# Waterfront Development Individual Permit Application

## Raritan Bay Geotechnical Investigation Project

### Raritan Bay, New Jersey

Prepared for:

ATLANTIC SHORES offshore wind

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# 1.0 PROJECT DESCRIPTION

Atlantic Shores Offshore Wind, LLC (Atlantic Shores), a 50/50 joint venture (JV) between EDF-RE Offshore Development, LLC (an indirect wholly owned subsidiary of EDF Renewables, Inc.; referred to herein as "EDF Offshore") and Shell New Energies US LLC ("Shell New Energies"), is proposing to evaluate the substrate at four sampling locations in Raritan Bay in New Jersey State waters off the coast of the Borough of Keyport, Monmouth County, New Jersey (the "Project"). All sampling locations will include a sediment boring and cone penetrometer testing (CPT). New Jersey State Waters are defined as those waters extending out from the shore 3 nautical miles (nm). Sampling is anticipated to start on April 1, 2024, with an estimated completion date of September 30, 2024.

Sediment samples will be collected through vibracoring, which obtains sediments samples by vibrating a core barrel into the sediment (USGS, 2019). Physical samples will be acquired to a target depth of 19.7 ft (6 m), logged, and photographed. The vibration allows the core barrel to descend into the sediment more easily while preserving the profile compared to other methods. This method also reduces the amount of sediment suspension into the water column, thereby reducing impacts to surrounding areas when compared with open rotary drilling or similar methods.

The CPT sounding will be conducted using direct shallow push equipment in accordance with ASTM D5778. Measurements will be obtained by the instrumented equipment. CPT sounding locations will have a maximum 2-inch radius and will be advanced to a target depth of 19.7 ft (6 m).

The four (4) sampling locations utilizing vibracore within Raritan Bay, which will be obtained at a depth of 6 meters, will obtain approximately a total of 6 samples for each sample location. Approximately 24 samples will be obtained in total for the four (4) sampling locations.

## 1.1 Project Purpose

Atlantic Shores has identified the potential export cable approach to a landfall in the Borough of Keyport, Monmouth County, New Jersey. The purpose of this investigation and authorization under a Waterfront Development Individual Permit (N.J.A.C. 7:7-2.4) is to collect specific geotechnical information to inform the necessary engineering assessments that will determine the substrate suitability for trenching, export cable installation, and a horizontal directional drill (HDD) crossing from Raritan Bay to an upland location landward of the beach. The need for an individual waterfront development permit was determined to be required for this project due to the proximity of mapped soft and hard clam habitat.

# 2.0 POTENTIAL IMPACTS

The direct temporary impact area will be limited to the radius and depth of the boreholes and CPT soundings with limited indirect impacts occurring as a result of sediment suspension during boring activities and subsequent settling which is not anticipated to extend a significant distance from the sampling location. It is assumed that the natural sediment movement from tides and wind, and subsequent currents, will quickly fill the boring locations to natural grade.

## 3.0 GENERAL PERMIT 23 – GEOTECHNICAL SURVEY BORING (N.J.A.C. 7:7 6.23) COMPLIANCE STATEMENTS

Although this application is for a Waterfront Development Individual Permit because of the location of mapped shellfish, the applicable policies under subchapter 6, which covers general permits is applicable to the proposed project which includes surveying activities. A demonstration of compliance with these policies is provided in this section.

*"This general permit authorizes geotechnical survey borings including survey borings or excavations constructed for the purpose of obtaining information on subsurface conditions, for the purpose of determining the presence or extent of contamination in subsurface soils or groundwater, and for obtaining seismic information, provided the following conditions are met."*

***N.J.A.C. 7:7-6.23(a)(1)***

*"Borings and related site disturbance shall not be located in shellfish habitat (N.J.A.C. 7:7- 9.2), submerged vegetation habitat (N.J.A.C. 7:7-9.6) or endangered or threatened wildlife or plant species habitats (N.J.A.C. 7:7-9.36)".*

Borings, CPT soundings and related site disturbance will occur within proximity to soft and hard clam habitat mapped in 2000 and 2014, respectively (NJDEP, 2000; NJDEP, 2014). Project activities will be located between two active navigation channels (Raritan Bay West Reach and Keyport Harbor Reach A/B). The area is not likely to contain suitable habitat for shellfish due to the depth of the water column (approximately 7 to 26 feet in depth [NOAA, 2023]), turbidity, and marine vessel traffic. As a result, permanent impacts to shellfish and/or their habitat are not anticipated.

Given preliminary screening, these activities are primarily not anticipated to occur within any endangered/ threatened wildlife or plant species habitat. The United States Fish & Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) was consulted to determine federally endangered/threatened wildlife/plant species or their habitat that could potentially occur within the Project Area.

The USFWS documented three federal listed species within proximity to the Project Area:

- Red knot (*Calidris canutus rufa*)
- Piping plover (*Charadrius melodus*)
- Roseate Tern (*Sterna dougallii dougallii)*

These three species and their associated habitat occur onshore along beachfronts, dunes, and estuarine habitats (i.e., tidal flats); however, the proposed borings and CPT soundings will occur within Raritan Bay, an offshore open water bay with a direct connection to the Atlantic Ocean. Therefore, the proposed sampling will not have any impact on suitable habitat for any of the three species identified in the IPaC.

Additionally, the Marine Landscape Project on the NJDEP GeoWeb Mapper was consulted to determine state endangered/threatened wildlife/plant species or their habitat that could potentially occur within the Project Area.

NJDEP documented four state listed species within proximity to the Project Area:

- Osprey (*Pandion haliaetus*)
- Atlantic loggerhead (*Caretta caretta*)
- Black-crowned Night Heron (*Nycticorax nycrticorax*)
- Least Tern (*Sternula antillarum*)

The three bird species (osprey, black-crowned night-heron, and least tern) and their associated habitat include riparian corridors, wetlands, and estuarine and inland open water; however, the proposed borings and CPT soundings will occur within Raritan Bay, which is not suitable habitat for any of the three bird species.

As for the Atlantic loggerhead, the habitat of this species is widely distributed, ranging from open ocean to inshore areas such as bays, lagoons, salt marshes, creeks, ship channels, and the mouths of large rivers (USFWS, 2023). While proposed project activities would occur within Atlantic loggerhead habitat, activities would not result in direct, adverse impacts to Atlantic loggerhead and/or their associated habitat. As detailed in Section 2.0, the direct temporary impact area will be limited to the radius and depth of the boreholes and CPT soundings with limited indirect impacts occurring as a result of sediment suspension during boring activities and subsequent settling which is not anticipated to extend a significant distance from the sampling location. It is assumed that the natural sediment movement from tides and wind, and subsequent currents, will quickly fill the boring locations to natural grade.

Furthermore, in order to minimize impacts to offshore listed species (i.e., sea turtles), with the main goal of avoidance, Atlantic Shores has developed BMPs such as: training personnel in marine mammal spotting and identification, observation reporting protocols and vessel strike avoidance procedures; establishing marine mammal protection zones which would include an exclusion zone; utilizing National Oceanic and Atmospheric Administration (NOAA) Fisheries-approved protected species observers (PSOs); and using acoustic monitoring during periods of inclement weather and/or low visibility. Therefore, the proposed borings and CPT soundings will not have any impact on suitable habitat for any of the four listed species identified in the Marine Landscape Project.

Atlantic Shores does not anticipate impacts to any federal or state-listed species. As a result, the Project is considered consistent with the applicable policies listed in N.J.A.C. 7:7-6.23(a)(1).

***N.J.A.C. 7:7-6.23(a)(2)***

*"Borings and related site disturbance shall comply with wild and scenic river corridors, (N.J.A.C. 7:7-9.44), wetlands (N.J.A.C. 7:7-9.27), and wetlands buffers (N.J.A.C. 7:7- 9.28)".*

The borings and CPT soundings are proposed to occur in Raritan Bay, which is considered New Jersey State waters and Waters of the United States. Borings and CPT soundings will not occur in wild and scenic river corridors, wetlands, or wetland buffers. Therefore, this policy is not applicable to the Project.

***N.J.A.C. 7:7-6.23(a)(3)***

*"Borings for remedial investigation shall be permitted, constructed, and completed in accordance with the Well Construction and Maintenance; Sealing of Abandoned Well rules, N.J.A.C. 7:9D, and N.J.A.C. 7:26E-1.5(b) and 4 of the Technical Requirements for Site Remediation."*

The proposed borings and CPT soundings are for geotechnical purposes only, not remedial investigations; Therefore, this policy is not applicable to the Project.

***N.J.A.C. 7:7-6.23(a)(4)***

*"Disturbance shall be limited to that which is necessary to access and conduct the geotechnical borings".*

*i. "Disturbance to vegetation shall be limited to a maximum width of five feet for access".*

The sediment boreholes for the Project will be advanced to a maximum of six (6) inches in (outer) diameter and up to 19.7 ft (6 m) deep. The CPT soundings will be advanced to a maximum of one-and-three quarters (1 ¾) in (outer) diameter and up to 19.7 ft (6 m) feet deep. Direct disturbance will be limited to the diameter of the borings and CPT soundings with negligible deposition from the vibracore samples and CPT soundings occurring within a few feet of each sample location. No vegetation will be affected as a result of this investigation since it will occur entirely within Raritan Bay. Therefore, the Project is consistent with this policy.

***N.J.A.C. 7:7-6.23(a)(5)***

*"Borings and related site disturbance shall not be conducted during the following time periods":*

*i. "During the migration of anadromous fish from April 1 thru June 30 (inclusive)";*

The proposed locations of the borings and CPT soundings are in Raritan Bay. Borings and CPT soundings at each location will be temporary and will not cause significant sediment loading in waters within the immediate vicinity of the sampling location. Vibracoring at each of the four respective locations will be temporary and will cause sediment loading in waters within the immediate vicinity of the sampling location; however, the sample itself will be completed in minutes to hours so this sediment loading will be temporary and brief. After the vibracore sample has been collected, any suspended sediment is expected to settle out of the water column quickly. It is not anticipated that this geotechnical investigation will have any impact on the migration of anadromous fish due to the limited nature of Project activities.

ii. *"During the period from March 1 thru June 30 and from October 1 thru November 30 (inclusive), within and adjacent to waters on the Delaware River System from the mouth of bay to Delaware Memorial Bridge and tidal Maurice River, identified as American shad migratory pathways;"*

The proposed location of the borings and CPT soundings are not within or adjacent to waters on the Delaware River System from the mouth of bay to Delaware Bridge and tidal Maurice River; therefore, this timing restriction does not apply.

iii. *"During the period from April 1 thru June 30 and from September 1 thru November 30 (inclusive), within and adjacent to waters on the Delaware River System from the Delaware Memorial Bridge to the New York State line and tidal portions of Rancocas and Raccoon Creeks, identified as American shad migratory pathways"*.

The proposed location of the borings and CPT soundings are not within or adjacent to waters of the Delaware River System from the Delaware Memorial Bridge to the New York State line and tidal portions of Rancocas and Raccoon Creeks; therefore, this timing restriction does not apply.

***N.J.A.C. 7:7-6.23(a)(6)***

*"Bore holes shall be backfilled to the original surface level with appropriate, noncontaminated, soil material"*.

i. *"Sand may not be used for backfilling in either freshwater or coastal wetlands. Restoration of all bore holes must maintain the hydrologic integrity of the wetlands. To avoid the potential for draining a wetland by puncturing a hard-pan or confining layer, all borings must be sealed with grout or bentonite in accordance with the Department's Water Monitoring Management Program rules, N.J.A.C. 7:9-6"*.

This investigation will be conducted in Raritan Bay; however, there will be no back-filing in either freshwater or coastal wetlands nor will there be any impact to the hydrologic integrity of wetlands due to the location within the open water bay. Draining will not occur and it is assumed that the natural sediment movement from tides and currents will quickly fill the boring and CPT sounding locations to existing grade. Therefore, the Project is consistent with this policy.

ii. *"Water used to flush a boring may be discharged to the ground provided the boring is not conducted in proximity to a stream or in an area of hazardous waste or acid producing soils. When the boring is performed in proximity to a stream, and water or drilling fluid is used to remove soil from the hole, the sediment-laden water shall not be allowed to flow overland such that it would enter the stream. Soil erosion and sediment control measures shall be used as necessary to contain/filter excess water. Drilling fluid shall be contained when working adjacent to a fish-populated watercourse during the relevant restricted period, and in any other situation where containment represents the only method of ensuring that there is no impact to adjacent streams"*.

Water will not be used to flush borings, Borings will be collected via vibracore, which obtains sediment samples by vibrating a core barrel into the sediment.

## 4.0 SUBCHAPTER 9 – SPECIAL AREAS (N.J.A.C. 7:7-9.0) COMPLIANCE STATEMENTS

The applicable policies under subchapter 9 (N.J.A.C. 7:7-9.0) and demonstration of compliance are provided in this section. Policies that do not apply to the proposed activities are not listed.

***Shellfish Habitat (N.J.A.C. 7:7-9.2)***

*"Shellfish habitat is defined as an estuarine bay or river bottom which currently supports or has a history of production for hard clams (Mercenaria mercenaria), soft clams (Mya arenaria), eastern oysters (Crassostrea virginica), bay scallops (Argopecten irradians), or blue mussels (Mytilus edulis), or otherwise listed below in this section. A shellfish habitat area is defined as an area which meets one or more of the following criteria:*

*1. The area has a current shellfish density equal to or greater than 0.20 shellfish per square foot;*

*2. The area has a history of natural shellfish production according to data available to the New Jersey Bureau of Shellfisheries, or is depicted as having high or moderate commercial value in the Distribution of Shellfish Resources in Relation to the New Jersey Intracoastal Waterway (U.S. Department of the Interior, 1963) and/or "Inventory of New Jersey's Estuarine Shellfish Resources" (Division of Fish, Game and Wildlife, Bureau of Shellfisheries, 1983-present);*

*3. The area is designated by the State of New Jersey as a shellfish culture area as authorized by N.J.S.A. 50:1 et seq. Shellfish culture areas include estuarine areas presently leased by the State for shellfish aquaculture activities or hard clam relay, transplant and transfer as well as those areas suitable for future shellfish aquaculture development; or*

*4. The area is designated as productive at N.J.A.C. 7:25-24, Leasing of Atlantic and Delaware Bay Bottom for Aquaculture.*

*Additionally, specific areas, such as but not limited to any area determined by the NJDEP to be contaminated by toxins, are excluded from the definition of shellfish habitat areas."*

This policy limits disturbance of shellfish habitat and prohibits specific activities, such as the construction of docks, piers, or boat moorings. This policy generally prohibits new dredging within and adjacent to shellfish habitat. Maintenance dredging under this policy is conditionally allowed provided that the disturbance to shellfish habitat is minimized to the greatest extent possible.

As stated above in Section 3.0 in the response to policy N.J.A.C. 7:7-6.23(a)(1), borings, CPT soundings and related site disturbance will occur within proximity to soft and hard clam habitat mapped in 2000 and 2014, respectively (NJDEP, 2000; NJDEP, 2014). Project activities will be located between two active navigation channels (Raritan Bay West Reach and Keyport Harbor Reach A/B). The area is not likely to contain suitable habitat for shellfish due to the depth of the water column (approximately 7 to 26 feet in depth [NOAA, 2023]), turbidity, and marine vessel traffic. As a result, permanent impacts to shellfish and/or their habitat are not anticipated.

According to N.J.A.C. 7:7-9.2(b), any area determined by the NJDEP to be contaminated by toxins and which is included in the List of Water Quality Limited Segments (known as the "303(d) list") is excluded from the definition of shellfish habitat. The NJDEP's most recent report published in 2022, which is based on EPA data from 2020 (EPA, 2020), includes Raritan Bay west of Thornes Creek (Watershed Management Area 12; HUC02030104910010) on the 303(d) list. Raritan Bay west of Thornes Creek was included in the most recent 303(d) list for exceeding the TMDL for dissolved oxygen and coliform in 2014 (EPA, 2020) and pH in 2020 (EPA, 2020).

Furthermore, as detailed in N.J.A.C. 7:7-9.2(f), maintenance dredging (as defined at N.J.A.C. 7:7-12.6) within shellfish habitat is conditionally acceptable, provided the disturbance to shellfish habitat is minimized to the greatest extent possible. The proposed sediment sampling is not maintenance dredging and will only involve an approximately 6-inch diameter boring and 1 ¾-inch diameter CPT sounding into the sediment at specific locations in Raritan Bay between two existing navigation channels. This method of sampling will minimize the disturbance to potential shellfish habitat to the greatest extent practicable.

Impacts from borings and CPT soundings at each location will be temporary and will not cause significant sediment loading in waters within the immediate vicinity of the sampling location. Vibracoring at each of the four respective locations will be temporary and will cause sediment loading in waters within the immediate vicinity of the sampling location; however, the sample itself will be completed in minutes to hours so this sediment loading will be temporary and brief. After the vibracore sample has been collected, any suspended sediment is expected to settle out of the water column quickly. It is not anticipated that this geotechnical investigation will have any impact on shellfish habitat, regardless of whether the habitat is located in a 303(d) listed waterbody.

Therefore, the Project is consistent with this policy.

***Finfish Migratory Pathways (N.J.A.C. 7:7-9.5)***

*"Finfish migratory pathways are waterways (rivers, streams, creeks, bays and inlets) which can be determined to serve as passageways for diadromous fish to or from seasonal spawning areas, including juvenile anadromous fish which migrate in autumn and those listed by H.E. Zich (1977) "New Jersey Anadromous Fish Inventory" NJDEP Miscellaneous Report No. 41, and including those portions of the Hudson and Delaware Rivers within the coastal zone boundary. Species of concern include: alewife or river herring (Alosa pseudoharengus), blueback herring (Alosa aestivalis), American shad (Alosa sapidissima), striped bass (Morone saxatilis), Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus), Shortnose sturgeon (Acipenser brevirostrum) and American eel (Anguilla rostrata)."*

This policy prohibits development, such as dams, dikes, spillways, channelization, tide gates and intake pipes, which creates a physical barrier to the movement of fish along finfish migratory pathways, unless acceptable mitigation measures such as fish ladders, erosion control, or oxygenation are implemented. This policy also prohibits development which lowers water quality to such an extent as to interfere with the movement of fish along finfish migratory pathways or to violate State and Delaware River Basin Commission water quality standards. This policy requires mitigating measures for any development which would result

in: lowering dissolved oxygen levels, releasing toxic chemicals, raising ambient water temperature, impinging or suffocating fish, entrainment of fish eggs, larvae or juveniles, causing siltation, or raising turbidity levels during migration periods.

While Project activities could be located in finfish migratory pathways, the Project does not include development. There is potential for temporary, short-term impacts at each sampling location within the water column. These impacts will be temporary and will not cause significant sediment loading in waters within the immediate vicinity of the sampling location. Vibracoring at each of the four respective locations will be temporary and will cause sediment loading in waters within the immediate vicinity of the sampling location; however, the sample itself will be completed in minutes to hours so this sediment loading will be temporary and brief. After the vibracore sample has been collected, any suspended sediment is expected to settle out of the water column quickly. and will not cause significant sediment loading in waters within the immediate vicinity of the sampling location. Vibracoring at each of the four respective locations will be temporary and will cause sediment loading in waters within the immediate vicinity of the sampling location; however, the sample itself will be completed in minutes to hours so this sediment loading will be temporary and brief. After the vibracore sample has been collected, any suspended sediment is expected to settle out of the water column quickly. Therefore, the Project is consistent with this possible.

***Navigation Channels (N.J.A.C. 7:7-9.7)***

*"Navigation channels are tidal water areas including the Atlantic Ocean, inlets, bays, rivers and tidal guts with sufficient depth to provide safe navigation. Navigation channels include all areas between the top of the channel slopes on either side. These navigation channels are often marked with buoys or stakes. Major navigation channels are shown on NOAA/National Ocean Service Charts."*

This policy requires development which would result in terrestrial soil and shoreline erosion and siltation in navigation channels to utilize appropriate mitigation measures. This policy prohibits development which would result in the loss of navigability or construction which extends into a navigation channel. Under this policy, the placement of structures within 50 feet of any authorized navigation channel requires demonstration that the proposed structure would not hinder navigation. This policy permits maintenance dredging, as defined in N.J.A.C. 7:7-12.6, of navigation channels to provide safe navigation provided the dredging activity meets the requirements of N.J.A.C. 7:7-12.6 and Appendix G of N.J.A.C. 7:7. New dredging, as defined in N.J.A.C. 7:7-12.7, is conditionally permitted under this policy as long as the activity meets the requirements of N.J.A.C. 7:7-12.7 and Appendix G of N.J.A.C. 7:7.

While the proposed sampling will be located between and proximate to two active navigation channels, the Raritan Bay West Reach and the Keyport Harbor Reach A/B, there are no proposed sampling locations located within navigation channels. Furthermore, sampling activities located in proximity to a navigation channel would not have adverse impacts to navigation due to the short duration and limited spatial extent of the proposed sampling. Therefore, the Project is consistent with this policy.

***Submerged Infrastructure Routes (N.J.A.C. 7:7-9.12)***

*"A submerged infrastructure route is the corridor in which a pipe or cable runs on or below a submerged land surface."*

This policy prohibits any activity which would result in the increased likelihood of infrastructure damage or breakage, or interference with maintenance operations. According to the NOAA Navigation Chart 12331 (Raritan Bay and Southern Part of Arthur Kill; NOAA, 2023), the Project will be in proximity to an existing pipeline area located south of the Raritan Bay West Reach Navigation Channel. Atlantic Shores has sited the proposed sampling locations to avoid any existing submerged infrastructure route. Project activities would not result in infrastructure damage or breakage, or interference with maintenance operations. Therefore, the Project is consistent with this policy.

***Endangered or Threatened Wildlife or Plant Species Habitat (N.J.A.C. 7:7-9.36)***

*"Endangered or threatened wildlife or plant species habitats are terrestrial and aquatic (marine, estuarine, or freshwater) areas known to be inhabited on a seasonal or permanent basis by or to be critical at any stage in the life cycle of any wildlife or plant identified as "endangered" or "threatened" species on official Federal or State lists of endangered or threatened species, or under active consideration for State or Federal listing. The definition of endangered or threatened wildlife or plant species habitats includes a sufficient buffer area to ensure continued survival of the population of the species as well as areas that serve an essential role as corridors for movement of endangered or threatened wildlife. Absence of such a buffer area does not preclude an area from being endangered or threatened wildlife or plant species habitat."*

This policy prohibits the development of endangered or threatened wildlife or plant species (henceforth known as "listed species" for this section) habitat unless it can be demonstrated, through a listed species impact assessment as described at N.J.A.C. 7:7-11, that listed species habitat would not directly or through secondary impacts on the relevant site or in the surrounding area be adversely affected.

As stated in Section 3.0 in the response to N.J.A.C. 7:7-6.23(a)(1), Project activities are primarily not anticipated to occur within any endangered/ threatened wildlife or plant species habitat. The USFWS IPaC was consulted to determine federally endangered/threatened wildlife/plant species or their habitat that could potentially occur within the Project Area.

The USFWS documented three federal listed species within proximity to the Project Area:

- Red knot (*Calidris canutus rufa*)
- Piping plover (*Charadrius melodus*)
- Roseate Tern (*Sterna dougallii dougallii)*

These three species and their associated habitat occur onshore along beachfronts, dunes, and estuarine habitats (i.e., tidal flats); however, the proposed borings and CPT soundings will occur within Raritan Bay, an offshore open water bay with a direct connection to the Atlantic Ocean. Therefore, the proposed sampling will not have any impact on suitable habitat for any of the three species identified in the IPaC.

Additionally, the Marine Landscape Project on the NJDEP GeoWeb Mapper was consulted to determine state endangered/threatened wildlife/plant species or their habitat that could potentially occur within the Project Area.

NJDEP documented four state listed species within proximity to the Project Area:

- Osprey (*Pandion haliaetus*)
- Atlantic loggerhead (*Caretta caretta*)
- Black-crowned Night Heron (*Nycticorax nycrticorax*)
- Least Tern (*Sternula antillarum*)

The three bird species (osprey, black-crowned night-heron, and least tern) and their associated habitat include riparian corridors, wetlands, and estuarine and inland open water; however, the proposed borings and CPT soundings will occur within Raritan Bay, which is not suitable habitat for any of the three bird species.

As for the Atlantic loggerhead, the habitat of this species is widely distributed, ranging from open ocean to inshore areas such as bays, lagoons, salt marshes, creeks, ship channels, and the mouths of large rivers (USFWS, 2023). While proposed project activities would occur within Atlantic loggerhead habitat, activities would not result in direct, adverse impacts to Atlantic loggerhead and/or their associated habitat. As detailed in Section 2.0, the direct temporary impact area will be limited to the radius and depth of the boreholes and CPT soundings with limited indirect impacts occurring as a result of sediment suspension during boring activities and subsequent settling which is not anticipated to extend a significant distance from the sampling location. It is assumed that the natural sediment movement from tides and wind, and subsequent currents, will quickly fill the boring locations to natural grade.

Furthermore, in order to minimize impacts to offshore listed species (i.e., sea turtles), with the main goal of avoidance, Atlantic Shores has developed BMPs such as: training personnel in marine mammal spotting and identification, observation reporting protocols and vessel strike avoidance procedures; establishing marine mammal protection zones which would include an exclusion zone; utilizing NOAA Fisheries-approved PSOs; and using acoustic monitoring during periods of inclement weather and/or low visibility. The proposed borings and CPT soundings are not anticipated to result in permanent, adverse impacts on suitable habitat for any of the ten listed species identified in the Marine Landscape Project. Therefore, the Project is consistent with this policy.

## 5.0 SOURCES


ASTM D1586-11. Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils.

ASTM D1587-00. Standard Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes.

ASTM D3550/D3550M-17. Standard Practice for Thick Wall, Ring-Lined,plit Barrel, Drive Sampling of Soils.

ASTM D5778. Standard Test Method for Electronic Friction Cone and Piezocone Penetration Testing of Soils.

EPA. 2020. New Jersey 303(d) List. https://www.epa.gov/system/files/documents/2022-01/nj-2020-303d-list.pdf. (Accessed November 2023).

NOAA. 2023. Raritan Bay and Southern Part of Arthur Kill. https://www.charts.noaa.gov/OnLineViewer/12331.shtml (Accessed November 2023).

NJDEP. 2000. Shellfish Inventory: Raritan and Sandy Hook Bay Distribution of Surf Clams, Spisula solidissima, and soft clams, Mya arenaria (Shellfish Map Number 010). https://dep.nj.gov/wp-content/uploads/wlm/downloads/maps/shellfish/map_010.pdf (Accessed November 2023).

NJDEP. 2014. Hard Clam Abundance, 2014 Raritan and Sandy Hook Bays (Shellfish Map Number 065). https://dep.nj.gov/wp-content/uploads/wlm/downloads/maps/shellfish/map_065.pdf (Accessed November 2023)

USGS. 2019. Sediment Sample Surveys: Vibracoring. Available: https://pubs.usgs.gov/pp/p1634/jf_vbcor.htm (Accessed March 2020).

USFWS. 2023. Loggerhead Overview. https://www.fws.gov/species/loggerhead-caretta-caretta (Accessed November 2023).

# APPENDIX A

Figures and Site Plan

# APPENDIX B

Public Notice Form

# APPENDIX C

Proof of Public Notification

# APPENDIX D

Property Owner Certification Form

# APPENDIX E

Natural Heritage Program Request Letter