longitude)
- Pile diameters (m)
- Pile length (m)
- Greatest hammer power used for each pile (kJ)

Monitoring Effort Information

- Date (YYYY-MM-DD)
- Noise source (ON = Hammer On, OFF = Hammer Off)
- PSOs (Last, First) & affiliations
- How many visual PSOs on watch at one time
- Start time (HH:MM) and latitude/longitude (decimal degrees) of observations
- End time (HH:MM) and latitude/longitude (decimal degrees) of observations
- Vessel heading and speed (if applicable) at beginning and end of visual PSO duty shifts
- Vessel activity (i.e., transit, soft start, etc.)
- Duration of visual observation (HH:MM)
- Monitoring equipment used (unaided eye, reticule binoculars, bigeye binoculars, mounted thermal cameras, night vision devices)
- Environmental conditions at beginning and end of PSO shift and whenever conditions change significantly
  - Wind speed (knots), from direction
  - Swell (m)
  - Sea state (glassy, slight, choppy, rough, or Beaufort scale)
  - Water depth (m)
  - Visibility (km)
  - Glare severity
  - Precipitation
  - Cloud coverage (%)
- Block name and number
- Time clearance visual monitoring began in UTC (HH:MM)
- Time clearance visual monitoring ended in UTC (HH:MM)
- Time clearance PAM monitoring began in UTC (HH:MM)
- Time PAM monitoring ended in UTC (HH:MM)
- Duration of clearance visual monitoring and PAM (HH:MM)
- Time soft start began (HH:MM)
- Time equipment full power was reached (HH:MM)
- Duration of soft start (HH:MM)
- Time vibratory pile driving activity began per pile (hammer on) (HH:MM)
- Time vibratory pile driving activity ended per pile (hammer off) (HH:MM)
- Time impact pile driving activity began per pile (hammer on) (HH:MM)
- Time impact pile driving activity ended per pile (hammer off) (HH:MM)
- Pile driving duration (HH:MM)
- Did a shutdown/power down occur?
- Time shutdown was called for in UTC (HH:MM)
- Time equipment was shutdown in UTC (HH:MM)
- Dates of departures and returns to port with port name (YYYY-MM-DD)

- Inhibiting factors of observations (e.g., vessel traffic)
- Habitat or prey observations, including latitude and longitude
- Marine debris sighted, including latitude and longitude

Detection Information (To be collected for all marine mammal and sea turtle detection events)

- Date (YYYY-MM-DD)
- Sighting ID (V01, V02, or sequential sighting number for that day) (multiple sightings of same animal or group should use the same ID)
- Start time at first detection in UTC (HH:MM)
- End time at last detection in UTC (HH:MM)
- PSO name(s) who detected the animal (Last, First)
- Platform PSO/PAM is on
- Effort (ON=Hammer On; OFF=Hammer Off)
- Latitude (decimal degrees), longitude (decimal degrees)
- Compass heading of vessel (degrees)
- Vessel speed (kts)
- Tide state
- Water depth (m)
- Swell height (m)
- Beaufort scale (B0-B12)
- Wind speed (kts)
- Wind direction
- Precipitation
- Visibility (km)
- Cloud coverage (%)
- Glare strength
- Species identification including common name, scientific name, or family
- Certainty of identification
- Number of adults
- Number of juveniles
- Number of yearlings
- Number of calves
- Group composition (if mix of species)
- Total number of animals (high/low/best)
- Distance and bearing of each protected species observed relative to the pile being driven for each sighting (if pile driving was occurring at time of sighting)
- Description (include features such as overall size; shape of head; color and pattern; size, shape, and position of dorsal fin; height, direction, and shape of blow, etc.)
- Detection narrative (note behavior, especially changes in relation to construction activity and distance from vessel)
- Direction of travel/first approach (relative to vessel)
- Behaviors observed: indicate behaviors and behavioral changes observed in sequential order (use behavioral codes)
- Pace of animal
- Range from vessel
- If any bow-riding behavior observed, record total duration during detection (HH:MM)
- Initial heading of animal(s) (degrees)
- Final heading of animal(s) (degrees)
- Construction activity at time of sighting (i.e., ramp-up, active pile driving, delay etc.)
- SZ size during detection (m)
- Was the animal inside the respective SZ?
- Animal's closest distance from the pile being driven (meters) and estimated time spent within the HZ (HH:MM)
- Time at closest approach to vessel in UTC (HH:MM)

- Time at closest approach to pile being driven in UTC (HH:MM)
- Time animal entered MZ in UTC (HH:MM)
- Time animal left MZ in UTC (HH:MM)
- Description of any mitigation-related actions called for but not implemented in response to a sighting (e.g., delay, shutdown, etc.), including time, location, and the reason why the mitigation-related action was not implemented
- If observed/detected during soft start: first distance (reticle distance in meters), closest distance (reticle distance in meters), last distance (reticle distance in meters), behavior at final detection
- Detections with PAM (expanded in PAM Plan – Appendix D of CMMP)
- Watch Status (sighting made by PSO on/off effort, opportunistic, crew, alternate platform)
- Marine mammal occurrence within relevant Level A or Level B HZs must be documented
- Duration of detection (HH:MM)
- Did a shutdown/power down occur?
- Time shutdown was called for in UTC (HH:MM)
- Time equipment was shutdown in UTC (HH:MM)
- Time pile driving restarted in UTC (HH:MM)
- Event was communicated to other project vessels (Y/N)
- Photograph taken (Y/N)
- Other human activity in the area

Potential exposure detection narratives will be reviewed by the RPS Project Manager, who will update the Project Total Potential Exposures on the daily report form, identifying the remaining number of potential exposures.

The estimated potential exposures and maximum amount of takes for authorization by for Level A and Level B Harassment from vibratory and impact pile driving associated with CVOW-C installations, assuming 10 dB noise attenuation, are outlined in the CVOW Construction Mitigation and Monitoring Plan and Table 15 of the final rule. The number of sea turtles exposed above the 175 dB harassment threshold and the number of marine mammals exposed above the Level A and Level B harassment thresholds will be determined based on the number actually observed within the relevant distances during pile driving. Estimates will be provided of potential exposures of animals observed within harassment zones that were observed during periods of non-active piling. The assessment of the number of sea turtles exposed to noise above the 175 dB harassment threshold during impact pile driving of WTG and OSS foundations and determined number of ESA-listed whales exposed to noise above the Level B harassment (behavioral disturbance) threshold during impact pile driving of WTG and OSS foundations will be included in the final report.

Port Call Information

- Vessel name
- Date of arrival/departure (YYYY-MM-DD)
- Time of arrival/departure (YYYY-MM-DD)
- Port location
- Reason

9 REPORTING

9.1 Communication Flow

Any reportable events pertaining to protected species during operations will be transferred by the LPSO to the appropriate parties. Reportable events are explained in more detail in the following sections of this plan. Throughout this section, where a report, notification, or submittal is required per a Project permit, Dominion Energy's Contractor or their delegates will report to the issuing authority. All marine mammal related reports will be submitted to both NMFS OPR and GARFO.

9.1.1 General Offshore Communications

Communication methods utilized offshore will consist of in person verbal, WhatsApp, or radio as needed to ensure rapid responses to sightings which may require mitigation actions. This includes communications occurring within a vessel or between two vessels offshore.

9.1.2 General Ship to Shore Communications

Offshore personnel will communicate with shore via WhatsApp, phone call, or email as required according to the type of reportable event that has occurred.

9.2 Soft-Start/Ramp-up Communication Procedure

The Vessel Master on duty informs the Lead PSO aboard the activity vessel what time the activity is planned to commence so the PSO and PAM teams can coordinate their clearance periods accordingly. After the clearance period has passed, the Lead PSO receives confirmation from the PSO and PAM teams that the clearance and shutdown zones have been appropriately monitored, no delay is required, and soft-start/ramp-up may begin (Figure 8).

9.2.1 Protected Species Detection During Soft-Start/Ramp-up

If a marine mammal is detected within or about to enter the applicable clearance zones 30 minutes prior to the beginning of pile driving (including soft start if impact pile driving) or during pile driving, pile driving must be delayed or shutdown until the animal has been visually observed exiting the clearance zone or until a specific time period has elapsed with no further sightings. The specific time periods are 15 minutes for small odontocetes and pinnipeds, and 30 minutes for all other species (§ 217.294 Mitigation Requirements (c)(7)). This step is illustrated in the red box below for reference.

Once the Vessel Master has clearance to begin soft-start/ramp-up, they will notify the Lead PSO (who will then notify the PSO and PAM teams) that soft-start/ramp-up has commenced. After the soft-start/ramp-up is complete, the Vessel Master will inform the Lead PSO (who will in turn notify the PSO and PAM teams) that full power has commenced. PSO and PAM monitoring will continue for the duration of the activity and 30 minutes following cessation of activity. If at any time electronic communications are not available, (i.e., due to an internet outage) alternate means of communication will be available via satellite phone or radio (reference above sections). Protected Species Detection During Soft-Start/Ramp-up Offshore personnel will communicate with shore via WhatsApp, phone call, or email as required according to the type of reportable event that has occurred.

[redacted]

9.3 Shutdown Request Communication Procedure

At the first detection of a protected species inside the respective shutdown zone, the PSO or PAM Analyst immediately notifies the Lead PSO aboard the activity vessel via VHF radio/WhatsApp that a shutdown of operations must be requested, and the Vessel Master (VM) is notified. The VM will confirm the shutdown with the Lead PSO who will notify the PSO and PAM Analyst. This step is identified by the red box in the flow chart below (Figure 9). During the detection, the PSO/PAM will continue to monitor and record ongoing behavior of the detected animal(s). When the animal exits the zone, the time that the protected species is last detected inside the respective shutdown zone is documented. Monitoring continues for 15 to 30 minutes following the last detection as appropriate based on species. The PSO/PAM Analyst informs the Lead PSO that a ramp up is cleared to commence after another 30 minutes have elapsed without re-detection (for all large whales, non-delphinid odontocetes, and other marine protected species) or 15 minutes have elapsed without re-detection (for all other marine protected species) (§ 217.294 Mitigation Requirements (c)(4)). The PSO and PAM monitoring will continue throughout the activities and for 30 minutes following cessation of activities. Details on the procedures and communications protocols associated with pile-driving shutdown requests are also addressed in the PDMP (Appendix C).

9.4 Protected Species Detection Notification

For any NARW detection, either acoustic or visual, notifications will follow the procedure outlined in Figure 10. Throughout the detection incident, the observer will continuously monitor and record ongoing behavior and location of the detected animal(s). The Lead PSO notifies the VM if mitigation measures, such as a shutdown, are requested. The VM assesses the viability of the mitigative action request and notifies MCC who then notifies the Dominion Energy Environmental Compliance Coordinator. The Lead PSO will compile a report of the detection incident for the VM to submit to the Dominion Energy Environmental Compliance Coordinator. Notification of regulatory agencies will follow the procedures outlined in Section 9.5.

9.5 Reporting NARW Detections

It will be the responsibility of the LPSO to report any visual sightings of NARW using the designated form. The report will immediately be sent to the RPS Project Manager, and DEME Project Manager who will report to the Dominion Energy Compliance Manager. The PSO team will make every effort to photograph and document all relevant information associated with the sighting. The vessel Captain will call USCG on channel 16 to report the detection.

Any sighting of a NARW by Dominion Energy Project personnel or by personnel contracted by Dominion Energy (including vessel crews and construction personnel) must be immediately reported to the LPSO.

It will be the responsibility of the PAM Operator to report any acoustic detections of NARW using the designated form. The report will immediately be sent to the RPS Project Manager, and DEME Project Manager who will report to the Dominion Energy Compliance Manager. The PAM Operator will make every effort to capture screenshots and document all relevant information associated with the detection.

Dominion Energy will immediately report the visual detections to BOEM, NMFS to the NOAA Fisheries 24-hour Stranding Hotline number: (866) 755-6622, Right Whale Sightings Advisory System (RWSAS), and WhaleAlert. Acoustic detections will be reported to NMFS North Atlantic right whale Passive Acoustic Reporting System via email (nmfs.pacmdata@noaa.gov) using the the 24-hour North Atlantic right whale Detection Template (https://www.fisheries.noaa.gov/resource/document/passive-acoustic-reportingsystem-templates). Visual and acoustic detections will be reported as soon as feasible, but no longer than 24hrs after

the detections to NMFS GARFO (nmfs.gar.incidental-take@noaa.gov) and NMFS OPR (PR.ITP.MonitoringReports@noaa.gov).

The report must include:

A. Time (note time format, e.g., UTC, EST),
B. Date,
C. Location (latitude/longitude in decimal degrees) of the sighting,
D. Number of whales,
E. Animal description/
F. Certainty of sighting
G. Photos/video if taken,
H. Lease area/project name,
I. PSO/personnel name,
J. PSO provider company (if applicable), and
K. Reporter's contact information.
L. Confirmation the sighting/detection was reported to the respective hotline,
M. Vessel/platform from which the sighting/detection was made,
N. Activity the vessel/platform was engaged in at time of sighting/detection,
O. Project construction and/or survey activity ongoing at time of sighting/detection (e.g., pile driving, cable installation, HRG survey),
P. Distance from vessel/platform to animal at time of initial sighting/detection,
Q. Closest point of approach of whale to vessel/platform,
R. Vessel speed, and
S. Any mitigation actions taken in response to the sighting.

9.6 Sighting of Large Whale

If a large whale is detected during vessel transit, the following information must be recorded and reported via the WhaleAlert app (http://www.whalealert.org/):

A. Time, date, and location.
B. The vessel's activity, heading, and speed.
C. Sea state, water depth, and visibility.
D. Marine mammal identification to the best of the observer's ability (e.g., North Atlantic right whale, whale, dolphin, seal).
E. Defining characteristics (body length, presence of a dorsal fin, size and position of the dorsal fin, shape and size of flippers, shape of the head and general body shape, presence of a beak, shape of the blow, body color and patterns, swimming characteristics)
F. Initial distance and bearing to marine mammal from vessel and closest point of approach and,
G. Any avoidance measures taken in response to the marine mammal sighting.

9.7 Sighting and Reporting of Injured or Dead Marine Mammals

Dominion Energy will immediately report the injured or dead animal to NMFS and NOAA Fisheries Marine Mammal and Sea Turtles Stranding and Entanglement Hotline by phone (866-755-6622) or the NOAA's Dolphin and Whale 911 App.

As soon as feasible but no later than 24 hours from the detection, Dominion Energy will make the 24-hour report (866-755-6622) for the injured or dead animal to NMFS (Protected Resources Division, nmfs.gar.incidental-take@noaa.gov).

If the death or injury was clearly caused by the specified activity, Dominion Energy must immediately cease the activities until NMFS OPR is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance.

Report will include:

A. Time (HH:MM), date (YYYY-MM-DD), 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); and
F. General circumstances under which the animal was discovered.

9.8 Sighting and Reporting of Injured or Dead Marine Mammals-Vessel Collision

Vessel collisions with marine protected species must be immediately reported by CVOW-C to NOAA Fisheries Marine Mammal and Sea Turtles Stranding and Entanglement Hotline by phone (866-755-6622) or the NOAA's Dolphin and Whale 911 App, as well as the U.S. Coast Guard via Channel 16. An incident report must be provided as soon as practicable but no later than 24 hours to NMFS OPR (301-427-8401). As soon as practicable notification (but no later than 24 hours) goes to NMFS Protected Resources Division (nmfs.gar.incidental-take@noaa.gov).

Dominion Energy must immediately cease the activities until NMFS OPR is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance.

The incident will be reported to Dominion Energy Compliance Manager.

Specific fields to be included in the report are identified in Section 8.1 of the VSAP.

9.9 Sighting and Reporting of Injured or Dead ESA-Listed Species: Non-Vessel Strike

In the event of an injured or dead ESA-listed species, CVOW-C will immediately report the incident to the NMFS Greater Atlantic Stranding Hotline (866-755-6622) and to GARFO (nmfs.gar.incidental-take@noaa.gov) soon as feasible, as well as notify BSEE (via TIMSWeb and notification email to (protectedspecies@bsee.gov). Reports of listed fish should only be sent to nmfs.gar.incidental-take@noaa.gov.

The report will include the following information:

A. Contact information (name, phone number, etc.)
B. Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable).
C. Species identification (if known) or description of the animal(s) involved.
D. Condition of the animal(s) (including carcass condition if the animal is dead).
E. Observed behaviors of the animal(s), if alive.
F. If available. photographs or video footage of the animal(s).
G. General circumstances under which the animal was discovered.
H. Lessee and vessel(s) information.
I. Vessel's speed during and leading up to the incident.
J. Vessel's course/heading and what operations were being conducted (if applicable).
K. Status of all sound sources in use (if applicable).
L. Estimated size and length of animal (m).
M. Estimated fate of the animal (e.g., dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared). and
N. To the extent practicable, photographs or video footage of the animal(s).

Staff responding to the hotline call will provide any instructions for handling or disposing of any injured or dead animals, which may include coordination of transport to shore, particularly for injured sea turtles.

9.10 Sighting and Reporting of Injured or Dead ESA-Listed Species: Vessel Strike

In the event of a suspected or confirmed vessel strike of an ESA-listed species by any project vessel, CVOW-C will report the incident to BSEE (via TIMSWeb and notification email to (protectedspecies@bsee.gov), NMFS (NMFS Protected Resources Division, nmfs.gar.incidental-take@noaa.gov; and NMFS New England/Mid-Atlantic Regional Stranding Hotline (866-755-6622)) as soon as feasible. Then report within 24 hours to NMFS (Protected Resources Division, nmfs.gar.incidental-take@noaa.gov).

The report will include the following information:

A. Time, date, and location (coordinates) of the incident;
B. Species identification (if known) or description of the animal(s) involved (i.e., identifiable features including animal color, presence of dorsal fin, body shape and size);
C. Vessel strike reporter information (name, affiliation, email for person completing the report);
D. Vessel strike witness (if different than reporter) information (name, affiliation, phone number, platform for person witnessing the event);
E. Vessel name and/or MMSI number;
F. Vessel size and motor configuration (inboard, outboard, jet propulsion);
G. Vessel's speed leading up to and during the incident;
H. Vessel's course/heading and what operations were being conducted (if applicable);
I. Part of vessel that struck whale, or other protected species (if known);
J. Vessel damage notes;
K. Status of all sound sources in use;
L. If animal was seen before strike event;
M. Behavior of animal before strike event;

N. 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;
O. Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;
P. Estimated (or actual, if known) size and length of animal that was struck;
Q. Description of the behavior of the marine mammal immediately preceding and following the strike;
R. If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;
S. Other animal details if known (e.g., length, sex, age class);
T. Behavior or estimated fate of the animal post-strike (e.g., dead, injured but alive, injured and moving, external visible wounds (linear wounds, propeller wounds, non-cutting blunt-force trauma wounds), blood or tissue observed in the water, status unknown, disappeared);
U. To the extent practicable, photographs or video footage of the animal(s); and
V. Any additional notes the witness may have from the interaction.

Numerical values will be accompanied by an indication of whether the value is actual or estimated.

9.11 Reporting Marine Mammal and Sea Turtles in the Pile-Driving SZ

The data collection platform will track the number of animals that entered the respective SZ during pile driving activities. as well as the number totaled for the construction on a daily basis. RPS will submit the data report (raw data collected in the field) and must include the daily form with the date, time, species, pile identification number, GPS coordinates, time and distance of the animal when sighted, time the shutdown or power-down occurred, behavior of the animal, direction of travel, time the animal left the respective SZ, time the pile driver was restarted or powered back up, and any photographs that may have been taken.

In the event that the sighted species is ESA-listed, notification will also be made by CVOW-C to NMFS GARFO (nmfs.gar.incidental-take@noaa.gov) and BSEE (via TIMSWeb and notification email to protectedspecies@bsee.gov) within 48 hours of the incident.

The report will include the following information:

A. Duration of pile driving prior to the detection of the animal(s),
B. Location of PSOs,
C. Any factors that impaired visibility or detection ability,
D. Time of first and last detection of the animal(s),
E. Distance of animal(s) at first detection,
F. Closest point of approach of animal(s) to pile,
G. Behavioral observations of the animal(s),
H. Time the PSO called for shutdown,
I. Hammer log (number of strikes, hammer energy),
J. Time the pile driving began and stopped,
K. Any measures implemented (e.g., reduced hammer energy) prior to shutdown, and
L. If shutdown was determined not to be feasible, the report must include an explanation for that determination and the measures that were implemented (e.g., reduced hammer energy).

Table 9. Exposures Estimates and Maximum Amount of Take for Authorization by Level A Harassment and Level B Harassment from Vibratory and Impact Pile Driving

Marine Mammal Hearing Group and Species		Takes for Authorization			
		2024		2025	
		Level A Harassment	Level B Harassment	Level A Harassment	Level B Harassment
LFC	North Atlantic right whale*	0	6	0	6
	Fin whale*	4	112	3	90
	Humpback whale	4	29	4	104
	Minke whale	8	53	7	48
	Sei whale*	1	3	1	2
MFC	Sperm whale*	0	3	0	3
	Pygmy sperm whale	0	1	0	1
	Atlantic spotted dolphin	0	2,108	0	1,896
	Atlantic white-sided dolphin	0	15	0	15
	Bottlenose dolphin	0	4,290	0	3,602
	Clymene dolphin	0	5	0	5
	Common dolphin	0	1,720	0	1,380
	False killer whale	0	4	0	4
	Melon-headed whale	0	5	0	5
	Pilot whale *spp*.	0	61	0	50
	Pantropical spotted dolphin	0	20	0	20
	Risso's dolphin	0	25	0	23
HFC	Harbor porpoise	1	23	1	20
PP	Gray seal	1	62	1	53
	Harbor seal	1	62	1	53
Sea turtles					
	Green sea turtle*	24	114	22	101
	Kemp's ridley sea turtle*	24	112	20	91
	Leatherback sea turtle*	1	5	1	3
	Loggerhead sea turtle*	657	3,134	557	2,630

* *denotes species listed under the Endangered Species Act*

9.12 Reporting Observed Impacts to Protected Species

It will be the responsibility of the PSO on duty to report any impacts to an ESA species to the RPS Project Manager immediately via WhatsApp. In addition, the PSO on duty will report any potential exposures resulting in injury or mortality of listed marine mammals, sea turtles, and ESA-Listed fish species to the RPS Project Manager immediately. The RPS Project Manager will inform DEME Project Manager who will report to the CVOW-C Compliance Manager. CVOW-C will in turn report any observed potential exposures resulting in injury or mortality to NMFS immediately.

Any take in a manner other than authorized (i.e., non-auditory injury or mortality) must be immediately reported to NMFS OPR and GARFO.

9.13 Reporting Detected and/or Impacted Non-ESA Listed Fish

Any occurrence of dead, non-ESA-listed fish of 10 or more individual fish within established shutdown and/or MZs will also be reported to Dominion Energy as soon as practicable (accounting for crew and vessel safety), but no later than 24 hours after the sighting. The DEME Project Manager will be copied on all such reports.

9.14 Reporting Intent to Pile Drive

Dominion Energy will alert the agencies (NMFS) of intention to initiate pile drive, via email notification 24 hours prior to the start of pile driving activities for the year, and again within 24 hours of completion of pile driving activities for the year.

9.15 Reporting Shutdown Decision

Dominion Energy will report the decision not to shutdown pile-driving equipment to NMFS within 24 hours of the decision, with a detailed explanation of the imminent risk presented and the animals potentially impacted. RPS will provide through DEME, the protected species detection data that must be included in these reports.

9.16 24-Hour Reporting

A daily summary of protected species related events will be provided to Dominion Energy, highlighting the following events:

- Marine Mammal and Sea Turtles in the Pile-Driving respective SZ
- North Atlantic Right Whale Sightings
- North Atlantic Right Whale PAM Detections (minimal reporting)
- Injured/Dead Marine Mammals and Sea Turtles
- Vessel Strikes
- Dead/Impacted Non-ESA listed Fish
- Shutdown Decisions
- All sighting data

9.17 Weekly Reporting

During pile driving activities, RPS will compile weekly reports to submit to Dominion Energy, that document the daily start and stop of all pile driving activities, any mitigation actions or if mitigation actions could not be undertaken, the start and stop of associated observation periods by the PSOs, details on the deployment of PSOs, and a record of all observations of marine mammals and sea turtles, which will include:

- Time (UTC)/date for each sighting,
- Detections of protected species, species ID, and behaviours,
- Vessel/project activity at time of sighting/detection
- Categorization of sightings/detections by activity type, (clearance, active pile driving, post pile driving, transit, opportunistic, etc.),
- Platform/vessel name,
- Pile ID, type of pile, and pile diameter,
- Daily start and stop of pile driving activities,
- Hammer log (number of strikes, max hammer energy, duration of piling) per pile,
- Changes to noise attenuation systems and/or hammer schedule,
- Daily start and stop of associated observation periods by PSOs,
- Details on the deployment of PSOs and PAM Operators,
- Any mitigation actions and the reason for them,
- Distance to animal/initial sighting distance (meters),
- Vessel speed at time of detection and bearing to animal,
- Distance (meters) from animal to pile installation vessel, and
- Confirmation of detection relay via What's App (noting any transmittal delays)

This report will be completed for each vessel with PSOs onboard, and the file name will follow the format Lease#_ ProjectName_PSOData_YearMonthDay to YearMonthDay.

Weekly reports are due on Wednesday for the previous week (Sunday – Saturday, local time). Dominion Energy will submit the weekly reports to NMFS GARFO (nmfs.gar.incidental-take@noaa.gov), BOEM, and BSEE per the permit stipulations.

9.18 Monthly Reporting

PSO and PAM data will be collated monthly starting on the 1st and ending on the last day of the month. These reports will include a summary of all information in the weekly reports including project activities carried out in the previous month, vessel transits (vessel name, number of transits, type of vessel, vessel activity, and route), piles installed, occurrence of aerial/vessel surveys (including with survey results) and all sightings or detections of marine mammals and protected species inclusive of the ESA- listed whales, sea turtles and sturgeon and any mitigation measures taken as a result of the sightings or observations. Sightings/detections will include species ID, time, date, initial detection distance, vessel/platform name, vessel activity, vessel speed, bearing to animal, project activity, and if any mitigation measures were taken.These datasheets will be submitted to the DEME Project Manager monthly, with Dominion Energy in copy, by the 7th of the following month for review. Dominion Energy will submit the monthly reports to NMFS GARFO (nmfs.gar.incidental-take@noaa.gov) on the 15th of the month for the previous month.

9.19 Annual Report

Dominion Energy will be required to submit an annual PSO, PAM, and SFV summary report to NMFS (at *PR.ITP.monitoringreports@noaa.gov*) no later than 90 days following the end of a given calendar year describing, in detail, all of the information required in the monitoring section above (Section 9). A final annual report would be prepared and submitted within 30 calendar days following receipt of any NMFS comments on the draft report. If no comments were received from NMFS within 60 calendar days of NMFS' receipt of the draft report, the report would be considered final.

9.20 Final Report

The RPS team will develop a final report summarizing the construction activities and all visual and acoustic observations for pile driving operations.

The RPS Project Manager will provide the first draft of the report to DEME, who will provide the report to the Dominion Energy Compliance Manager within 60 days of project completion.

Dominion Energy will submit its draft 5-year report(s) to NMFS (at *PR.ITP.monitoringreports@noaa.gov*) on all visual and acoustic monitoring conducted under the MMPA LOA within 90 calendar days of the completion of activities occurring under the MMPA LOA. A 5-year report must be prepared and submitted within 30 calendar days following receipt of any NMFS comments on the draft report. If no comments are received from NMFS within 60 calendar days of NMFS' receipt of the draft report, the report shall be considered final.

10 RESOURCES

NOAA MMPA LOA – Takes of Marine Mammals Incidental to Specified Activities, Taking Marine Mammals Incidental to the Coastal Virginia Offshore Wind Commercial Project Offshore of Virginia **[Docket No. 230424-0110] RIN 0648-BL74**

BOEM – CVOW-C Construction and Operations Plan (2023)

NOAA Technical Memorandum NMFS-OPR-49. National Standards for a Protected Species Observer and Data Management Program: A Model Using Geological and Geophysical Surveys (November 2013)

National Marine Fisheries Service ESA Section 7 Biological Opinion and Conference for the Construction, Operation, Maintenance, and Decommissioning of the Coastal Virginia Offshore Wind Commercial Project (September 18, 2023)

National Marine Fisheries Service. 2018. 2018 Revisions to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0): Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts. U.S. Dept. of Commerce, NOAA. NOAA Technical Memorandum NMFS-OPR-59, 167 p

11 APPENDICES

Attachment F-1: Visual Monitoring Schedules Per Vessel

Seasonal (summer and fall) PSO monitoring schedules describing standard pile driving operations with monitoring conducted with three (3) PSOs on active watch on the pile-driving vessel and two (2) dedicated PSO vessels.

Sunrise 4:30 (11:34 UTC)

Sunset 19:25 (2:25 UTC)

Summer						
Time	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
0:00						
1:00						
2:00						
3:00	ON	ON		ON		
4:00	ON	ON		ON		
5:00	ON				ON	ON
6:00			ON		ON	ON
7:00		ON	ON	ON		
8:00	ON	ON		ON		
9:00	ON			ON	ON	
10:00			ON		ON	ON
11:00		ON	ON			ON
12:00	ON	ON	ON			
13:00	ON			ON	ON	
14:00				ON	ON	ON
15:00		ON		ON		ON
16:00	ON	ON		ON		
17:00	ON	ON	ON			
18:00			ON		ON	ON
19:00			ON		ON	ON
20:00			ON		ON	ON
21:00						
22:00						
23:00						
Total Watch	9	9	9~	9~	9~	9~

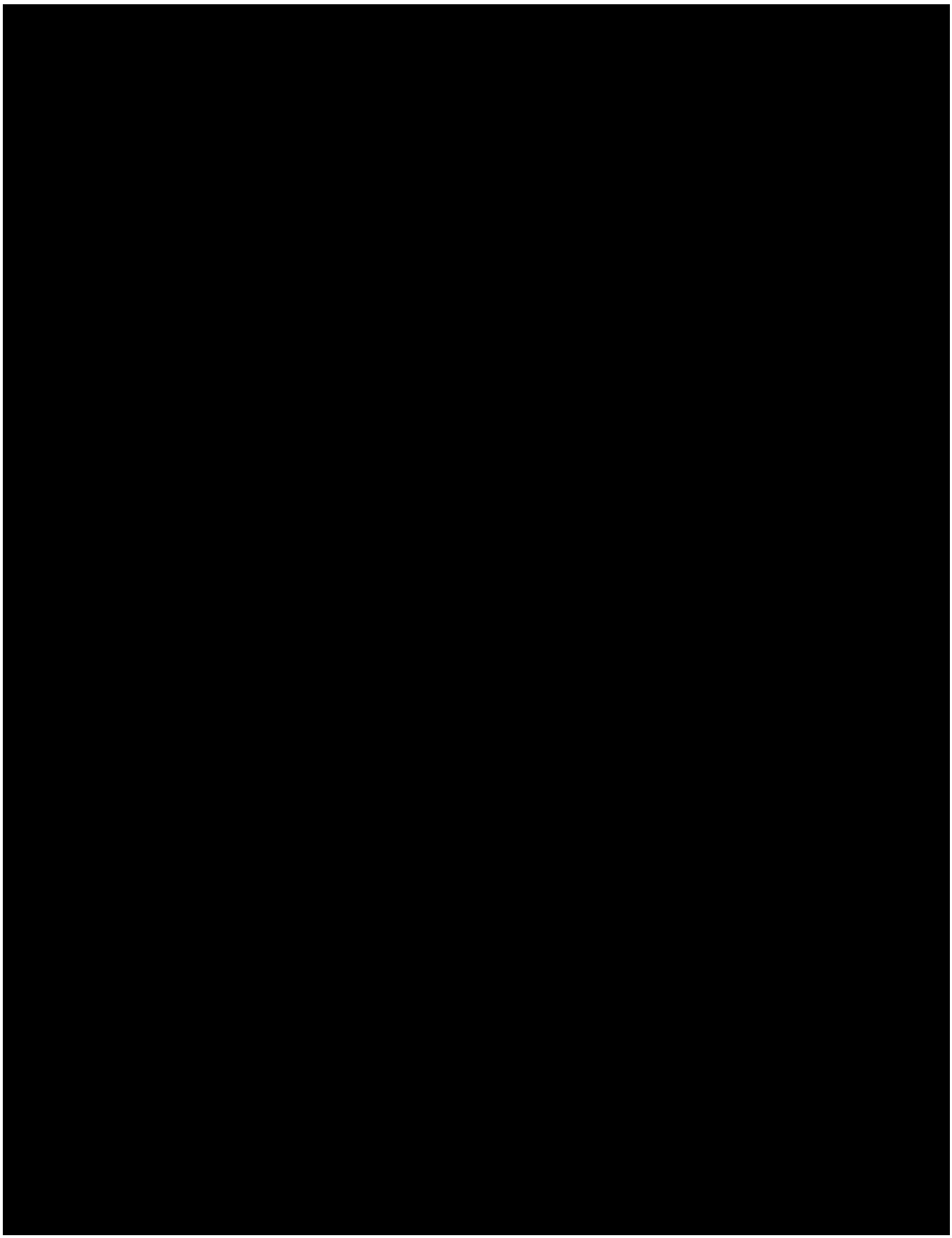
Sunrise 5:29 (12:29 UTC)

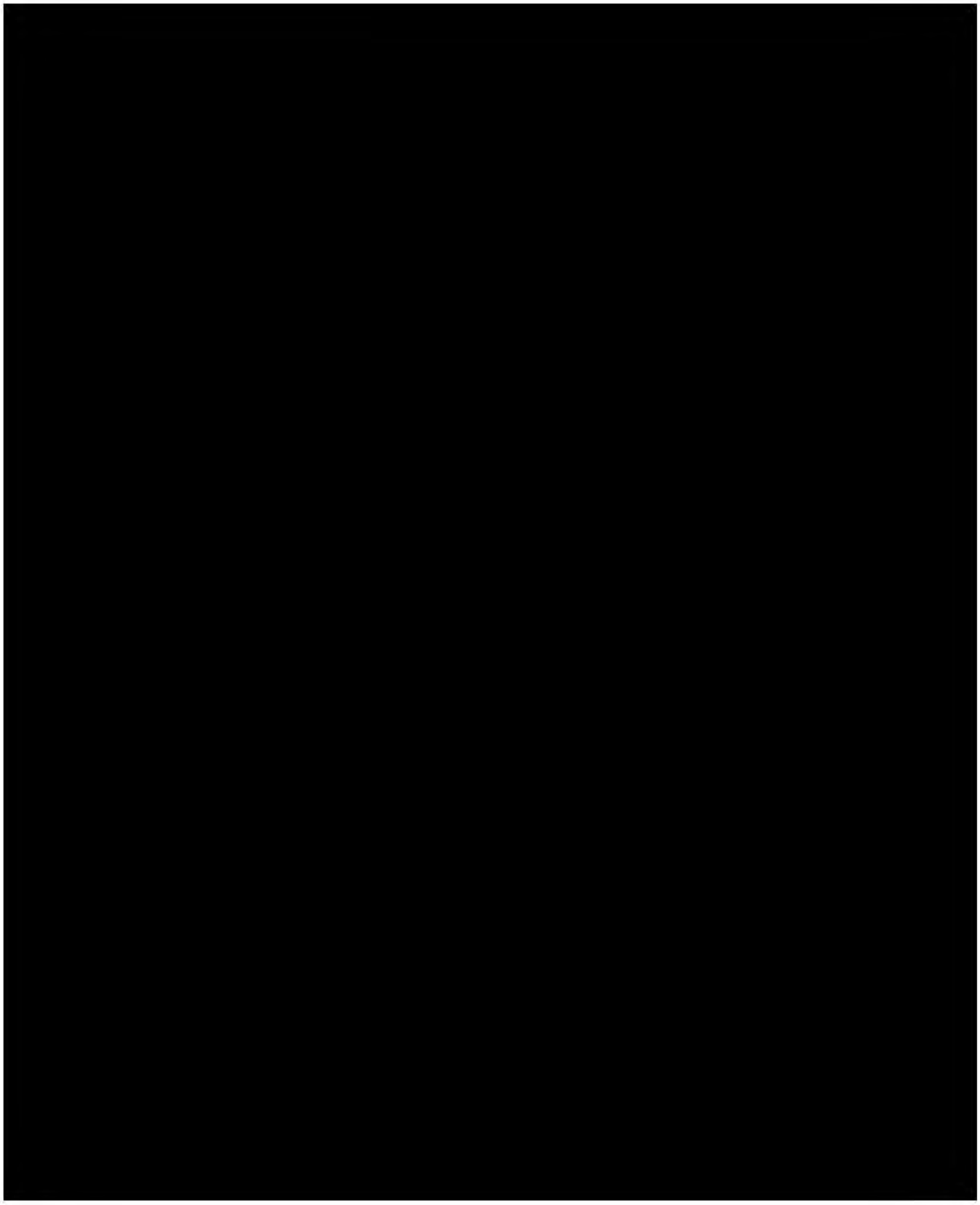
Sunset 18:32 (1:32 UTC)

Fall						
Time	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
0:00						
1:00						
2:00						
3:00						
4:00	ON	ON		ON		
5:00	ON				ON	ON
6:00			ON		ON	ON
7:00		ON	ON	ON		
8:00	ON	ON		ON		
9:00	ON			ON	ON	
10:00			ON		ON	ON
11:00		ON	ON			ON
12:00	ON	ON	ON			
13:00	ON			ON	ON	
14:00				ON	ON	ON
15:00		ON		ON		ON
16:00	ON	ON		ON		
17:00	ON	ON	ON			
18:00			ON		ON	ON
19:00			ON		ON	ON
20:00						
21:00						
22:00						
23:00						
Total Watch	8	8	8~	8	8~	8~

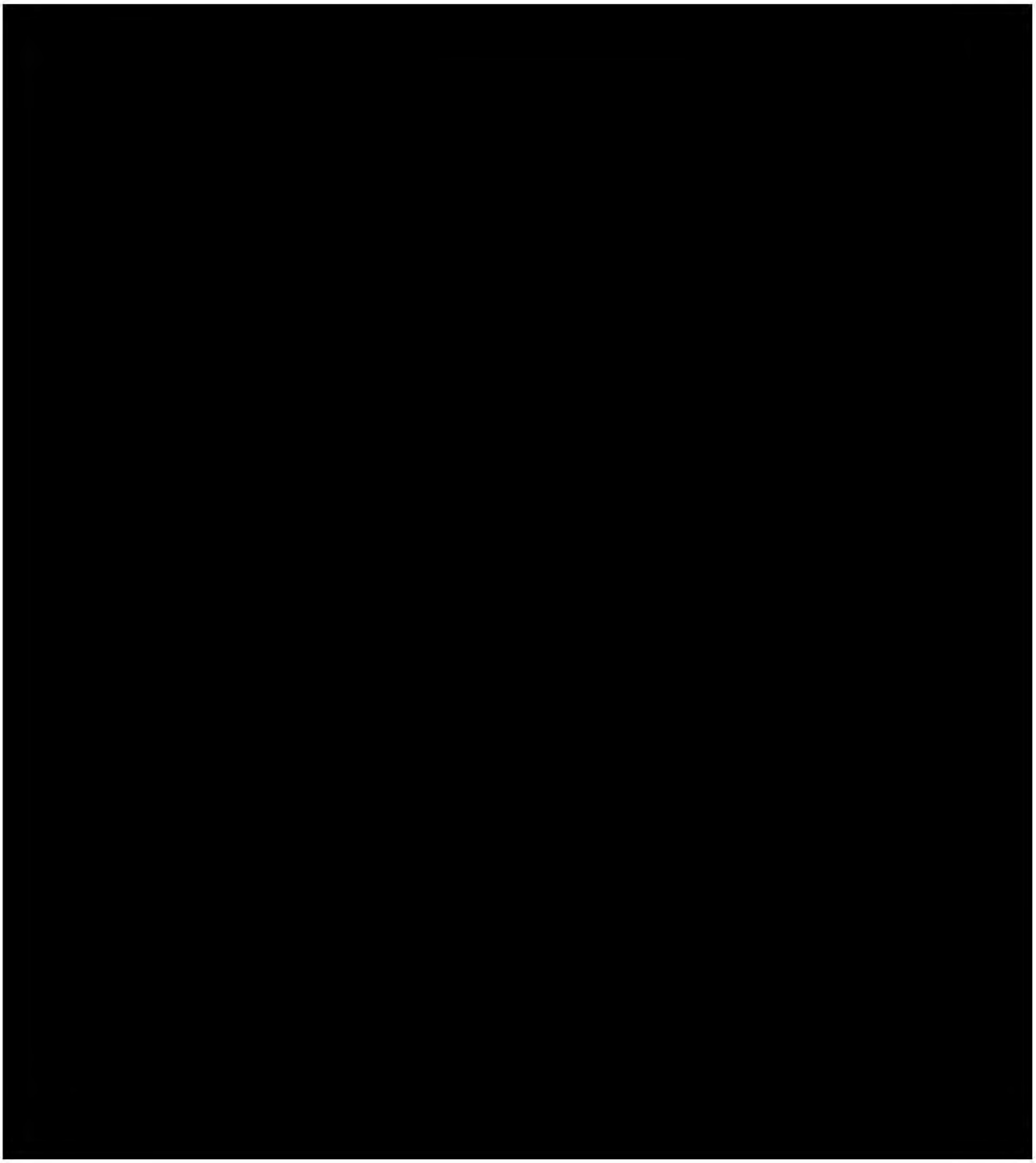
Attachment F-2: Alternative Monitoring Equipment Specifications (Night Vision Devices and Infra-Red Equipment Specifications)

Manufacturer specifications for each piece of alternative monitoring equipment are included below. Table 6 of the PDMP provides maximum detection distances based on PSO field observations to relevant species/species groups for each of the equipment.





[redacted]



Attachment F-3: Protected Species Observer and Passive Acoustic Monitoring Species Detection Data Form