Waterfront Development Individual Permit Application

Atlantic Export Cable Corridor and Cardiff Back Bay

Geotechnical Investigation Project

Atlantic City, Atlantic County, New Jersey, and New Jersey State Waters

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 seven (7) sampling locations within the Atlantic Export Cable Corridor (ECC) and five (5) sampling locations within the Geotech Area (see Figure 1), which are located in the Atlantic Ocean in New Jersey State waters off the coast of Atlantic City, Atlantic County, New Jersey. Additionally, Atlantic Shores is proposing to evaluate the substrate at three (3) sampling locations in the back bay waters of Great Thorofare in Atlantic City, Atlantic County, New Jersey. There will be a total of fifteen (15) sampling locations across the three areas (the "Project" or "Project Area"). 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.

The seven (7) sediment samples within the Atlantic ECC will be collected through vibracoring, which obtains sediment 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 seven (7) Atlantic ECC sediment samples will include a co-located CPT sounding. The CPT soundings for the sampling locations within the Atlantic ECC will be conducted using direct shallow push equipment in accordance with ASTM D5778. Measurements will be obtained by the instrumented equipment. CPT sounding locations have a maximum 2-inch radius and will be advanced to a target depth of 19.7 ft (6 m) from the seabed.

Additionally, boreholes for the five (5) sampling locations within the Geotech Area and three (3) sampling locations within Great Thorofare will be drilled vertically using a combination of hollow stem auger and mud rotary sediment drilling techniques and will be conducted from a 20 x 45-foot barge, which will be pushed into location by a boat with GPS on board to accurately identify the correct boring location. The barge will be anchored in place by two spuds, which are approximately 24-inch in diameter and 38-feet in length and will be lowered approximately 2 to 4 feet into the mudline. The barge will remain in place until the boring and sampling have been completed and will then be advanced to the next sampling location. The use of spuds will allow the barge to move vertically with the tides. Each spud will be marked to track the vertical movement of the barge during sampling activities. The geotechnical rig will be track- or skid-mounted and utilized from the barge. In order to stabilize the boreholes, it is estimated that approximately 10 to 15 feet of hollow stem with a maximum 6-inch diameter and matching roller bit will be drilled first to provide surface casing. Casings will be advanced from the rig on the barge into the mudline. Borehole advancement below the hollow stem augers will utilize mud-rotary methods, with a borehole diameter of approximately 6-inches. Sediment sampling will be performed at 5-foot intervals using a combination of split-barrel Standard Penetration Test (SPT) sampling (ASTM D1586), 3-inch diameter thin-wall tube sampling (ASTM D1587) and split-barrel samples with 2.5-inch liners (ASTM D3550). The approximate maximum target depth of each of the eight (8) sediment borings is 150-feet.

The seven (7) sampling locations utilizing vibracore within the Atlantic ECC, which will be obtained at a depth of 6 meters, will obtain approximately a total of 6 samples for each sample location for an approximate total of 42 samples. The eight (8) sediment sampling (boring) locations utilizing the hollow stem auger and mud rotary sediment drilling techniques within the Geotech Area and Great Thorofare, which will be drilled to a depth of 150 feet, will obtain approximately 30 sediment samples per each boring location for an approximate total of 240 samples. Approximately 282 samples will be obtained in total from the fifteen (15) sampling locations.

1.1 Project Purpose

Atlantic Shores has identified the potential export cable approach to a landfall via horizontal directional drill (HDD) in Atlantic City, Monmouth Atlantic, New Jersey. Additionally, Atlantic Shores has identified an additional HDD crossing of the back bay waters, specifically Great Thorofare, in Atlantic City, Atlantic 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, an HDD crossing from the Atlantic Ocean to an upland location landward of the beach for the landfall, and an HDD crossing of the back bay waters of Great Thorofare. The need for an individual waterfront development permit was determined to be required for this project due to the proximity of mapped hard clam habitat and mapped submerged aquatic vegetation (SAV) habitat.

2.0 POTENTIAL IMPACTS

The direct temporary impact area will be limited to the radius and depth of the boreholes, vibracores, CPT soundings, and the barge anchoring spuds (where applicable) 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 and mapped SAV habitat, 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 and related site disturbance from barge anchoring spuds will occur within proximity to hard clam habitat mapped in 1963 by the United States Department of Interior (USDOI) (Map Number 001 [USDOI, 1963]) and SAV habitat mapped in 1979 by the New Jersey Department of Environmental Protection (NJDEP) (Map Number 030 [NJDEP, 1979]) within Great Thorofare. Sampling will be located within the existing navigation channel of Great Thorofare which is not likely suitable habitat for shellfish or SAV due to the depth of the water column, turbidity, and marine vessel traffic. Furthermore, Great Thorofare is periodically dredged for channel maintenance, which reduces the ability of shellfish and/or SAV to colonize the existing navigation channel. Sampling within the Atlantic Ocean is in an area that has not been identified by the NJDEP as shellfish habitat or SAV habitat. The Atlantic Ocean is not suitable habitat for shellfish or SAV due to natural nearshore processes such as wave action, littoral drift, and currents. As a result, permanent impacts to shellfish or SAV 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 four federal listed species within proximity to the Project Area:

- Red knot (*Calidris canutus rufa*)
- Piping plover (*Charadrius melodus*)
- Roseate Tern (*Sterna dougallii dougallii)*
- Northern long-eared bat (*Myotis septentrionalis*)

The three bird species (Red knot, Piping plover, and Roseate tern) and their associated habitat occur onshore along beachfronts, dunes, and estuarine habitats (i.e., tidal flats); however, the sampling will occur within the Atlantic Ocean and Great Thorofare, a tidal waterway with connections to Great Egg Harbor Inlet and eventually the Atlantic Ocean. Spring, Summer, and Fall habitat for the Northern long-eared bat habitat consists of forested areas with a dense growth of trees and underbrush covering a large tract, which does not occur within the Project Area. Winter habitat consists of caves and mines for hibernating, which do not occur within the Project Area. Therefore, the proposed sampling will not have any impact on suitable habitat for any of the four species identified in the IPaC.

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

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

- Fin whale (*Balaenoptera physalus*)
- Humpback whale (*Megaptera novaeangliae*)
- North Atlantic right whale (*Eubalaena glacialis*)
- Atlantic leatherback (*Dermochelys coriacea*)
- Atlantic loggerhead (*Caretta caretta*)
- Black skimmer (*Rynchops niger*)
- Osprey (*Pandion haliaetus*)
- Black-crowned night heron (*Nycticorax nycrticorax*)
- Yellow-crowned night heron (*Nyctanassa violacea*)
- Least Tern (*Sternula antillarum*)

The five bird species (Black skimmer, Osprey, Black-crowned night-heron, Yellow-crowned night heron, and least tern) and their associated habitat include riparian corridors, wetlands, and estuarine and inland open water; however, the proposed sampling will occur within the Atlantic Ocean and within the existing navigation channel of Great Thorofare, which is not suitable breeding habitat for any of the five bird species. Great Thorofare could be potentially suitable foraging habitat for any of the five bird species. However, the proposed sampling would be short-term (minutes to hours) and would not result in permanent adverse impacts to the foraging habitat of Great Thorofare.

As for the three marine mammals (Fin whale, Humpback whale, and North Atlantic right whale), the habitat of these species consists of offshore waters along the continental shelf and deep water. The habitat of the two marine reptiles (Atlantic loggerhead, Atlantic leatherback) 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 habitat for all of the above listed marine mammals and marine reptiles, activities would not result in direct, adverse impacts to these species 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, vibracores, CPT soundings, and barge anchoring spuds (where applicable) 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, 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 sampling activities will not have any impact on suitable habitat for any of the ten 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 sampling is proposed to occur within the Atlantic Ocean and Great Thorofare, which are considered New Jersey State waters and Waters of the United States. Sampling 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 sampling is 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 vibracores 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 two (2) in (outer) diameter and up to 19.7 ft (6 m) feet deep. Boreholes will be advanced to a maximum of six (6) inches in (outer) diameter and up to 150 feet deep. Direct disturbance will be limited to the diameter of the borings, vibracores, CPT soundings, and barge anchoring spuds (where applicable) with negligible deposition from the vibracores, CPT soundings, and borings occurring within a few feet of each sample location. No onshore vegetation will be affected as a result of this investigation since it will occur entirely within the Atlantic Ocean and Great Thorofare. Additionally, impact to SAV is not anticipated due to the minor footprint of the proposed activities and limited, if any, SAV habitat located within Great Thorofare because of the water column depth of the existing navigation channel (NOAA, 2022). 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 sampling is within the Atlantic Ocean and Great Thorofare. Sampling at each location will be temporary and will not cause significant sediment loading in waters within the immediate vicinity of the sampling location. Sampling at each of the 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 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 samples 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 samples 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 within the Atlantic Ocean and Great Thorofare; 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 ocean and tidal waterway within and proximate to the existing navigation channel. Draining will not occur and it is assumed that the natural sediment movement from tides and currents will quickly fill the sampling 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 within the Atlantic ECC, which will be collected via vibracore. Vibracoring obtains sediment samples by vibrating a core barrel into the sediment.

For the borings within the Geotech Area and Great Thorofare, drilling fluid will consist of fresh water and a sodium bentonite viscosifier such as Baroid Quick-Gel® and Baroid Quick-Trol®. Tremie grout will be utilized to seal the borings from the bottom of the boring. A mud tub will be located on the barge deck to recirculate the drilling fluid. Excess mud and fluids will be placed in drums for off-site disposal, none will be discharged to the waters of Great Thorofare.

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 and related site disturbance from the barge anchoring spuds will occur within proximity to hard clam habitat mapped in 1963 (USDOI, 1963) within Great Thorofare. Sampling will be located within the existing navigation channel of Great Thorofare which is not likely suitable habitat for shellfish due to the depth of the water column, turbidity, and marine vessel traffic. Sampling within the Atlantic Ocean is in an area that has not been identified by the NJDEP as shellfish habitat. The Atlantic Ocean is not suitable habitat for shellfish due to natural nearshore processes such as wave action, littoral drift, and currents. 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 the entirety of Lakes Bay (Watershed Management Area 15; HUC02040302060) on the 303(d) list. Lakes Bay includes Great Thorofare and Inside Thorofare according to the NJDEP GeoWeb GIS Viewer (NJDEP, 2023). These waterways are included in the Total Maximum Daily Load (TMDL) shellfish groups of Lakes Bay-B and Lakes Bay-C (NJDEP, 2023). Lakes Bay was included in the most recent 303(d) list for exceeding the TMDL for dissolved oxygen and coliform in 2006 (NJDEP, 2006; EPA, 2020) and turbidity in 2018 (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, an approximately 6-inch diameter vibracore, and 2-inch diameter CPT sounding into the sediment at specific locations within the Atlantic Ocean and Great Thorofare, an existing navigation channel. This method of sampling will minimize the disturbance to potential shellfish habitat to the greatest extent practicable.

Impacts from borings, vibracores, CPT soundings, and barge anchoring spuds (where applicable) at each location will be temporary and will not cause significant sediment loading in waters within the immediate vicinity of the sampling location. Sampling at each respective location 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 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.

Surf Clam Areas (N.J.A.C. 7:7-9.3)

"Surf clams areas are coastal waters which can be demonstrated to support significant commercially harvestable quantities of surf clams (Spisula solidissima), or areas important for recruitment of surf clam stocks. This includes areas where fishing is prohibited for research sanctuary or conservation purposes by N.J.A.C. 7:25-12.1(d)(4). Surf clams are a marine fish and therefore are also subject to marine fish and fisheries rules, N.J.A.C. 7:7-16.2.

This policy prohibits development which would result in the destruction, condemnation, or contamination of surf clam areas, except for development that is of national interest and/or sand and gravel mining to obtain material for beach nourishment.

While Project activities could be located in surf clam areas within the Atlantic Ocean, 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 seven 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 seven 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 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 or proximate to 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. Sampling at each respective location 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 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. Therefore, the Project is consistent with this policy.

Submerged Vegetation Habitat (N.J.A.C. 7:7-9.6)

"A submerged vegetation habitat special area consists of water areas supporting or documented as previously supporting rooted, submerged vascular plants such as widgeon grass (Ruppia maritima), sago pondweed (Potamogeton pectinatus), horned pondweed (Zannichellia palustris), and eelgrass (Zostera marina). In New Jersey, submerged vegetation is most prevalent in the shallow portions of the Navesink, Shrewsbury, Manasquan, and Metedeconk Rivers, and in Barnegat, Manahawkin, and Little Egg Harbor Bays. Other submerged vegetation species in lesser quantities include, but are not limited to, the following: water weed (Elodea nuttalli), Eriocaulon parkeri, Liaeopsis chinesis, Naja flexilis, Nuphar variegatum, Potamogeton crispus, Potamogeton epihydrus, Potamogeton perfoliatus, Potamogeton pusillus, Scirpus subterminalis, and Vallisneria americana."

This policy prohibits or restricts development in habitat that supports submerged vegetation. As described in Section 3.0 in the response to N.J.A.C. 7:7-6.23(a)(1), borings and related site disturbance will occur within proximity to SAV habitat mapped in 1979 by the New Jersey Department of Environmental Protection (NJDEP) (Map Number 030 [NJDEP, 1979]) within Great Thorofare. Sampling will be located within the existing navigation channel of Great Thorofare which is not likely suitable habitat for SAV due to the depth of the water column, turbidity, and marine vessel traffic. Furthermore, Great Thorofare is periodically

dredged for channel maintenance, which reduces the ability of shellfish and/or SAV to colonize the existing navigation channel. Sampling within the Atlantic Ocean is in an area that has not been identified by the NJDEP as SAV habitat. The Atlantic Ocean is not suitable habitat for SAV due to natural nearshore processes such as wave action, littoral drift, and currents. As a result, permanent impacts to SAV and/or their habitat are not anticipated. Therefore, the Project is consistent with this policy.

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 proposed sampling will be located within the Atlantic Ocean and Great Thorofare, an existing navigation channel, Atlantic Shores does not anticipate permanent impacts to navigation channels or the Atlantic Ocean that would alter the ability to maintain navigation, such as a change in channel width or depth, that would occur as a result of the proposed sampling. Sampling activities located within navigation channels would not have adverse impacts to navigation due to the short duration and limited spatial extent of the proposed sampling. There may be a need for temporary restrictions on vessel navigation through navigation channels and in the Atlantic Ocean in proximity to the Project during construction activities for the purpose of protecting the health and safety of the construction workers and the general public. 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 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 four federal listed species within proximity to the Project Area:

- Red knot (*Calidris canutus rufa*)
- Piping plover (*Charadrius melodus*)
- Roseate Tern (*Sterna dougallii dougallii)*
- Northern long-eared bat (*Myotis septentrionalis*)

The three bird species (Red knot, Piping plover, and Roseate tern) and their associated habitat occur onshore along beachfronts, dunes, and estuarine habitats (i.e., tidal flats); however, the proposed sampling will occur within the Atlantic Ocean and Great Thorofare, a tidal waterway with connections to Great Egg Harbor Inlet and eventually the Atlantic Ocean. Spring, Summer, and Fall habitat for the Northern long-eared bat habitat consists of forested areas with a dense growth of trees and underbrush covering a large tract, which does not occur within the Project Area. Winter habitat consists of caves and mines for hibernating, which do not occur within the Project Area. Therefore, the proposed sampling will not have any impact on suitable habitat for any of the four species identified in the IPaC.

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

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

- Fin whale (*Balaenoptera physalus*)
- Humpback whale (*Megaptera novaeangliae*)
- North Atlantic right whale (*Eubalaena glacialis*)
- Atlantic leatherback (*Dermochelys coriacea*)
- Atlantic loggerhead (*Caretta caretta*)
- Black skimmer (*Rynchops niger*)

- Osprey (*Pandion haliaetus*)
- Black-crowned night heron (*Nycticorax nycrticorax*)
- Yellow-crowned night heron (*Nyctanassa violacea*)
- Least Tern (*Sternula antillarum*)

The five bird species (Black skimmer, Osprey, Black-crowned night-heron, Yellow-crowned night heron, and least tern) and their associated habitat include riparian corridors, wetlands, and estuarine and inland open water; however, the proposed sampling will occur within the Atlantic Ocean and within the existing navigation channel of Great Thorofare, which is not suitable breeding habitat for any of the five bird species. Great Thorofare could be potentially suitable foraging habitat for any of the five bird species. However, the proposed sampling would be short-term (minutes to hours) and would not result in permanent adverse impacts to the foraging habitat of Great Thorofare.

As for the three marine mammals (Fin whale, Humpback whale, and North Atlantic right whale), the habitat of these species consists of offshore waters along the continental shelf and deep water. The habitat of the two marine reptiles (Atlantic loggerhead, Atlantic leatherback) 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 habitat for all of the above listed marine mammals and marine reptiles, activities would not result in direct, adverse impacts to these species 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, vibracores, CPT soundings, and barge anchoring spuds (where applicable) with limited indirect impacts occurring as a result of sediment suspension during sampling 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, 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. The proposed sampling activities 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.

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NOAA 2022. Nautical Chart #12316 Intracoastal Waterway. New Jersey, Little Egg Harbor to Cape Map. Available: https://www.charts.noaa.gov/PDFs/12316.pdf (Accessed November 2023).

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APPENDIX A

Figures and Site Plan

USGS Project Location Map

2024 Geotechnical Survey Area – Atlantic ECC & Cardiff Back Bay Geotechnical Investigation Area

Atlantic City, Atlantic County, New Jersey, and New Jersey State Waters

Waterfront Development Individual Permit

Geotechnical Sampling Location
Geotech Area
Federal Waters Boundary

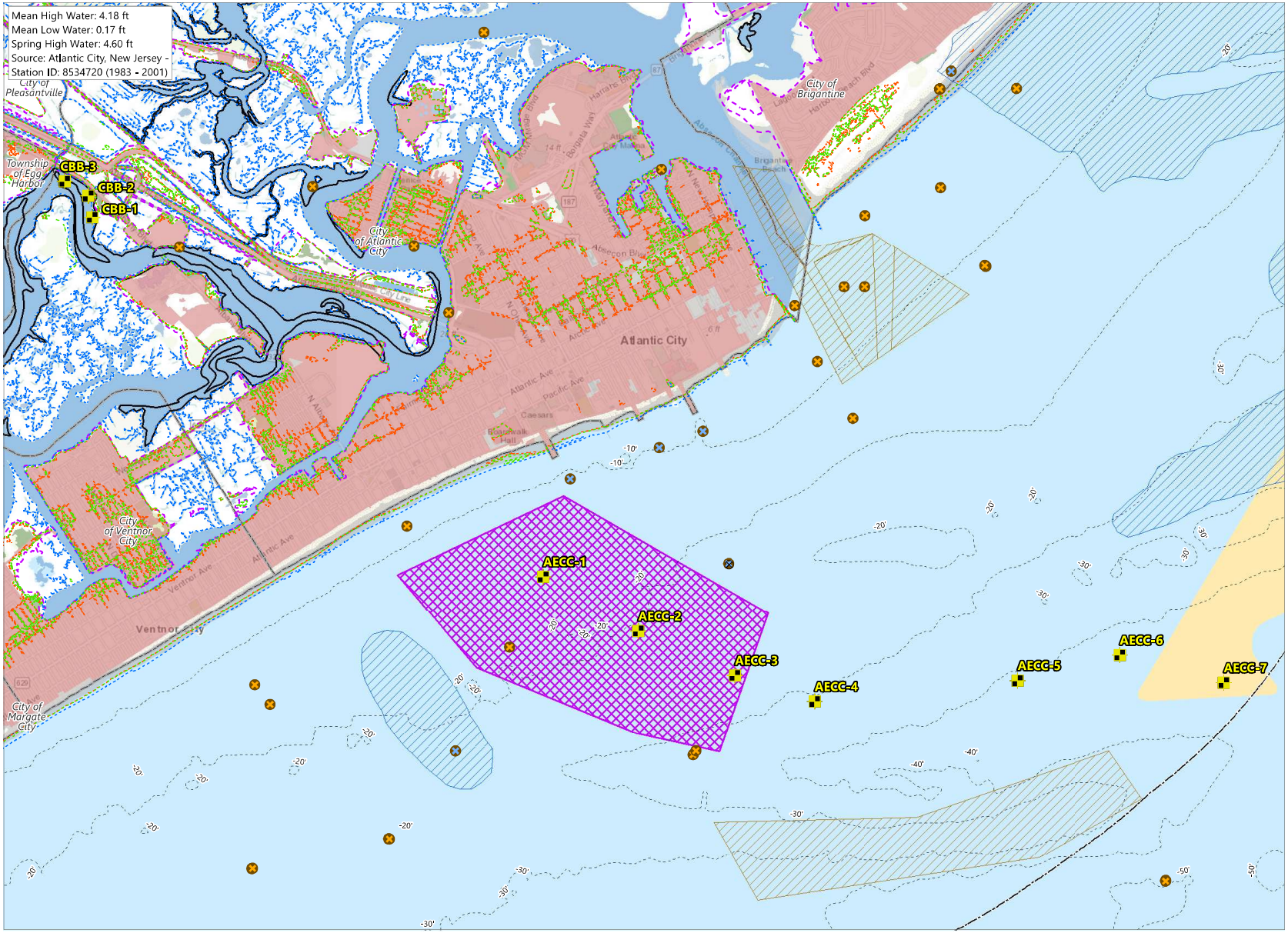
0 1,000 2,000 4,000
Feet

Prepared January 15, 2024
Basemap: Esri ArcGIS Online "USA Topo Maps" map service.

ATLANTIC SHORES offshore wind

EDR

Site Plan



2024 Geotechnical Survey Area – Atlantic ECC & Cardiff Back Bay Geotechnical Investigation Area

Atlantic City, Atlantic County, New Jersey, and New Jersey State Waters

Waterfront Development Individual Permit

- Geotechnical Sampling Location
- Unexploded Ordinance Location
- Obstruction
- Wreck
- Mean High Water Contour
- Mean Low Water Contour
- Spring High Water Contour
- NJDEP Upper Wetlands Boundary
- Bathymetric Contour (ft)
- Federal Waters Boundary
- Geotech Area
- Submerged Aquatic Vegetation (1979)
- NJDEP Sand Borrow Area
- Prime Fishing Area
- NJGWS Sand Resource Area
- Municipal Boundary

Land Cover

- Barren Land
- Forest
- Urban
- Water

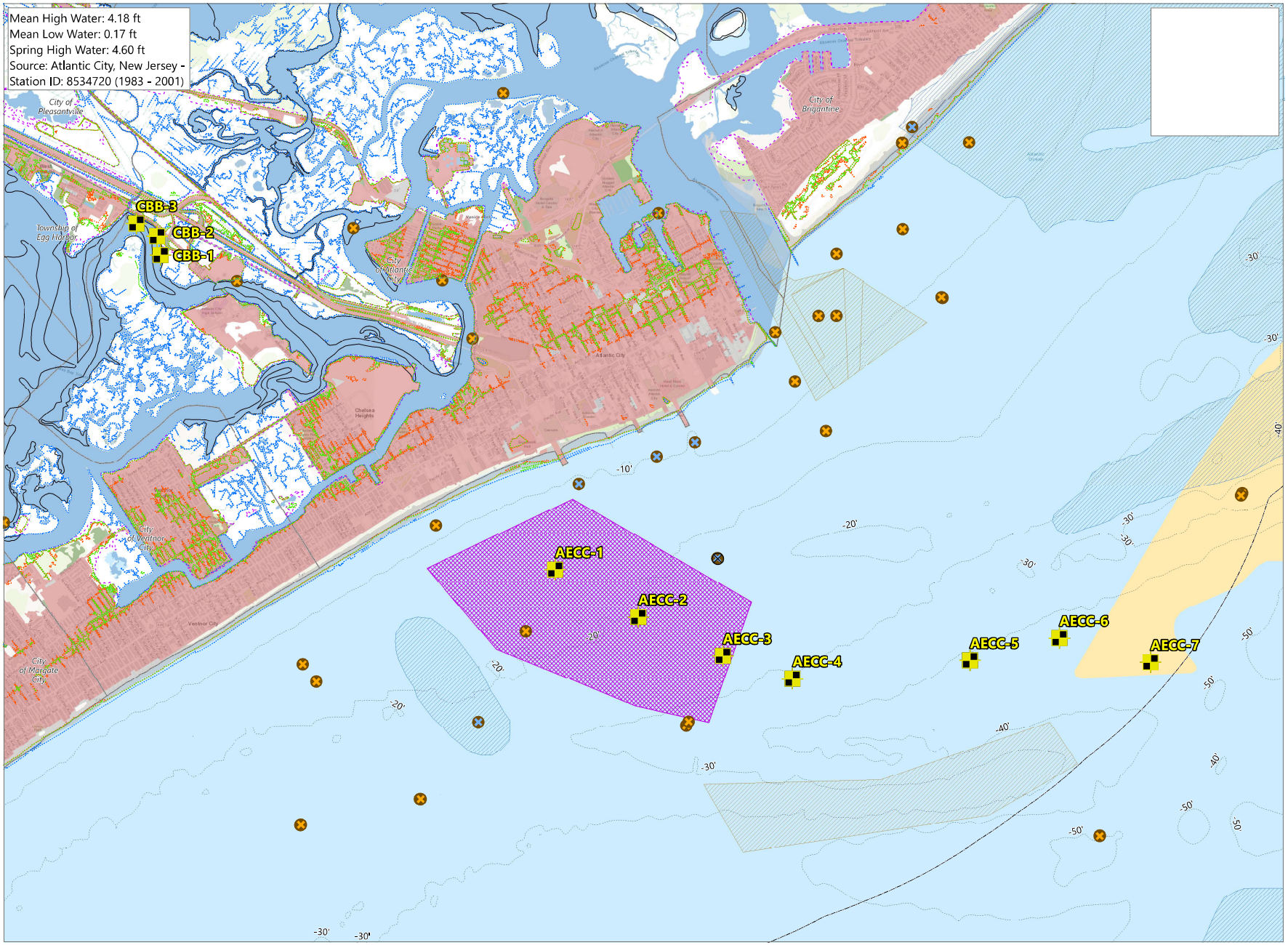
Prepared January 15, 2024

Basemap: Esri ArcGIS Online "World Topographic Map" map service. This historic maps of both the Submerged Aquatic Vegetation Distribution – Atlantic City (1979) and Distribution of Shellfish Resources - Little Egg Harbor to Longport (1963) have been georeferenced and digitized to produce the Submerged Aquatic Vegetation and Hard Clam Areas. These not intended to depict survey-accurate information.

ATLANTIC SHORES offshore wind

EDR

Site Plan



2024 Geotechnical Survey Area – Atlantic ECC & Cardiff Back Bay Geotechnical Investigation Area

Atlantic City, Atlantic County, New Jersey, and New Jersey State Waters

Waterfront Development Individual Permit

- Geotechnical Boring (Legend)
- Unexploded Ordinance Location
- Obstruction
- Wreck
- Mean High Water Contour
- Mean Low Water Contour
- Spring High Water Contour
- NJDEP Upper Wetlands Boundary
- Bathymetric Contour (ft)
- Federal Waters Boundary
- Geotech Area
- Submerged Aquatic Vegetation (1979)
- NJDEP Sand Borrow Area
- Prime Fishing Area
- NJGWS Sand Resource Area
- Municipal Boundary

Land Cover

- Barren Land
- Forest
- Urban
- Water

0 1,000 2,000 4,000 Feet

1 inch = 7,500 feet

STATE OF NEW JERSEY
CHUL WOO KIM
No. GE56887
LICENSED
PROFESSIONAL ENGINEER

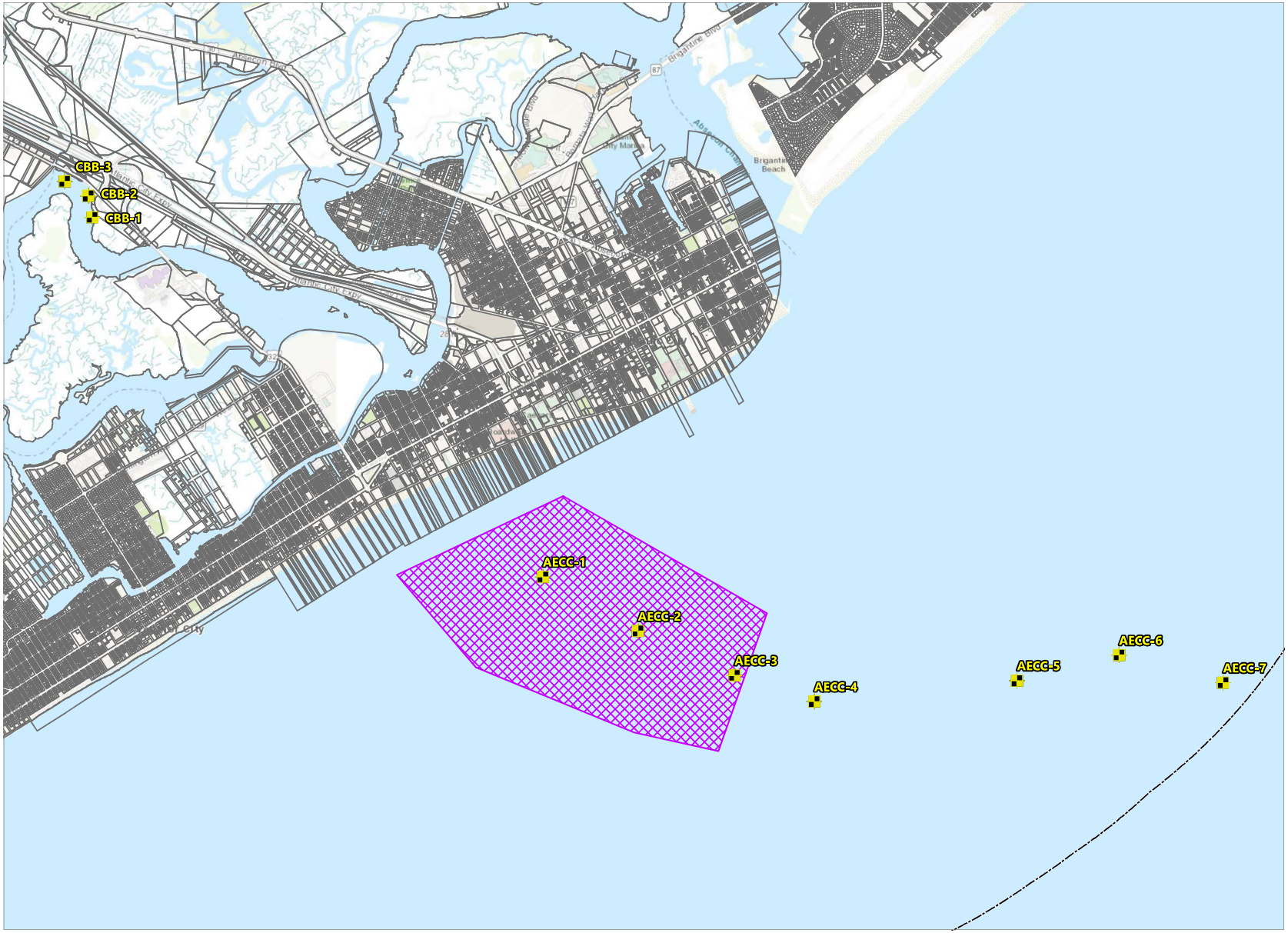
Chul Woo Kim
Professional Engineer
Atlantic Shores Offshore Wind
1 Dock 72, Floor 7, Brooklyn, New York

Version	Date
Version 1	1/5/2024

Prepared: January 15, 2024
Basemap: Esri ArcGIS Online "World Topographic Map" map service.

EDR

Tax Parcel Map



2024 Geotechnical Survey Area – Atlantic ECC & Cardiff Back Bay Geotechnical Investigation Area

Atlantic City, Atlantic County, New Jersey, and New Jersey State Waters

Waterfront Development Individual Permit

- Geotechnical Sampling Location
- Federal Waters Boundary
- Geotech Area
- Tax Parcel Boundary

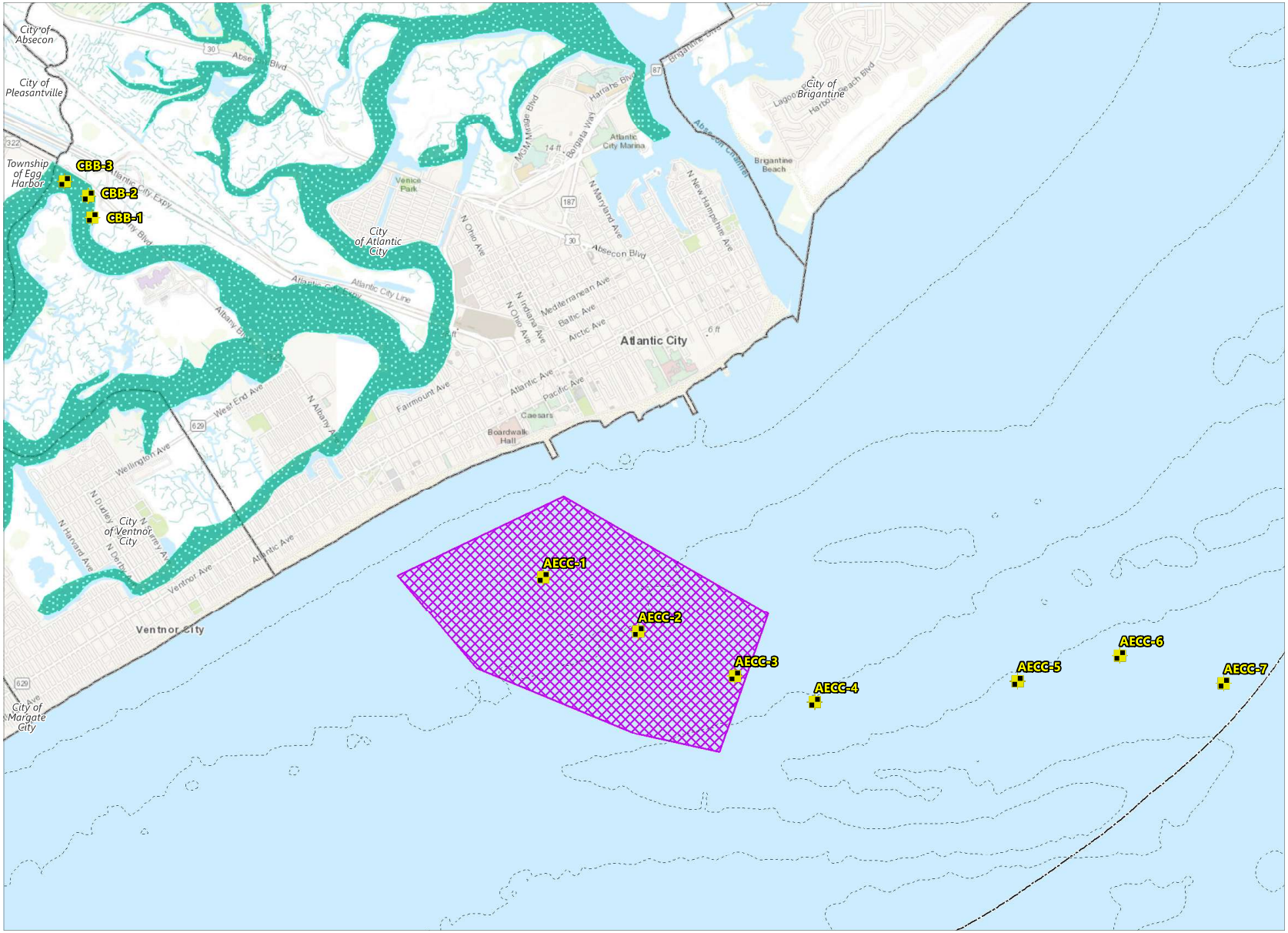
0 1,000 2,000 4,000
Feet

Prepared January 15, 2024
Basemap: Esri ArcGIS Online "World Topographic Map" map service.

ATLANTIC SHORES offshore wind

EDR

Shellfish



2024 Geotechnical Survey Area – Atlantic ECC & Cardiff Back Bay Geotechnical Investigation Area

Atlantic City, Atlantic County, New Jersey, and New Jersey State Waters

Waterfront Development Individual Permit

- Geotechnical Sampling Location
- Bathymetric Contour (ft)
- Federal Waters Boundary
- Geotech Area
- Hard Clam – High Value Commercial (1963)
- Municipal Boundary

0 1,000 2,000 4,000

Feet

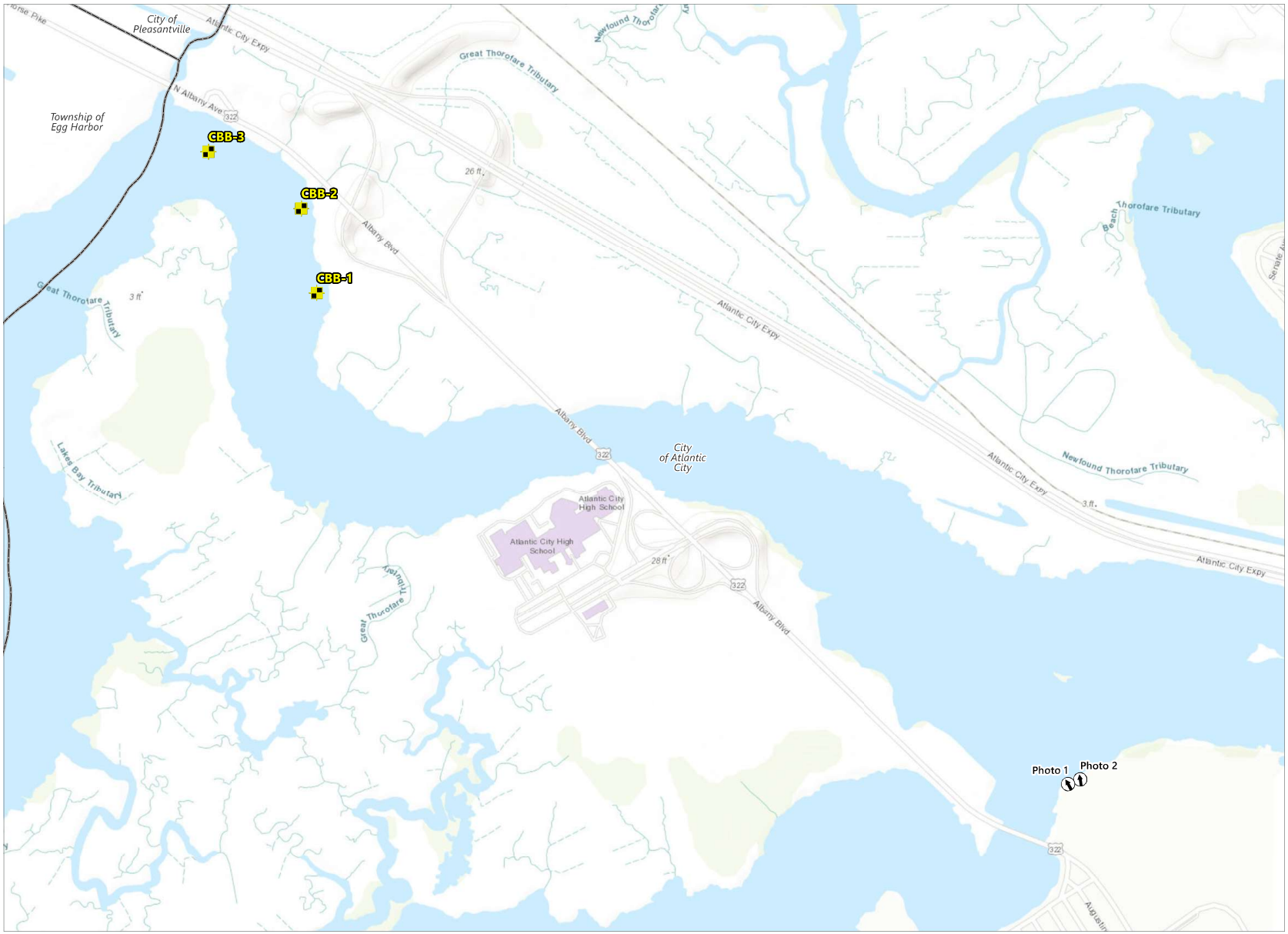
Prepared January 15, 2024

Basemap: Esri ArcGIS Online "World Topographic Map" map service. The historic map entitled *Distribution of Shellfish Resources - Little Egg Harbor to Longport (1963)* was georeferenced and digitized to produce the Hard Clam Area. These are not intended to depict survey-accurate information.

ATLANTIC SHORES offshore wind

EDR

Photograph Location



2024 Geotechnical Survey Area – Atlantic ECC & Cardiff Back Bay Geotechnical Investigation Area

Atlantic City, Atlantic County, New Jersey, and New Jersey State Waters

Waterfront Development Individual Permit

Geotechnical Sampling Location

Photograph Location

0 250 500 1,000

Feet

Prepared January 15, 2024

Basemap: Esri ArcGIS Online "World Topographic Map" map service.

ATLANTIC SHORES offshore wind

EDR