Ocean Wind
An Ørsted & PSEG project

Ocean Wind Offshore Wind Farm

Green Acres Diversion Application

Section 3

Environmental Assessment Report

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3. Environmental Assessment Report

3.1 Description of the Proposed Action

Ocean Wind, LLC (Ocean Wind 1), a joint venture between Ørsted Wind Power North America LLC (Ørsted) and Public Service Enterprise Group Renewable Generation LLC (PSEG), proposes to construct and operate the Ocean Wind 1 Offshore Wind Farm (Project). The purpose of the Project is to develop an offshore wind generation project within the Bureau of Ocean Energy Management (BOEM) Lease Area OCS-A 0498 and connected to the grid, that meets the need to deliver competitively priced renewable energy and additional capacity to meet State and regional renewable energy demands and goals. Once complete, the Project will fulfill the requirements of the State's Offshore Wind Economic Development Act, which mandates the development of a minimum of 1,100 megawatts (MW) of offshore wind resources. The Project will also contribute to meeting the goals of both Executive Order 8 (2018), which set a goal of 3,500 MW of renewable energy by 2030, and Executive Order 92, which in November 2019 increased the goal to 7,500 MW by 2035.

The Project includes up to 98 wind turbine generators (WTGs), up to three offshore alternating current (AC) substations, array cables linking the individual turbines to the offshore substations, substation interconnector cables linking the substations to each other, offshore export cables, an onshore export cable system[1], two onshore substations, and connections to the existing electrical grid in New Jersey (underground cables or overhead transmission lines would be required to connect each onshore substation to the existing grid). The WTGs and offshore substations, array cables, and substation interconnector cables will be located in Federal waters approximately 13 nautical miles (nm, 15 statute miles) southeast of Atlantic City. The offshore export cables will be buried below the seabed surface within Federal and State waters. The onshore export cables, substations, and grid connections will be located in Ocean and Cape May Counties, New Jersey.

The information presented herein discusses that portion of the Project, which is the landfall and onshore export cable route for the BL England interconnection, located in Ocean City, Cape May County, New Jersey. This application is specific to the activities affecting Green Acres encumbered parcels at the beach and in nearshore waters at the 35th Street landfall location and along Roosevelt Boulevard Bridge in Ocean City.

The proposed export cables will cross Green Acres encumbered parcels on route to the BL England substation. At the 35th Street landfall in Ocean City, two parcels owned by Ocean City and a riparian grant area will be crossed (**Figure 1.2-1** in Section 1). An additional parcel owned by Ocean City will be crossed along the BL England export cable route along the north side of Roosevelt Boulevard east of the Roosevelt Boulevard bridge (**Figure 1.2-2** in Section 1). The proposed Project is scheduled for construction beginning in 2023, with first power in 2024.

Please refer to Section 1 (Detailed Description of Proposed Major Diversion for the BL England Point of Interconnection) of this application package for further details of the Proposed Action and the lands affected, along with the purpose and need for the Project.

Ocean Wind has prepared this Green Acres Environmental Assessment for the BL England export cable route in Ocean City, Cape May County and it is being submitted pursuant to the requirements of the Green Acres regulations at N.J.A.C 7:36-26.9(d)(3) and 26.11.

The Project would be installed under the Green Acres encumbered parcels using horizontal directional drilling (HDD) technology. HDD entry/exit pits would be located outside of the Green Acres parcels; within 35th Street and in the Atlantic Ocean for landfall, and within the Roosevelt Boulevard ramp on the east side of Peck Bay and

[1] The onshore export cable system will include the onshore export cable, transition joint bays, onshore splice vaults/grounding link boxes and fiber optic system, including manholes.

in a marina parking lot on the west side of Peck Bay. The export cables would be installed under the Green Acres encumbered parcels by drilling below the seabed, land surface and under Peck Bay between the HDD entry/exit pits, avoiding disturbance of the surface at the Green Acres parcels.

3.2 Description of the Environment

3.2.1 Land

This section discusses the geology, soils, and land use of the Green Acres encumbered parcels and a riparian grant area along the BL England export cable route. At the landfall in Ocean City, three Green Acres encumbered parcels owned by Ocean City (Block 611.11, Lots 137 and 145, Block 3500, Lot 1, including a riparian grant area in the Atlantic Ocean) Block 611.11/Lot 137, including beach between Block 611.11/Lot 137 and the water) and a riparian grant area in the Atlantic Ocean will be crossed. An additional Green Acres encumbered parcel owned by Ocean City (Block 3350.01, Lot 17) will be crossed along the north side of Roosevelt Boulevard east of the Roosevelt Boulevard bridge in Ocean City.

3.2.1.1 Geology and Soils

3.2.1.1.1 Geology

Readily available geologic maps and geophysical and geotechnical data were reviewed to characterize the potential conditions within the Green Acres encumbered parcels and riparian grant area along the BL England export cable route.

The Green Acres encumbered parcels and riparian grant area are within the Outer Lowland Province of the Atlantic Coastal Plain, which is characterized by broad plains and gently sloping hills. The Outer Lowland Province is characterized by coastal estuaries, swamplands, and near sea level relief (U.S. Geological Survey [USGS] 2017). Based on the Digital Elevation Model and Light Detection and Ranging (LiDAR) data, the Green Acres encumbered parcels and riparian grant area range in elevation between sea level and approximately 3 feet (1 meter) above mean sea level.

According to the NJDEP's GIS database (NJ-GeoWeb, NJDEP n.d.), bedrock below the Green Acres encumbered parcels includes the Cohansey formation (Tch). The bedrock units are overlain by saltmarsh and estuarine deposits, which are typically found in salt marshes, estuaries, and tidal channels during Holocene sea-level rise. These deposits may be comprised of silt, sand, peat, clay, minor pebble gravel; brown, dark-brown, gray, and black, and contain abundant organic matter.

3.2.1.1.2 Soils and Sediments

The sediment information for the riparian grant (Block 3500 Lot 1) area was derived from the Marine Cadastre National Viewer (BOEM 2021). Sediments along the riparian grant area within the Atlantic Ocean and nearshore consist of sand. Soil information for the Green Acres encumbered parcels was obtained from the United States Department of Agriculture (USDA) soil maps and descriptions (USDA 1978). The existing soil survey data includes site specific data for soil type, slope, areas susceptible to landslide, erosion potential, rock outcrops, rocky soils, liquefaction potential, sheer strength, and other soil properties related to engineering. Surface soils within the Green Acres encumbered parcels consist primarily of sands and mucky peat. **Table 3.2.1-1** details the soil units within the Green Acres encumbered parcels in Ocean City.

Soil units crossed by the BL England Route within the Green Acres encumbered parcels are further described below.

Landfall Parcels

Beaches (BEADV) 0 to 15 percent slopes, very frequently flooded

Beaches soils are located within the Green Acres encumbered parcels on the beach area off 35th Street, specifically within the beach area of Block 611.11/Lot 137 and Block 3500/Lot 1 near the water. These soils are typically dunes with a convex, linear shape. Parent material is beach sand. Beaches soils are poorly drained and have a water table depth of approximately 0 to 7 inches. These soils are frequently flooded. Beaches soils are known to be wet and have high runoff potential due to the presence of a water table within 23 inches of the surface (EarthData 2020).

Hooksan (HorDr) 2 to 15 percent slopes, rarely flooded

The Hooksan series are located within the following Green Acres encumbered parcels: Block 611.11/Lot 145, Block 611.11/Lot 137 and Block 3500/Lot 1 on the beach. This series is typically found within dunes on barrier islands with a convex, linear shape. Parent material includes Eolian sands. Depth to bedrock is more than 80 inches. The Hooksan soil series rarely floods and has a water table depth of about 79 to 90 inches.

Urban land-Psamments (USPSBR), wet substratum complex, 0 to 2 percent slopes, rarely flooded

The Green Acres encumbered parcels are not located within the Urban land-Psamments series; however, the temporary workspace, a portion of the proposed drill path, underground conduit, and part of the permanent easement for the HDD will occur within these soils which are located west of the beach on 35th Street outside of the Green Acres-restricted parcels. These soils are found in flat areas and are comprised mostly of coarse sands. Urban land-Psamments soils tend to be moderately well drained and are rarely flooded. Depth to bedrock is more than 80 inches.

Roosevelt Boulevard Bridge Parcel

Pawcatuck-Transquaking complex (PdwAv), 0 to 1 percent slopes, very frequently flooded

The Pawcatuk-Transquaking series is found along the southern portion of the Green Acres encumbered parcel, north of Roosevelt Boulevard Bridge (Block 3350.01 Lot 17). The BL England export cable route will cross this soil series in the southwestern corner of the Green Acres encumbered parcel. The Pawcatuk series is typically found in tidal marshes consisting of herbaceous organic material over sandy marine deposits. These soils are very poorly drained and flood very frequently; the water table is approximately 0 inches.

Urban land-Psamments (USPSAS), sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded

The Urban land-Psammaquents series is found along the southern portion of the Green Acres encumbered parcel, north of Roosevelt Boulevard (Block 3350.01 Lot 17). The BL England export cable route will cross this soil series in the southwestern corner of the Green Acres encumbered parcel. Urban land-Psamments are usually flat and consist of sandy human-transported material. These soils consist mostly of sand and are moderately well drained with occasional flooding.

Table 3.2.1-1. Soil characteristics of Green Acres encumbered parcels.

Green Acres Parcel	Map Unit Symbol	Percent Slope	Hydric Soil Rating	Flooding	Depth to Bedrock (inches)	Depth to Water Table (inches)
Landfall Parcels						
Block 611.11/Lot 145	HorDr	2-15	No	Rare	> 80	79-90
Block 611.11/Lot 137	HorDr	2-15	No	Rare	> 80	79-90

Green Acres Parcel	Map Unit Symbol	Percent Slope	Hydric Soil Rating	Flooding	Depth to Bedrock (inches)	Depth to Water Table (inches)
Block 3500/Lot 1	HorDr	2-15	No	Rare	> 80	79-90
Block 611.11/Lot 137	BEADV	0-15	Yes	Frequent	N/A	0-7
Block 3500/Lot 1	BEADV	0-15	Yes	Frequent	N/A	0-7
Roosevelt Boulevard Bridge Parcel						
Block 3350.01/Lot 17	USPSAS	0-2	No	Occasional	> 80	18-42
Block 3350.01/Lot 17	PdwAv	0-1	Yes	Very Frequent	> 80	0

Source: Soil information was derived from the United States Department of Agriculture (USDA) - Natural Resource Conservation Service (NRCS) - Soil Survey Geo-graphic (SSURGO).
Note: > = greater than

NJDEP maps regions of New Jersey where there are areas of historic fill that cover greater than 5 acres in its "Historic Fill for New Jersey as of January 2016" GIS dataset (NJDEP and NJ Geological and Water Survey 2016). NJDEP identified historic fill within the northern, southern, and eastern portions of the Green Acres encumbered parcel located north of Roosevelt Boulevard Bridge (Block 3350.01 Lot 17).

3.2.1.2 Land Use

The NJDEP - GeoWeb database was used to determine the applicable land use designations within the study area**.** The Green Acres parcel north of Roosevelt Boulevard Bridge is categorized as phragmites dominated coastal wetlands (Block 3350.01 Lot 17). The Green Acres encumbered parcels located at the HDD landfall are categorized as residential, high density or multiple dwelling, urban land use (Block 611.11 Lot 145 and Block 611.11 Lot 137). The area from the edge of the parcels through the beach to the water is designated as vegetated dune communities, wetlands, and barren land (Block 611.11 Lot 137 and Block 3500/Lot 1). The riparian grant area is categorized as an estuarine and marine deepwater wetland (Block 3500 Lot 1).

Per the Ocean City zoning map, dated August 31, 2016, the area north of Roosevelt Boulevard is zoned as Conservation area (Block 3350.01 Lot 17). The parcels at the HDD landfall are zoned as Residential Oceanfront-Two Family (Block 611.11 Lot 145 and Block 611.11 Lot 137). The area from the parcel boundaries to the ocean is zoned as Beach Dune (Block 611.11 Lot 137). The riparian grant area parcel is not zoned because it is located offshore in the Atlantic Ocean (Block 3500 Lot 1). Landfall beaches are included in the USACE beach nourishment program. NJDEP has a dune surface easement on this property (Block 611.11 Lot 145; Block 611.11 Lot 137 and Block 3500 Lot 1).

Based on site visits, the parcels proposed for diversion at the landfall are currently used for recreation as undeveloped beach in Ocean City (Block 611.11 Lot 145 and Block 611.11 Lot 137). The riparian grant area proposed for diversion is also currently used for recreation including boating, swimming, surfing, scuba diving, sailing, paddle sports, and whale watching (Block 3500 Lot 1). The Roosevelt Boulevard Bridge Green Acres parcel is tidal marsh (Block 3350.01 Lot 17).

3.2.2 Water

This section discusses the water resources including groundwater, surface water, state water quality, wetlands, floodplains, and tidelands data within the Green Acres encumbered parcels located in Ocean City, Cape May County, New Jersey that are subject to diversion from the Green Acres Program.

3.2.2.1 Groundwater

The Green Acres encumbered parcels are located within a sole source aquifer known as the New Jersey Coastal Plain Aquifer. A sole source aquifer is an aquifer that supplies at least 50 percent of the drinking water for its service area and is the only reasonable drinking water source for that area (USEPA 2015). The New Jersey Coastal Plain Aquifer System meets these requirements and is recognized by the USEPA as a sole source aquifer for the southern half of New Jersey (USEPA 2015, NJDEP 1999). Several aquifers compose this larger aquifer system. They are the Kirkwood-Cohansey aquifer system, the Atlantic City 800-foot sand, the Wenonah-Mount Laurel aquifer, the Englishtown aquifer, and the Potomac-Raritan-Magothy aquifer system (USGS 1985). The high production yields (yields measured up to 4500 gallons per minute (gpm); mean yield of 400 gpm) and storage capacities of the aquifer system as a whole are directly due to the unconsolidated deposits that form the geology of the Coastal Plain Province (NJ Geological Survey 2009). In general, these deposits are highly permeable beds of sand and gravel that allow for the storage of groundwater. Deposits of silt and clay form mostly confining layers in between the more permeable deposits, which restrict the vertical migration of water. Aquifer recharge occurs directly by the vertical leakage of water through confining beds from precipitation or by seepage from surface water (USGS 1985).

3.2.2.1.1 Potential Groundwater Hazards

Federal and state databases, including the United States Environmental Protection Agency's (USEPA's) Regulated Facility dataset (USEPA 2021), the USEPA's Enviromapper for Envirofacts (Enviromapper, USEPA, n.d.), and NJDEP's GeoWeb program were utilized to determine potential groundwater hazard areas near the Project Area.

Based on a review of the NJDEP -GeoWeb, there is an underground storage tank (UST) approximately 264 feet southeast from the Roosevelt Boulevard Bridge Green Acres parcel (Block 3350.01 Lot 17); however, the UST is not located within the Green Acres encumbered parcel and no work will be performed in the UST area.

3.2.2.1.2 Well-head Protection Areas

In New Jersey, a Well Head Protection Area (WHPA) is a mapped area around a public community water supply (PCWS) or a public non-community water supply (PNCWS) well that delineates the horizontal extent of groundwater captured by a well pumping at a specific rate over 2-, 5-, and 12-year periods of time for unconfined wells and a 50-foot radius delineated around each confined PCWS well (NJDEP Division of Water Supply and Geoscience). WHPAs are divided into Tiers 1 through 3 based on the time it takes for groundwater to move and recharge a pumping well (NJ Geological Survey 2003).

Based on a review of the statewide NJDEP WHPA mapper, there are no WHPAs that overlap the Green Acres encumbered parcels. There are no PNCWS wells within the Green Acres encumbered parcels. NJ Geo-Web mapper identified a PNCWS Well located across Peck Bay, directly west of the Roosevelt Boulevard Bridge Green Acres parcel (Block 3350.01 Lot 17). The WHPA for this well includes Tiers 1 through 3 depending on distance from the well.

3.2.2.2 Surface Water

Readily available data from NJ-GeoWeb was reviewed to identify streams, rivers, and waterways within the Green Acres encumbered parcels.

The Green Acres encumbered parcels lie within two watersheds: Atlantic Coast (34th Street to Cape May Point) (hydrologic unit code [HUC] 11 No. 02040302940) and Cape May Bays and Tributaries East (HUC 11 No. 02040302080). The Green Acres encumbered parcels at landfall ((Block 611.11 Lot 145; Block 611.11 Lot 137 and Block 3500 Lot 1) are located within the Atlantic Coast watershed and the Roosevelt Boulevard Bridge Green Acres parcel (Block 3350.01 Lot 17) is located within the Cape May Bays and Tributaries East watershed. The watersheds are within the Great Egg Harbor and Cape May Watershed Management Areas (WMAs) (WMA 15; WMA 16, respectively). The major watercourses draining these watersheds into the bays include Patcong Creek, Great Egg Harbor River, Abescon Creek, Dennis Creek, Tuckahoe River, and Cape May Tribs East and West (NJDEP 2007).

The NJDEP Surface Water Quality Standards (SWQS) were established for protection and enhancement of surface water resources, such as use designations and water quality-based effluent limitations. Two water resources, the Atlantic Ocean and Peck Bay are immediately adjacent to the Green Acres encumbered parcels. The Atlantic Ocean is located directly east of the landfall Green Acres encumbered parcels (Block 611.11 Lot 145 and Block 611.11 Lot 137), with the riparian grant area (Block 3500 Lot 1) located within the Atlantic Ocean. Peck Bay is west of the Roosevelt Boulevard Bridge Green Acres parcel (Block 3350.01 Lot 17) and the wetland within the parcel is adjacent to Peck Bay.

Peck Bay and its tributaries within the Roosevelt Boulevard Bridge Green Acres parcel (Block 3350.01 Lot 17) are predominantly categorized as FW2-NT/SE1, meaning that they are non-trout (NT) estuarine freshwaters (FW2) or brackish (SE1). Peck Bay is categorized as FW2-NT/SE1, meaning that it is non-trout (NT) estuarine freshwaters (FW2) or brackish (SE1). In all FW2 waters, the designated uses include maintenance, migration, and propagation of natural and established biota, primary contact recreation, industrial and agricultural water supply, and public potable water supply after conventional filtration treatment. In SE1 waters, the designated uses include shellfish harvesting in accordance with N.J.A.C. 7:12; maintenance, migration, and propagation of natural and established biota; and primary contact recreation.

3.2.2.3 State Water Quality Data

NJDEP conducts annual coastal water quality monitoring as required by the Clean Water Act. **Table 3.2.2-1** provides the results from the annual coastal water quality monitoring from 1989-2009 at the New Jersey Atlantic Ocean location, which is the location nearest to the Green Acres encumbered parcels including riparian grant area (Block 611.11 Lot 145; Block 611.11 Lot 137; and Block 3500 Lot 1).

Table 3.2.2-1. Results from annual coastal water quality samples taken near the Offshore Export Cable Corridor within proximity to the Green Acres encumbered parcels (1989-2009).

Water Quality Parameter	Unit	Mean	Maximum
Ammonia	µg/L	27	504
Nitrate	µg/L	38	259
Total Nitrogen	µg/L	314	8457
Total Phosphorus	µg/L	39	286
Chlorophyll a	µg/L	3	50
Dissolved Oxygen	mg/L	7.7	15.1

Note: µg/L = micrograms per liter; mg/L = milligrams per liter

Source: Connell 2010.

Additional state water quality data includes the New Jersey Ambient Ground Water Quality Monitoring Network program that utilizes 150 wells throughout northern and southern New Jersey to evaluate shallow groundwater

quality. The chemical and physical characteristic measured in each well-water sample include pH, specific conductivity, DO, temperature, alkalinity, major ions, trace elements, nutrients, gross-alpha particle activity, volatile organic compounds (VOCs), total dissolved solids (TDS), and pesticides. In southern New Jersey, shallow groundwater has a more acidic pH and lower TDS levels, reflecting the coastal plain origin (New Jersey Geological and Water Survey 2016). In the urbanized areas of southern New Jersey, lower DO levels are detected due to large proportions of impervious surface area. Specific conductivity increases in southern New Jersey have been attributed to application of road salt during the winter. Urban areas in New Jersey have high concentrations of nutrients, such as nitrate and nitrite, in groundwater due to possible leakage from septic and sewer systems. Pesticides, VOCs, trace elements, and major ion concentrations are all higher in the urban areas of Southern New Jersey compared to undeveloped areas.

3.2.2.4 Wetlands

Based on a review of the NJDEP -GeoWeb, a vegetated dune community southeast of 35th Street in Ocean City is located within the landfall Green Acres encumbered parcels (Block 611.11 Lot 145 and Block 611.11 Lot 137). This community is discussed in Section 3.2.4.

The United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Mapper identified two wetlands in the vicinity of the landfall Green Acres parcels, including one estuarine and marine wetland (M2US2P) along the beach and one identified as an estuarine and marine deep water (M1UBL) wetland within the ocean, including the riparian grant area.

Ocean Wind conducted wetland delineations at the Roosevelt Boulevard Bridge Green Acres parcel (Block 3350.01 Lot 17) in 2019. USACE and NJDEP staff conducted a wetland verification site visit in November 2021. The Roosevelt Boulevard Bridge Green Acres parcel is located within a saline marsh (low marsh). **Figure 3.2.2.4-1** shows the NJDEP and NWI wetlands located within the Green Acres encumbered parcels including the riparian grant area.

3.2.2.5 Floodplains

Based on a review of the Federal Emergency Management Agency's (FEMA's) National Flood Hazard Layer (NFHL) Viewer, the Green Acres encumbered parcels are located within one flood hazard zone and comprise three different Base Flood Elevations (BFEs): Zone VE (elevation (EL)11, 13, and 15 North American vertical Datum 1988 (NAVD 88). Flood hazard zones with a designation of VE are known as a coastal high hazard area, where wave action and fast-moving water can cause extensive damage during a base flood event (FEMA 2021). BFEs identify the expected height in feet that floodwaters are expected to reach in a high-risk area (FEMA 2021).

Based on a FEMA FIRM Maps (34009C0176F and 34009C0069F) effective October 5, 2017, the Green Acres encumbered parcels located at landfall (Block 611.11 Lot 145; Block 611.11 Lot 137 and Block 3500 Lot 1) are within Zone VE (EL 13 NAVD 88). The Roosevelt Boulevard Bridge Green Acres parcel (Block 3350.01 Lot 17) is located within Zone VE (EL 11 NAVD 88). The riparian grant area is located within Zone VE (EL 15 NAVD 88).

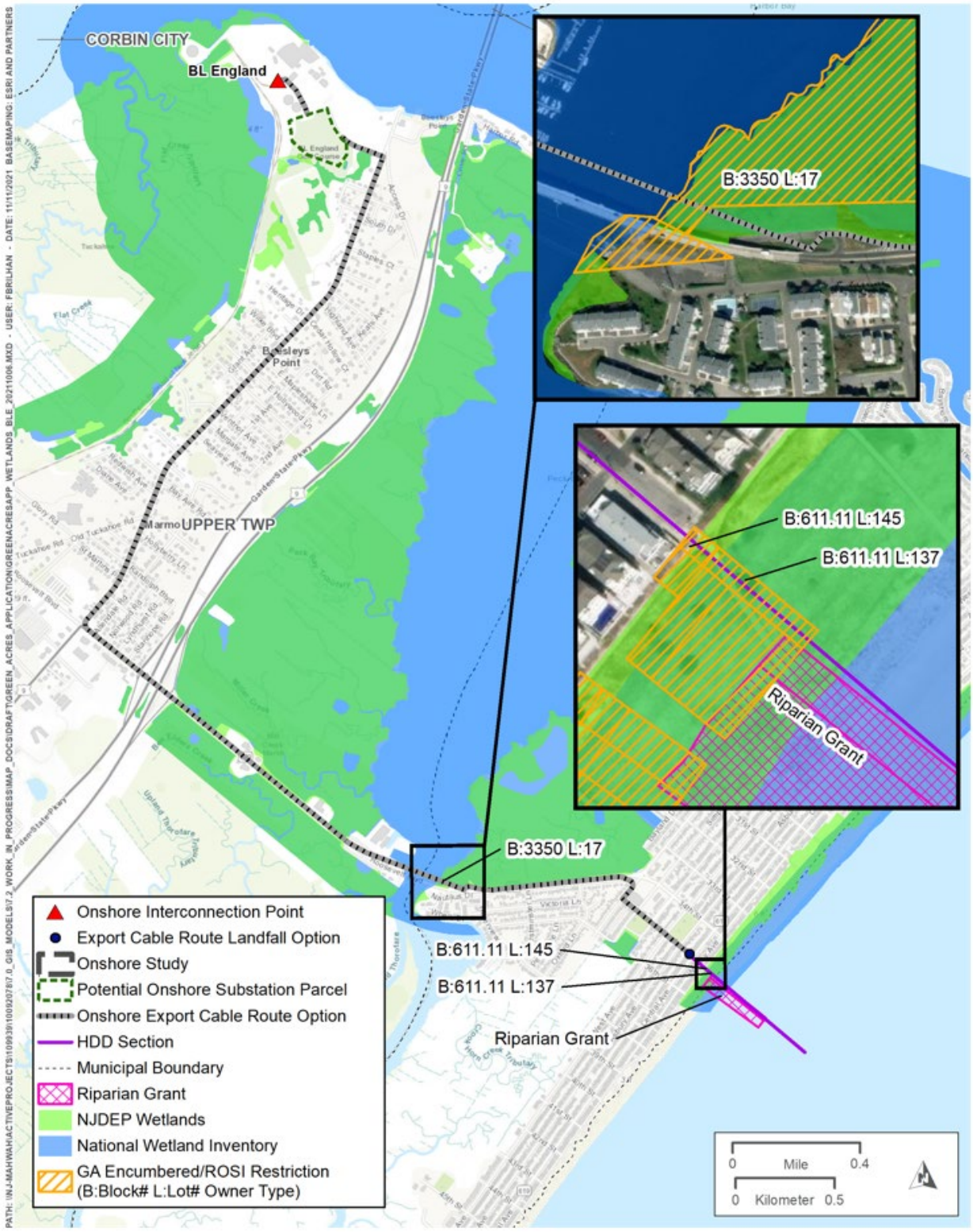

Figure 3.2.2.4-1. Wetlands within the Green Acres encumbered parcels in Ocean City.

3.2.2.6 Tidelands

New Jersey contains an extensive network of tidelands, defined as all lands that are currently and formerly flowed by the mean high tide of a natural waterway (NJDEP Division of Land and Resource Protection). Based on a review of NJ-GeoWeb, tidelands are present in the Green Acres encumbered parcels at landfall and the Roosevelt Boulevard Bridge Green Acres parcel. According to the NJDEP Division of Land Resource Protection, a Riparian Grant is a deed from the State of New Jersey for the sale of its formerly flowed tidelands.

3.2.3 Air

Federal and State air regulations protect human health and the environment through ensuring that the impacts of background, existing sources and proposed sources are in compliance with ambient air quality standards. National Ambient Air Quality Standards (NAAQS) have been promulgated for six air pollutants, known as criteria air pollutants. The six criteria air pollutants are carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) (including PM_{10} [particles with a diameter smaller than 10 micrometers] and $PM_{2.5}$ [particles with a diameter smaller than 2.5 micrometers]), and sulfur dioxide (SO_2). NAAQS are expressed as primary standards, which are intended to protect human health, and secondary standards, which are intended to protect public welfare. Public welfare considerations include protection against damage to animals, crops, and buildings. NAAQS have varying averaging times and forms that define a NAAQS exceedance for each pollutant and standard.

Aspects of the Project are subject to various air quality regulations at both the state and federal level. Broadly, a portion of the Project's offshore emissions are subject to Outer Continental Shelf (OCS) air permitting under 40 CFR Part 55. Onshore emission units are subject to the Air Pollution Control rules promulgated in N.J.A.C. Title 7, Chapter 27. Additionally, aspects of the Project may be subject to General Conformity.

Forty CFR Part 55 regulates air emissions from OCS sources, which are defined in 40 CFR § 55.2 as any equipment, activity, or facility which:

(1) Emits or has the potential to emit any air pollutant;
(2) Is regulated or authorized under the Outer Continental Shelf Lands Act (OCSLA) (43 U.S.C. § 1331 *et seq.*); and
(3) Is located on the OCS or in or on waters above the OCS.

This definition shall include vessels only when they are:

A. Permanently or temporarily attached to the seabed and erected thereon and used for the purpose of exploring, developing or producing resources therefrom, within the meaning of section 4(a)(1) of OCSLA (43 U.S.C. § 1331*et seq.*); or
B. Physically attached to an OCS facility, in which case only the stationary source aspects of the vessels will be regulated.

The definition of potential air emissions in 40 CFR § 55.2 includes emissions from vessels servicing or associated with an OCS source. Emissions from such vessels are considered direct emissions from the OCS source while the vessels are on-site and while enroute to or from the OCS source while within 25 miles of the source (measured from source's center). Combined, these emissions are considered the source's potential emissions with respect to OCS air permitting.

On September 14, 2021, Ocean Wind submitted a Notice of Intent (NOI) as required under 40 CFR Part 55. The NOI was submitted to USEPA Regional Office 2, New Jersey (the Nearest Onshore Area (NOA), and the onshore areas adjacent to New Jersey, which include New York and Delaware. The NOI provides emissions information for emissions subject to OCS air permitting. Based on the information in the NOI, the USEPA will designate a Corresponding Onshore Area (COA) as well as conduct a consistency update that will incorporate applicable

State and local onshore rules into Part 55 as they apply onshore. Additionally, the Project will be required to comply with applicable Federal air regulations, as promulgated in 40 CFR 55.13, and any other Federal regulations such as General Conformity. Once USEPA completes its consistency update, the applicable State and local air regulations of the COA, as determined by USEPA, will be incorporated by reference into 40 CFR Part 55. Once USEPA completes its rulemaking to revise 40 CFR Part 55, the State and local air regulations become Federal law and apply to any OCS source with that COA designation.

In addition to the state and local air regulations that will apply to the offshore potential emissions associated with the Project as a result of OCS air permitting, onshore aspects of the Project are independently subject to the Air Pollution Control rules promulgated in N.J.A.C. Title 7, Chapter 27. Emission units associated with the Project that may require authorization from a preconstruction and/or operating permit may include emergency generators, standby generators, and non-electric pumps. It is anticipated that most, or all, of the equipment used to construct onshore portions of the Project will be exempt from the requirement to obtain a preconstruction permit and operating certificate due to the exemption for equipment used to conduct construction, repair or maintenance activities found in N.J.A.C. 7:27-8.2(d)15. Equipment used to conduct construction, repair or maintenance activities is exempt provided the equipment is portable and is located on site for no longer than one year.

The Project is potentially subject to USEPA's General Conformity regulations as promulgated in 40 CFR Part 93 Subpart B and 40 CFR Part 51 Subpart W. General Conformity regulations are intended to ensure that Federal actions do not interfere with states' plans to attain and maintain the NAAQS in areas that are or have been in nonattainment for one or more pollutants. General Conformity regulations require that projects which are considered Federal actions and result in direct and indirect emissions in a nonattainment or maintenance area be compared to de minimis thresholds for the nonattainment or maintenance area(s) in which project emissions occur. All areas of the United States are classified by the USEPA as attainment, nonattainment, or unclassified for the criteria air pollutants. An area in attainment is in compliance with all NAAQS. An area in nonattainment is not in compliance with one or more NAAQS. An unclassified area cannot be classified as attainment or nonattainment based on available information but is treated as an area in attainment. If an area was in nonattainment at any point in the last twenty years but is currently in attainment or is unclassified, then the area is termed a maintenance area.

The official record of the attainment status of all areas in the United States is published in 40 C.F.R. Part 81: Designation of Areas for Air Quality Planning Purposes and can also be found in the USEPA's Green Book published online[2]. For all coastal areas along the Atlantic Ocean, the attainment status boundary extends 3 nm, to the seaward boundary[3]. Due to anti-backsliding provisions of the Clean Air Act, the Project must consider the potential applicability of all previously designated nonattainment or maintenance areas, regardless of whether or not the standard for which it was designated nonattainment or maintenance has since been revoked.

Attainment designations for all nonattainment or maintenance areas where Project emissions may occur are summarized in **Table 3.2.3-1**. Pb, NO2, PM (including PM2.5 and PM10) and SO2 are not included in the table since the Project is not projected to result in emissions in a nonattainment or maintenance area for these pollutants.

[2] Environmental Protection Agency. (n.d.). *Nonattainment Areas for Criteria Pollutants*. EPA. Retrieved from http://www.epa.gov/green-book.
[3] U.S. EPA. (2017, June 28). General Conformity Training Module 3.1: Applicability Analyses. Retrieved from https://www.epa.gov/general-conformity/general-conformity-training-module-31-applicability-analyses.

Table 3.2.3-1. Attainment status for areas where Project emissions may occur.

	Ozone				Carbon Monoxide
	2015 8-Hr Std	2008 8-Hr Std	1997 8-Hr Std	1979 1-Hr Std	1971 Std
Status of NAAQS	Current	Replaced by 2015 std	Revoked	Revoked	Current
Philadelphia-Wilmington-Atlantic City	Marginal NA	Marginal NA	Moderate NA	--	--
Philadelphia-Wilmington-Trenton	--	--	--	Severe NA	--
Norfolk-Virginia Beach-Newport News (Hampton Roads)	--	--	Maintenance	Maintenance	--
New York-N. New Jersey-Long Island	Project Emissions will not Occur in this Designated Area	Project Emissions will not Occur in this Designated Area	Project Emissions will not Occur in this Designated Area	Severe NA	--
Sussex County	--	--	--	Marginal NA	--
Atlantic City	--	--	--	Moderate NA	Maintenance
Philadelphia-Camden County	These areas were designated for carbon monoxide standard.				Maintenance
Penns Grove					Maintenance

-- = No nonattainment or maintenance designation for this designated area for this standard
NA = Nonattainment

Emissions that are subject to New Source Review will be excluded from the General Conformity analysis; therefore, emissions that will be regulated by the OCS air permit and any onshore state air permitting will be excluded from the General Conformity analysis.

Projects subject to General Conformity are required to provide the Federal land manager charged with direct responsibility of designated Class I areas within 62 miles (100 km) of the Project copies of the draft General Conformity demonstration. The location of Class I areas nearest to the Project are shown in **Figure 3.2.3-1**. The Brigantine Wilderness Area is the only Class I area within 62 miles (100 km) of the Project. It is located approximately 25 miles from the centroid of the Project. The Federal land manager identifies appropriate air quality related values (AQRVs) for the Class I area and evaluates the impact of the Project on AQRVs. AQRVs identified for Brigantine Wilderness include aquatic resources, fauna/wildlife, soils, vegetation, and visibility.

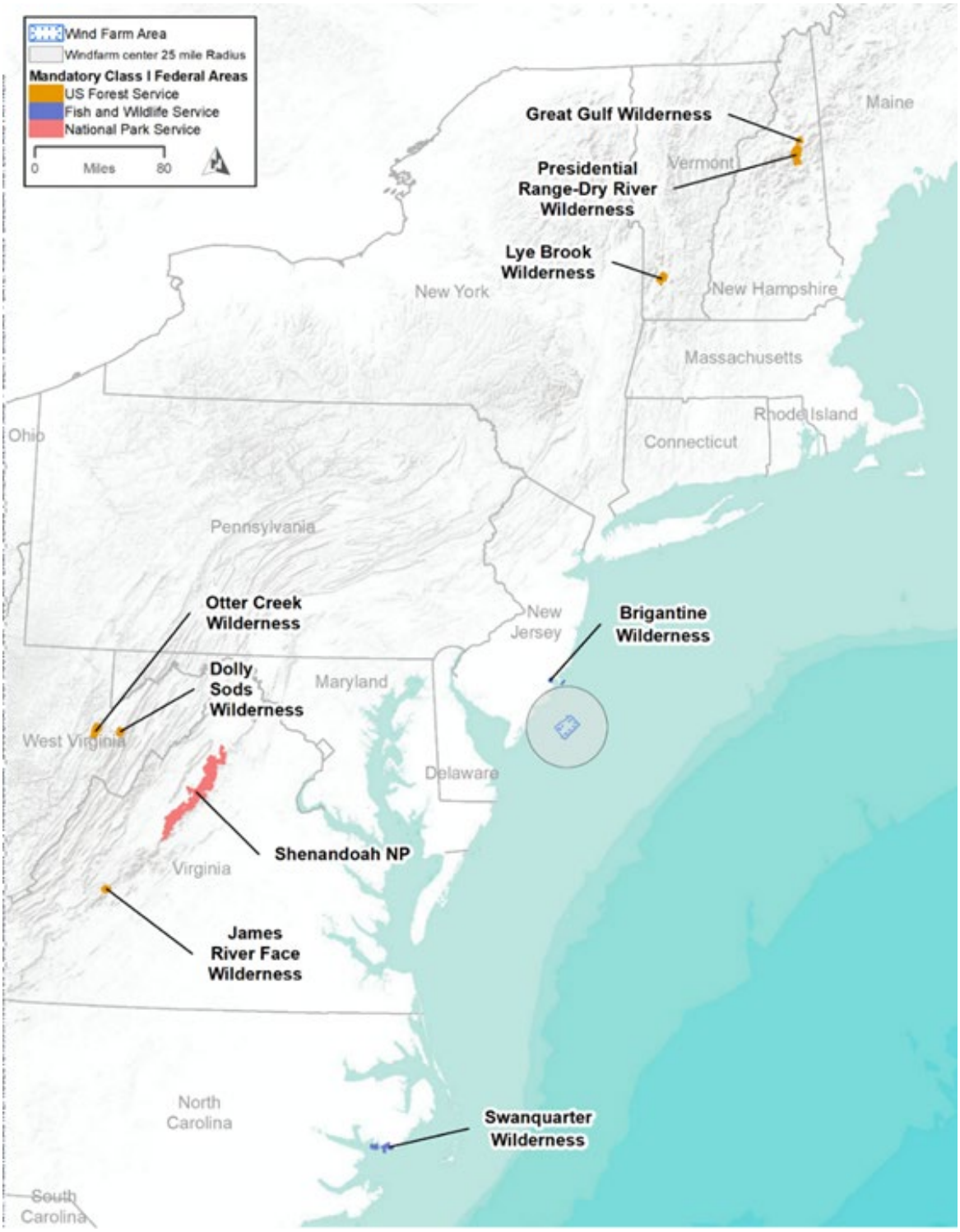

Figure 3.2.3-1. Class I areas nearest to the Project.

3.2.4 Aquatic and Terrestrial Vegetation and Wildlife

New Jersey is home to a diverse assemblage of natural landscapes (NJ Landscape Project, n.d.). The state is divided into six landscape regions: Skylands, Piedmont Plains, Pinelands, Delaware Bay, Marine, and Atlantic Coastal Landscapes. The New Jersey Fish and Wildlife Service's (NJ FWS's) NJ Landscape Project used geographic information systems (GIS) technology to document species location data and land use/land cover types to produce maps that depict habitat for endangered, threatened, and special concern wildlife species throughout the state, to guide strategic wildlife habitat conservation (NJ FWS, n.d.).

The landfall Green Acres parcels and the Roosevelt Boulevard Bridge Green Acres parcel in Ocean City are located within the Atlantic Coastal Landscape (Block 611.11 Lots 137 and 145; Block 3500/Lot 1; and Block 3350.01 Lot 17). The Atlantic Coastal Landscape encompasses parts of Monmouth, Ocean, Cape May, and Atlantic counties (NJ FWS, n.d.). The riparian grant area (Block 3500 Lot 1) is located within the Marine Region Landscape. The Marine Region includes a portion of the Atlantic Ocean within New Jersey's jurisdiction, which is defined as the area within 3-nautical miles of the New Jersey shoreline (NJ Landscape Project).

3.2.4.1 Vegetation

Based on information from the NJ Landscape Project and land use and land cover data, vegetation communities within the Green Acres encumbered parcels are limited to the beach, vegetated dune communities, and saline marsh (low marsh) areas. The majority of the land outside of the encumbered parcels is developed and is primarily utilized for residential, recreational, commercial, transportation, communication, and utility purposes. The vegetated dune community is found along the Atlantic Ocean within the Green Acres encumbered parcels at landfall (Block 611.11 Lots 137 and 145). Based on field review of the landfall parcels, vegetation within the Green Acres parcels includes northern bayberry (*Morella pensylvanica*), seaside goldenrod (*Solidago sempervirens*), and American beachgrass (*Ammophila breviligulata*).

Communities along Roosevelt Boulevard Bridge Green Acres parcel and along Peck Bay are dominated by saline low marshes. Based on the NJ-GeoWeb mapper, typical species within the Roosevelt Boulevard Bridge Green Acres parcel (Block 3350.01 Lot 17) include saltmarsh cordgrass (*Spartina alterniflora*), saltmeadow cordgrass (*Spartina patens*), big cordgrass (*Spartina cynosuroides*), Roemer's rush (*Juncus roemerianus*), narrow-leaved cattail (*Typha angustifolia*), and marsh-millet (*Zizaniopsis miliacea*). In addition, segments of the saltmarsh (low marsh) are dominated by coastal wetlands, coniferous wooded wetlands, mixed deciduous scrub/shrub, and phragmites communities, especially alongside the road right-of-way. Based on wetland delineations conducted by HDR on September 16 and 17, 2019, the portion of the Roosevelt Boulevard Bridge Green Acres parcel (Block 3350.01 Lot 17) crossed by the Project is dominated by saltmeadow cordgrass (*Spartina patens*), with uplands dominated by Kentucky bluegrass (*Poa pratensis*) and Virginia creeper (*Parthenocissus quinquefolia*).

Terrestrial plant species identified within the Green Acres encumbered parcels are presented in **Table 3.2.4-1**.

Table 3.2.4-1. Common vegetation present in the Green Acres encumbered parcels during field surveys.

Common Name	Scientific Name	Common Name	Scientific Name
Kentucky bluegrass	*Poa pratensis*	Northern bayberry	*Morella pensylvanica*
Barnyardgrass	*Echinochloa crus-galli*	Seaside goldenrod	*Solidago sempervirens*
Eastern poison ivy	*Toxicodendron radicans*	American beachgrass	*Ammophila breviligulata*
Saltmeadow cordgrass	*Spartina patens*	Virginia Creeper	*Parthenoscissus quinquefolia*
Common Reed	*Phragmites australis*	High-tide bush	*Iva frutescens*

Source: HDR Wetland Delineation and Field Reviews (2019).

3.2.4.2 Terrestrial Wildlife

3.2.4.2.1 Mammals

Wildlife potentially found within the Green Acres encumbered parcels include cottontail rabbit (*Sylvilagus floridanus*), meadow vole (*Microtus pennsylvanicus*), muskrat (*Ondatra zibethicus*), Norway rat (*Rattus norvegicus*), opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), river otter (*Lontra canadensis*), gray squirrel (*Sciurus carolinensis*), house mouse (*Mus musculus*), and whitetail deer (Odocoileus virginianus) (Ocean City, 2009).

3.2.4.2.2 Birds

The Atlantic Coastal Landscape is known for supporting a variety of bird populations such as colonial nesting birds like the common tern (*Sterna hirundo*), little blue heron (*Egretta caerulea*), and great egret (*Ardea alba*); endangered beach-nesting birds like the piping plover (*Charadrius melodus*) and least tern (*Sterna antillarum*); and raptorspecies such as osprey (*Pandion haliaetus*), peregrine falcon (*Falco peregrinus*), and northern harrier (*Circus cyaneus*), and migrating and wintering waterfowl (NJ Landscape Project) (NJ FWS).

3.2.4.2.3 Reptiles

Reptiles that inhabit the wetlands and streams of the Project area include the diamondback terrapin (*Malaclemys terrapin*), corn snake (*Pantherophis guttatus*), and black rat snake (*Pantherophis obsoletus*) (Ocean City, 2009).

3.2.4.3 Fisheries

No waterbodies are crossed at the onshore Green Acres parcels. The waterbodies adjacent to the Roosevelt Boulevard Bridge Green Acres parcel (Block 3350.01 Lot 17), including Peck Bay, Miller Creek, and Ben Elders Creek, are classified as FW2-NT/SE1 Waters. These waterbodies are non-trout waters and, therefore, habitat required to support state regulated fisheries is not present.

The landfall riparian grant area (Block 3500 Lot 1) is within the Atlantic Ocean off New Jersey. Two Federally and State-listed endangered fish species may occur off the New Jersey coast: shortnose sturgeon (*Acipenser brevirostrum*) and the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). A further description of these species is provided below. Additionally, species that are candidates for listing are also listed in **Table 3.2.4-2**.

Table 3.2.4-2. List of Mid-Atlantic threatened and endangered species.

Species (Scientific Name)	Endangered Species Act Status
Shortnose sturgeon (*Acipenser brevirostrum*)	New York Bight distinct population segment (DPS) - ESA Endangered
Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*)	New York Bight DPS - ESA Endangered
Oceanic whitetip shark (*Caracharinus longimanus*)	ESA Threatened
Giant manta ray (*Manta birostris*)	ESA Threatened
Alewife (*Alosa pseudoharengus*)	Candidate Species
Blueback herring (*Alosa aestevalis*)	Candidate Species
Cusk (*Brosme brosme*)	Candidate Species

3.2.4.3.1 Shortnose Sturgeon

Shortnose sturgeon is an anadromous fish species that migrates far upstream into freshwater rivers to spawn in the spring. Once they mature, males spawn every 1 to 2 years while females spawn every 3 to 5 years. Females can produce up to 200,000 eggs per year. The species spends relatively little time in marine waters, with the majority of their lives being spent in the estuarine waters. When they do enter ocean waters, they generally stay close to shore. Historically, the species was found in coastal rivers along the entire east coast of North America. Because of threats such as habitat degradation, water pollution, dredging, water withdrawals, fishery bycatch and habitat impediments (e.g., dams), the species is now listed as endangered throughout the entire population range. Within the Mid-Atlantic Region, shortnose sturgeon are found in the in the Delaware and Hudson River estuaries (NOAA Fisheries 2018d).

3.2.4.3.2 Atlantic Sturgeon

Atlantic sturgeon is an anadromous fish species that lives in rivers and coastal waters along the entire east coast from Canada to Florida. The species hatches in freshwaters and migrates to the ocean as juveniles. Once reaching maturity, Atlantic sturgeon migrate back up rivers to spawn in the spring with males spawning almost every year and females every two to three years. Distribution and abundance vary by season as they are found in shallow coastal waters during the summer months and move to deeper waters in winter and early spring (Dunton *et al.* 2010).

Historically, the species was found in great abundance, but due to overfishing and habitat loss, populations have drastically declined. Other threats include vessel strikes, fishery bycatch, habitat degradation, poor water quality, and habitat impediments. Currently, four distinct population segments (DPS) are listed as Endangered, including the New York Bight DPS.

On April 6, 2012, NMFS divided U.S. populations of Atlantic sturgeon into five “species” or DPSs. However, based on genetic data and tracking and tagging data, sturgeon from any of these DPSs and Canada can occur anywhere in the geographic range of the subspecies. Eyler *et al*. (2009) reported that Atlantic sturgeon tagged off New Jersey have been recaptured in Long Island Sound, off Maryland, Delaware, New Hampshire, and North Carolina. Consequently, the sturgeon that occur in the Project area may represent any of the five DPS of this species.

Atlantic sturgeon have been captured in several sampling programs off the New Jersey coast (Dunton *et al*. 2010, Erickson *et al*. 2011, Eyler *et al*. 2009, Stein *et al.* 2004). Dunton *et al.* (2010) analyzed data from surveys covering the northwest Atlantic Ocean from Cape Hatteras (North Carolina) to the Gulf of Maine conducted by five agencies. The catch per unit of effort (CPUE) for Atlantic sturgeon off New Jersey, from New York Harbor south

to the entrance of Delaware Bay (Delaware), was second only to CPUE from the entrance of New York harbor to Montauk Point (New York). Supplemental information on Atlantic sturgeon is contained in Appendix B.

3.2.4.4 Rare, Threatened, and Endangered Species and Species of Concern

Endangered and threatened species in New Jersey are protected by the federal Endangered Species Act (ESA) of 1973 (16 U.S.C.A §§ 1531-1543, P.L. 93-205), the New Jersey State Endangered and Nongame Species Conservation Act (N.J. Stat. Ann. §523:2A-1: et seq.), and the state Endangered Plant Species List Act (N.J. Stat. Ann. §13:1B-15.151).

NJDEP's Landscape Project data is based on documented wildlife locations and habitat types depicted in 2012 land use and land cover data. The dataset combines documented wildlife locations along with aerials and land use and land cover data to delineate protected species habitat in the State. Species polygons based on their ranking or listing status are provided in spatial format and depict the location and extent of species habitats. Each habitat is given a rank from 1 to 5 that reflects the critical nature of the habitat. Areas with Ranks 3, 4, or 5 are considered most critical since they represent habitat areas utilized by species on the State Threatened, State Endangered, and Federal Threatened and Endangered Species lists (NJDFW 2017b). The Green Acres encumbered parcels are within Rank 4 habitat.

3.2.4.4.1 Natural Heritage Priority Sites

Based on the NJ-GeoWeb, there are no Natural Heritage Priority Sites within the Green Acres encumbered parcels. The closest Natural Heritage Priority Sites include Corson Inlet North Site (approximately 2.4 miles southwest from the Roosevelt Boulevard Bridge Green Acres parcel and 2.5 miles from the landfall parcels), and Longport (approximately 4.3 miles northeast of the landfall parcels and 4.6 miles northeast of the Roosevelt Boulevard Bridge parcel). An Osprey platform is located near the Roosevelt Boulevard Bridge Green Acres parcel (Block 3350.01 Lot 17).

A list of federally and state-listed protected species with potential to occur within the Green Acres encumbered parcels is outlined in **Table 3.2.4-3** below. Other species of particular concern with potential to occur include migratory birds listed by USFWS as Birds of Conservation Concern and the monarch butterfly (*Danaus plexippus*), a candidate species listed by the USFWS. Fowler's toad (*Anaxyrus fowleri*), a NJ state-listed species of special concern, also has the potential to occur within the Green Acres encumbered parcels. For a list of birds that may occur within the Green Acres encumbered parcels please see Section 3.2.4.2 above.

Table 3.2.4-3. Federal and State-listed threatened and endangered species with potential to occur within the Green Acres encumbered parcels and riparian grant area.

Species Common	Species Scientific	Status	Habitat
Plants			
Seabeach amaranth	*Amaranthus pumilus*	FT, SE	Barrier beaches, overwash flats at the ends of islands accumulating more sand, lower developing dunes, upper strands of non-eroding beaches
Birds			
Eastern black rail	*Laterallus jamaicensis ssp. jamaicensis*	FT, ST^{BR}, ST^{NB}	Tidally or non-tidally influenced, salt and brackish marshes with dense cover, upland areas of marshes, southernmost habitat impounded and unimpounded salt and brackish marshes
Piping plover	*Charadrius melodus*	FT, SE	Sandy beaches

Species Common	Species Scientific	Status	Habitat
Red knot	*Calidris canutus rufa*	FT, SE[NB]	Ocean and bay beaches, mudflats
Roseate tern	*Sterna dougallii dougallii*	FE	rocky coastal islands; generally, use the more densely vegetated portions of nesting habitat
Reptiles and Amphibians			
Corn snake	*Pantherophis guttatus*	SE	Sandy, forested areas, New Jersey Pine Barrens, pine-oak forests, understory of low brush, hollow logs, railroad ties, foundations of old buildings, under boards
Invertebrates			
Robust baskettail	*Epitheca spinosa*	ST	Flood plain swamps and marshes along the coastal plain
Banner clubtail	*Gomphus apomyius*	ST	Coastal plain, clean/acidic streams with sandy substrate and organic debris
Fish			
Atlantic sturgeon	*Acipenser oxyrinchus oxyrinchus*	FE	Range from along Canadian and U.S. Atlantic Coast and as far as Iceland when at sea
Shortnose sturgeon	*Acipenser brevirostrum*	FE	Coastal rivers along East Coast of North America; bays and rivers along the east coast; short feeding or migratory trips in salt water while spawning, predation escape, and feeding occurs in freshwater

Status: FT – Federally Threatened, FE – Federally Endangered, SE – State Endangered, ST – State Threatened, BR – breeding population only, NB – non-breeding population only
Based on consultation with the New Jersey Natural Heritage Program, NJDEP Landscape Project, NOAA Fisheries Species Directory, and USFWS

3.2.5 Social and Economic

3.2.5.1 Historic Archaeological and Cultural Resources Historic, Archaeological, and Cultural Resources

3.2.5.1.1 Archaeological Resources

Within the BL England onshore study area, three previously recorded archaeological sites were found to be within or adjacent to the onshore Preliminary Area of Potential Effects (PAPE). Area of potential effects means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. These sites are more than 2 miles from the Green Acres encumbered parcels.

Based on field review, the landfall area is part of a late Holocene beach strand that has been highly remodeled over time. Effects from Superstorm Sandy are still evident in the area and the overall archaeological potential is considered to be quite low.

The Roosevelt Boulevard right-of-way is highly developed with extensive buried utilities (some of which are currently being re-installed/repaired after Superstorm Sandy). A 1 m by 1 m unit test was conducted east of the Roosevelt Boulevard bridge. The unit exhibited extensive disturbance and fill horizons associated with the construction of the present bridge, various utilities, and associated infrastructure. The unit was terminated due to

standing water in the bottom 5 to 10 cm of the excavation. No further archeological study is recommended for the Green Acres parcels, as they have been disturbed and no intact archaeological resources likely remain.

3.2.5.1.2 Historic Properties

Both buried and aboveground onshore infrastructure is included within the visual PAPE for the Project. The offshore infrastructure is approximately 15 mi from the shoreline of the barrier islands at its nearest point. However, the visual effects will extend to the shore, including in the vicinity of the Green Acres encumbered parcels at landfall. No historic properties are located within the Green Acres encumbered parcels.

3.2.5.2 Public Access and Public Recreational Facilities

A portion of Block 3350.01 Lot 17 is currently occupied by Roosevelt Boulevard.

The landfall Green Acres encumbered parcels (Block 611.11 Lots 137 and 145) are used for passive recreation by members of the public. The parcels are undeveloped and have no recreational improvements. The riparian grant area (Block 3500 Lot 1) within the Atlantic Ocean provides for recreational activities such as surfing, sailing, boating, fishing, diving, and kayaking. Recreational fishing occurs along the back bays and from the surf, piers, and boats along the Jersey Cape (Cape May County 2018). Recreational fishing within the riparian grant area would be from the surf or boating since no piers are located within the riparian grant area.

3.2.5.3 Environmental Justice

Executive Order 12898, Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations, requires Federal agencies to consider if impacts on human health or the environment (including social and economic aspects) would be disproportionately high and adverse for minority and low-income populations, and appreciably exceed impacts on the general population or other comparison group.

The Project area includes Green Acres encumbered parcels located within Ocean City in Cape May County, New Jersey. The data used for the environmental justice analysis were obtained from the U.S. Census Bureau 2019 American Community Survey (ACS). The analysis identified the U.S. Census tracts and block groups within the study areas using ACS 2015-2019 Block Group geospatial data and then compared the population of each block group to a comparison group. For this analysis, the comparison group is the county in which the block group is located. The comparison group is used to determine whether potential adverse impacts of the Project are disproportionately borne by one or more minority or low-income populations in comparison to the greater area (i.e., the county level).

The study area for the environmental justice analysis focuses on locations where potential impacts resulting from construction, operations and maintenance, and decommissioning activities may occur, within the block groups where Green Acres encumbered parcels will be crossed by the Project. Relevant characteristics of the block group and county-level populations in the study area are compared to their respective characteristics for the State of New Jersey to provide context for the assessment. Population and demographic data used in this analysis were obtained from the U.S. Census Bureau and are presented in **Table 3.2.5-2**. As shown in the table, the population of the census block group that includes the Landfall parcels has a minority population slightly higher than that for Cape May County. The census block group that includes the Roosevelt Boulevard Bridge Green Acres parcel does not have a minority population.

Table 3.2.5-2. Racial and ethnic statistics in the study area.

Geography	Asian	Black or African American	Hispanic or Latino	Native American	Two or More Races	Other	White	Total Minority (Percent)
State of New Jersey	9.4%	12.7%	20.2%	0.1%	1.8%	0.5%	55.4%	44.6%
Cape May County	1.1%	4.5%	7.2%	0.06%	1.3%	0.05%	85.8%	14.1%
Block Group 2, Census Tract 202.06, Cape May County, New Jersey (Landfall parcels Block 611.11 Lot 145 and Block 611.11 Lot 137)	0.9%	4.4%	7.7%	0.0%	1.6%	0.1%	85.3%	14.7%
Block Group 1, Census Tract 202.06, Cape May County, New Jersey (Roosevelt Boulevard Bridge Green Acres parcel Block 3350.01 Lot 17)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%

Source: 2015- 2019 ACS 5-year estimates.

The U.S. Census (2018a) uses the following definitions to define race categories:

· White. A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

· Black or African American. A person having origins in any of the Black racial groups of Africa.

· American Indian and Alaska Native. A person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment.

· Asian. A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

· Native Hawaiian and Other -Pacific Islander. A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

· Two or more races. People may choose to provide two or more races either by checking two or more race response check boxes, by providing multiple responses, or by some combination of check boxes and other responses. For data product purposes, "Two or More Races" refers to combinations of two or more of the following race categories: "White," "Black or African American," American Indian or Alaska Native," "Asian," Native Hawaiian or Other Pacific Islander," or "Some Other Race".

People who identify their origin as Hispanic, Latino, or Spanish may be of any race.

Low-income populations have been analyzed using U.S. Census poverty data for the two block groups for the Green Acres encumbered parcels. To determine whether either of these block groups would be identified as an environmental justice population based on income, the poverty rate within each block group was compared to the poverty rate in the county as a whole as shown in **Table 3.2.5-3.** Neither block group would be considered a low-income population, since the percentage of households in poverty is below the percentage for Cape May County.

Table 3.2.5-3. Poverty rates in the BL England study area.

Geography	Total Households	Households Below Poverty	Percent
State of New Jersey	3,231,874	323,772	10.0%
Cape May County, New Jersey	40,171	3,812	9.5%
Block Group 2, Census Tract 202.06, Cape May County, New Jersey (Landfall parcels Block 611.11 Lot 145 and Block 611.11 Lot 137)	206	10	4.9%
Block Group 1, Census Tract 202.06, Cape May County, New Jersey (Roosevelt Boulevard Bridge Green Acres parcel Block 3350.01 Lot 17)	205	7	3.4%

3.2.6 Aesthetics

The landscape character in the vicinity of the onshore export cable corridors at BL England includes a combination of natural views such as beaches, shorelines, and marshes, and man-made views such as unique buildings, landscaping, parks, and other cultural features. Important visual resources include those recognized as highly valued (e.g., identified by a visitor's organization or historic preservation office) and views and vistas that people are accustomed to seeing as part of the everyday landscape/seascape (e.g., boardwalks, skylines, the Atlantic Ocean, bays, and tidal rivers).

The topography in the vicinity of the onshore export cable corridors at BL England is primarily flat and coastal with beaches and barrier islands characterized by dense populations. The Green Acres encumbered parcels include public access to the beach at landfall and to Peck Bay at the Roosevelt Boulevard Bridge parcel.

3.3 Environmental Impacts of the Proposed Action

3.3.1 Land

The area proposed for diversion at landfall is classified as barren land and is part of the beach in Ocean City (Block 611.11 Lots 137 and 145). The export cable will be installed under the beach and riparian grant (Block 3500 Lot 1) area using HDD to minimize impacts to the beach and nearshore area. The area proposed for diversion along Roosevelt Boulevard (Block 3350.01 Lot 17) is classified as wetland and has been delineated in the field as wetland. The export cable will be installed under the Green Acres encumbered parcel to minimize impacts to the wetland and associated recreational facilities. No contaminated soils are known to occur at the Green Acres encumbered parcels and disturbance of contaminated soils is not expected. Drilling mud will be monitored during the drilling process.

3.3.1.1 Geology and Soils

Potential impacts to soils and sediments at the Green Acres encumbered parcels include land disturbance and seabed disturbance and potential contamination from spills. Ocean Wind proposes to install the export cable under the Green Acres encumbered parcels using HDD to minimize impacts to soils and sediments. In the unlikely event of an inadvertent return during drilling, there is a potential for impacts to soils and the surface from inadvertent returns of drilling fluid (typically consisting of bentonite and water) within the Green Acres encumbered parcels during drilling. Ocean Wind will develop and implement an Inadvertent Return Plan that includes measures to prevent inadvertent returns of drilling fluid to the extent practicable and measures to

be taken in the event of an inadvertent return. The proposed HDD method would avoid surface impacts including impacts to topography. **Table 3.3.1-1** provides the acreage of land affected within each Green Acres encumbered parcel and the riparian grant area in Ocean City.

Contamination from spills or leaks of fuels, lubricants, and coolant from construction equipment within the nearby HDD workspace could adversely affect soils and sediments. The potential for these impacts will be minimized by implementing a Spill Prevention, Control, and Countermeasures (SPCC) Plan. All applicant proposed measures to avoid and minimize impacts are described in Section 3.4.

Table 3.3.1-1. Acreage of land affected within each Green Acres Parcel within Ocean City.

Block/Lot	Owner	County/ Municipality/Street Address	Acreage of Permanent Easement through Green Acres Encumbered Areas (30 foot wide)
Block 611.11/ Lot 145	City of Ocean City	Cape May County/ Ocean City/ 3500-02 Wesley Ave	0.026 acre
Block 611.11/ Lot 137	City of Ocean City	Cape May County/ Ocean City/ 3501-03 Wesley Ave	0.362 acre
Block 3500, Lot 1 (Including Riparian Grant)	City of Ocean City	Cape May County/Ocean City	0.191 acre
Block 3350.01/ Lot 17	City of Ocean City	Cape May County/ Ocean City/ Bay Ave and 34th St	0.068 acre

3.3.1.2 Land Use

Most impacts on land use at the Green Acres encumbered parcels will be avoided through the use of HDD installation technology, but there may be short-term and minor noise impacts during active installation. The cable would be installed under the Green Acres encumbered parcels using HDD to minimize impacts to the resources and current uses (beach and nearshore waters of the Atlantic for landfall (Block 611.11 Lot 145; Block 611.11 Lot 137; and Block 3500 Lot 1) and tidal wetlands along the Roosevelt Boulevard Bridge Green Acres parcel (Block 3350.01 Lot 17)). Impacts would be limited to noise from the nearby HDD entry pits which would be located outside of the Green Acres encumbered parcels (within 35th Street for landfall and within the exit ramp from Roosevelt Boulevard). Following installation, the public would still have access to the surface, and the current use would continue, so no long-term impacts to current land uses are anticipated. Per the Ocean City zoning map, dated August 31, 2016, the Roosevelt Boulevard Bridge Green Acres parcel (Block 3350.01 Lot 17) is zoned as Conservation area. The parcels at the HDD landfall are zoned as Residential Oceanfront- Two Family (Block 611.11 Lot 145 and Block 611.11 Lot 137). The area from the mapped parcel boundaries (Block 611.11 Lot 137) to the ocean is zoned as Beach Dune. Installation of the export cable under the Roosevelt Boulevard Bridge Green Acres parcel area zoned as Conservation and under the landfall Green Acres encumbered parcels area zoned as Beach-Dune is consistent with that zoning. The export cable will be approximately 50 feet under

the beach at landfall, and below USACE depth of closure for their beach nourishment project. Therefore, there will be no impact to the beach nourishment project. The easement would include long term restrictions on building that would limit future land uses for the life of the Project. The parcels at landfall zoned Residential Oceanfront-Two Family (Block 611.11 Lot 145 and Block 611.11 Lot 137) would be restricted and development of structures would not be permitted.

3.3.2 Water

Ocean Wind will use HDD technology to install the export cable under the Green Acres encumbered parcels to avoid or minimize impacts to groundwater, the Atlantic Ocean, wetlands and Peck Bay and the associated habitat and biota. Using HDD will avoid disturbance of seabed sediments and surface soils minimizing potential changes in turbidity. There is a potential for inadvertent returns during drilling, which could result in a release of mud (used to lubricate the drill path) into wetlands or waterbodies, however this is unlikely. Such a release could increase turbidity in the surface water column. Ocean Wind will develop and implement an Inadvertent Return Plan that includes measures to prevent inadvertent returns of drilling fluid to the extent practicable and measures to be taken in the event of an inadvertent return to reduce the potential for impacts associated with inadvertent returns.

There is also a potential for introduction of contaminants into surface water and wetlands through inadvertent spills in the HDD workspace outside the Green Acres parcels but nearby. Disturbance of soil or sediments in the HDD workspace could cause an increase in turbidity and affect water quality in the Green Acres parcels as well. Ocean Wind will develop and implement a SPCC plan and Stormwater Pollution Prevention Plan (SWPPP) to minimize potential for impacts associated with spills and stormwater. These plans will also minimize the potential for impacts to groundwater.

The proposed Project will not require groundwater or surface water withdrawals within the Green Acres encumbered parcels.

3.3.3 Air and Noise

While the proposed WTGs will not generate air emissions during operation, the Project will emit air pollutants during construction, operation, and decommissioning phases primarily due to marine vessel traffic. As explained in this section, the air emissions from these phases of the Project will be offset by the Project's displacement of fossil fuel-generated electricity on the regional power grid (PJM Interconnection L.L.C.) for 35 years, the lifespan of the Project.

Potential emissions for the Project were estimated using the Project Design Envelope concept resulting in emission estimates that are conservatively high. A very small subset of the overall Project emissions during construction are anticipated to occur within Green Acres encumbered parcels. Activities anticipated to occur in Green Acres encumbered parcels includes offshore export cable installation using HDD installation techniques. Project emissions anticipated to occur within Green Acres encumbered parcels were estimated by scaling overall Project emissions to activities occurring in Green Acres encumbered parcels. This was accomplished by multiplying Project emissions for each activity by the proportion of activity that will occur in Green Acres encumbered parcels to the overall Project activity. For example, Ocean Wind will install up to 540,772 feet (102.4 statute miles, 89 nautical miles) of offshore export cable, of which 730 feet is anticipated to occur within Green Acres encumbered parcels. Therefore, emissions associated with installation of offshore export cable were multiplied by (730/540,772). Potential emission estimates occurring within Green Acres encumbered parcels are presented in **Table 3.3.3-1**. It is not expected that the Project will emit air pollutants within Green Acres encumbered parcels during operations and maintenance or decommissioning phases.

Table 3.3.3-1. Potential construction phase emissions within Green Acres parcels.

Emission Source	CO_2e	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	Lead [1]	VOC
Onshore Equipment	35.3	0.02	0.07	0.004	0.003	0.0003	--	0.004
Marine Vessels	42.7	0.15	0.65	0.02	0.02	0.004	0.000003	0.01
Total	78.0	0.17	0.72	0.024	0.023	0.0043	0.000003	0.014

[1] Lead emissions were not estimated for onshore equipment because emissions were estimated using EPA's MOVES2014b, which does not have emission factors for lead.

Although Project emissions occurring outside Green Acres encumbered parcels may impact air quality within Green Acres encumbered parcels, the Project will have a net benefit on ambient air quality in New Jersey and in the region. Even though short-term impacts include emission of air pollution during the construction phase, and a small amount of pollution during the operational phase, the proposed Project would provide renewable electricity, providing more than half a million New Jersey homes with clean, reliable, and stable-priced power. The Project would thereby result in a net reduction of regional air pollution. **Table 3.3.3-2** below shows estimated avoided emissions on an annual basis and over the 35-year lifespan of the Project.

Table 3.3.3-2. Avoided annual emissions (tons).

	CO_2	CH_4	N_2O	Black Carbon	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	Lead	VOC
Annual	2,989,161	243.0	35.2	5.4	648.9	2,362	151.6	114.2	5,705	0.1	71.6
Lifetime	104,620,660	8,506	1,231	187.5	22,710	82,695	5,307	3,997	199,704	3.5	2,506

The Project itself is an air quality impact avoidance measure since it would result in a net reduction of regional air pollution over the life of the Project through displacement of fossil fuel-generated power plants. Other potential impacts are short-term. Short term impacts include emission of air pollutants during construction, operations and maintenance, and decommissioning phases resulting from fugitive dust and emissions from Project equipment and vessels associated with construction-related activities and on a smaller scale with operations-related activities. Project emissions will be minimized through compliance with applicable air pollution control rules including 40 CFR Part 55, N.J.A.C. Air Pollution Control Rules, and General Conformity. Per Part 55, the Project will need to employ Best Available Control Technology and Lowest Achievable Emission Rate technology. The Project will have a net benefit on ambient air quality in New Jersey and in the region.

3.3.3.1 Prevention of Noise Problems

The use of HDD equipment near the Green Acres encumbered parcels will likely result in temporary noise impacts during active installation. Noise impacts would be short term and temporary. In order to prevent noise problems, the Project will comply with NJDEP noise regulations (New Jersey Administrative Code [N.J.A.C.] 7:29) and comply with any local noise regulations, to the extent practicable, to minimize impacts on nearby communities. However, due to proximity of buildings, noise during construction may exceed thresholds included in regulations and ordinances. In addition, once drilling begins it will continue until complete to prevent borehole collapse, so work outside of hours specified in NJDEP and local noise regulations is expected.

3.3.3.2 Prevention of Odor Problems

Installation of the Project is not expected to result in odors. In order to prevent any odor problems associated with the Project on Green Acres encumbered parcels in particular, low sulfur fuels for the Project will be used to the extent practicable (15 parts per million [ppm] per 40 Code of Federal Regulations [CFR] §80.510(c) as applicable). Select engines designed to reduce air pollution to the extent practicable (such as U.S. EPA Tier 3 or 4 certified) will be utilized. During construction, there will be a limited engine idling time.

3.3.4 Aquatic and Terrestrial Wildlife

No loss or gain in wildlife or fish habitat is expected at the Green Acres parcels. Use of HDD to install the export cable beneath the Green Acres encumbered parcels will avoid surface disturbance and minimize impacts to fish and wildlife species and habitat, including state and federal threatened and endangered plants, animals, and fish. Construction activities within and adjacent to these parcels may cause temporary displacement of fish and wildlife from the immediate vicinity of the workspace area (including within the encumbered parcels) due to noise, equipment, and the presence of workers. See Section 3.4 for additional information on avoidance mitigation measures for fish and wildlife.

Mobile life stages of fish and wildlife are expected to leave the area of active construction. Fish may be impacted through reduced water quality in the event of an inadvertent return. Measures to protect water quality and fish are provided in section 3.4.

3.3.5 Social and Economic

3.3.5.1 Historic, Archaeological or Cultural Resources

The Green Acres encumbered parcels onshore (Block 611.11 Lot 145; Block 611.11 Lot 137; and Block 3350.01 Lot 17) have been previously disturbed and no intact archaeological resources likely remain. In the nearshore riparian grant area (Block 3500 Lot 1), historic period resources or submerged ancient landforms of archaeological interest are not expected to exist within the landfall area. Ocean Wind will develop unanticipated discoveries plans (UDP) for the marine and terrestrial environments and will implement them during construction.

No historic properties are located within the Green Acres encumbered parcels. Installation of the Project under the Green Acres encumbered parcels would avoid surface disturbance during construction and the transmission lines would be buried and not visible during operation.

3.3.5.2 Public Access and Public Recreational Facilities

Access to specific areas utilized for recreation at the Green Acres encumbered parcels may be temporarily restricted during construction, which could result in short-term traffic or pedestrian diversions and may temporarily exclude recreational users from accessing certain areas. Ocean Wind will coordinate construction activities to try to avoid community events (e.g., annual marathons or parades) and develop a construction schedule to minimize activities in the onshore export cable corridors during the peak summer recreation and tourism season, where practicable.

The cable would be installed under the Green Acres encumbered parcels using HDD to avoid or minimize impacts to the resources and current uses (landfall: beach, nearshore portions of the ocean). The HDD entry pits would be located outside of the Green Acres encumbered parcels within 35th Street at landfall and within the exit ramp along Roosevelt Boulevard. During construction, the areas used for drill workspace would be temporarily disturbed and access would be temporarily restricted, but the surface area at the Green Acres encumbered parcels is expected to remain undisturbed and access to the beach at 34th and 36th Street would remain available. In the unlikely event a construction disturbance does occur along the cable route near the beach, emergency access to the beach area will be via the 34th or 36th Street access points. Following installation, the public would

still have access to the surface (including the beach), and the current use would continue. Therefore, no long-term impacts are anticipated.

HDD installation will generate noise that would likely be heard at Green Acres encumbered parcels. Construction activities would divert local traffic from the HDD workspace on 35th Street and generate additional vehicular traffic in the area. Within the riparian grant area, public access to the offshore export cable corridor area may be temporarily restricted in the immediate area of active construction activities. Areas may not be accessible for fishing and recreation (e.g., boating, swimming, surfing, scuba diving, sailing, and paddle sports) when vessels are on site conducting construction activities. However, any restricted area would be very localized and would represent a negligible area in relation to the available nearshore recreational space available adjacent to the work corridor and in other areas such as Ocean City.

Within the offshore export cable corridor near the riparian grant area, noise generated from construction activities may include pile driving, dredging, site preparation activities associated with the in-water HDD pit, general HDD equipment operations, pipe towing activities, etc. for the installation of the offshore export cable and increased vessel traffic.

During Project operations, recreation and tourism activities at the Green Acres encumbered parcels and riparian grant area would be consistent with pre-existing conditions as cables would be buried. Other impacts would be short-term. The noise, traffic, and visual impacts generated during construction activities may temporarily deter recreation in the Green Acres encumbered parcels (including the riparian grant area), specifically, the beach surrounding the landfall area to be diverted.

3.3.5.3 Environmental Justice

Within the Onshore Project Area that is Green Acres encumbered, there are not low-income communities. The census block group that includes the landfall parcels has a minority population slightly above the County and therefore could be considered a minority community. Any potentially adverse environmental impacts associated with construction of the Project would be minimized and/or mitigated, as applicable, and are not characterized as high and adverse. The location of facilities within minority and low-income block groups are not disproportionate to the project facilities located outside environmental justice areas. Based on this analysis, the Project would not cause a disproportionate share of high and adverse environmental or socioeconomic impacts on any racial, ethnic, or socioeconomic group.

During Project operations, the Project would result in a net reduction of regional air pollution (and associated health and environmental benefits), which would benefit all communities, including low income and minority communities. The operation and maintenance of onshore export cables within minority and low-income block groups would not cause a disproportionate share of high and adverse environmental or socioeconomic impacts on any racial, ethnic, or socioeconomic group.

3.3.6 Aesthetics

During construction, temporary visual impacts will occur in the vicinity of the Green Acres encumbered parcels as a result of construction equipment and disturbed soil at the nearby HDD workspaces within 35th Street and the Roosevelt Boulevard ramp. HDD will be used to install the Project under the Green Acres encumbered parcels to avoid direct impacts to the parcels. The cables will be buried to avoid permanent visual impacts, resulting in change to the present character of the Green Acres parcels.

3.3.7 Solid Waste

Wastes associated with installation of the Project under the Green Acres encumbered parcels may include solid trash, drilling solids, and drilling muds. During operation of the Project, waste would only be generated in the

event of a repair. Where feasible, Ocean Wind will reduce waste and recycle to minimize its waste generation. Ocean Wind will prepare and implement waste management plans. Ocean Wind is likely to use a site-specific Waste Management Register to identify, profile, categorize, and coordinate each waste stream. Wastes would be disposed of in an appropriate licensed landfill and/or recycling center. Please see Section 3.4 for specific information on mitigation measures regarding waste within the onshore and offshore Project areas.

3.3.8 Sustainability

The Project is proposed to meet New Jersey's need to fulfill the State's Offshore Wind Economic Development Act, which mandates the development of a minimum of 1,100 megawatts (MW) of offshore wind resources. The Project also contributes to meeting the need established by both NJ Executive Order 8, which set a goal of 3,500 MW of renewable energy by 2030, and Executive Order 92, which in November 2019 increased the goal to 7,500 MW by 2035.

Under the New Jersey Offshore Wind Energy Development Act (OWEDA), the NJBPU is required to establish an OREC program requiring a percentage of electricity sold in the state be from derived from offshore wind energy, in order to support at least 1,100 MW of generation from qualified projects. On June 21, 2019, the NJBPU selected the Ocean Wind Project for an OREC award (NJBPU Docket No. QO18121289). The OREC allowance includes 4,851 gigawatt hours per year (GWh/year) of energy production. and Ocean Wind has contractual commitments to the NJBPU pursuant to the 2019 Power Purchase Agreement resulting from the NJBPU's competitive selection process. The proposed Project is scheduled for construction beginning in 2023, with first power in 2024.

The Project's benefits include the following:

- Contributing to meeting state renewable energy goals and replacing fossil fuel-based energy sources;
- Improving regional air quality through the net reduction of regional air pollution over the life of the Project;
- Creating artificial reefs through the placement of WTGs, which will create hard substrate habitats for a new, more diverse community of finfish and invertebrates; and
- Increased job opportunities, increased property tax revenue, and increased income associated with local construction employment. Long-term employment opportunities during the operations phase will include the creation of operations and maintenance jobs. Artificial reefs are expected to increase the number of trips and revenue for recreational fishermen.

3.3.8.1 Siting

During Project planning, Ocean Wind assessed several options for interconnection points, turbine layout, offshore and onshore substations, and export cable routes. These options were reviewed relative to Ocean Wind's purpose and need, schedule, and geographic requirements, as well as avoidance and minimization of potential impacts during construction, operation and maintenance, and decommissioning. The screening and siting of the Project is being conducted in three phases: 1) initial screening, 2) desktop study, windshield surveys, and stakeholder outreach, and 3) site specific surveys. The initial screening process involved the review and evaluation of various potential interconnection options, taking into consideration Ocean Wind's purpose and need and the criteria summarized below in **Table 3.3.8-1.**

Historically the power grid in New Jersey was built up to supply the main load centers from large conventional fuel generation, such as coal, oil, gas and nuclear, as well as interconnection with the rest of the state and neighboring states. Two large generators of this type have recently retired on the Atlantic Coast, which were connected to the grid near the Ocean Wind Offshore Wind Farm. These are the Oyster Creek nuclear (636 MW) and the BL England coal, oil, and diesel (450 MW) generators.

The Oyster Creek nuclear plant was retired during the Project development phase and is entering the decommissioning phase. Similarly, the BL England coal, oil, and diesel plant has retired in phases from 2014 to 2019. Utilizing the existing grid infrastructure used to formerly interconnect these plants provides the most efficient method of connecting offshore wind energy to the grid. It will take existing disturbed area from energy generating facilities and continue that land use using sustainable renewable energy. The offshore energy created will use the onshore plants to connect to the power grid.

The BL England onshore export cable route is sited primarily within road right-of-ways, which were seen as siting opportunities to minimize impacts to the environment. During planning, alternate installation methods were considered such as open cut installation. HDD was selected to minimize impacts to the nearshore, beach and wetland habitats at the Green Acres encumbered parcels.

Table 3.3.8-1. Summary of criteria for Project screening and siting.

Project Segment	Criteria
Wind Turbine Array	• Clustered development for consolidated use of export cables and O&M economies. • WTG location that minimizes visual impacts • Optimize WTG spacing - avoid spacing that limits options for future development and optimize wind resource and generation. • Avoid known submerged shipwrecks and other cultural resources. • Avoid known artificial reefs and unique habitats. • Avoid and minimize conflicts to existing users (e.g., fishermen and USCG operations)
Interconnection Points	• Availability of interconnection points (breaker positions) at the substation, or the capability to add interconnection points. • Capability of existing circuits connected to the substation that could accommodate the additional capacity of the Project. • Extent or the need for substation or system upgrades.
Onshore Substations	• Avoid or minimize impacts to environmental features (e.g., critical habitat, wetlands, cultural resources, existing contamination). • Proximity to the export cable route to minimize environmental impacts, neighborhood disruption (e.g., disturbances, interruptions, or changes), and costs associated with the cable connections to the point of interconnection. • Sufficient land available (a minimum of 6 acres). • Consistency with, and potential impacts on, adjacent land uses. • Constructability and cost. • Optimization of cable route lengths. • Availability of suitable landfall locations (i.e., those that minimize environmental impacts and are within 10 miles of the substation).
Export Cable Landfalls	• Avoid or minimize impacts to environmental features (e.g., critical habitat, shellfish lease areas, fish spawning areas, cultural resources, and existing contamination) by leveraging existing conditions (i.e., targeting areas that are closed to shellfish harvesting permanently). • Consistency with, and potential impacts on, adjacent land uses. • Constructability and cost. • Optimization of cable route lengths. • Availability of suitable landfall locations (i.e., those that minimize environmental impacts and are within 10 miles of the substation). • Use of existing ROWs when a landfall location was not adjacent to the water.

Project Segment	Criteria
Offshore Export Cable Route	• Minimize extreme changes in slope and water depths. • Coarse grain sediments of sufficient depth to meet target cable burial depths while avoiding pockets of contaminated sediments and organic sediments. • Optimization of cable route lengths. • Avoid or limit crossing navigation channels and anchorage areas. • Avoid known submerged shipwrecks and other cultural resources. • Avoid mining and or dredge spoil areas. • Minimize number of infrastructure (e.g., utility) crossings. • Minimize impacts to aquatic communities and sensitive habitats. • Constructability and cost.
Onshore Export Cable Route	• Minimize extreme changes in slope. • Property availability and State-owned and existing utility ROW. • Avoid known Superfund Sites or sites designated as hazardous. • Avoid known locations of historic or archaeological resources. • Avoid or minimize number of infrastructure (e.g., roads, bridges, culverts) crossings. • Minimize impacts to wetlands and floodplains. • Minimize the overall length of the route to minimize impacts to terrestrial communities, wildlife species, and sensitive habitats. • Minimize impacts to aesthetic resources. • Minimize impacts to sensitive receptors such as hospitals, schools, and churches.

3.3.8.2 Additional Sustainable Benefits

The Project will improve regional air quality through the net reduction of regional air pollution annually and over the life of the Project. Section 3.3.3 above, provides a description of the reduction in avoided annual emissions.

Part of the Project includes the involvement of local Universities to support research in offshore wind- related fields. The Project executed a Memorandum of Understanding (MOU) with Stockton University in March 2019 to provide funding to assist in promoting educational programming related to alternative energy, climate change and resiliency. An MOU was signed with Rutgers University in May 2019 to support academic research activities related to offshore wind. An MOU was executed in April 2019 with Rowan University to support innovative offshore wind engineering clinics. The Project developed an MOU with Montclair University to host a Wind Energy Roundtable session for stakeholders; support clean energy and sustainability analytics research; support student and faculty researcher participation in outreach and dissemination through presenting at workshops, conferences, and meetings. By signing these MOUs and involving Universities to promote research in offshore wind-related fields, the Project is engaging future generations to become involved in sustainable renewable energy research and implementation.

3.3.9 Cumulative Effects

Cumulative impacts are the incremental effects of the proposed action on the environment when combined with the past present and reasonably foreseeable actions.

The proposed Project will be buried below the Green Acres encumbered parcels and will be installed using HDD techniques to avoid and minimize incremental impacts during construction and operation at and near the Green Acres encumbered parcels. Recreational use will not be impacted once construction is complete. The easement would include long term restrictions on building that would limit future land uses for the life of the Project. With the exception of development restrictions, use of HDD to install the cable and implementation of the Applicant Proposed Measures in Section 3.4 will avoid or reduce impacts to those that are minor, short-term, and temporary.

Per the Ocean City zoning map, dated August 31, 2016, parcels at the HDD landfall are zoned as Residential Oceanfront- Two Family. The easement would include long term restrictions on building that would limit future land uses for the life of the Project. The parcels at landfall zoned Residential Oceanfront- Two Family would be restricted and development of structures would not be permitted.

3.4 Appropriate Environmental Design and Avoidance, Minimization and Mitigation

This section includes a summary of the Applicant Proposed Measures (APMs) to avoid, minimize, or mitigate impacts, and monitoring, by resource area (T**able 3.4-1**). The proposed APMs presented in **Table 3.4-1** were developed based on the Bureau of Ocean Energy Management's (BOEM's) best management practices (BMPs) as detailed in Appendix S of Volume III of the COP.

Table 3.4-1. Applicant proposed measures (APMs) to avoid, minimize, or mitigate impacts, and monitoring.

APM Number *	Applicant Proposed Measure**	Geological Resources	Water Quality	Air Quality	Terrestrial & Coastal Habitats	Terrest. & Coastal Fauna	Birds	Bats	Benthic Resources	Fish & EFH	Marine Mammals	Sea Turtles	Demog. Employ. & Econ.	Environmental Justice	Rec. & Tourism	Comm. & For-Hire Rec. Fishing	Land Use & Coastal Infrastructure	Nav. & Vessel Traffic	Other Marine Uses	Cultural Resources
General																				
Project Siting																				
GEN-01	**Site onshore export cable corridors and landfall within existing rights-of-way or previously disturbed/developed lands to the extent practicable.**	●	●	●	●	●	●	●					●	●	●		●			●
GEN-02	Site onshore, cable landfall and offshore facilities to avoid known locations of sensitive habitat (such as known nesting beaches) or species during sensitive periods (such as nesting season); important marine habitat (such as **high density, high value fishing grounds as determined by fishing revenues estimate [BOEM Geographical Information System (GIS) Data** - see Section 2.3.4])**;** and sensitive benthic habitat; to the extent practicable. Avoid hard-bottom habitats and seagrass communities, where practicable, and restore any damage to these communities.	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
GEN-03	Avoid areas that would require extensive seabed or onshore alterations to the extent practicable.	●	●	●	●	●	●	●	●	●	●	●				●	●			●
GEN-04	Bury **onshore** and offshore cables below the surface or seabed to the extent practicable and inspect offshore cable burial depth periodically during project operation, as described in the Project Description, to ensure that adequate coverage is maintained to avoid interference with fishing gear/activity.	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
GEN-06	Develop and implement a site-specific monitoring program to ensure that environmental conditions are monitored during construction, operation, and decommissioning phases, designed to ensure environmental conditions are monitored and reasonable actions are taken to avoid and/or minimize seabed disturbance and sediment dispersion, consistent with permit conditions. The monitoring plan will be developed during the permitting process, in consultation with resource agencies.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

APM Number *	Applicant Proposed Measure**	Geological Resources	Water Quality	Air Quality	Terrestrial & Coastal Habitats	Terrest. & Coastal Fauna	Birds	Bats	Benthic Resources	Fish & EFH	Marine Mammals	Sea Turtles	Demog. Employ. & Econ.	Environmental Justice	Rec. & Tourism	Comm. & For-Hire Rec. Fishing	Land Use & Coastal Infrastructure	Nav. & Vessel Traffic	Other Marine Uses	Cultural Resources
Design																				
Construction																				
GEN-08	To the extent practicable, use appropriate installation technology designed to minimize disturbance to the seabed and sensitive habitat (such as beaches and dunes, wetlands and associated buffers, streams, hard-bottom habitats, seagrass beds, and the near-shore zone); avoid anchoring on sensitive habitat; and implement turbidity reduction measures to minimize impacts to sensitive habitat from construction activities.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●
GEN-10	Prepare waste management plans and hazardous materials plans as appropriate for the Project.		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
GEN-11	Establish and implement erosion and sedimentation control measures in a **Stormwater Pollution Prevention Plan (SWPPP**, authorized by the State), and Spill Prevention, Control, and Countermeasures (SPCC) Plan to minimize impacts to water quality (signed/sealed by a New Jersey Professional Engineer and prepared in accordance with applicable regulations such as NJDEP Site Remediation Reform Act, Linear Construction Technical Guidance, and Spill Compensation and Control Act). Development and implementation of an Oil Spill Response Plan (OSRP, part of the SPCC plan) and SPCC plans for vessels.	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
GEN-12	**Where HDD trenchless technology methods are used, develop, and implement an Inadvertent Return Plan that includes measures to prevent inadvertent returns of drilling fluid to the extent practicable and measures to be taken in the event of an inadvertent return.**	●	●		●	●	●		●	●	●	●		●		●	●		●	
Restoration																				
GEN-13	**Restore disturbance areas in the Onshore Project Area to pre-existing contours** (maintaining natural surface drainage patterns) and allow vegetation to become reestablished once construction activities are completed, to the extent practicable.	●	●	●	●	●	●	●		●				●			●			

APM Number *	Applicant Proposed Measure**	Geological Resources	Water Quality	Air Quality	Terrestrial & Coastal Habitats	Terrest. & Coastal Fauna	Birds	Bats	Benthic Resources	Fish & EFH	Marine Mammals	Sea Turtles	Demog. Employ. & Econ.	Environmental Justice	Rec. & Tourism	Comm. & For-Hire Rec. Fishing	Land Use & Coastal Infrastructure	Nav. & Vessel Traffic	Other Marine Uses	Cultural Resources
Communication																				
GEN-15	**Develop and implement an Onshore Maintenance of Traffic Plan to minimize vehicular traffic impacts during construction. Ocean Wind would designate and utilize onshore construction vehicle traffic routes, construction parking areas, and carpool/bus plans to minimize potential impacts.**			●		●	●						●	●	●		●			
GEN-16	Prior to the start of operations, Ocean Wind will hold training to establish responsibilities of each involved party, define the chains of command, discuss communication procedures, provide an overview of monitoring procedures, and review operational procedures. This training will include all relevant personnel, crew members and protected species observers (PSO). New personnel must be trained as they join the work in progress. Vessel operators, crew members and protected species observers shall be required to undergo training on applicable vessel guidelines and the standard operating conditions. Ocean Wind will make a copy of the standard operating conditions available to each project-related vessel operator.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
GEN-17	**Implement Project and site-specific safety plans (Safety Management System, Appendix B).**		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Geological Resources																				
GEO-03	Conduct periodic and routine inspections to determine if non-routine maintenance is required.	●	●				●	●	●	●	●	●	●	●		●	●	●	●	●
Air Quality																				
AQ-01	**Use low sulfur fuels to the extent practicable** (15 parts per million [ppm] per 40 Code of Federal Regulations [CFR] §80.510(c) as applicable)**.**			●										●						

APM Number *	Applicant Proposed Measure**	Geological Resources	Water Quality	Air Quality	Terrestrial & Coastal Habitats	Terrest. & Coastal Fauna	Birds	Bats	Benthic Resources	Fish & EFH	Marine Mammals	Sea Turtles	Demog. Employ. & Econ.	Environmental Justice	Rec. & Tourism	Comm. & For-Hire Rec. Fishing	Land Use & Coastal Infrastructure	Nav. & Vessel Traffic	Other Marine Uses	Cultural Resources
AQ-02	**Select engines designed to reduce air pollution to the extent practicable (such as U.S. Environmental Protection Agency [USEPA] Tier 3 or 4 certified).**			●										●						
AQ-03	**Limit engine idling time.**			●										●						
AQ-05	**Implement dust control plan.**	●	●	●																
Terrestrial and Coastal Habitats and Fauna																				
TCHF-01	Coordinate with the New Jersey Department of Environmental Protection (NJDEP) and United States Fish and Wildlife Service (USFWS) to identify unique or protected habitat or known habitat for threatened or endangered and candidate species and avoid these areas to the extent practicable.				●	●	●	●	●	●	●	●								
TCHF-02	**Conduct maintenance and repair activities in a manner to avoid or minimize impacts to sensitive species and habitat such as beaches, dunes, and the near-shore zone.**		●		●	●	●	●	●	●	●	●	●		●					
Benthic Resources																				
BENTH-01	Ocean Wind is conducting appropriate pre-siting surveys to identify and characterize potentially sensitive seabed habitats and topographic features.	●	●		●	●			●	●		●				●			●	●
BENTH-02	Use standard underwater cables which have electrical shielding to control the intensity of electromagnetic fields (EMF). EMF will be further refined as part of the design or cable burial risk assessment.								●	●	●	●				●			●	
BENTH-03	**Conduct a submerged aquatic vegetation (SAV) survey of the proposed inshore export cable route.**				●	●			●	●		●								
Fish and EFH																				
FISH-01	Evaluate geotechnical and geophysical survey results to identify sensitive habitats (e.g., shellfish and SAV beds) and avoid these areas during construction, to the extent practicable.				●				●	●		●	●		●	●	●		●	
FISH-02	Ocean Wind will coordinate with NJDEP, NMFS and USACE regarding time of year restrictions for winter flounder and river				●				●	●					●	●				

APM Number *	Applicant Proposed Measure**	Geological Resources	Water Quality	Air Quality	Terrestrial & Coastal Habitats	Terrest. & Coastal Fauna	Birds	Bats	Benthic Resources	Fish & EFH	Marine Mammals	Sea Turtles	Demog. Employ. & Econ.	Environmental Justice	Rec. & Tourism	Comm. & For-Hire Rec. Fishing	Land Use & Coastal Infrastructure	Nav. & Vessel Traffic	Other Marine Uses	Cultural Resources
	herring, as well as summer flounder habitat areas of particular concern (HAPC).																			
Socioeconomics and Environmental Justice																				
SOC-01	**Comply with NJDEP noise regulations (New Jersey Administrative Code [N.J.A.C.] 7:29), which limit noise from industrial facilities received at residential property lines to 50 decibels during nighttime (10:00 p.m. to 7:00 a.m.) and 65 decibels during daytime as well as specific octave band noise limits, and comply with any local noise regulations, to the extent practicable, to minimize impacts on nearby communities.**												●	●	●		●			
Cultural, Historical, and Archaeological Resources																				
CUL-01	**Develop and implement an Unanticipated Discovery Plan.**																			●
CUL-03	**Conduct background research and consult with the State Historic Preservation Office (SHPO) to determine the need for cultural resource surveys onshore. Any cultural resources found will be avoided to the extent practicable. Where avoidance is not practicable, coordinate with SHPO and affected tribes to determine minimization and mitigation as necessary.**																			●
Recreation and Tourism																				
REC-01	**Develop a construction schedule to minimize activities in the onshore export cable route during the peak summer recreation and tourism season, where practicable.**												●		●	●		●	●	
REC-02	**Coordinate with local municipalities to minimize impacts to popular events in the area during construction, to the extent practicable.**												●		●	●		●	●	

APM Number *	Applicant Proposed Measure**	Geological Resources	Water Quality	Air Quality	Terrestrial & Coastal Habitats	Terrest. & Coastal Fauna	Birds	Bats	Benthic Resources	Fish & EFH	Marine Mammals	Sea Turtles	Demog. Employ. & Econ.	Environmental Justice	Rec. & Tourism	Comm. & For-Hire Rec. Fishing	Land Use & Coastal Infrastructure	Nav. & Vessel Traffic	Other Marine Uses	Cultural Resources
Land Use and Coastal Infrastructure																				
LU-01	**Develop crossing and proximity agreements with utility owners prior to utility crossings.** (Crossing agreements in U.S. waters are supported by the International Cable Protection Committee (ICPC), which provides a framework for establishing cable crossing agreements.)		●						●								●	●	●	

* APM numbers were assigned to allow easy reference to specific measures. Each APM number includes an abbreviation of general (GEN) or the most pertinent resource area (e.g., NAV for Navigation) along with a number.
** **Bold** items are beyond the requirements of or more specific than the BOEM BMPs.

3.5 Unavoidable Adverse Impacts

No impacts that cannot be reduced to acceptable levels are anticipated at the Green Acres encumbered parcels. There will be restrictions on future development on the portion of the Green Acres encumbered parcels included within the easement. With the exception of development restrictions, but recreational opportunities will not be impacted after construction and use of HDD to install the cable and implementation of the Applicant Proposed Measures in Section 3.4 will reduce impacts to those that are minor, short-term, and temporary.

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