US Wind
Fueling our future, naturally.

Maryland Offshore Wind Project

Monitoring Plan – Delaware

October 2024
Revised November 2024

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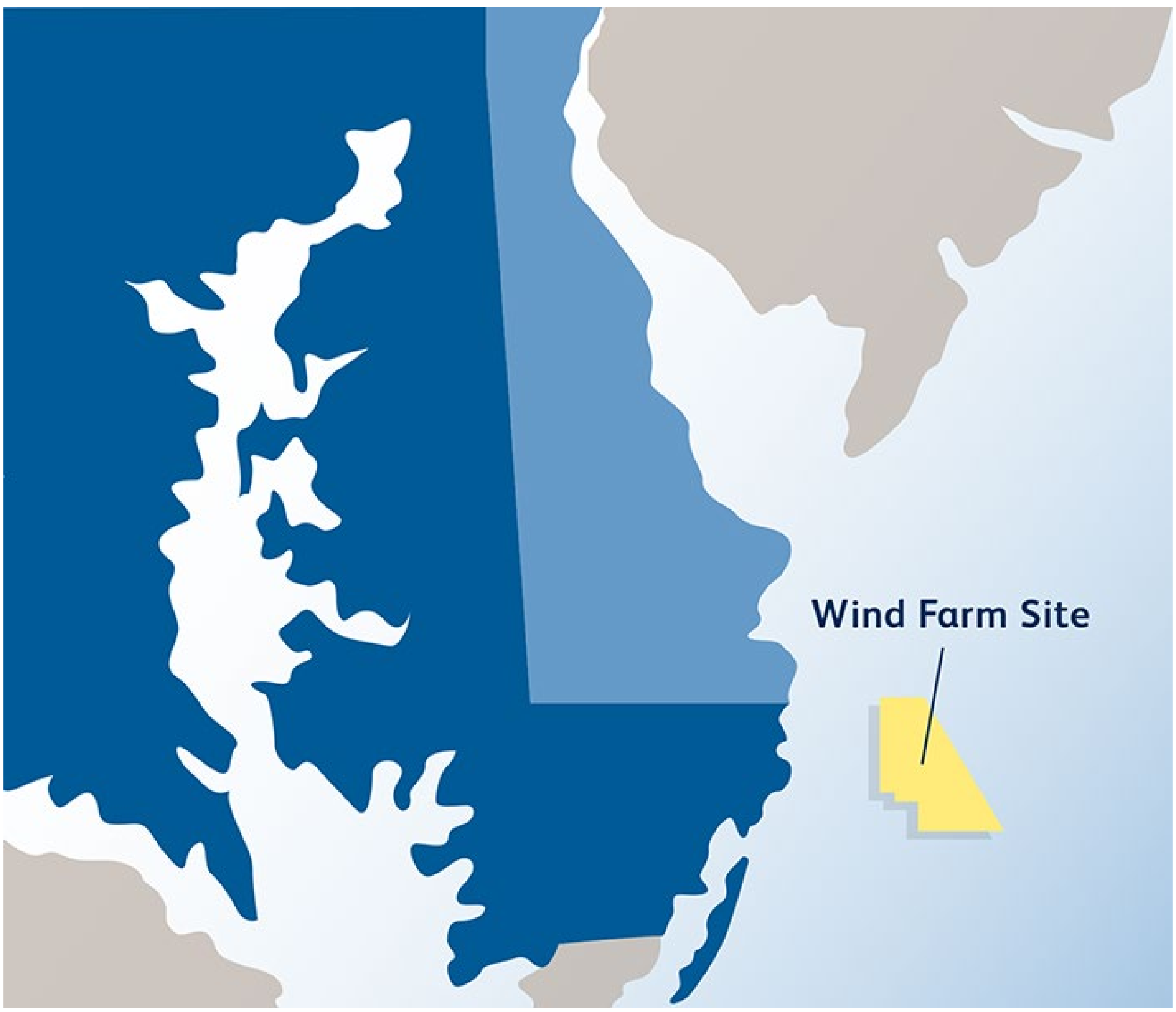

US Wind, Inc. (US Wind) is developing the Maryland Offshore Wind Project (the Project), an offshore wind project of up to 2 gigawatts within the area described in OCS-A 0490 (the Lease), an area off the coast of Maryland on the Outer Continental Shelf. US Wind obtained the Lease in 2014 when the company won an auction for two leases from the Bureau of Ocean Energy Management (BOEM) which in 2018 were combined into the Lease. The Project would include up to 114 wind turbine generators (WTG), up to four (4) offshore substations (OSS), and one (1) Meteorological Tower in the roughly 80,000-acre Lease area. The Project is proposed to be interconnected to the onshore electric grid by up to four new 230-275 kV export cables via new substations in Delaware.

US Wind's proposed export cables would come ashore from the Lease area to land at 3R's Beach Parking Lot, south of Indian River Inlet Bridge, via horizontal directional drilling (HDD). Transition vaults are proposed to be buried under the existing parking lot. From the transition vaults the export cables would enter Indian River Bay via HDD, traverse the bay with cables buried to a target depth of 1.8 meters (6 feet), and exit Indian River to the onshore substation location near the Indian River Power Plant. The cable route through Indian River Bay is referred to as the Onshore Export Cable South Corridor in US Wind's Construction and Operations Plan submitted to BOEM and is used here for consistency.

The Project area within Delaware state waters and onshore at the 3R's Beach landfall is provided in Figure 1.

Figure 1. Export Cable Landfall and Route to Point of Interconnection

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US Wind compiled the Monitoring Plan – Delaware in response to a request from DNREC in a letter dated September 25, 2024. The plan includes the following components:

- Appendix A – Construction Monitoring
    - Appendix A-I: Indian River Bay Turbidity Monitoring Plan
    - Appendix A-II: Cable Landfall Location Noise and Seismic Monitoring Plan
    - Appendix A-III: Inadvertent Release Contingency Plan
- Appendix B – Operations Monitoring
    - Appendix B-I: Operations and Maintenance Plan - Delaware
    - Appendix B-II: Indian River Bay Electromagnetic Field Monitoring Plan

Drones may be used to monitor construction activities as weather conditions allow. The drone would be operated by a licensed remote pilot, who would follow the operating rules outlined in 14 CFR Part 107 Small Unmanned Aircraft Systems, Subpart B Operating Rules.

The Monitoring Plan – Delaware includes separate component plans because each component plan is likely to be the responsibility of a specific vendor or contractor. Prior to construction, US Wind anticipates contractors may refine and elaborate elements of the plans, however, the fundamentals submitted in 2024 would be retained. Advances in technology for monitoring may become available in the future and would be evaluated for use by US Wind at that time. US Wind will provide final plans to DNREC prior to construction for review and acceptance.

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Appendix A. Construction Monitoring

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Appendix A-I. Indian River Bay Turbidity Monitoring Plan

Indian River Bay Turbidity Monitoring Plan – Delaware
US Wind, Inc.

October 10, 2024

This Indian River Bay Turbidity Monitoring Plan presented herein will be implemented during the export cable installation and the associated dredging proposed by US Wind in Indian River Bay for the Maryland Offshore Wind Project. Detail below is consistent with the turbidity monitoring plan submitted in the Turbidity Minimization and Monitoring Plan submitted September 16, 2024.

1. Proposed Turbidity Monitoring Protocols

1.1. Exceedance Thresholds

Per Delaware's Surface Water Quality Standards, "Turbidity Measured as Nephelometric or Formazin Turbidity Units, in all waters of the State shall not exceed natural levels by more than 10 units" (7 Del. C. Section 7401 Surface Water Quality Standards). Ambient conditions would be established by sampling at an up current background station. Down-current measurements would be compared to up current background station measurements collected on the same day, during the same tidal stage, and at the same depth.

1.2. Proposed Thresholds

Based on the Indian River Bay Sediment Transport Modeling report,[1] the suspended sediment concentrations are modelled to be less than 200 mg/L at distances greater than 4,396 ft from dredging and cable installation activities. Plumes greater than 50 mg/L above ambient conditions are predicted to dissipate in less than 12 hours after passage of the jet plow, and suspended sediments of 10 mg/L greater than ambient are predicted to completely settle within 24 hours following the completion of Project activities.

US Wind recognizes that the Indian River Bay Sediment Transport Modeling report is a conservative evaluation of potential sediment concentrations and deposition. The modeling conducted also does not incorporate the controls and best practices US Wind proposes during Project activities. Additionally, the report assumes a relatively high loss factor that should be lessened by valving off the upper jets of the embedment tool, does not account for proposed dredging that would presumably remove upper fine-grained sediment, and 30 days of continuous operations for each cable are expected. Observed turbidity has been shown to be a small fraction of what was modeled prior to installation

[1] Matt Hodge, Hodge Water Resources, LLC. Suspended Sediment Transport Modelling Study, Indian River Bay Submarine Cable Installation, Maryland Offshore Wind Project. Prepared for TRC. March 27, 2023. Submitted to DNREC February 15, 2024. https://documents.dnrec.delaware.gov/Admin/Hearings/2024-P-MULTI-0007/exhibits/water/water-quality/Indian%20River%20Bay%20Sediment%20Transport%20Modeling%2C%202023.pdf

(less than 1% of the predicted levels in the models for two recent projects completed by BOEM and environmental scientists). However, the report includes the best available information to establish a protective threshold at the current time.

US Wind proposes to use the following monitoring requirements and compliance thresholds during dredging and cable installation operations:

- Ambient TSS measured daily at established compliance monitoring stations up current and down current of the work area prior to the start of daily operations. The average of the daily up current and down current ambient TSS levels would establish the baseline for compliance for operations each working day.
- TSS threshold 500 ft from Project activities: 200 mg/L above ambient

Additionally, US Wind proposes to confirm that temporary cable installation activities did not have a long-term impact by measuring baseline turbidity at 3 locations along and up-river from the export cable route approximately over 7 days prior to construction activities and 7 days after cable installation to confirm conditions are within 5 mg/L of background conditions, discounting any storms or unusual upset conditions.

1.3. Methodology

US Wind would conduct turbidity monitoring while performing cable installation activities in Indian River Bay, in accordance with the requirements contained in the USACE and DNREC permits. The permits would specify monitoring for analytes (e.g., TSS, turbidity, metals, PAHs, etc.), exceedance thresholds, monitoring distances, frequency/timing of the required sampling and depth at which samples would be taken.

Monitoring of TSS, turbidity, and the additional water quality constituents described above would be conducted daily (during daylight hours only) at the following tidal stages: max flood, high slack, max ebb, and low slack during Project activities. Monitoring would involve measurement of in-situ acoustic and optical data and collection of water samples from an onsite survey vessel during daylight hours. Collected water samples would be sent for laboratory analysis.

To allow for real-time monitoring of TSS concentrations during Project activities, a correlation would be established between acoustic backscatter intensity (as measured by an Acoustic Doppler Current Profiler [ADCP]), optical backscatter (turbidity as measured by a water quality sonde), and laboratory determined TSS concentration. This relationship (calibration curve) would be established during preinstallation trials and refined based on data collected during cable installation. Comparisons between the optical and acoustic backscatter intensity measurements would provide a continuing check on system stability and calibration throughout the monitoring period.

The characteristics of the dispersing plume of sediment placed in suspension during Project activities would be documented in real time using an ADCP. An onsite survey vessel would collect acoustic backscatter intensity data along transects located at the edge of the applicable mixing zone during daylight hours. The ADCP would provide measurements of acoustic backscatter intensity and current velocity at 1-meter vertical bins throughout the water column.

A water quality sonde capable of measuring conductivity, temperature, depth, and optical backscatter (CTD-OBS) would be deployed to collect a vertical profile of backscatter intensity, water temperature, and salinity at a selected location along each survey transect that corresponds to the highest observed acoustic backscatter intensity. Measured OBS readings would then be related to TSS levels using the established correlation. Grab samples for laboratory analysis of TSS would also be collected at three depths at the location of maximum acoustic backscatter intensity.

The combination of these techniques is considered a relatively comprehensive, accurate, and cost-effective means to define background TSS conditions based on project design and past experience performing similar monitoring where these techniques have been able to adequately define the character and extent (both space and time) of suspended sediment distribution associated with Project activities. The proposed methodology would allow real-time monitoring of project–related suspended sediment characteristics. The collection of water samples for laboratory measurement of TSS concentrations would provide an additional data correlation needed for calibration and would provide validation of the real-time monitoring results.

Monitoring would be conducted from a smaller vessel (or vessels) than would be used for cable installation. Therefore, weather conditions may prevent the safe collection of suspended sediment and water quality data during time periods when conditions remain acceptable for cable installation. To avoid material delay of installation activities and minimize risk of damage to the cable, US Wind may suspend monitoring operations, but continue installation activities, during such periods of adverse weather. Monitoring operations would be resumed promptly once weather conditions allow.

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Appendix A-II. Cable Landfall Location Noise and Seismic Monitoring Plan

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Cable Landfall Location Noise and Seismic Monitoring Plan – Delaware
US Wind, Inc.

October 10, 2024

The Cable Landfall Location Noise and Seismic Monitoring Plan – Delaware summarizes the protocols proposed by US Wind for monitoring noise and seismic impacts resulting from the horizontal directional drilling (HDD) of the export cables under 3R's Beach for the Maryland Offshore Wind Project.

1. Proposed Noise Monitoring Plan

1.1. Project Construction Activities

HDD operations would be employed for the Project to install cable ducts that allow for the installation of the export cables at the transition points between water and land. The Cable Landfall Location Noise and Seismic Monitoring Plan includes monitoring of HDD from the landfall location at 3R's Beach parking lot to the Atlantic and from 3R's Beach parking lot into Indian River Bay. The HDD work may be conducted simultaneously or in stages depending on the final design of the Project.

The primary HDD drilling equipment would be located on land and would consist of a drilling rig, mud pumps, drilling fluid cleaning systems, pipe handling equipment, excavators, and support equipment such as generators and trucks. Typical maximum sound levels from HDD beach construction activities are expected to be approximately 100-110 dB.

HDD construction may be conducted 24 hours per day, 7 days per week with rotating shifts, depending on state and local construction approval.

Concrete transition vaults would be installed under the parking lot where the cables would be pulled into and joined.

Following installation of the transition vaults and pulling in of the cables, the parking lot would be restored to existing conditions with eight 8-30-inch manhole covers evenly spaced within the parking lot.

Table 1 lists the typical maximum noise levels of indicative construction equipment at 50 feet. Table 1 does <u>not</u> necessarily reflect the list of equipment proposed at 3R's Beach parking lot.

Table 1: Typical Maximum Noise Levels of Major Construction Equipment

Equipment Type	Construction Equipment Noise Levels at 50 Feet (dBA)
Crane	83
Dump Trucks	90
Chainsaw	85

Equipment Type	Construction Equipment Noise Levels at 50 Feet (dBA)
Roller	89
Grader	86
Concrete Mixer	85
Bulldozers	85
Pickup Trucks	65
Backhoes	85
Vibratory Hammer	92
Wire Tensioning Equipment	80
Trenching Machine	90
Water Pump	75
Pipe Bender	50
Welder	70
Compactor	80
Cable Pulling Machine	80
Splicing Trailer	50
Oil Pump	75
Source: BBN, 1971; JCP&L, 1989.	

1.2. Proposed Noise Management Measures

US Wind's avoidance and minimization measures limit construction activities at 3R's Beach parking lot to outside of the peak tourism and recreation season, i.e., no work would occur between May 15 through September 15. The closest residence is approximately 750 feet from the 3R's Beach parking lot.

Onshore Project construction activities would abide by the restrictions set by the state of Delaware and relevant local jurisdictions, unless a waiver from such requirements can be obtained. Construction activities would be limited to the hours permitted by each jurisdiction and noise levels would be managed to comply with the noise limits imposed by each jurisdiction. US Wind will be responsible for monitoring construction activities to assure compliance with the applicable limitations.

In addition, US Wind will consider the implementation of the following noise management measures as needed to comply with the local ordinances, and to address any community concerns or complaints about excessive noise during Project construction:

- Locate the HDD construction site entrances away from residences or other sensitive receptors.
- Designate an off-site parking area for the HDD construction sites away from residences for trucks arriving prior to gates opening.
- Plan truck access routes to the HDD construction sites to avoid residential areas.

- Schedule HDD construction site deliveries during specified periods when nearby residents are less likely to be home.
- Avoid the use of reversing alarms by designing the HDD construction site layouts to include drive-throughs for parking and deliveries.
- Schedule noisier construction activities during periods when adjacent landowners will be least affected.
- Provide advance notification to nearby property owners when construction activities which could produce higher levels of sound will occur.
- Position trucks and construction equipment in areas away from nearby residences and restrict the operation of trucks and equipment adjacent to residential areas to the extent practicable.
- Minimize idling of trucks and reduce the throttle settings or turn off construction equipment when not in active use.
- Use natural landforms or erect temporary noise barriers to reduce noise impacts from HDD construction activities to local residences, where practicable.
- Utilize mufflers and noise shielding on construction equipment where practicable.
- Require contractors to use equipment which is well maintained and operated in accordance with the manufacturer's recommendations, and to conduct regular inspections to ensure all equipment is in good working order.
- Require contractors to train on-site construction workers on best practices to minimize noise impacts.

1.3. Proposed Noise Monitoring Protocols

US Wind will conduct short term and long-term periodic noise monitoring during construction to ensure compliance with local noise limits. Baseline measurements would be completed prior to construction to account for the noise from existing sound sources such as passing vehicle traffic and surf. Noise monitoring will be conducted at the property line of the 3R's Beach parking lot at up to three locations, with one location at the closest point to nearby sensitive receptors, including The Cove and Indian Harbor Villas.

The sound level monitors used will be certified as Class I monitors and will be operated and calibrated before and after every measurement period in accordance with the equipment manufacturer's specifications.

If the sound levels measured during the HDD noise monitoring exceed the allowable levels, US Wind will implement additional noise mitigation, such as temporary noise barriers, as needed to achieve the allowable levels during HDD activities.

The results of the baseline and HDD noise monitoring will be provided to DNREC in a letter report.

2. Proposed Seismic Monitoring Protocols[1]

US Wind will conduct seismic monitoring during HDD activities at 3R's Beach parking lot. Baseline measurements would be completed prior to construction to account for passing vehicle traffic, consisting of continuous measurements for 10-30 minutes.[2]

A geophone would be deployed at the location closest to sensitive receptors periodically during HDD activities. The geophone would be stabilized by sandbags or similar items, with its supports pressed into the ground.

The geophone will be operated and calibrated before and after each measurement period in accordance with the equipment manufacturer's specifications.

The results of the baseline and HDD seismic monitoring will be summarized and provided to DNREC in a letter report.

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[1] Methods based on following:

Svantek Academy. Comprehensive Guide to Vibration Monitors, Sensors, Noise, and Dust Monitoring in Construction: Real-Time Analysis and Equipment. Accessed October 4, 2024. https://svantek.com/academy/vibration-monitoring-guide/

Geo-Instruments. Vibration Monitoring Guide. Accessed October 4, 2024. https://www.geo-instruments.com/technology/vibration-monitoring-guide/

[2] Federal Transit Administration. Transit Noise and Vibration Impact Assessment Manual. FTA Report No. 0123. Prepared by John A. Volpe National Transportation Systems Center. September 2018. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

Appendix A-III. Inadvertent Release Contingency Plan

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INADVERTENT RELEASE CONTINGENCY PLAN

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INADVERTENT RELEASE PLAN

Introduction

Horizontal directional drilling (HDD) is recognized as the least environmentally disturbing construction technique available for installing pipelines/conduits underwater bodies or facilities that need to remain undisturbed. The HDD procedure is designed to be a closed loop system that uses drilling fluids for advancement of the drill string and installation of the product pipe. The drilling fluids:

- Lubricate the bore hole
- Reduce friction by cooling the bottom-hole assembly (BHA)
- Stabilize the surrounding formations by providing a seal that reduces the risk of the fluid migrating into the formation
- Carry the cuttings to the surface

The main component of the drilling fluid is a slurry of naturally occurring Bentonite clay and water. The clay is insoluble and made up of small particles that function as a sealant that fills the pore spaces surrounding the borehole. Various non-toxic additives may be added to the drilling fluid to optimize its properties. During the drilling operations, it is possible that some of the drilling fluids will be lost in fractures within the formation. In cases of lateral fractures, lost fluids may not surface. While it is not anticipated, in other cases, drilling fluids may reach the surface (e.g., the fracture comes close enough to the surface that the pressure causes the release of drilling fluid above ground). Such a release is termed an inadvertent return. The key to containing and controlling an inadvertent return is the drilling plan (i.e. penetration rate, incremental reaming, fluids design), early detection, and quick response by HDD crew and support personnel.

Inadvertent Drilling Fluid Release

For the purposes of this document and the US Wind HDDs, an inadvertent drilling fluid release, or inadvertent return, shall be defined as the unintentional or inadvertent loss of drilling fluids from the HDD bore hole to the onshore ground surface, other than the bore hole entry and exit points. Loss of drilling fluids to the subsurface geological formation may result in an apparent reduction in the return of fluids and cuttings but will not be considered an inadvertent release unless drilling fluids are observed at the ground surface and/or a significant loss of drilling fluid is detected.

Purpose of the Plan

This document establishes plans for preventing, monitoring, and responding to an inadvertent release of drilling fluids that may occur during the installation of the US Wind HDDs. This plan will identify the activities to be monitored and appropriate response actions to be taken to minimize a release of drilling fluid. The plan outlines a process of monitoring the drilling fluid in order to identify a loss-of-returns situation and determine if there is a release to the surface. The intent of this document is to set forth a plan to illustrate actions to be taken, under various conditions and for various sizes of inadvertent releases, should an inadvertent drilling fluid release occur; as well as establish a monitoring and response criteria that will minimize the environmental effects of the HDD operations.

Inadvertent Return Prevention

The objective to prevent inadvertent returns shall be managed through reasonable construction practices and industry standard means and methods, including:

Controlled Drill Head Advance

During pilot hole drilling, the drill head will be advanced at a conservative rate, to ensure that soils cuttings have sufficient time to be flushed from the bore hole by the drilling fluids, preventing plugging and thereby keeping down hole pressures to a minimum. If plugging occurs (i.e. return flow is diminished relative to fluid pumping rate), the rate of advance will be reduced, stopped, or reversed, as appropriate, until the plug has been cleared.

Down Hole Pressure

Drilling fluid pump pressure will be maintained at no more than the minimum necessary to maintain good circulation and to keep the bore hole clear of cuttings. This operating envelope will be established by conducting an engineered hydrofracture analysis in which the geotechnical data will be analyzed in order to produce a model which compares the confining force of the in situ overburden soil vs the hydrostatic pressure or outward expansion force of the drill fluid at several points along the bore profile of the final bore design. Once this comparison is complete a calculated safe pressure zone can be established between the soil pressure and the drill fluid hydrostatic head pressure along the entire bore path. In the event a reduction in circulation is observed and recorded drilling fluid pressures are within the safe work zone, mechanical swabbing or tripping of the drill pipe may be required or adjustments to drilling fluid properties (e.g., density, viscosity) can be made. Additionally, the rate of drill head advance shall be considered before pump pressure is increased to ensure cuttings have enough time to exit the bore hole.

During pilot hole drilling, the down hole annular pressure will be monitored through a pressure tool located in the BHA. The driller will regularly evaluate the average recorded pressures in order to mitigate a potential loss of returns. Leading indicators such as increasing or decreasing trends in down hole pressure may indicate the occurrence of a release or more commonly the buildup of cuttings down hole which may require additional mechanical cleaning of the bore hole , the need for drill fluid property adjustment, or a reduced penetration rate/ additional pumping time. The drill rig operator, or driller, is responsible for monitoring the annular pressures.

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Inadvertent Return Monitoring

The HDD superintendent has the overall responsibility for monitoring the site and bore path for an inadvertent drilling fluid release. However, he may delegate this responsibility as he sees fit. Where appropriate, the following methods of monitoring shall be used:

Circulation Rate

The flow rate of drilling fluid circulation and the volume of returns to the returns pit at entry point will be continuously monitored. Differences between the pumping rate and the rate of returns may indicate an inadvertent drilling fluid release. The drill rig operator, or driller, is responsible for visually monitoring the fluid returns to the returns pit at entry point.

Inspection

HDD activities will be closely and continually monitored by the Contractor, the Construction Inspector, and the Environmental Inspector, or any combination of the three. Monitoring and sampling procedures will/may include:

- Visual and pedestrian field inspection along the drill path, to the extent allowable by the terrain, including monitoring the wetlands and waterbodies for evidence of release,
- Use of drones to inspect the area along and adjacent to the HDD drill path when inadvertent returns are suspected,
- Continuous monitoring of the non-toxic clay and water slurry, drilling pressures, and return flows by the Contractor,
- Consistent recording of drill status information regarding drill conditions, pressures, returns, and progress during the course of drilling activities,
- Consistent recording of pedestrian and drone inspections along the drill path and surrounding area including time of inspection,
- documentation of all observations of sensitive resources, and people conducting the inspection.
- and Continuous, 24-hour monitoring of operating pumps being utilized while drilling operations are conducted on-site.

While performing an HDD, the Contractor will closely monitor all down hole pressures during the pilot phase along with the entry/exit pits during the reaming process to ensure fluid returns are returning. The crew will closely and frequently monitor the right-of-way and surrounding areas with pedestrian search and/or the use of aerial drones. Should an inadvertent return be found in a wetland, waterbody, or ditch; the drilling operations will take appropriate actions which may or may not include immediately halting until the inadvertent return is adequately contained. The monitoring of the right-of-way along with all findings will be documented.

In the event that pedestrian searches for inadvertent release are inadequate due to limited traversable terrain, a remote-controlled aerial drone can be utilized for ground surveillance if requested. The drone can be flown the length of the HDD drill path with concentrated focus on the areas that pedestrian search is not practical and during daylight hours.

Providing the inadvertent return is in a location that can be accessed through approved landowners along the permanent easement of the right-of-way, the crew will contain the inadvertent return with silt fence, straw bales and/or sandbags.

Provided adequate access can be obtained, the HDD contractor and/or its subcontractor will utilize vacuum trucks, pumps and hand tools as needed to clean-up the inadvertent return. Upon containment of the inadvertent return, the drilling operations will commence as the clean-up efforts continue.

In the event an inadvertent return is located outside of the previously approved right-of-way boundaries, the HDD contractor will work closely with US Wind to obtain landowner and agency permission to access the area to begin the clean-up efforts.

Similar investigation techniques will be implemented during nighttime operations if they can be conducted safely.

Inadvertent Return Response

Upon discovery of a loss of circulation or sign of a down-hole pressure drop, the contractor shall notify the on-site US Wind representative, begin to reduce down-hold pressure as practicable, and conduct a detailed examination of the drill path and adjacent area for evidence of an inadvertent release. At the first sign of release of the non-toxic clay and water slurry, immediate actions to manage and control the release will be implemented as prescribed by this plan.

Depending on the location and the amount of fluid being released, corrective actions may include the following:

- Upon discovery of a loss of circulation or sign of a down-hole pressure drop, the contractor shall notify the on-site US Wind representative,
- begin to reduce down-hole pressure by immediately ceasing to pump drill fluid and tripping the drill string back to aid in removing pressure down hole.
- and conduct a detailed examination of the drill path and adjacent area for evidence of an inadvertent release.
- At the first sign of release of the non-toxic clay and water slurry, immediate actions to manage and control the release will be implemented as prescribed by this plan.

Depending on the location and the amount of fluid being released, corrective actions may include the following:

- If public health and safety are threatened by an inadvertent release, drilling operations will be immediately shut down until the threat is eliminated. Upon discovery of an IR within a sensitive area, a temporary suspension of drilling operations will take place until measures are in place to manage, control, and contain the release.
- Evaluating the release to determine if containment structures are warranted and can effectively contain the release.
- Placing containment structures at the affected area to prevent migration of the release.

- If the amount of the release is large enough to allow collection, collecting the non-toxic clay and water slurry released into containment structures and returning it to either the drilling operations or an approved disposal site by hose or tanker.
- If the amount of the release is not large enough to allow collection, diluting the affected area with fresh water and allowing it to dry. Steps will be taken to prevent silt-laden water from flowing into a wetland or waterbody.
- If a wetland or waterbody release occurs, initiating an inspection to determine the potential movement of released non-toxic clay and water slurry within the wetland or waterbody.
- If a wetland or waterbody release occurs, collecting the non-toxic clay and water slurry returns at the drill entry location for future analysis, as required.
- If a wetland or waterbody release occurs, monitoring of the release will be documented by the Environmental Inspector. The Contractor will keep photographs of release events on record.

The following measures will be implemented to minimize or prevent further release, contain the release, and clean-up the affected area:

- If a release occurs within a wetland or waterbody, reasonable measures, within the limitation of directional drilling technology and the Contractor's onshore and offshore capabilities, will be taken to reestablish drilling return circulation.
- The Contractor will provide the materials utilized to reasonably reduce or eliminate and contain inadvertent returns. A list of these materials is shown below. The Contractor will execute the operation of containing and cleaning up any effects of inadvertent returns.
- While the Contractor is waiting to resume drilling operations (i.e. advancement of the down hole tooling), certain actions, at the discretion of the HDD superintendent and/or drill rig operator, may be taken in order to maintain the integrity of the bore hole. The actions may include, but are not limited to, circulating the hole with drilling fluids, adding pre-approved loss circulation materials to the drilling fluid mixture, tripping drill string out of the bore hole to a length determined by the HDD superintendent and/or drill rig operator.

Response Materials

The following materials will be available onsite to utilize for response to any ground surface inadvertent returns. The materials used will be determined by the extent of the inadvertent release and the appropriate response action.

- sandbags
- hand plastic buckets (5 gallon)
- hand-held vacuum unit
- wide heavy duty push broom
- flat blade shovels
- silt fence
- turbidity barriers (silt curtains)
- hay bales
- silt fence
- plastic sheeting
- squeegees
- pumps and sufficient hose
- mud storage tanks
- vacuum truck
- SAFE Boat/ROV

- generator

HDD Personnel

Training

Supervisors, crew members, and other key HDD personnel on site will receive training with respect to the prevention, monitoring, and response of inadvertent returns. This training includes:

- The details of this plan
- Specific permitting conditions and requirements
- The need to monitor HDD operation
- Lines of communication
- Lines of authority and responsibility
- Contact names and phones numbers of the appropriate individuals
- Events that need to be reported and to whom

Roles and Responsibilities

All personnel that make up the HDD crew take part in the management of inadvertent drilling fluid release prevention, monitoring, and response. The following demonstrates the key HDD crew member roles and their respective responsibilities in relation to this plan:

HDD Superintendent

The onsite superintendent has the overall responsibility for monitoring the HDD operations for inadvertent returns, as well as response to any indications or discovery of inadvertent returns. He may delegate this responsibility as he sees fit. The onsite superintendent, with the assistance of the assigned crew members, is responsible for visually monitoring the length of the bore path, to the extent practicable, for inadvertent drilling fluid release. He may delegate this responsibility as he sees fit. The onsite superintendent is responsible for immediately notifying the Contractors project management of any discovery of inadvertent returns. The onsite superintendent is responsible for reporting, discussing, and implementing countermeasures to mitigate any fluid loss situation.

Drill Rig Operator (“Driller”)

The driller is responsible for monitoring drilling fluid pressures and fluid returns to the entry point. In the event of a significant drop in down hole fluid pressure or fluid returns, the driller will notify the onsite superintendent.

The driller will document the nature of any drilling fluid release, including physical characteristics of the fluid, location, and extent; the measures implemented to reduce the rate of release; the measures employed at the site of release to contain and cleanup drilling fluid; and the extent to which these measures are successful in containing or eliminating the release.

Mud System Operator

The mud system operator will continuously monitor and manipulate the viscosity of the drilling fluid as it is being cleaned and mixed. The mud system operator will closely monitor the level of mud in the mud cleaning system tanks. A substantial drop in the fluid levels will be reported immediately to the driller and/or onsite superintendent.

Laborers

The laborer is responsible for continuous inspection of hoses, pumps, and equipment, to identify leaks or damage that could potentially cause a failure in the item, resulting in drilling fluid release on site. A laborer will be assigned to perform inspection walks, as described above. If drilling fluid is found to have been released at the ground surface, the laborer(s) will immediately report the occurrence to the driller and/or onsite superintendent, typically via hand-held radios.

Communication

Inadvertent Return Communication Plan

The reporting procedure for inadvertent releases is follows:

- The worker that observes the inadvertent fluid release reports immediately to the driller and/or onsite superintendent, typically via hand-held radio. The driller will notify the onsite superintendent of the release if the observing worker has not done so.
- The onsite superintendent, after implementing any immediate response to reduce the fluid loss, such as ordering the cessation of drilling operations, will notify the Contractors project management, either via cell phone or in person. The superintendent will also notify the onsite US Wind representative.
- The Contractors project management will notify US Wind management.
- The onsite superintendent will determine the methods most appropriate to control, contain, and/or clean up the release.

IR Notification Key Contact List

[Placeholder - to be added prior to start of construction]

DOCUMENTATION

When inadvertent returns occur, the Contractor will submit to US Wind a “Drilling Fluid Migration and Release Report”, as soon as practical. The report will include:

- Details of the inadvertent release event
- Name and telephone number of person reporting
- Details regarding notification
- Location of the inadvertent release
- Date and time of inadvertent release
- Type and quantity, estimated size of inadvertent release

- The type of activity that was occurring around the area of the inadvertent release
- Description of any sensitive areas, and their location in relation to the inadvertent release
- Description of the methods used to clean up or secure the site
- Description of close-out actions

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DATE: 01/08/2025
BY: Matthew Jones
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Appendix B. Operations Monitoring

W.W.S
APPROVED PLANS
PERMIT #: SL/SP/WE-043/24
DATE: 01/08/2025
BY: Matthew Jones
(SEE PERMIT CONDITIONS)

Appendix B-I. Operations and Maintenance Plan – Delaware

W.W.S
APPROVED PLANS
PERMIT #: SL/SP/WE-043/24
DATE: 01/08/2025
BY: Matthew Jones
(SEE PERMIT CONDITIONS)

Operations & Maintenance Plan – Delaware
US Wind, Inc.
October 10, 2024

1. Routine Operating Procedures

Project maintenance activities are divided into planned and corrective maintenance. Planned maintenance includes proactive repairs or replacements based on the outcome of routine inspections and information collected from the remote monitoring system. Corrective maintenance includes reactive repairs or replacements of failed or damaged components.

Planned maintenance is considered a component of the routine operating procedure. Corrective or unscheduled maintenance is part of the non-routine operating procedures and is discussed in Non-Routine Operating Procedures (Section 2).

Maintaining protection of export cables is of paramount importance to US Wind. A significant amount of effort by way of studies and assessments to understand conditions resulted in the careful selection of the location of the proposed cable corridor, appropriate burial depths of the export cables, and the installation methods proposed to ensure the cables remain buried. Damage to one or more cables shuts down the connected portions of the wind farm, resulting in no electricity generation and no revenue to the company. The economic viability of the wind farm relies on buried, protected, and fully functioning cables.

US Wind's alternatives analysis provided in the application narrative clearly describes why US Wind chose the southern route through Indian River Bay to avoid dynamic conditions observed in the norther portions of the bay. Assessment of the conditions included high-resolution geophysical and geotechnical surveys of the bay bottom and the associated integrated marine site characterization report, historic review of satellite imaging (see Figure 3.4-1 in the application narrative, showing historic shoal migration to the north), and a Cable Burial Risk Assessment to settle on a proposed cable corridor.

1.1. Routine Operating Procedures for Power Cables

Subsea cables are exposed to tides or sediment flows and, in extreme cases, experience failure due to anchor strike. US Wind will continuously monitor and annually survey the export cables in Indian River Bay and repair the cables in the unlikely event it is needed. Survey work and remedial work would be subcontracted to a specialist service provider.

Export cables in Delaware waters and in the transition vaults under 3R's Beach parking lot would be remotely monitored, providing continuous real-time information about the status and health of the export cables. Cable performance would be monitored via the remote monitoring system in the asset control room located in US Wind's Operations and Maintenance Facility. In addition to monitoring wind turbine performance and energy yield, the remote monitoring system would monitor power flow, power load, any faults or indicators of wear and tear, and the cable core temperatures along the full length by built-in temperature sensing system.

Annual bathymetry surveys would be conducted to confirm sufficient depth of cover of the export cables, involving a barge or vessel-mounted multi-beam sonar for bathymetry surveys to compare to as-built conditions. The determination of cable burial depths may be derived indirectly from observed bathymetric changes with respect to the as-built situation. The cable impedance profile can be measured and compared with the as-built drawings to detect cable bending radius changes caused by external factors, such as anchors or dropped objects. It is anticipated that DNREC will require bathymetry surveys as a permit condition. Annual surveys would be the same as surveys already conducted by US Wind to understand conditions in the bay and would be focused on the cable corridor only.

1.2. Routine Operating Procedures for Transition Vaults

Maintenance of the transition vaults under 3R's Beach parking lot would be conducted roughly once per year and would involve a small truck visiting the site and workers opening the manhole covers to visibly check the cables and any water ingress. During the first two years after cable installation cable inspection frequency may be greater, such as quarterly for the first year and twice per year in the second year after installation. As described in Section 1.1, the export cables would include remote monitoring capability, and it is anticipated that this visual doublecheck would be all that is necessary.

2. Non-Routine Operating Procedures

In case of insufficient burial or cable exposure, whether attributable to natural or human caused issues, appropriate remedial measures would be taken to place additional protective measures over the cable(s). Plans for managing non-routine events will include contracts with vessel service providers, strategic spares inventory or supply agreements, combined with procedures and plans to execute the cable protection work. If a cable failure occurs, an appropriate cable repair spread would be mobilized.

In the unlikely event that one or more export cables become exposed, US Wind would mobilize to cover the export cable(s) with cable protection, i.e., concrete mattresses (see Figure 2.1-11 of the permit application narrative), as soon as possible. The deployment of flexible concrete mats would require a handling frame and a relatively small work vessel with a crane, or a shallow draft barge with mobile crane (see Figure 1 below). Divers may be used for final positioning. Remote operated vehicles (ROV) are not anticipated due to the shallow water conditions that would hinder ROV operations.

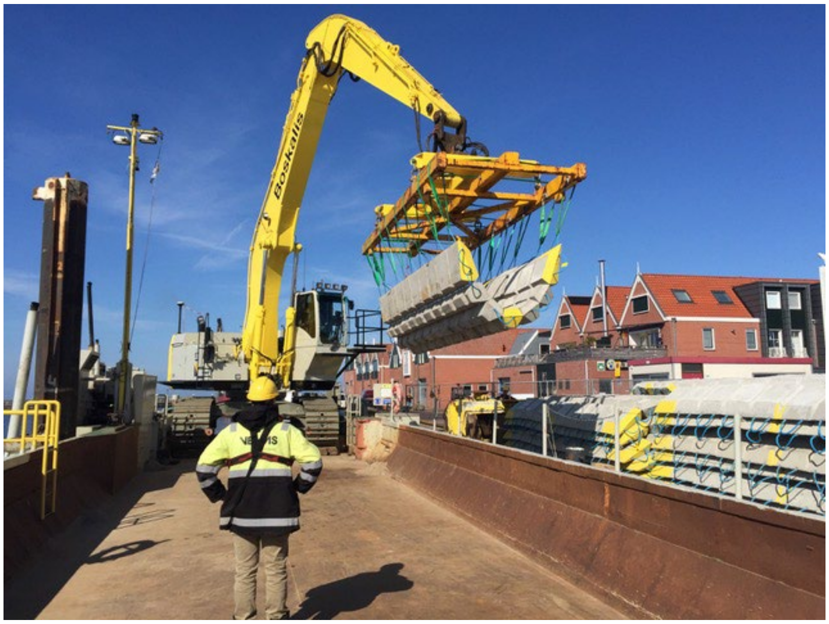

Figure 1 Example Cable Mattress and Installation Crane

In the event a transition vault under 3R's Beach parking lot may require repair, a small truck and crew would access the vault(s) using the installed manlid(s) to make necessary repairs.

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Appendix B-II. Indian River Bay Electromagnetic Field Monitoring Plan

Indian River Bay Electromagnetic Field Monitoring Plan – Delaware
US Wind, Inc.

October 10, 2024

This Electromagnetic Field (EMF) Monitoring Plan summarizes the proposed protocols for monitoring EMF levels following the installation of export cables within Indian River Bay.

1. Proposed EMF Monitoring Protocols[1]

US Wind would utilize a magnetometer, such as a SeaSPY[2] by Marine Magnetics Inc., and a gradiometer, such as a Bartington GRAD-13[3], towed using a remotely operated vehicle (ROV), autonomous underwater vehicle (AUV), glider, or, most likely from a small survey vessel. Baseline measurements would be collected prior to energizing the cable(s) during both construction campaigns to assess existing conditions and background levels.

Monitoring would be conducted using a grid pattern, sometimes called a “lawnmower pattern survey”, conducted at various heights above the buried cables (Figure 1). The survey would be conducted in two parts based on the Project construction campaign.

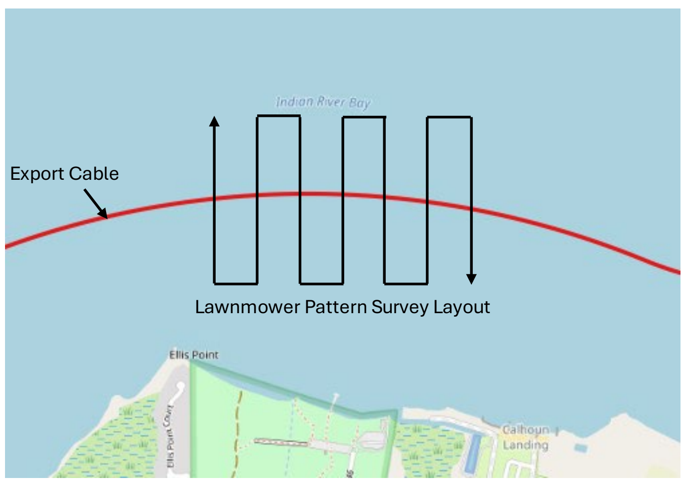

Figure 1. Representative Layout of a Lawnmower Pattern Survey (not to scale)

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[1] Methods based on following:

Dhanak, M., Coulson, R., Dibiasio, C., Frankenfield, J., and E. Henderson; Florida Atlantic University, Boca Raton, FL. Pugsley, D., and G. Valdes; Naval Surface Warfare Center, Bethesda, MD. Assessment of Electromagnetic Field Emissions from Subsea Cables. US Department of Energy Award DE-EE0006386. https://tethys.pnnl.gov/sites/default/files/publications/Dhanak-et-al-2016-METS.pdf

Imperadore, A., Amaral, L., Tanguy, F., Gregoire, Y., Soulard, T., Le-Bourhis, E., Vinagre, P.A., Bald., J., 2023. Deliverable 2.2 Monitoring of Electromagnetic fields. Corporate deliverable of the SafeWAVE Project co-funded by the European Climate, Infrastructure and Environment Executive Agency (CINEA), Call for Proposals EMFF-2019-1.2.1.1 -Environmental monitoring of ocean energy devices. DOI: http://dx.doi.org/10.13140/RG.2.2.17415.98722. 27 pp.

[2] SeaSpy2. Marine Magnetics Inc. Accessed October 4, 2024. https://marinemagnetics.com/products/marine-magnetometers/seaspy2/

[3] Grad-13. Bartington Instruments. Accessed October 4, 2024. https://www.bartington.com/products/grad-13/

The first construction campaign, would include the installation of one export cable within Indian River Bay. Consistent with the Dhanek et al methods, following the first construction campaign the transect length across (perpendicular) the cable would be 50 meters (164 feet), spaced 40 meters (131 feet) apart.

The second construction campaign would consist of the installation of three cables. Consistent with the Dhanek et al methods, following the second construction campaign the length of the transects would be approximately 200 meters (656 feet) to cover the extent of all four cables, also spaced 40 meters (131 feet) apart. The target survey depths for both campaigns would be 1 meter (3.3 feet) and 3 meters (9.8 feet) above the bay bottom to examine any change in EMF levels with water depth.

The final lengths for the proposed transects specified above may depend on the equipment and towing method used and would be confirmed to DNREC prior to conducting the EMF monitoring.

US Wind would perform the operational EMF monitoring once the wind turbines are energized and transmitting power to the substations on shore. A technical memorandum would be submitted to DNREC summarizing the results and comparing the results to established guideline levels and with the EMF modeling completed by US Wind.