



Appendix II-D1

Wetland and Stream Delineation Report – Cardiff

Note:

On March 26, 2021, Atlantic Shores Offshore Wind, LLC (Atlantic Shores) submitted a Construction and Operations Plan (COP) to BOEM for the southern portion of Lease OCS-A 0499. On June 30, 2021, the New Jersey Board of Public Utilities (NJ BPU) awarded Atlantic Shores an Offshore Renewable Energy Credit (OREC) allowance to deliver 1,509.6 megawatts (MW) of offshore renewable wind energy into the State of New Jersey. In response to this award, Atlantic Shores updated Volume 1 of the COP to divide the southern portion of Lease OCS-A 0499 into two separate and electrically distinct Projects. Project 1 will deliver renewable energy under this OREC allowance and Project 2 will be developed to support future New Jersey solicitations and power purchase agreements.

As a result of the June 30, 2021 NJ BPU OREC award, Atlantic Shores updated Volume I (Project Information) of the COP in August 2021 to reflect the two Projects. COP Volume II (Affected Environment) and applicable Appendices do not currently include this update and will be updated to reflect Projects 1 and 2 as part of Atlantic Shores' December 2021 COP revision.

Wetland and Stream Delineation Report

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

Egg Harbor Township, Pleasantville City, and the City of Atlantic City

Atlantic County, New Jersey

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ACRONYM LIST

Atlantic City Electric	ACE
Atlantic Shores Offshore Wind, LLC	Atlantic Shores
Code of Federal Regulations	CFR
Diameter breast height	dbh
Environmental Design & Research, Landscape Architecture, Engineering &	EDR
Environmental Services, D.P.C.	
Environmental Protection Agency	EPA
Facultative	FAC
Facultative Upland	FACU
Facultative Wetland	FACW
Federal Emergency Management Agency	FEMA
Federal Manual for Identifying and Delineating Jurisdictional Wetlands	1989 Interagency Manual
Hydrologic Unit Codes	HUC
Letter of Interpretation	LOI
National Land Cover Dataset	NLCD
National Wetlands Inventory	NWI
Natural Resources Conservation Service	NRCS
New Jersey Administrative Code	N.J.A.C.
New Jersey Department of Environmental Protection	NJDEP
Obligate	OBL
Palustrine emergent wetland	PEM
Palustrine forested wetland	PFO
Palustrine Open Water	POW
Palustrine scrub-shrub wetland	PSS
Point of Interconnection	POI
Right-of-Way	ROW
Square feet	ft ²
United States Army Corps of Engineers	USACE
United States Fish & Wildlife Service	USFWS
United States Geologic Service	USGS
Upland	UPL

1.0 INTRODUCTION

Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR), was contracted by Atlantic Shores Offshore Wind, LLC (Atlantic Shores) to conduct wetland and stream delineations along the approximately 12-mile long and assumed 150-foot wide proposed Cardiff onshore interconnection cable route (onshore cable route) from the Atlantic Landfall of the submarine export cable at Sovereign Avenue in Atlantic City to the Point of Interconnection (POI) at the Cardiff Substation located in Egg Harbor Township and the potential substation locations, herein referred to as the Cardiff Study Area (Exhibit 1 and Figure 1). This report characterizes the Cardiff Study Area and identifies and discusses the evaluation of the three wetland parameters (i.e., hydrology, soils, and vegetation) involved in determining the location and extent of jurisdictional wetland area boundaries. Due to security access restrictions, wetland and stream delineations were not conducted on the Cardiff Substation parcel; only a desktop evaluation.

Exhibit 1: Cardiff Study Area Location (not drawn to scale)



1.1 REGULATORY FRAMEWORK

Wetlands are defined as *“those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas”* (Environmental Protection Agency, 40 CFR 239.3 and Army Corps of Engineers, 33 CFR 328.3).

Navigable waters of the United States *“are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity”* (Army Corps of Engineers, 33 CFR 320.4).

Freshwater wetlands and waterbodies are typically under the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE) subject to Section 404 of the Clean Water Act; however, the New Jersey Legislature in July 1987 passed the state's Freshwater Wetlands Protection Act which provided protection for inland and coastal wetlands. This act provided the framework for New Jersey to establish a comprehensive permitting program to regulate all activities in freshwater and tidal wetlands and wetland transition areas under N.J.A.C. 7:7 et. seq.. As a result of this permitting program, a memorandum of understanding between the United States Environmental Protection Agency (EPA), United States Fish & Wildlife Service (USFWS), and the New Jersey Department of Environmental Protection (NJDEP) and a memorandum of agreement between the USACE and NJDEP has provided New Jersey delegated federal authority over non-tidal freshwater wetlands within the state. Navigable waters of the U.S. and other wetlands within 1,000 feet of the head of tide remain under the regulatory jurisdiction of the USACE subject to Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act but are also under NJDEP jurisdiction through the Freshwater Wetlands Protection Act.

Wetland transition areas established under N.J.A.C. 7:7-9.28 and N.J.A.C. 7:7A-3.3(d), varies depending on the resource value classification of the associated wetland or surface water based on surface water quality standards, special area protections and fish and wildlife requirements. The following are the resources classifications and their associated wetland transition areas:

- Ordinary Resource Value (0-foot transition area) wetlands are those that are smaller than 5,000 ft², is considered a drainage ditch or swale, a detention facility created for stormwater purposes or existing in lawns, maintained landscaped areas and other disturbed locations.

- Intermediate Resource Value (50-foot transition area) wetlands are those wetlands that are not classified as either exceptional or ordinary resource value.
- Exceptional Resource Value (150-foot transition area in freshwater wetland systems and 300-foot in tidal wetland systems) wetlands are those that discharge into trout production waters or their tributaries or Category One¹ waters and are a present or documented habitat for threatened & endangered species.

Depending on project design and assessed impacts to the wetlands and waters identified, various NJDEP permits and/or Section 10/404 permits from the USACE may be required.

1.2 PURPOSE

This report describes the results of the wetland and stream delineations conducted which includes identification of the federal and/or state jurisdictional wetland and water resources within the Cardiff Study Area, discussion of the evaluation of the three wetland parameters (i.e., hydrology, soils, and vegetation), and the process of evaluating the three parameters to determine the location and extent of the federal and/or state jurisdictional boundaries of wetlands and waters. This report also includes a preliminary evaluation of the resource value of each wetland according to NJDEP regulations for the purpose of supporting required permit applications.

¹ According to N.J.A.C. 7:9B-1.4 "Category one waters" means those waters designated in the tables in N.J.A.C. 7:9B-1.15(c) through (i), for purposes of implementing the antidegradation policies set forth at N.J.A.C. 7:9B1.5(d), for protection from measurable changes in water quality based on exceptional ecological significance, exceptional recreational significance, exceptional water supply significance or exceptional fisheries resource(s) to protect their aesthetic value (color, clarity, scenic setting) and ecological integrity (habitat, water quality and biological functions).

2.0 GENERAL SITE CHARACTERISTICS

Publicly available information used in determining the presence and approximate boundaries of wetlands and waters of the U.S. were obtained and reviewed prior to commencing field investigations and are summarized in the sub-sections 2.1 through 2.5.

Materials and data supporting this investigation have been derived from a number of publicly available sources including United States Geological Survey (USGS) topographic mapping (i.e., Pleasantville, Oceanville, and Atlantic City NJ 7.5 minute quadrangles), USFWS National Wetlands Inventory (NWI) mapping, NJDEP Wetlands mapping, the Natural Resources Conservation Service (NRCS) Web Soil Survey (Soil Survey Staff, 2020), the NRCS List of Hydric Soils of the State of New Jersey (NRCS, 2020), the National Land Cover Dataset (NLCD) land cover and vegetation classes (Yang et al., 2018), and recent aerial photography.

Vascular plant names follow nomenclature found in the Integrated Taxonomic Information System (ITIS, 2020), and wetland indicator status for plant species was determined by reference to the National Wetland Plant List (Lichvar et al., 2016). Jurisdictional areas were characterized according to the wetlands and deepwater habitats classification system used in NWI mapping (Cowardin, 1979).

2.1 PHYSIOGRAPHY AND SOILS

The Cardiff Study Area is located within the Outer Coastal Plain physiographic province of New Jersey. The local geography includes materials that are marine deposited sedimentary sands, gravels and clays overlain with later deposits of the interglacial Pleistocene time. The area is dominated by the Pinelands ecoregion which contains sandy and excessively well drained soils that have natural undulations in elevation and are generally low fertility soils. The coastal plain province is also an important aquifer area due to the shallow depth to groundwater. These shallow depths to groundwater support a diverse system of drainages and wetlands (NCTC, 2020).

Hydric soil is defined as a “...soil that is saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions in the upper part,” (USDA-SCS 1987) and typically is indicative of a wetland. Extended periods of inundation/saturation cause chemical reactions in the soil that alters the physical characteristics and soil color within the matrix. These properties are used to identify hydric soils and can often be observed during field investigations. Hydric mineral soils generally have a gleyed matrix, low chroma matrix and/or brightly colored redox concentrations (mottles). A representative gleyed soil will have blue, green, or gray coloration directly below the A-horizon, reflecting consistent long-term saturation. A soil containing redox concentrations or mottles with a low chroma matrix is usually a strong indicator of a fluctuating water table. Although soil series may be generally classified as hydric or potentially hydric in the online databases, this is for general use and does not supersede specific conditions documented in the

field. Within the Cardiff Study Area, elevations range from below sea level between Atlantic City and the mainland to approximately 65 feet above sea level approaching Cardiff Substation. The USGS map presented in Figure 1 shows the range of mapped elevations within the Cardiff Study Area and immediate proximity.

The Web Soil Survey of Atlantic County (Soil Survey Staff, 2020) indicates the occurrence of 16 soil series within the Cardiff Study Area (see Figure 2). Psammaquents (PstAt) is the predominant series occurring within the Cardiff Study Area. Other dominant soil series mapped on-site include Downer sandy loam (DocBo) and Galloway loamy sand (GamB). Soils range from very poorly drained to excessively drained, and soil textures range from sand to loamy sand. Table 1 lists the soil series found within the Cardiff Study Area and their characteristics. “Hydric” and “Potentially Hydric” designations are based on information obtained on the NRCS Web Soil Survey (Soil Survey Staff, 2020) and the National Hydric Soils List (Soil Survey Staff, 2020).

Table 1. Cardiff Study Area Soils

Mapping Unit Symbol	Series	Slope (%)	Drainage¹	Hydric²	Potentially Hydric³
AtsAO	Atsion sand, Northern Tidewater Area	0-2	PD	Yes	N/A
AugaB	Aura sandy loam, Northern Tidewater Area	2-5	WD	No	No
BEADV	Beaches, very frequently flooded	0-15	PD	N/A	N/A
DocBO	Downer loamy sand, Northern Tidewater Area	0-5	WD	No	Potentially
FobB	Fort Mott sand	0-5	WD	No	Potentially
GamB	Galloway loamy sand	0-5	SPD	No	Potentially
HbmB	Hammonton loamy sand	0-5	MWD	No	Potentially
HoruBr	Hooksan-Urban land complex, rarely flooded	0-10	ED	N/A	N/A
MumA	Mullica sandy loam	0-2	VPD	Yes	N/A
PHG	Pits, sand and gravel	N/A	WD	No	No
PstAt	Psammaquents, sulfidic substratum, frequently flooded	0-2	VPD	Yes	N/A
SacAO	Sassafras sandy loam, Northern Tidewater Area	0-2	WD	No	No
SacBO	Sassafras sandy loam, Northern Tidewater Area	2-5	WD	No	No
TrkAv	Transquaking mucky peat, very frequently flooded	0-1	VPD	Yes	N/A
WoeAO	Woodstown sandy loam, Northern Tidewater Area	0-2	MWD	No	Potentially

¹ Soil drainage is represented by the following abbreviation: “ED” = excessively drained, “WD” = well drained, “MWD” = moderately well drained, “PD” = poorly drained, and “VPD” = very poorly drained.

²"Yes" indicates this soil is listed as containing 66% or more hydric components within the map unit as listed on the USDA Web Soil Survey.

³"Yes" indicates this soil is listed as containing 1% to 65% hydric components within the map unit as listed on the USDA Web Soil Survey.

2.2 HYDROLOGY

The Cardiff Study Area is located in the NJDEP Great Egg Harbor Watershed Management Area (WMA) as shown in Figure 3. The Cardiff Study Area spans across the following Hydrologic Unit Codes (HUC) that are within the WMA (Figure 3).

- HUC 8:
 - Great Egg Harbor (02040302)
- HUC 10:
 - Great Egg Harbor Bay – Barrier Islands (0204030205)
- HUC 12:
 - Absecon Bay (020403020408)
 - Great Egg Harbor Bay-Great Egg Harbor Inlet (020403020500)
 - Patcong Creek (020403020408)

Most of the surface hydrology within the Cardiff Study Area is generated by precipitation and surface water run-off from adjacent land. Due to the sandy texture of the soil and portions of the Cardiff Study Area at or below Sea Level, there are areas where surface hydrology is influenced by groundwater discharge. In addition, total annual precipitation (from 2000 to 2019) averages 47.21 inches in the Atlantic City Region (NOAA, 2020). The on-site wetland delineation took place during the growing season between June 22 and 24, 2020. Precipitation for the Month of May was low (1.62 inches) compared to the monthly average of 3.38 inches in the Atlantic City Area.

2.3 FEDERAL AND STATE MAPPED WETLANDS

New Jersey State Mapped wetlands indicate that there are 24 mapped wetlands totaling approximately 16.5 acres in the Cardiff Study Area (Figure 4). The mapped wetlands include coniferous scrub/shrub wetlands (0.93 acres), coniferous wooded wetlands (1.08 acre), deciduous scrub/shrub wetlands (0.76 acres), herbaceous wetlands (3.46 acres), a managed wetland in a built-up maintained recreation area (0.50 acre), mixed scrub/shrub wetlands (0.13 acre deciduous dominated), Phragmites dominated coastal wetlands (0.04 acre), Phragmites dominated interior wetlands (0.91 acre), saline marsh (7.75 acres high marsh and 0.90 acres low marsh).

NWI mapping indicates the presence of 16 wetland communities and 15 riverine resources totaling approximately 10.6 acres within the Cardiff Study Area (Figure 4). Freshwater emergent wetland communities are the dominant community types mapped on site, totaling approximately 5.86 acres. Other NWI-mapped communities within the Cardiff Study

Area include estuarine and marine wetland (0.78 acre), freshwater forested/shrub wetlands (1.51 acres), and riverine resources (2.44 acres).

New Jersey mapping identifies two perennial waterways and an estuary of several thoroughfares within the Cardiff Study Area. The waterways include Mill Branch, Cedar Branch, and the estuary is the Beach and Great Thoroughfare that connects to Lakes Bay consisting of Jonathan Thoroughfare and the Inside Thoroughfare.

2.4 MAPPED FLOODPLAINS

According to the Federal Emergency Management Agency (FEMA) map service, the portions of the Cardiff Study Area on the barrier island and along Route 40 across the estuary are within the 1% chance annual floodplain. The remainder of the Cardiff Study Area on the mainland is outside of any mapped floodplains. Figure 5 shows the location of the mapped floodplain areas in relation to the Cardiff Study Area.

2.5 VEGETATION

Land cover and vegetation occurring within the Cardiff Study Area were evaluated using current NLCD mapping, which is compiled by the USGS (Yang et al., 2018), and further verified during the on-site field investigations. The Cardiff Study Area encompasses approximately 367 acres and consists primarily of transportation (highways and railroads), recreational areas (bike/jogging path), utility rights of ways and residential, commercial, and industrial development (Table 2).

Table 2. Vegetation/Land Cover Within the Cardiff Study Area

Land Cover Class	Acres	Percent Cover (%)
Residential, high density or multiple dwelling	3.0	0.8
Residential, single unit, medium density	7.0	1.9
Residential, single unit, low density	1.8	0.5
Residential, rural, single unit	1.2	0.3
Commercial/services	78.6	21.4
Industrial	7.4	2.0
Transportation/communication/utilities	47.9	13.1
Major roadway	14.7	4.0
Bridge over water	0.8	0.2
Railroads	24.2	6.6
Airport facilities	2.0	0.5
Upland rights-of-way undeveloped	23.8	6.5
Stormwater basin	2.7	0.7

Mixed urban or built-up land	0.02	0.01
Other urban or built-up land	16.6	4.5
Cemetery	4.9	1.3
Recreational land	16.6	4.5
Athletic fields (schools)	0.4	0.1
Stadium, theaters, cultural centers and zoos	2.1	0.6
Managed wetland in built-up maintained rec area	0.5	0.1
Deciduous forest (10-50% crown closure)	0.4	0.1
Deciduous forest (>50% crown closure)	24.2	6.6
Coniferous forest (10-50% crown closure)	0.2	0.04
Coniferous forest (>50% crown closure)	1.1	0.3
Mixed forest (>50% coniferous with >50% crown closure)	44.8	12.2
Mixed forest (>50% deciduous with 10-50% crown closure)	1.3	0.3
Mixed forest (>50% deciduous with >50% crown closure)	8.2	2.2
Old field (< 25% brush covered)	2.0	0.6
Deciduous brush/shrubland	0.2	0.1
Coniferous brush/shrubland	3.3	0.9
Mixed deciduous/coniferous brush/shrubland	0.5	0.1
Tidal rivers, inland bays, and other tidal waters	6.4	1.7
Saline marsh (low marsh)	0.9	0.2
Saline marsh (high marsh)	7.3	2.0
Phragmites dominate coastal wetlands	0.0	0.0
Coniferous wooded wetlands	1.1	0.3
Coniferous scrub/shrub wetlands	1.0	0.3
Mixed scrub/shrub wetlands (coniferous dom.)	0.1	0.04
Mixed scrub/shrub wetlands (deciduous dom.)	0.1	0.04
Mixed wooded wetlands (deciduous dom.)	0.1	0.04
Herbaceous wetlands	3.5	1.0
Phragmites dominate interior wetlands	0.9	0.3
Disturbed wetlands (modified)	0.7	0.2
Transitional areas	2.3	0.6
Total	366.8	100

Source: NLCD 2016 (Yang et al., 2018).

The location and extent of various land use and land cover locations is provided in Figure 6.

3.0 FIELD INVESTIGATIONS

An initial desktop analysis using the data sources described in Section 2.0 was conducted by EDR prior to performing on-site wetland delineations to identify areas likely to contain wetland and stream resources within the Cardiff Study Area. This desktop analysis guided the field wetland delineation conducted by EDR environmental scientists Matthew Spadoni and Jacqueline McMillen between June 22 and June 24, 2020.

3.1 METHODOLOGY

The identification of wetland boundaries was based on the methodology described in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (1989 Interagency Manual) (Federal Interagency Committee for Wetland Delineation, 1989).

Wetland boundaries were defined in the field and mapped using a GPS unit with reported sub-meter accuracy. Data were collected from sample plots in representative wetland cover types and recorded on Routine Onsite Wetland Determination forms (Appendix B). The data collected at each delineated wetland included dominant vegetation, hydrology indicators, and soil characteristics.

According to the 1989 Interagency Manual an area has wetland hydrology when saturated to the surface or inundated at some point in time during an average rainfall year, defined by the following criteria:

- 1) Saturation to the surface normally occurs when soils in the following natural drainage classes meet the following conditions:
 - a. In somewhat poorly drained mineral soils, the water table is less than 0.5 feet from the surface for usually one week or more during the growing season.
 - b. In low permeability (greater than 0.6 inches/hour), poorly drained or very poorly drained mineral soils, the water table is less than 1.5 feet from the surface for usually one week or more during the growing season.
 - c. In more permeable, poorly drained or very poorly drained mineral soils, the water table is less than 1.0 foot from the surface for usually one week or more during the growing season.
 - d. In poorly drained or very poorly drained organic soils, the water table is usually at a depth where saturation to the surface occurs more than rarely.
- 2) An area is inundated at some time if ponded or frequently flooded with surface water for one week or more during the growing season.

The manual lists field indicators of wetland hydrology including, but not limited to, visual observation of inundation, visual observation of soil saturation, oxidized channels (rhizospheres) associated with living roots and rhizomes, water

marks, drift lines, water-borne sediment deposits, water-stained leaves, surface scoured areas, wetland drainage patterns, morphological plant adaptations, and hydric soil characteristics.

The 1989 Interagency Manual defines hydrophytic vegetation as macrophytic plant life growing in water, soil or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content. According to the manual an area has hydrophytic vegetation when, under normal circumstances, more than 50% of the composition of the dominant species from all strata are assigned wetland indicators of obligate wetland, facultative wetland, and/or facultative; or a frequency analysis of all species within the community yields a prevalence index value of less than 3.0 when hydric soils and wetland hydrology are also present. Assessment of vegetation focused on the identification of plant species in four strata: trees (greater than 3 inches diameter at breast height [dbh]), saplings/shrubs (less than 3.0" inches dbh and greater than 3.2 feet tall), herbs (less than 3.2 feet tall), and woody vines. Dominance was determined by visually estimating those species having the greatest absolute percent cover within each stratum. Wetland indicator status for dominant plant species was determined by reference to the National Wetland Plant List (Lichvar et al., 2016). In addition, the 1989 Interagency Manual considers plants that have developed structural or morphological adaptations to inundation as indicators of hydric vegetation.

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (Federal Interagency Committee for Wetland Delineation, 1989). Hydric soil criteria are as follows:

- 1) All Histosols except Folists
- 2) Soils in aquatic suborders, aquatic sub-groups, Albolls suborder, Salorthids great group, or Pell great groups of Vertisols that are:
 - a. somewhat poorly drained and have water table less than 0.5 feet from the surface for a significant period (usually a week or more) during the growing season, or
 - b. poorly drained or very poorly drained and have either:
 - i. water table at less than 1.0 foot from the surface for a significant period during the growing season if permeability is equal to or greater than 6.0 inches/hour in all layers within 20 inches
 - ii. water table at less than 1.5 feet from the surface for a significant period during the growing season if permeability is less than 6.0 inches/hour in any layer within 20 inches
- 3) Soils that are ponded for long duration (seven days to one month) or very long duration (a single event that is greater than one month) during the growing season
- 4) Soils that are frequently flooded (50% chance of flooding in a given year) for long duration or very long duration during the growing season.

Hydric soil conditions were determined in the field through observation of soils composition, color, and morphology. Soils data were collected by using a Dutch auger and tiling spade to examine the soil profile. Soil colors were determined using Munsell Soil Charts (Munsell Color, 2009). Information concerning soil series, color, texture, and matrix and mottle color was recorded for each delineated wetland and used to determine whether the soils displayed hydric characteristics.

Streams were identified based on the presence of observable bed and bank, flow regime, catchment area, and presence of ordinary high water line characteristics, including a "*clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris*" (CFR, 1986). Stream boundaries were defined and mapped in the field using the same method as described above for wetlands. Stream flow regime (i.e., perennial, intermittent, or ephemeral) was determined through evaluation of hydrologic, geomorphic, and biological characteristics (NC DWQ, 2010). Data regarding stream gradient (gentle, moderate, or steep), stream bank and channel width, water depth, stream bed substrate, in-stream cover, and biological indicators were collected and recorded on stream inventory forms (Appendix B).

All wetlands and streams identified within the Cardiff Study Area were classified based on the Cowardin Classification System (1979).

Representative photographs were taken of wetlands and streams delineated within the Cardiff Study Area. Photographs of delineated wetland and stream communities are included in Appendix C.

4.0 RESULTS

EDR environmental scientists identified 7 wetlands and 5 streams within the Cardiff Study Area as shown in the Wetland and Stream Delineation Plan in Appendix D. The data collected at each delineated wetland and stream, including presumed jurisdiction and NJDEP resource value classification are summarized in Table 3 and a detailed description of each resource is in Section 4.1. In accordance with the Cowardin *et al.* (1979) classification system, the waters delineated within the Cardiff Study Area consist of the following community types: estuarine emergent (EEM), palustrine emergent (PEM), and palustrine forested (PFO).

Table 3. Delineated Wetlands and Streams

Delineation ID ¹	Latitude of Centroid	Longitude of Centroid	Wetland Acreage Within Cardiff Study Area by Type ²				Stream Type ³	Linear Feet of Stream Within Cardiff Study Area	Resource Value Classification	Anticipated Federal Jurisdiction ⁴	Anticipated State Jurisdiction ⁵
			EEM	PEM	PFO	Total					
WL1	39.36532	-74.46973	0.8	--	--	0.8	--	--	Exceptional	Yes	Yes
WL2	39.37271	-74.48030	0.6	--	--	0.6	--	--	Exceptional	Yes	Yes
WL3	39.38228	-74.49819	14.1	--	--	14.1	--	--	Exceptional	Yes	Yes
WL4	39.40447	-74.56685	--	0.1	--	0.1	--	--	Intermediate	Yes	Yes
WL5	39.41269	-74.59382	--	0.2	--	0.2	--	--	Intermediate	Yes	Yes
WL6	39.41360	-74.59692	--	0.1	0.01	0.11	--	--	Intermediate	Yes	Yes
WL7	39.41899	-74.61447	--	--	0.2	0.2	--	--	Intermediate	Yes	Yes
WC1	39.36314	-74.46545	--	--	--	--	R1	2,045	--	Yes	Yes
WC2	39.37453	-74.48210	--	--	--	--	R1	57	--	Yes	Yes
WC3	39.38046	-74.49409	--	--	--	--	R1	5,434	--	Yes	Yes
WC4	39.41795	-74.61117	--	--	--	--	R6	27	--	No	Yes
WC5	39.41898	-74.61455	--	--	--	--	R6	25	--	No	Yes
Totals			15.5	0.4	0.21	16.1		7,588			

¹ Field ID assigned by EDR.

² Wetland community types are based upon the Cowardin et al. (1979) classification system: estuarine emergent wetland (EEM), palustrine emergent wetland (PEM), palustrine forested wetland (PFO).

³ Stream type is based upon the Cowardin et al. (1979) classification system: tidal (R1) and ephemeral (R6).

⁴ Based on visual observation of hydrologic connectivity in the field and review of available spatial data. Final jurisdictional determination to be made by the USACE.

⁵ Based on existing NYSDEC mapping of freshwater wetlands and streams. See Sections 2.2 and 3.3 for additional information.

Most of these wetlands and streams are tidal or within 1,000 feet of the head of tide; therefore, USACE jurisdiction applies to some of the wetlands and streams identified as it relates to Section 404 of the Clean Water Act and Section 10 of the River and Harbors Act. Because NJDEP also regulates all wetlands within the State, all of the delineated wetlands and streams are expected to be under their jurisdiction. Descriptions of the delineated wetlands within the Cardiff Study Area are provided below in Sections 4.2.1 and Section 4.2.2 provides descriptions of the delineated streams within the Cardiff Study Area.

4.1.1 Wetlands

EDR identified 7 wetlands totaling approximately 16.1 acres within the Cardiff Study Area. Many of the wetlands identified contained more than one community type. The area of each community type is summarized in Table 3 and a detailed description is provided below which includes information to support resource classifications of ordinary or exceptional. Wetlands that do not satisfy the definition of ordinary or exceptional are assumed to be intermediate resource value.

Wetland 1 (EEM)

Wetland 1 is a complex of emergent tidal wetlands (EEM) along the Great Thorofare that are dominated by smooth cordgrass (*Spartina alterniflora*, OBL), glasswort (*Salicornia depressa*, OBL), seaside goldenrod (*Solidago sempervirens*, FACW), saltmeadow cordgrass (*Spartina patens*, FACW), sea lavender (*Limonium carolinianum*, OBL), and common reed (*Phragmites australis*, FACW). Soils ranged from a sand to sandy loam with a low chroma matrix (10 YR 4/2), additional soil characteristics identified during delineations included brightly colored mottles (5YR 4/6), criteria meeting the definition of a histic epipedon, and hydrogen sulfide odor; qualifying the soils as a hydric. Wetland hydrology indicators observed included standing water, soil saturation, tidal influence and oxidized rhizospheres on living roots. These wetlands were assessed as exceptional resource value wetlands due to their tidal influence and importance to the tidal ecosystem as well as the threatened & endangered species that are documented to use these wetlands.

Wetland 2 (EEM)

Wetland 2 is complex of emergent tidal wetlands (EEM) fed by the Great Thorofare and connected through culverts along US-40. Dominant vegetation consists of saltmeadow cordgrass and common reed, meeting the criteria of hydric vegetation. Where soils were not heavily disturbed, they were sandy with a low chroma matrix (10YR 4/1), additional soil characteristics included hydrogen sulfide odor and criteria meeting the definition of a histic epipedon, qualifying the soils as hydric. Areas disturbed from installation of roadways and associated ramps; did not meet the criteria for hydric soils; however, wetland hydrology indicators observed included soils saturation, a high-water table, hydrogen sulfide

odor, and water stained leaves. Areas that were previously disturbed were included as wetlands because they met criteria for hydrophytic plants, hydrology, and soils were saturated due to tidal inundation. These wetlands were assessed as exceptional resource value wetlands due to their tidal influence and importance to the tidal ecosystem as well as the threatened & endangered species that are documented to use these wetlands.

Wetland 3 (EEM)

Wetland 3 is a complex of emergent tidal wetlands that are fed by tidal streams and connected through culverts along US-40 and a railroad corridor. Dominant vegetation consists of saltmeadow cordgrass and smooth cordgrass with patches of eastern red cedar (*Juniperus virginiana*, FACU) and high tide bush (*Iva annua*, FAC) present along the edges of the wetland boundaries and meets the criteria for hydrophytic vegetation. Soils consisted of a thick layer of heavy organic matter with some sand and rocky material meeting the criteria for a histic epipedon and had a low chroma matrix (5Y 4/1) indicating that the soils were frequently inundated. Given these indicators, the soil met the criteria for hydric soil. Wetland hydrology indicators observed were ground surface inundation, tidal inundation, soil saturation, and hydrogen sulfide odor. These wetlands were assessed as exceptional resource value wetlands due to their tidal influence and importance to the tidal ecosystem as well as the threatened & endangered species that are documented to use these wetlands.

Wetland 4 (PEM)

Wetland 4 is a PEM wetland located in a depression within an Atlantic City Electric (ACE) powerline right-of-way (ROW) and adjacent to a pedestrian bike path which is a converted railroad corridor. Dominant vegetation consists of reed canary grass (*Phalaris arundinacea*, OBL), broadleaf cattail (*Typha latifolia*, OBL) and marshmallow (*Althaea officinalis*, FACW) and meets the hydrophytic plant community criteria. Soils were a sandy loam with a low chroma matrix (10YR 2/1) and mottles (5 YR 5/6) indicating that the soil is inundated for significant periods of time throughout the year but a varying water level/soil saturation. Wetland hydrology indicators observed were soil saturation, geomorphic position, and water-stained leaves.

Wetland 5 (PEM)

Wetland 5 is a PEM wetland located in a depression within an ACE powerline ROW located along a pedestrian bike path. Dominant vegetation consists of hairgrass (*Deschampsia cespitosa*, FACW) and meets the hydrophytic plant community criteria. Soils were an organic loam with a low chroma matrix (5 YR 2/1), indicating the soil is saturated or inundated for long durations. Wetland hydrology indicators observed were soil saturation and geomorphic position.

Wetland 6 (PEM & PFO)

Wetland 6 is a PEM/PFO wetland associated with Cedar Branch. The portion within the Cardiff Study Area is in a depression of an ACE powerline ROW located between a pedestrian bike path and West Jersey Avenue. Vegetation in the canopy was dominated by red maple (*Acer rubrum*, FAC) the understory mainly consisted of spicebush (*Lindera benzoin*, FACW), red maple saplings, and blueberry (*Vaccinium corymbosum*, FACW). The herbaceous layer was dominated by moss, slender path rush (*Juncus tenuis*, FAC), and hairgrass. Based on the species observed, the hydrophytic plant community criteria were satisfied. Soils were an organic loam that met the criteria for a histic epipedon. In addition, soils were a low chroma matrix (5YR 2/1) indicating a long duration of soils saturation occurs. Wetland hydrology indicators observed were soil saturation, a high-water table, moss trim lines, buttressed and eroded tree roots, wet leaves, and a sparsely vegetated concave surface.

Wetland 7 (PFO)

Wetland 7 is a PFO wetland associated with a drainage culvert under the bike path and drains south. Dominant vegetation in the canopy consists of red maple and the understory is dominated by black gum (*Nyssa sylvatica*, FAC) and red maple saplings. Dominant vegetation in the herbaceous layer consists of a sparse understory of cinnamon fern and black gum seedlings. The species observed indicate the vegetation community met the hydrophytic plant community criteria. Soils were a loamy sand and masked with organic material, meeting criteria for a histic epipedon. In addition, soils were a low chroma matrix (10 YR 3/2 and 2/1) indicating a long duration of soil saturation occurs. Wetland hydrology indicators observed include soil saturation, water stained leaves, and geomorphic position.

4.1.2 Surface Waters

EDR identified 5 surface waters that includes streams, thoroughfares and other surface drainage features within the Cardiff Study Area. Descriptions of each watercourse are presented below.

Watercourse 1 – Tidal (R1)

Watercourse 1 is the Inside Thorofare, the Beach Thorofare, and the Great Thorofare which are all interconnected and influenced by the Atlantic Ocean tidal fluctuations. The watercourse was inaccessible during field work due to steep banks protected by steep cement banks. The estimated bank width is approximately 520 feet. The watercourse was characterized by no gradient and water levels influenced by tidal events/currents, and channelization.

Watercourse 2 – Tidal (R1)

Watercourse 2 is a tidal creek that is connected to the Great Thorofare through culverts and bridges associated with US-40 and the Atlantic City Expressway. The approximate bank width ranged from 40 feet to 2 feet depending on

location (it was narrowest at the highest elevation and furthest from the Great Thoroughfare). At the time of field studies, the watercourse had an approximate water depth of 1 foot or greater and was characterized by a gentle gradient and overhanging *Spartina* and common reed grass vegetation. Substrate consisted of sand, loam, and rocks.

Watercourse 3 – Tidal (R1)

Watercourse 3 is a tidal creek that is directly connected to the Great Thorofare and flows under US-40. The approximate bank width ranged from 80 feet to 4 feet depending on location (it was narrowest at the furthest point from Great Thoroughfare well north of the Cardiff Study Area. At the time of field studies, water depth was inaccessible due to steep and often soft banks.

Watercourse 4 – Ephemeral (R6)

Watercourse 4 is Mill Branch, a channelized swale that flows via culvert under a pedestrian bike path from north to south. At the time of field studies, no flow was present, but had a gentle slope and an approximate bank width of 5 feet. This watercourse was also characterized by overhanging canopy vegetation, channelization, channel armoring (around the culvert intake and outflow), and substrate that consisted of sand, silt, and gravel.

Watercourse 5 – Ephemeral (R6)

Watercourse 5 is a channelized swale that flows under a pedestrian bike path via culvert from north to south. This drainage eventually connects with Mill Branch several hundred feet south of the Cardiff Study Area. At the time of delineation, no flow was present; however, this watercourse has a gentle slope and an approximate bank width of 6 feet. This watercourse was also characterized by overhanging vegetation, channelization, channel armoring (around the culvert intake and outflow), and substrate that consisted of sand, silt, and gravel.

5.0 CONCLUSIONS

EDR conducted a wetland and watercourse delineation in June 2020 for the Atlantic Shores proposed onshore transmission route to the Cardiff POI. A total of 7 wetlands totaling approximately 16.1 acres and 5 watercourses were identified and delineated within the Cardiff Study Area. The Cardiff Substation parcel was not delineated for wetlands and watercourse due to security access restrictions; however, no wetlands or streams are mapped to occur.

All wetlands and watercourses are under the jurisdiction of the NJDEP under the Freshwater Wetlands Protection Act. In additional, all tidally influenced systems are also under the jurisdiction of the USACE under Section 10 of the River and Harbors Act and the Section 404 of the Clean Water Act. Any wetlands and watercourses greater than 1,000 feet upslope from the head of tide are under the assumed jurisdiction of NJDEP.

This wetland and waterway delineation and presumed jurisdictional determination should not be considered final until a Letter of Interpretation (LOI) is issued by the NJDEP and a review has been conducted by the USACE concurring with the location, extent, and jurisdiction of the wetlands and watercourses identified. NJDEP will also need to confirm the resource value classification presented in Table 3.

6.0 REFERENCES

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APPENDIX A

Figures

Figure 1

Project Location Map

Wetland and Stream Delineation Report
Atlantic Shores Offshore Wind – Cardiff Onshore

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 1
Project Location Map

- Cardiff Interconnection Route
- Study Area



Notes: 1. Basemap: ESRI ArcGIS Online "USA Topo Maps" map service. 2. This map was generated in ArcMap on March 8, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

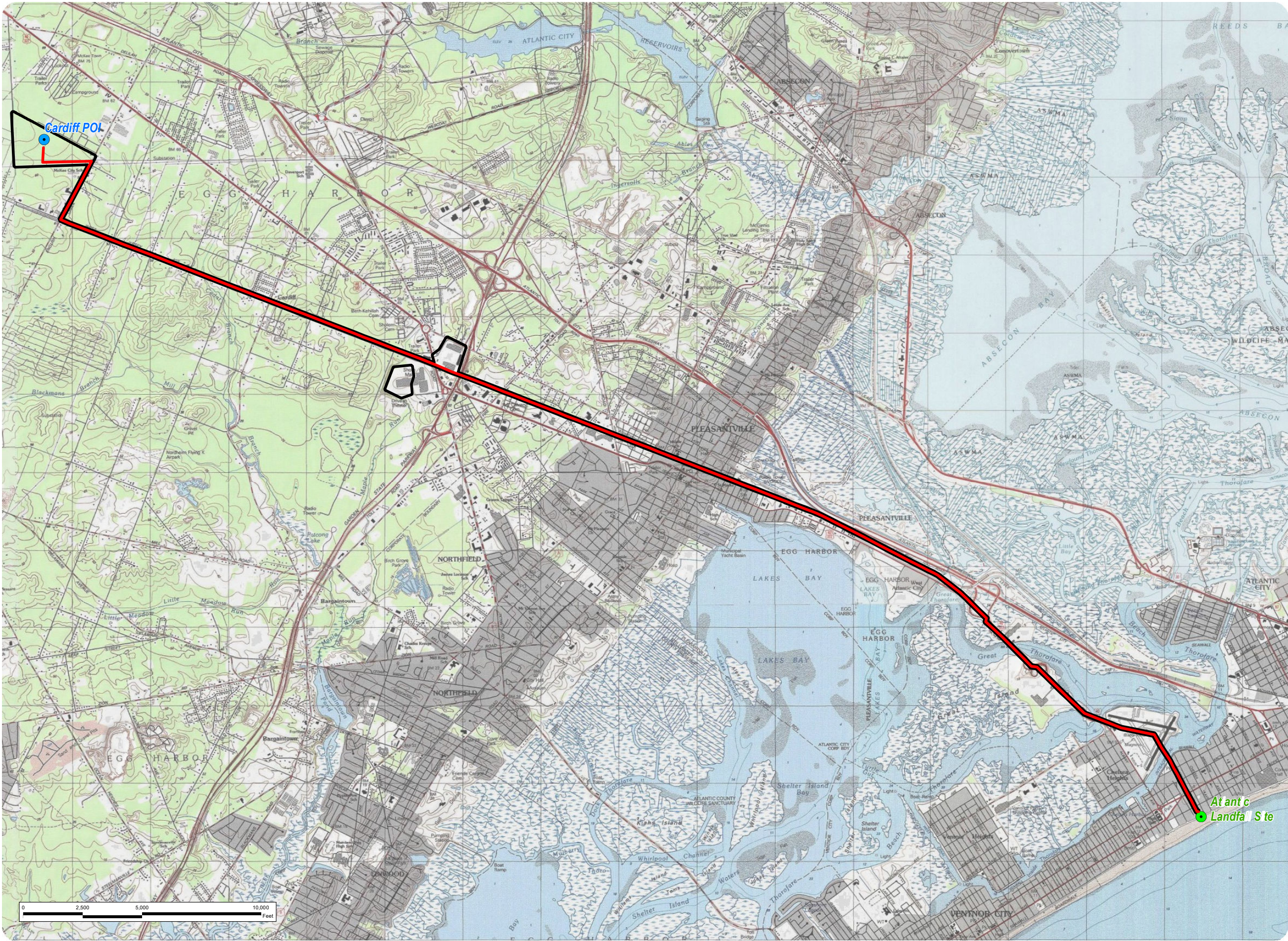
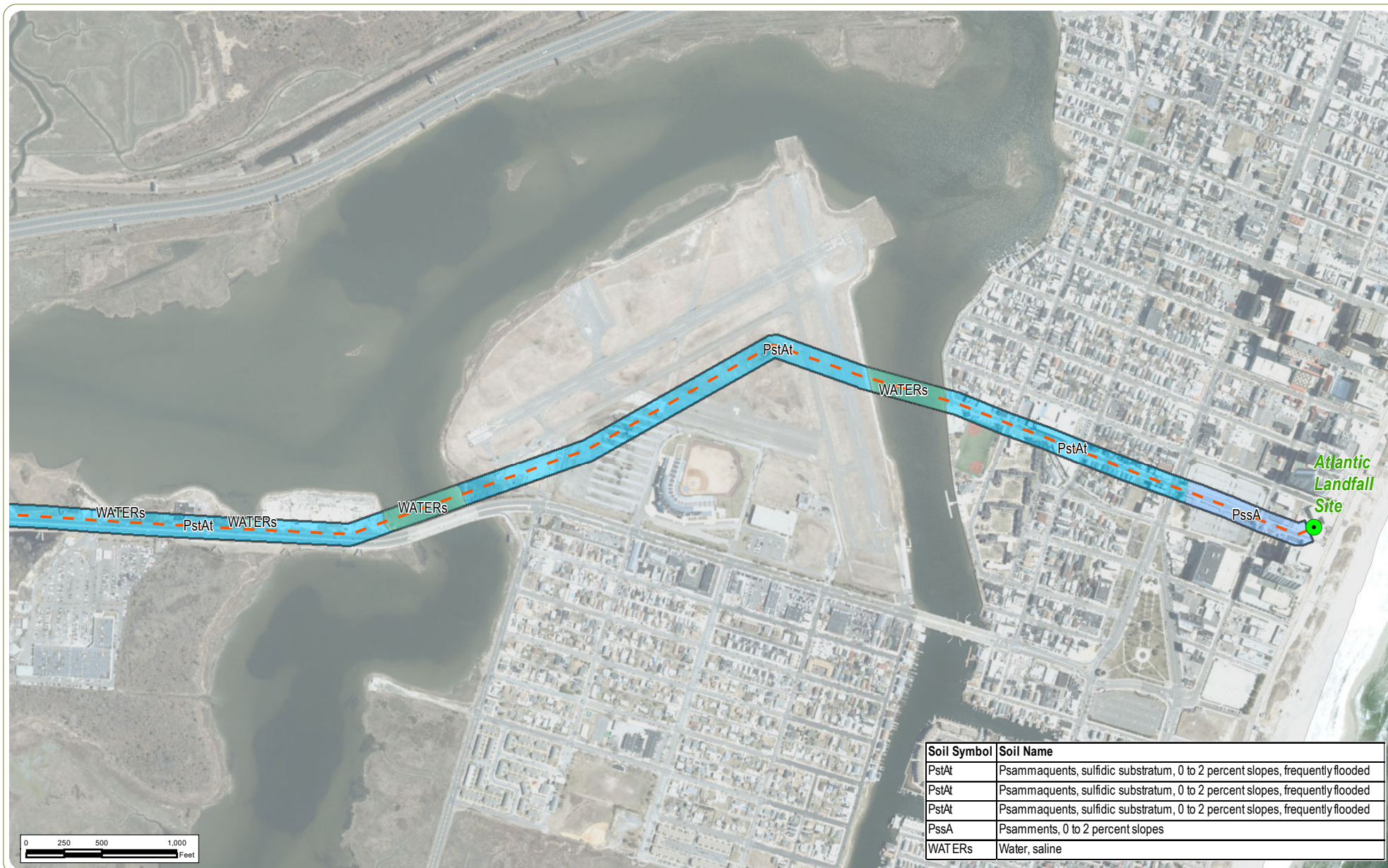


Figure 2

SSURGO Soils Map



Wetland and Stream Delineation Report

Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

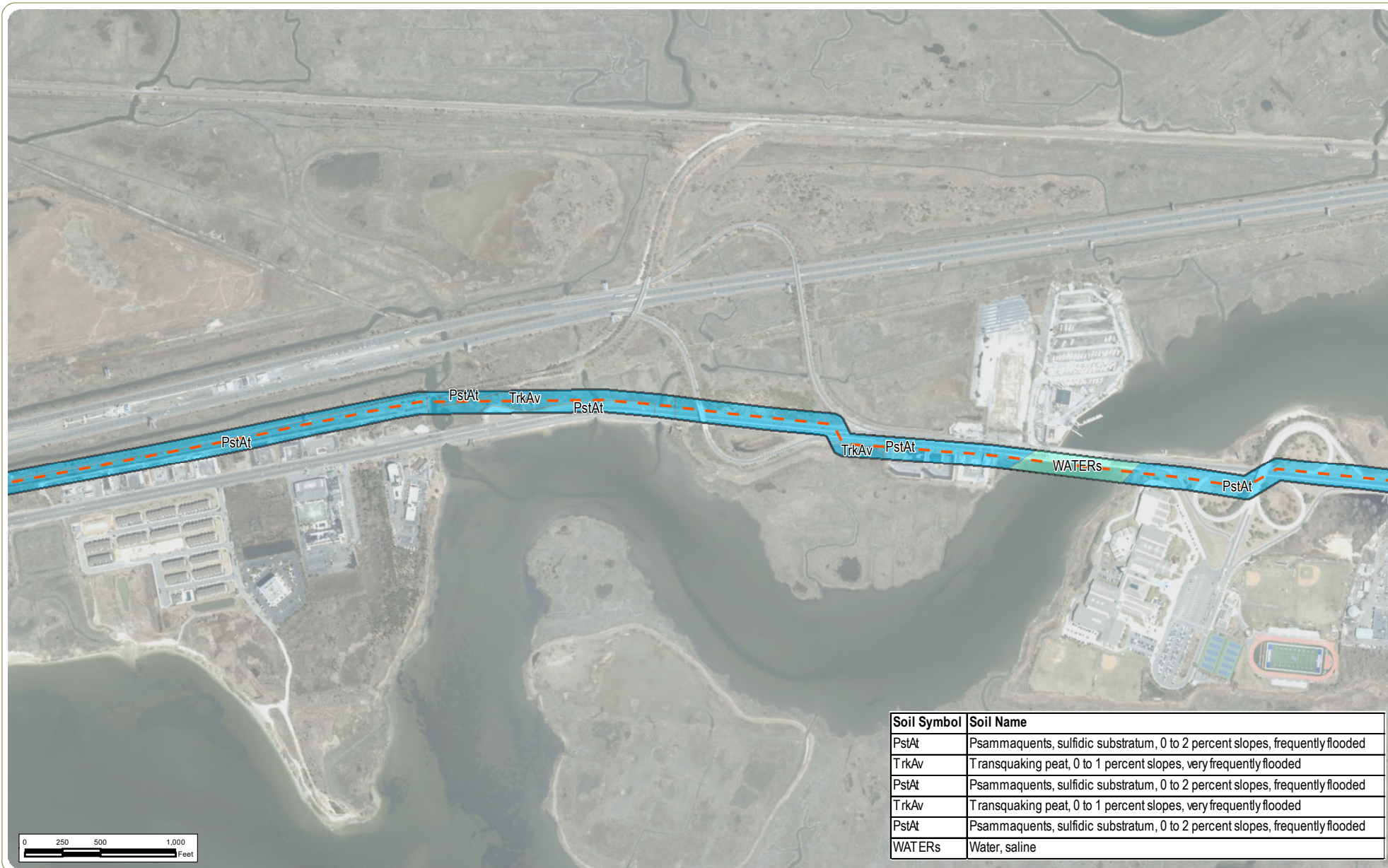
Figure 2 - SSURGO Soils

Sheet 1 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on March 8, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- Study Area
- NRCS (SSURGO) Soils
- Hydric
- Partially Hydric
- Water



Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

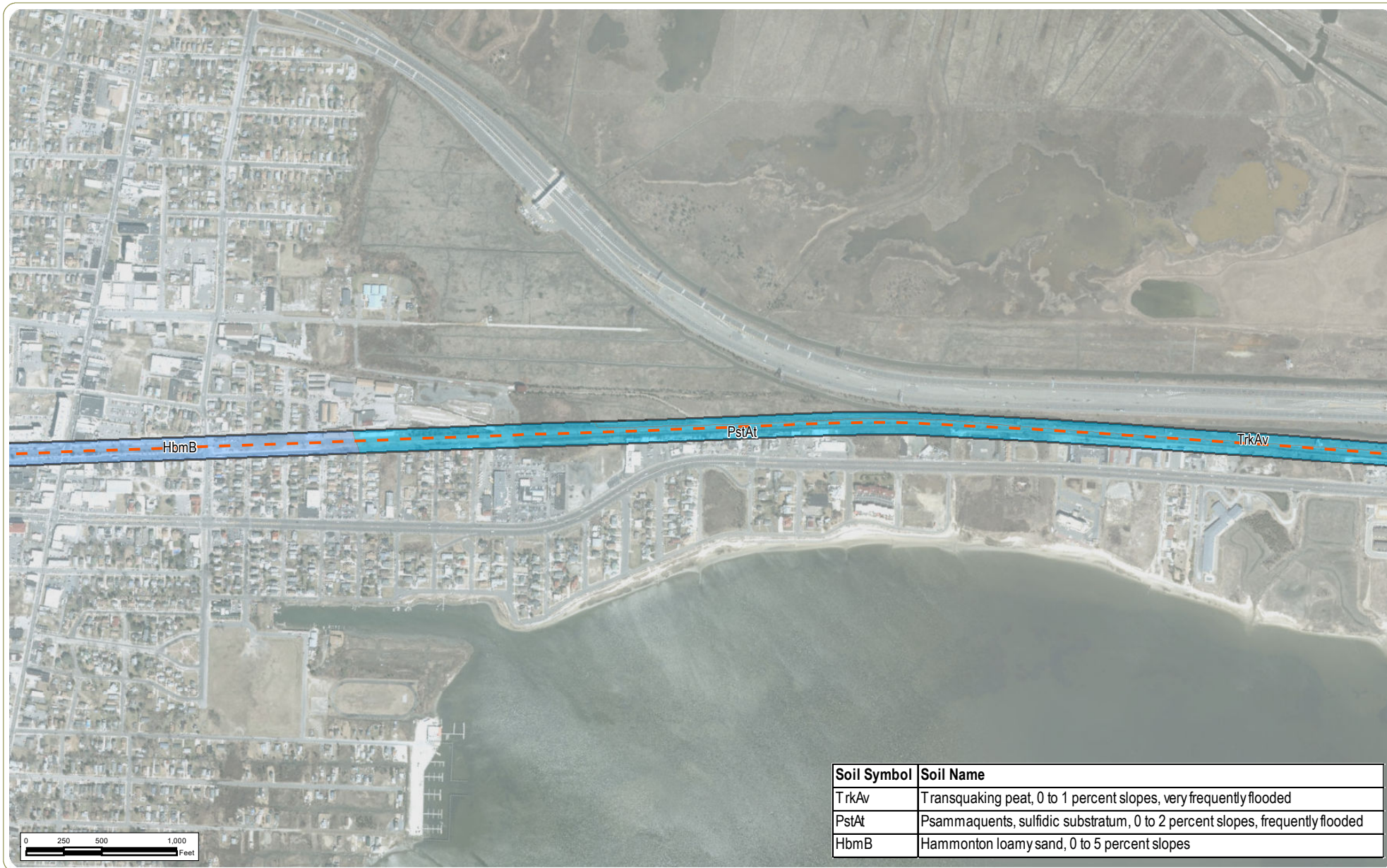
Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 2 - SSURGO Soils Sheet 2 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on March 3, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- Study Area
- NRCS (SSURGO) Soils
- Hydric
- Water



Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

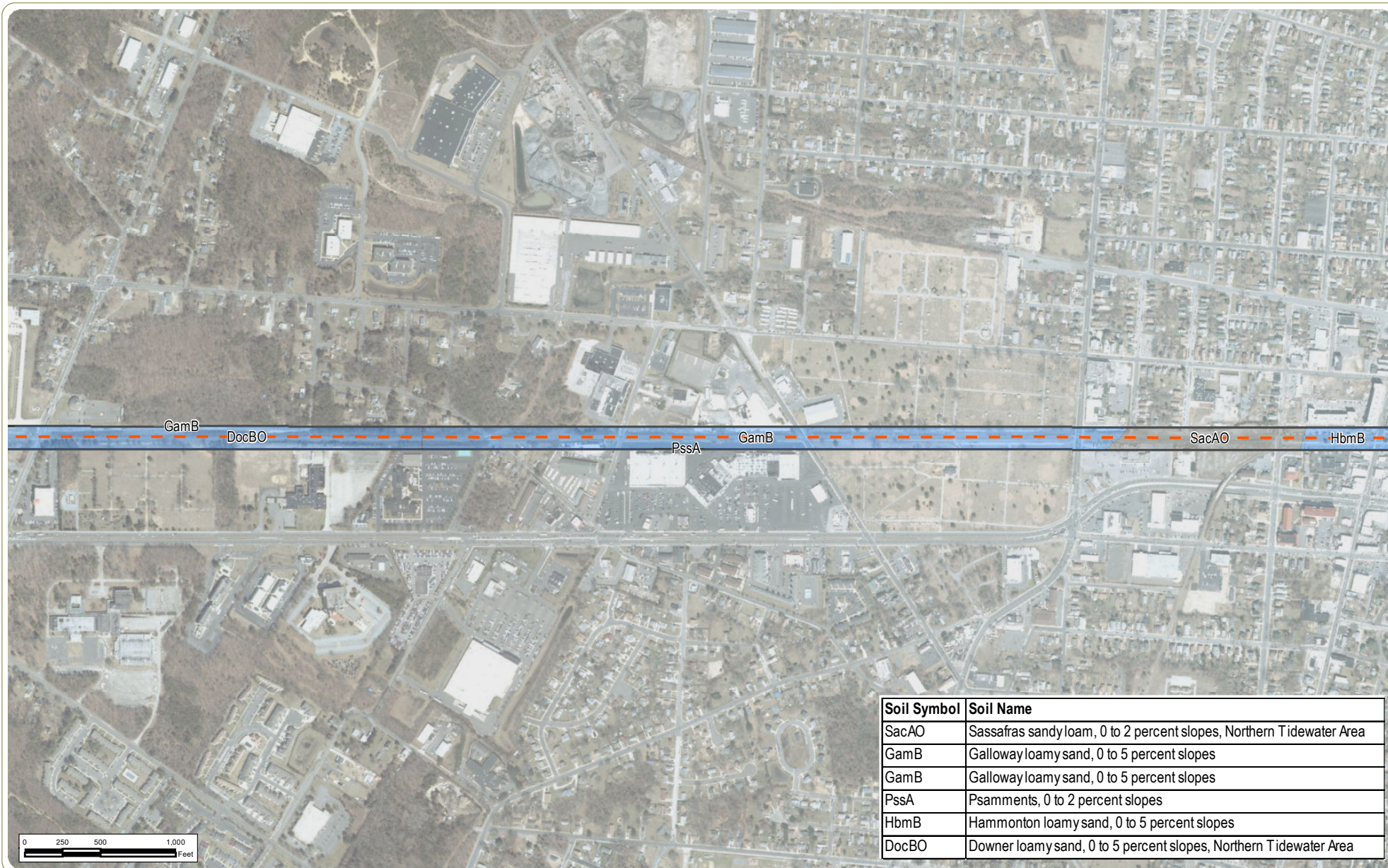
Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 2 - SSURGO Soils Sheet 3 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 21, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- Study Area
- NRCS (SSURGO) Soils
- Hydric
- Partially Hydric



Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

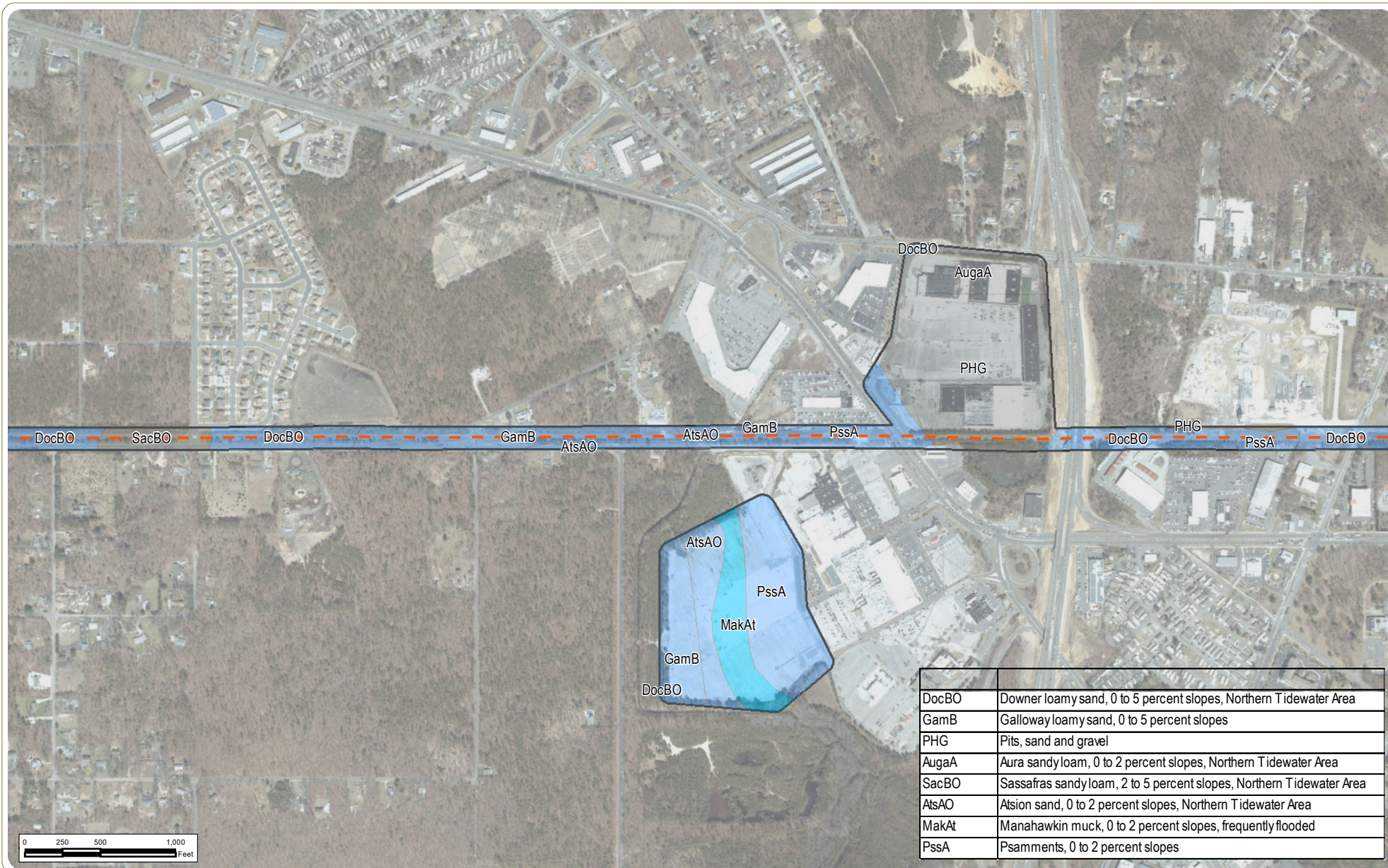
Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 2 - SSURGO Soils Sheet 4 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 21, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- Study Area
- NRCS (SSURGO) Soils
- Partially Hydric
- Not Hydric



Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

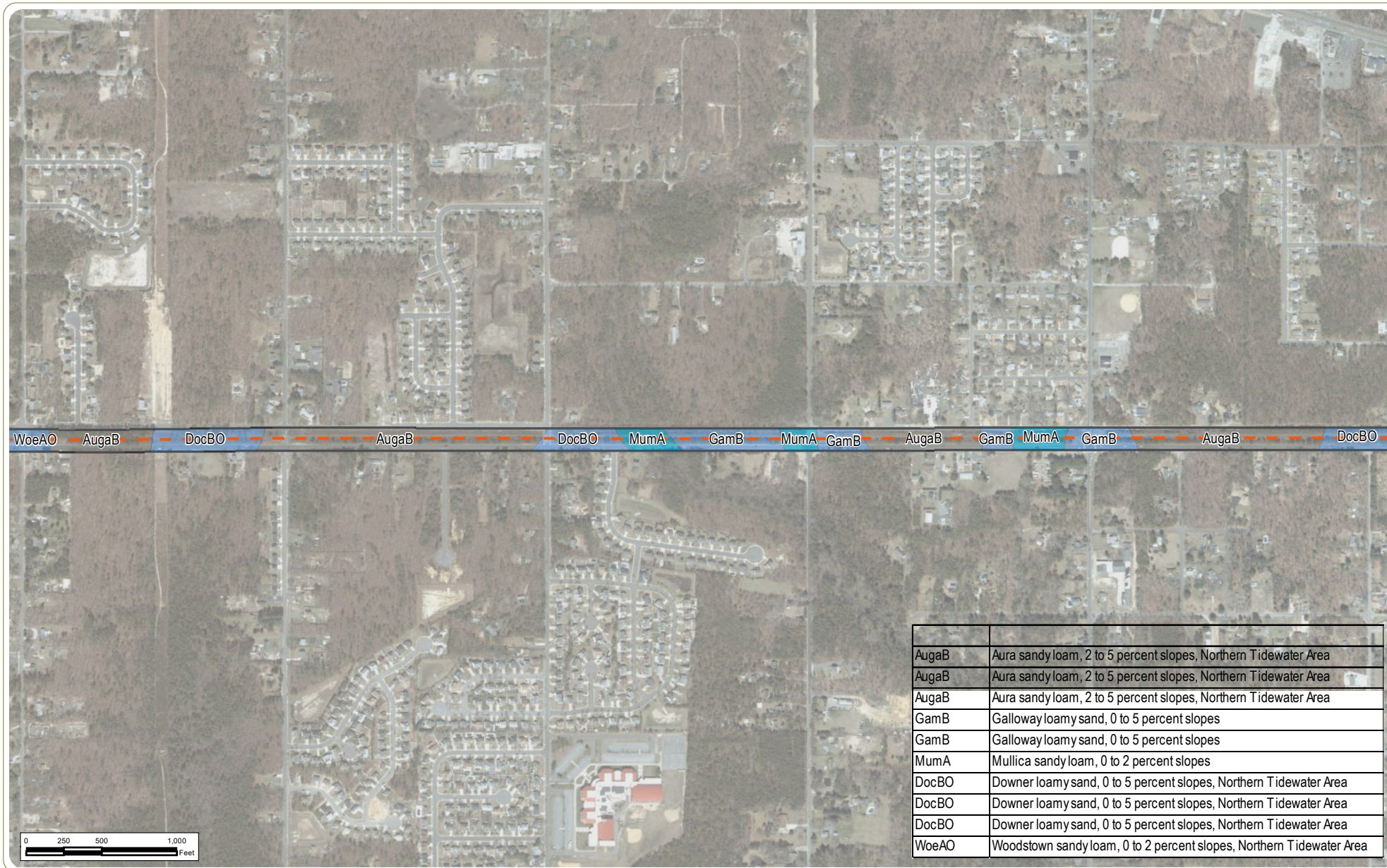
Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 2 - SSURGO Soils Sheet 5 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 21, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- Study Area
- NRCS (SSURGO) Soils
- Hydric
- Partially Hydric
- Not Hydric



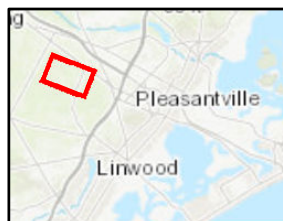
Wetland and Stream Delineation Report

Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

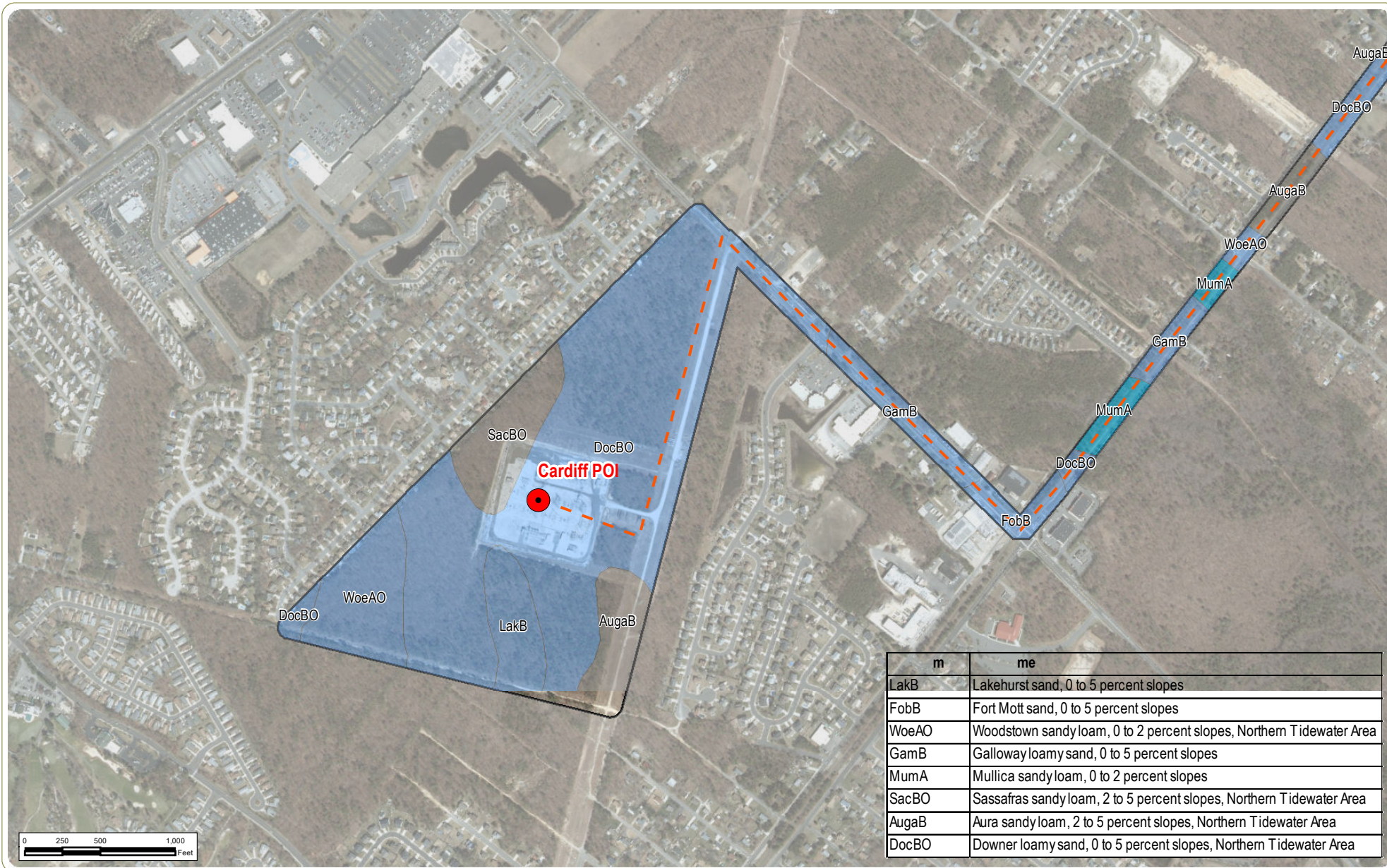
Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 2 - SSURGO Soils Sheet 6 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 21, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- Study Area
- NRCS (SSURGO) Soils
- Hydric
- Partially Hydric
- Not Hydric



Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 2 - SSURGO Soils Sheet 7 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 21, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- Study Area
- NRCS (SSURGO) Soils
- Hydric
- Partially Hydric
- Not Hydric

Figure 3

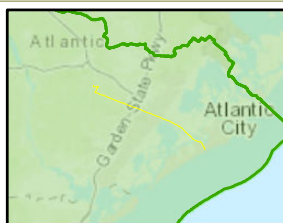
Watershed Management Areas and Hydrologic Units



Wetland and Stream Delineation Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route
 Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
 Atlantic County, New Jersey

Figure 3 - Watershed Management Areas and Hydrologic Units

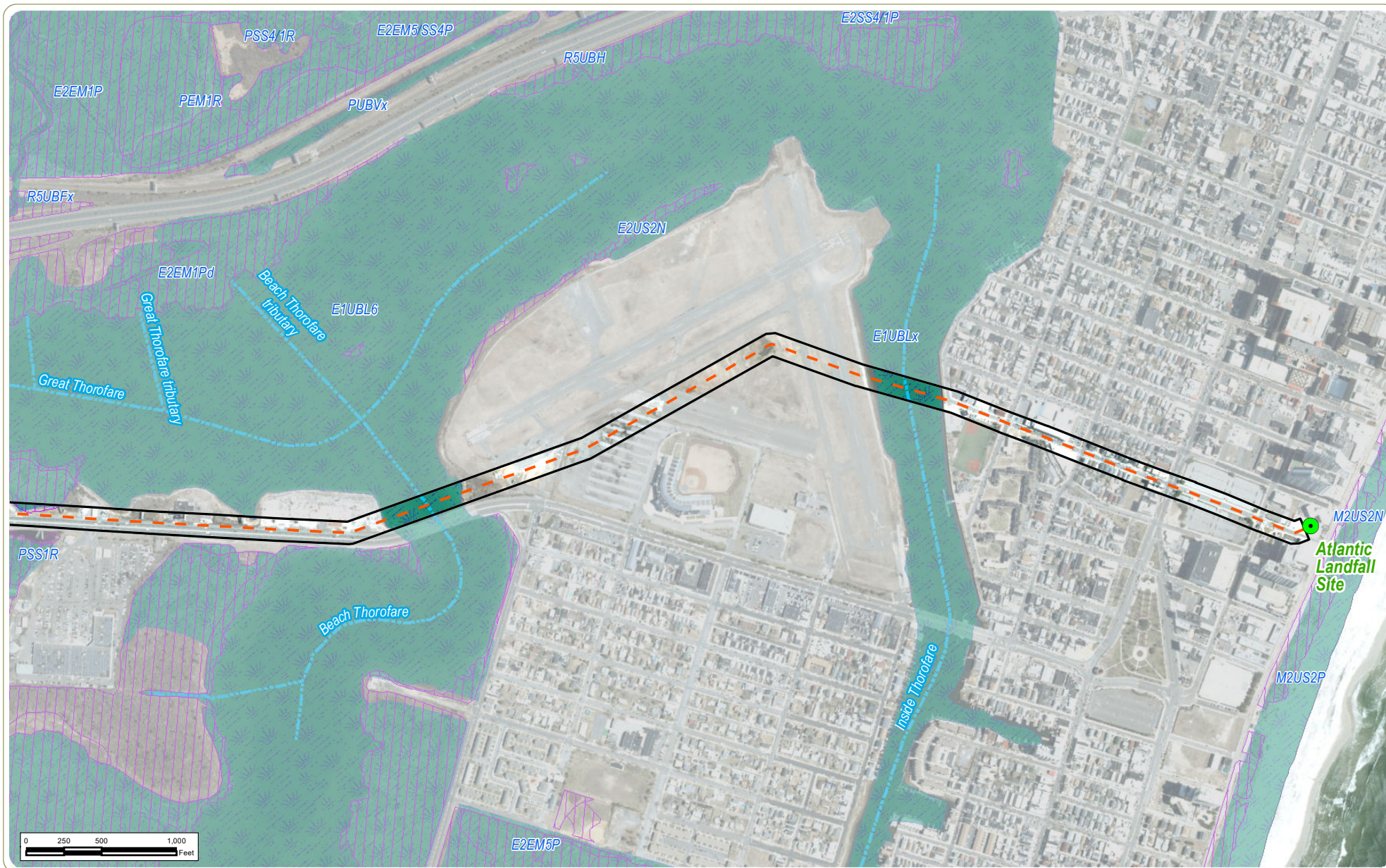
Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on March 8, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- Study Area
- Watershed Management Area
- 10-Digit Watershed

Figure 4

NJDEP/NWI Mapped Wetlands and Streams



Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

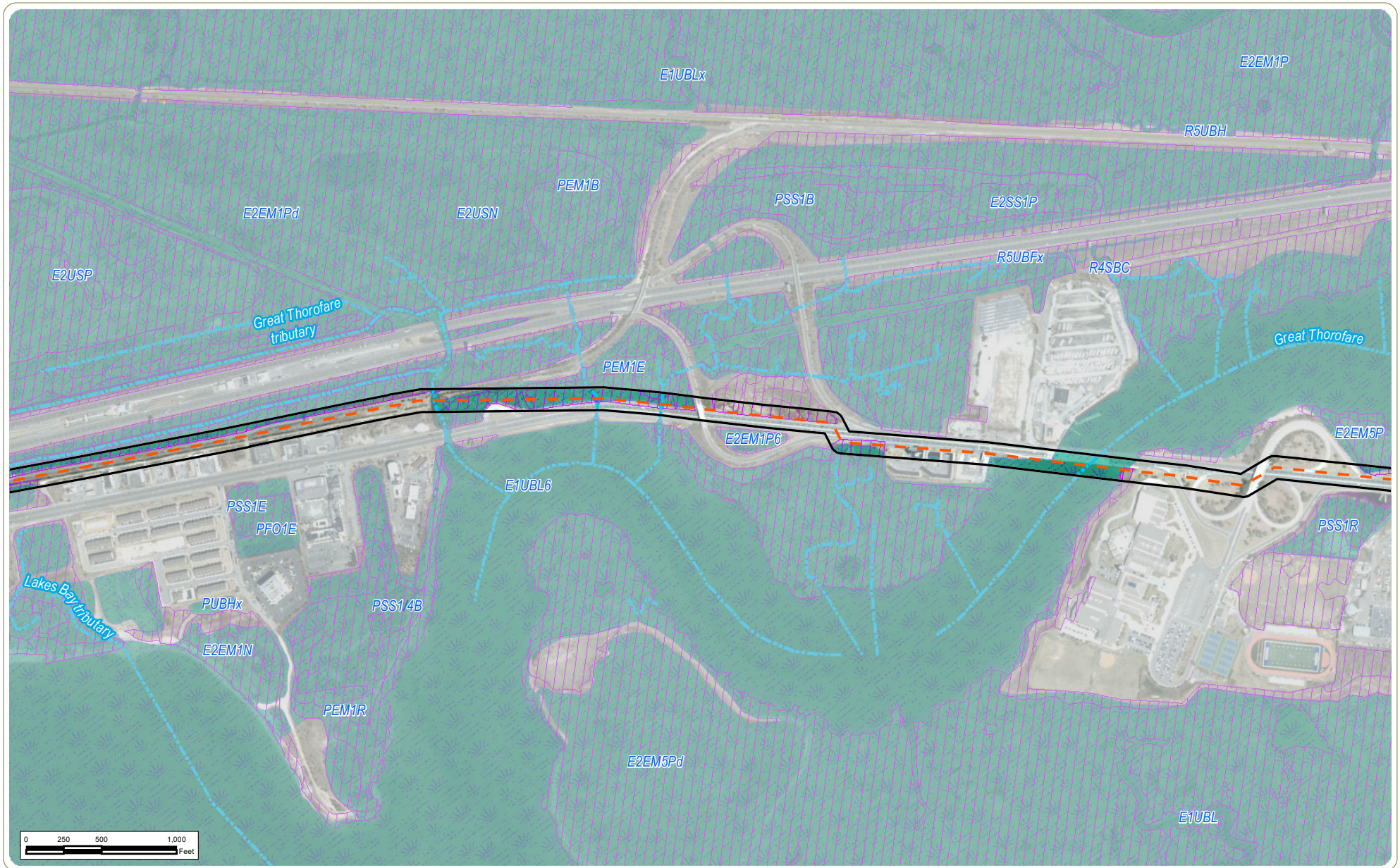
Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 4 - NJDEP/NWI Mapped Wetlands and Streams Sheet 1 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on March 8, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- ▬ Study Area
- Stream
- ▨ NJDEP Mapped Wetland
- NWI Wetland



Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

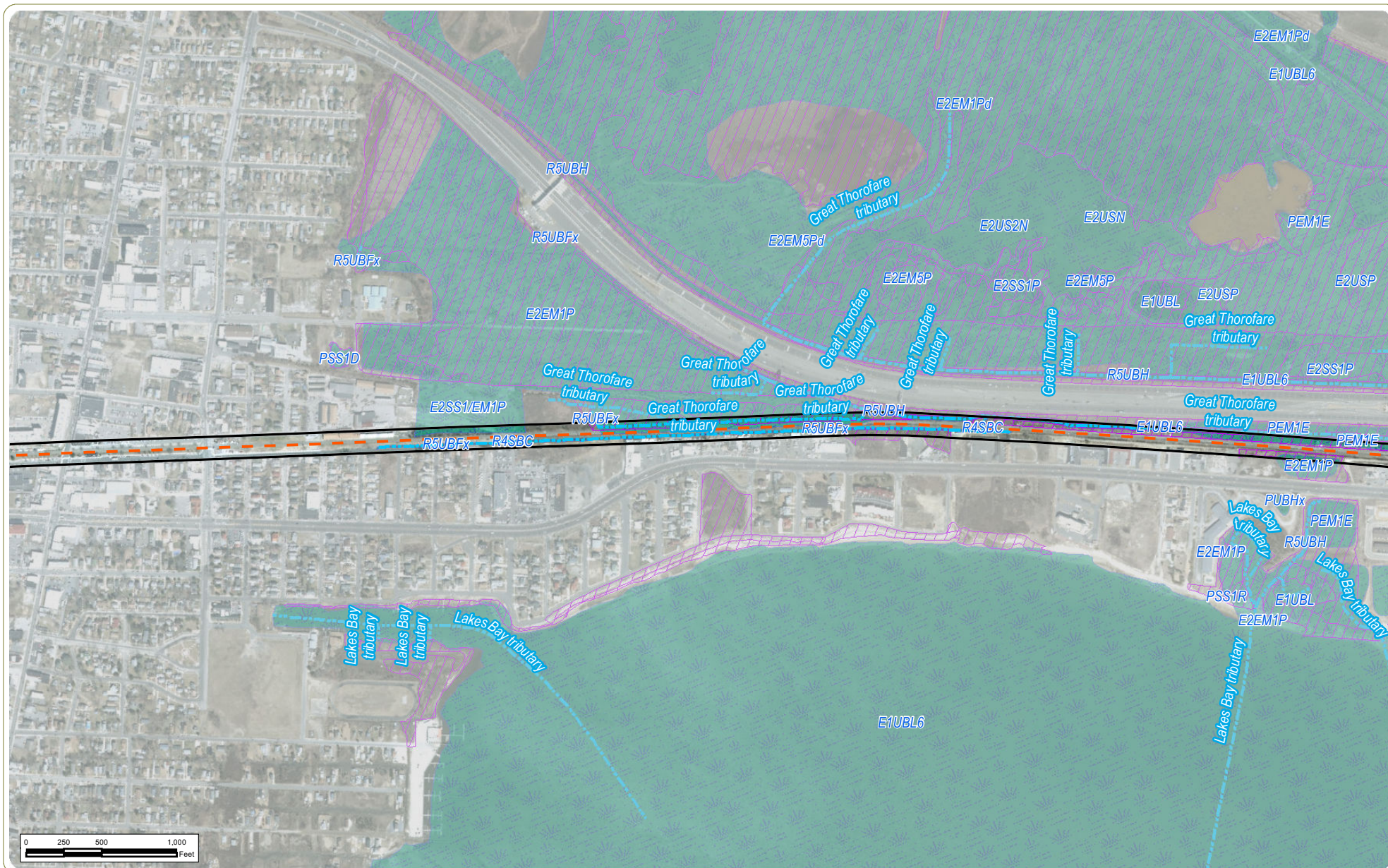
Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 4 - NJDEP/NWI Mapped Wetlands and Streams Sheet 2 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on March 3, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- ▭ Study Area
- Stream
- ▨ NJDEP Mapped Wetland
- NWI Wetland



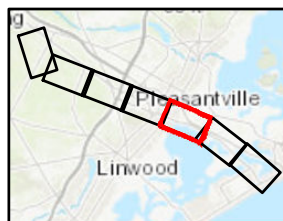
Wetland and Stream Delineation Report






Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 4 - NJDEP/NWI Mapped Wetlands and Streams
Sheet 3 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 20, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



-  Onshore Route
 Study Area
 Stream
 NJDEP Mapped Wetland
 NWI Wetland



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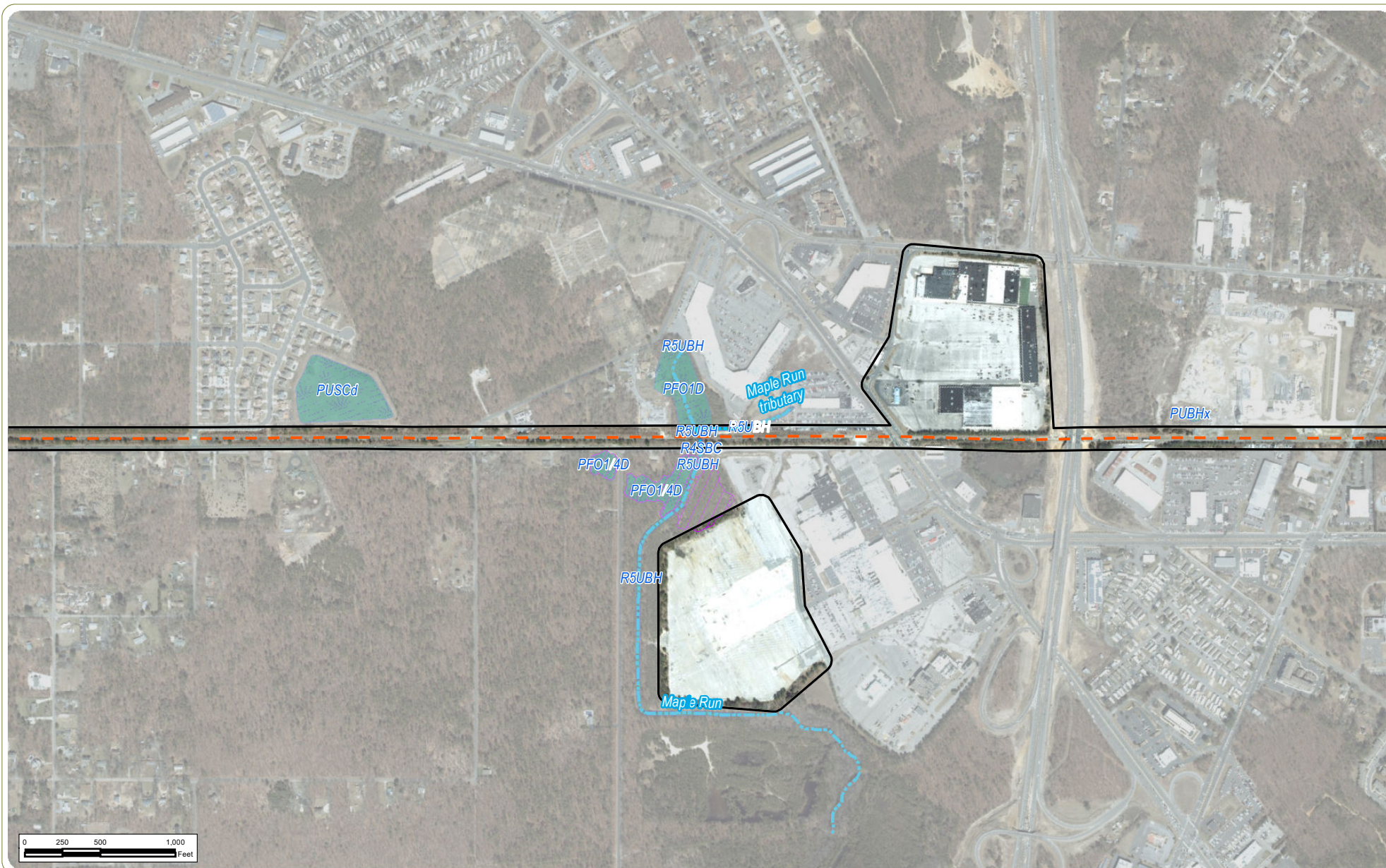
Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 4 - NJDEP/NWI Mapped Wetlands and Streams Sheet 4 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 20, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



— Onshore Route
□ Study Area



Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 4 - NJDEP/NWI Mapped Wetlands and Streams Sheet 5 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 20, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- ▭ Study Area
- Stream
- ▨ NJDEP Mapped Wetland
- NWI Wetland



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Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 4 - NJDEP/NWI Mapped Wetlands and Streams Sheet 7 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 20, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- ▭ Study Area
- Stream
- ▨ NJDEP Mapped Wetland
- NWI Wetland

Figure 5

FEMA 1% Chance Annual Floodplain



Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 5 - FEMA 1% Chance Annual Floodplain

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on March 8, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- Onshore Route
- Study Area
- FEMA Floodplain
(1% Annual Chance of Flood)

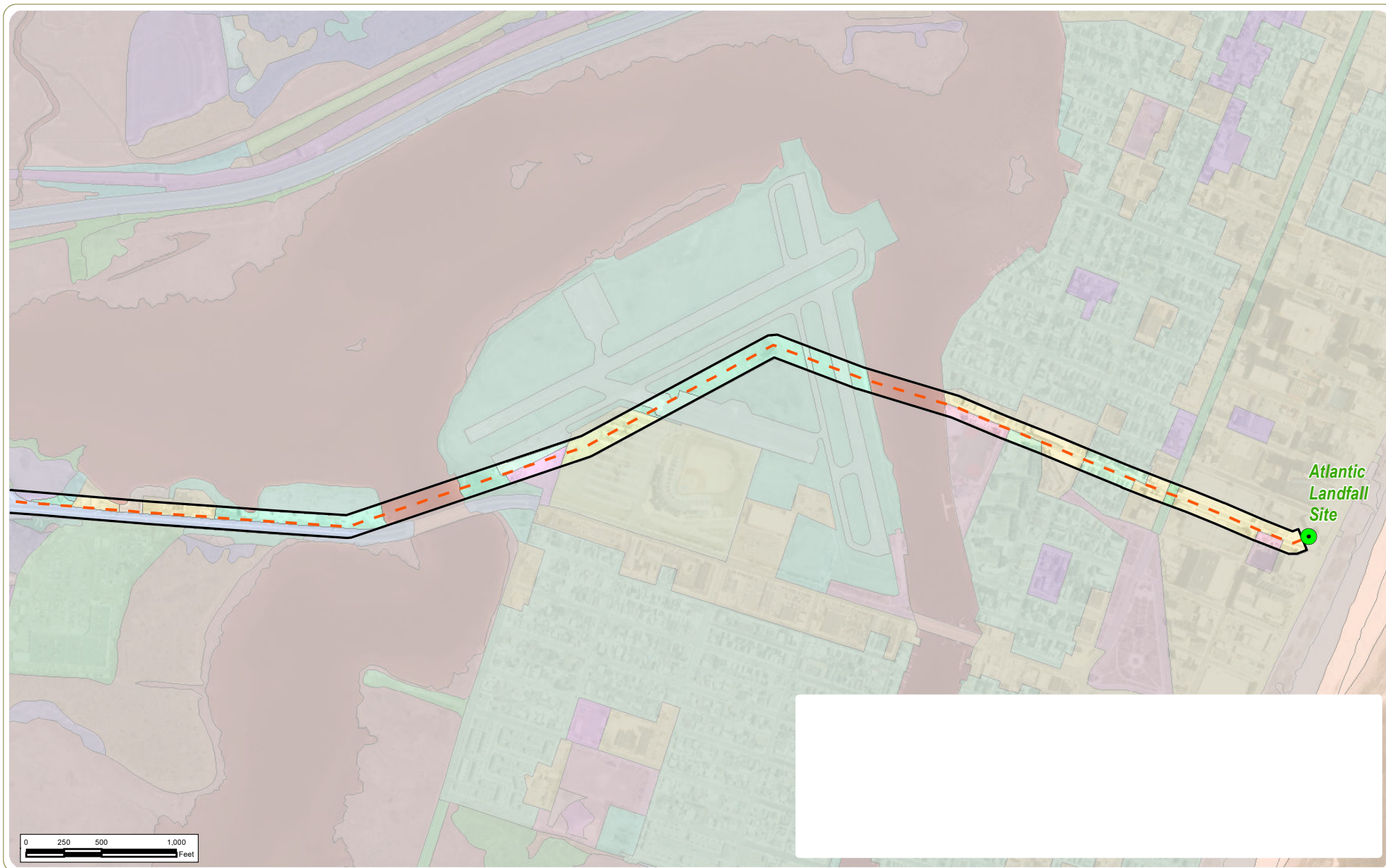


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Figure 6

Land Use/Land Cover



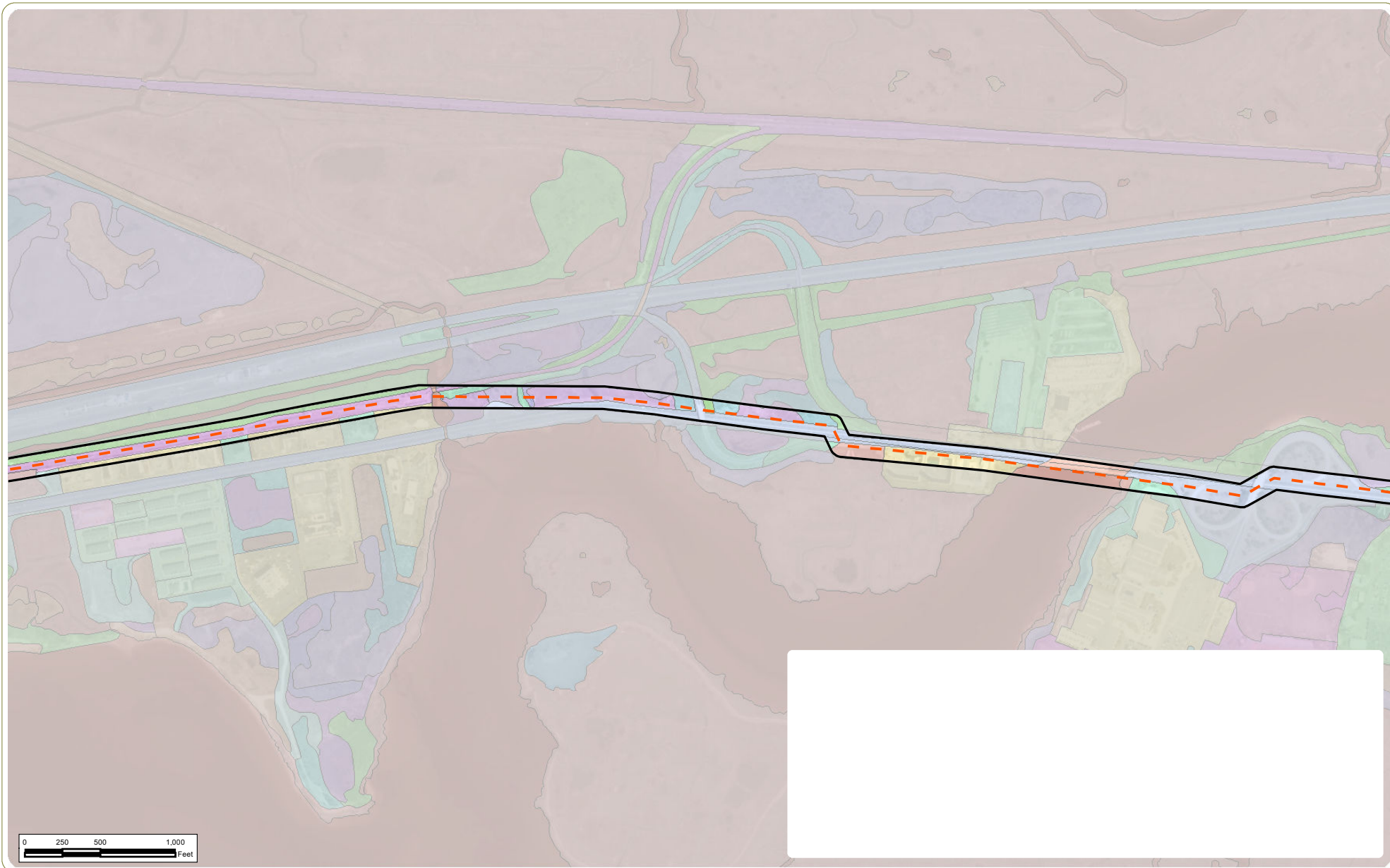
Wetland and Stream Delineation Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route
 Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
 Atlantic County, New Jersey

Figure 6 - Land Use/Land Cover
Sheet 1 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on March 8, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



— Onshore Route
 Study Area



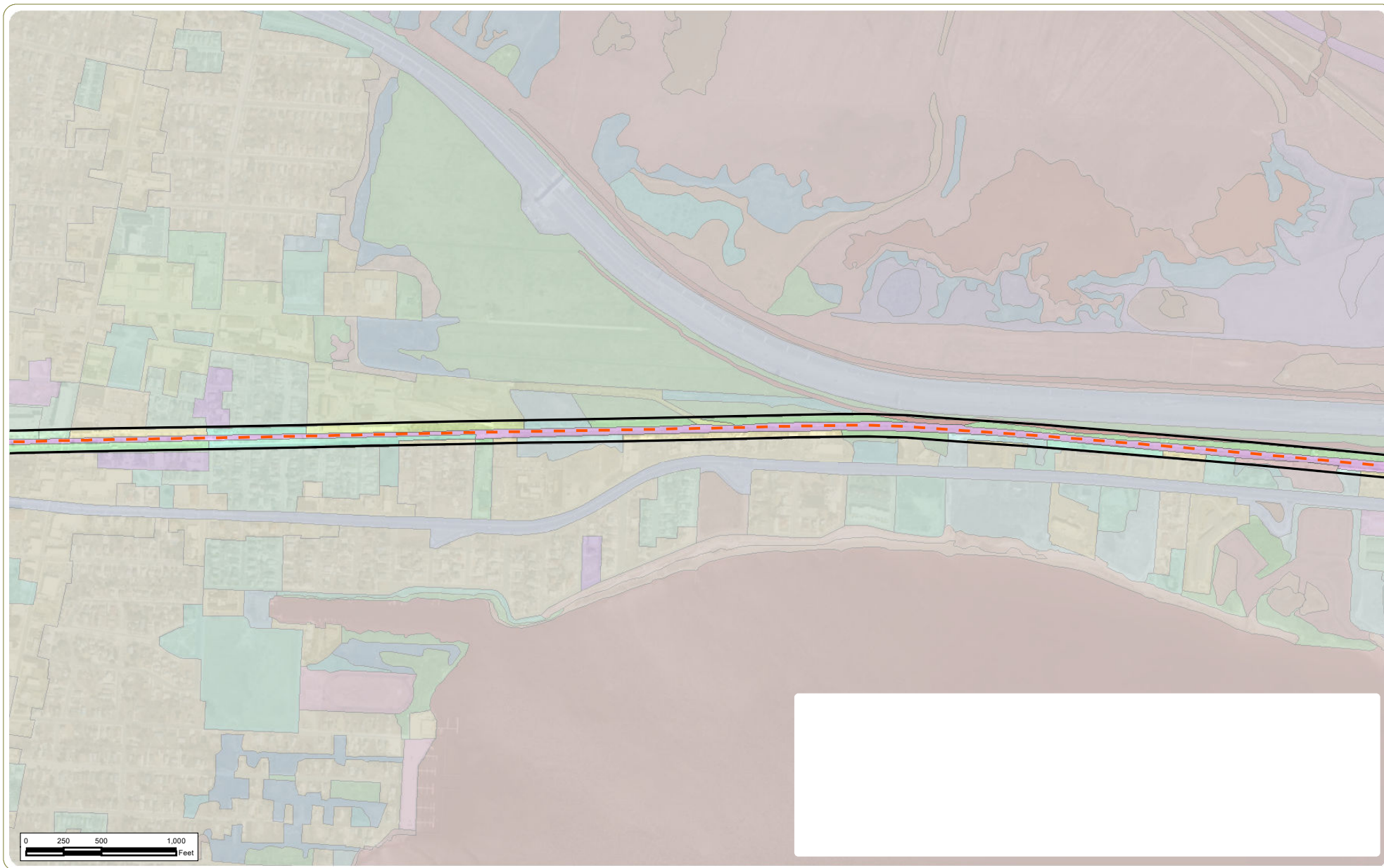
Wetland and Stream Delineation Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route
 Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
 Atlantic County, New Jersey

Figure 6 - Land Use/Land Cover
Sheet 2 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on March 4, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



— Onshore Route
 Study Area



Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

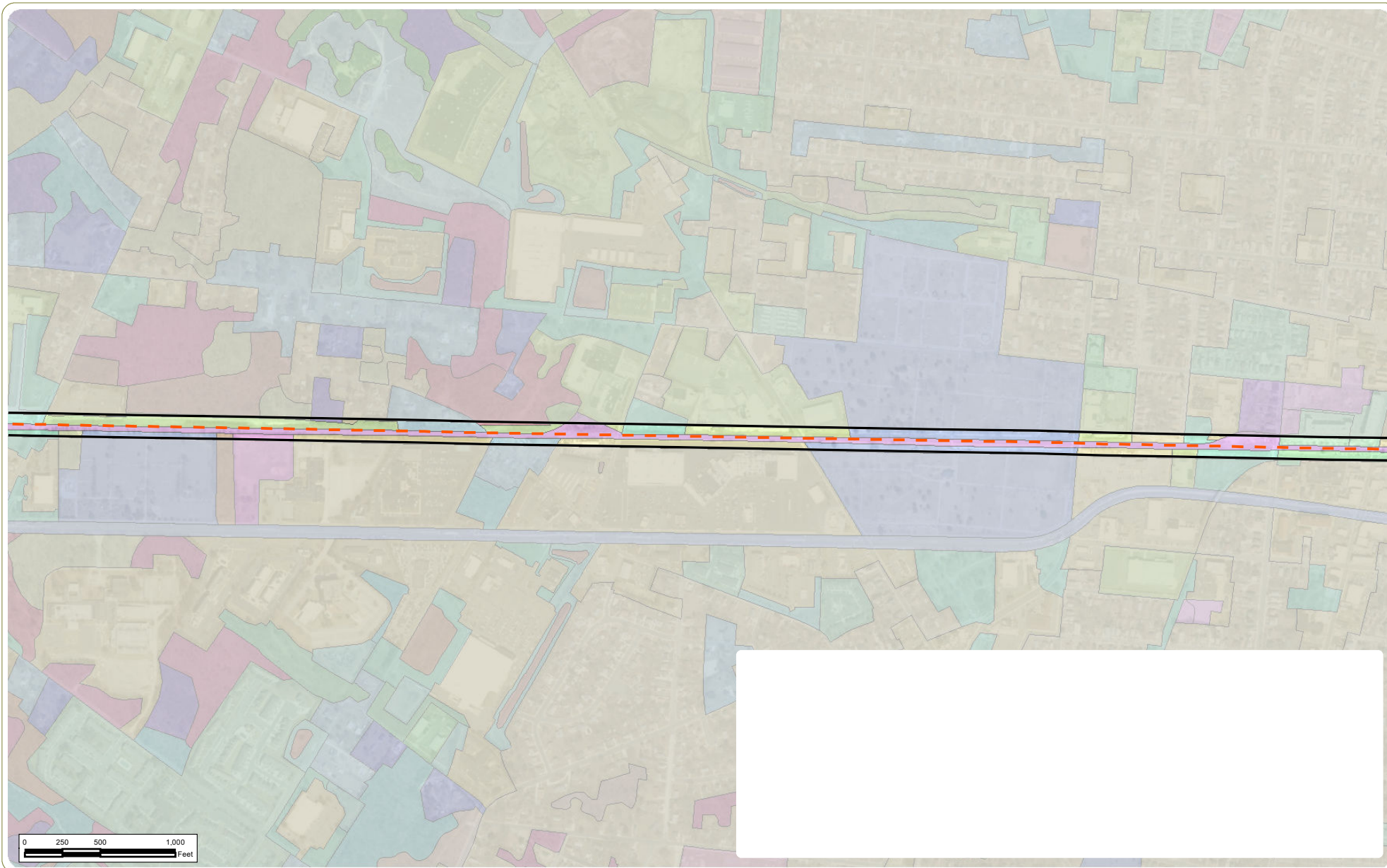
Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 6 - Land Use/Land Cover Sheet 3 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 20, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



— Onshore Route
□ Study Area



Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

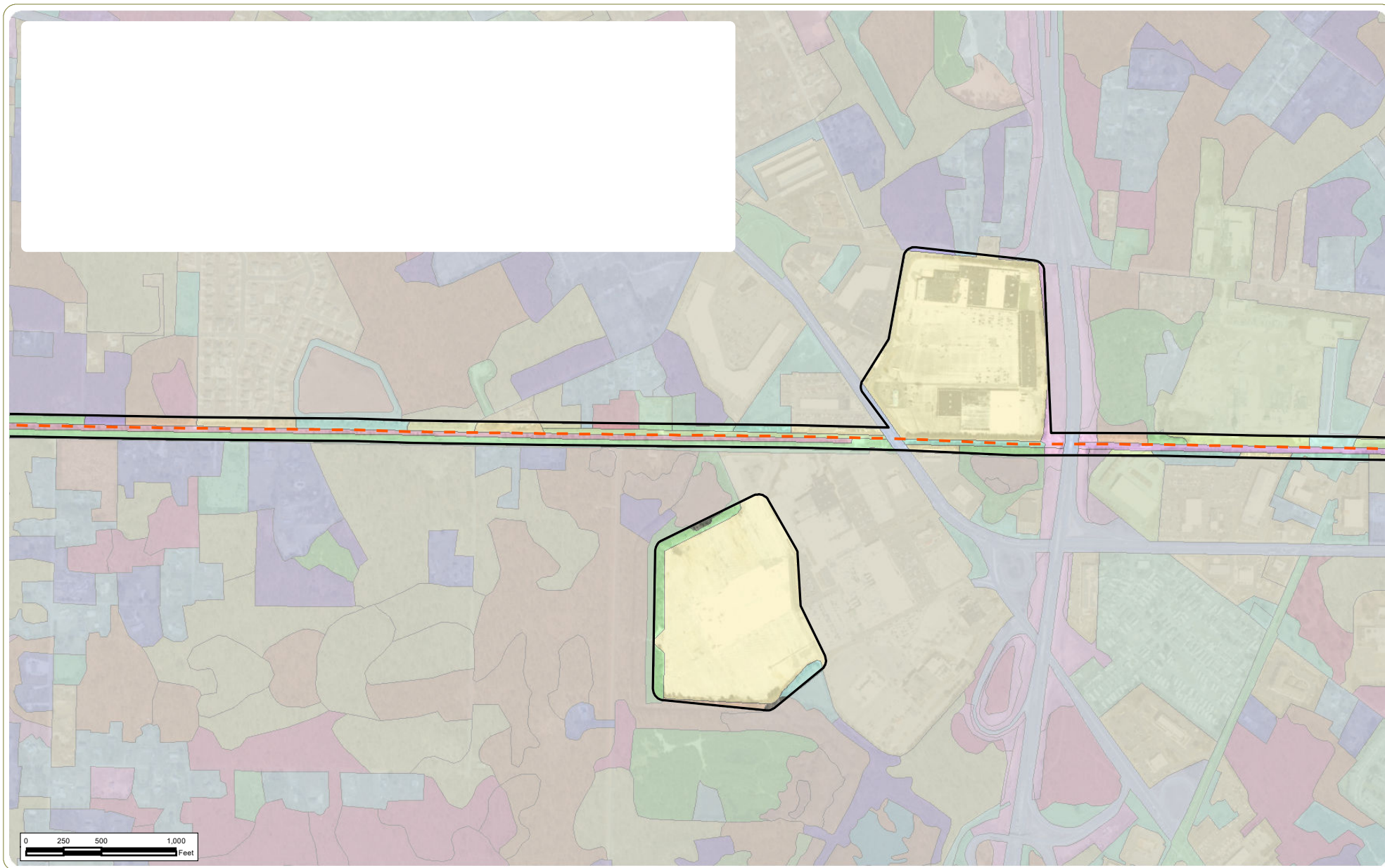
Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 6 - Land Use/Land Cover Sheet 4 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 20, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



— Onshore Route
□ Study Area



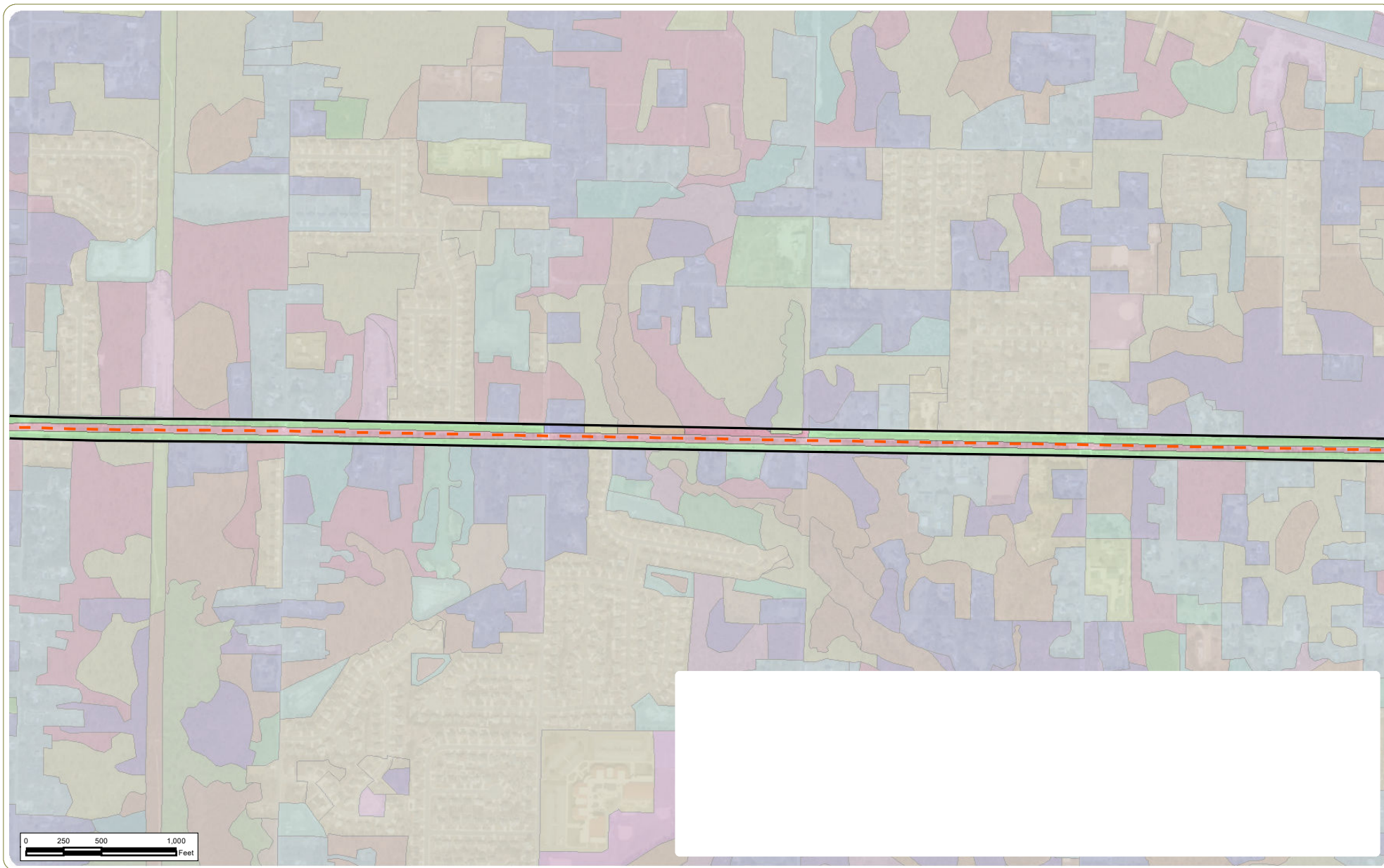
Wetland and Stream Delineation Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route
 Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
 Atlantic County, New Jersey

Figure 6 - Land Use/Land Cover
Sheet 5 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 20, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



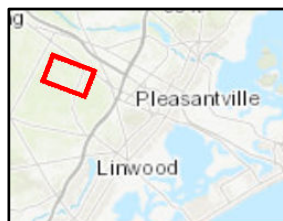
— Onshore Route
 Study Area



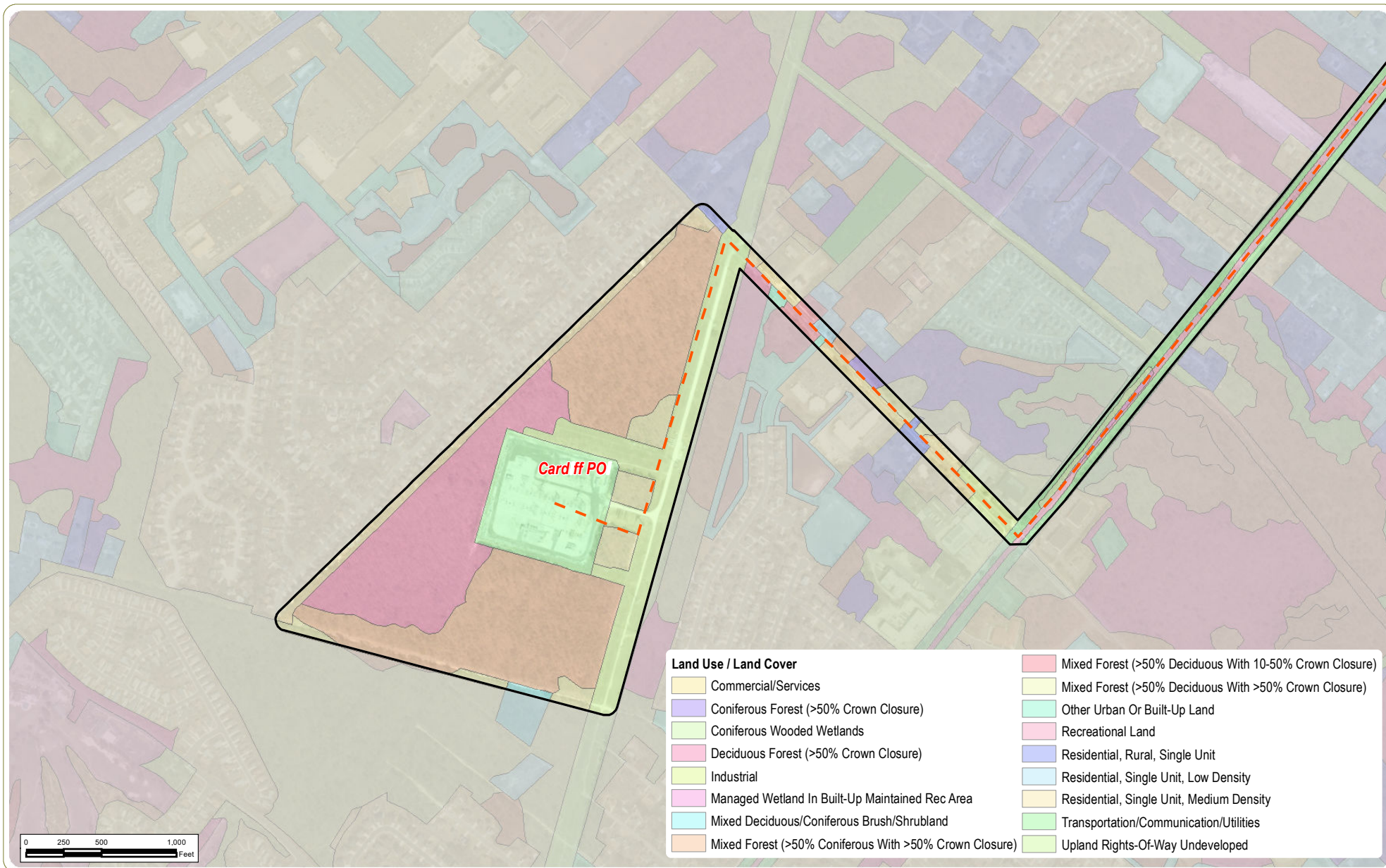
Wetland and Stream Delineation Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route
 Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
 Atlantic County, New Jersey

Figure 6 - Land Use/Land Cover
Sheet 6 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 20, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



— Onshore Route
 Study Area



Wetland and Stream Delineation Report

Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Figure 6 - Land Use/Land Cover Sheet 7 of 7

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 20, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



— Onshore Route
— Study Area

APPENDIX B

Routine Wetland Determination Data Sheets and Stream Inventory Forms

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 1 – 1W

Note: if a more detailed site description is necessary, provide detail here: Tidal Wetland

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Glasswort (Salicornia depressa)</u>	<u>5</u>	<u>OBL</u>	<u>Herbaceous</u>
2.	<u>Smooth Cordgrass (Spartina alterniflora)</u>	<u>99</u>	<u>OBL</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 100%

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Entisols Subgroup: Aquents

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☒ No ☐

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-8" 10YR 3/1 sandy rocky material with organic matter

Mottle Colors: N/A

Other hydric soil indicators: Saturated soils

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☒ No ☐ Surface water depth: 1"

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: 0"

List of other field evidence of surface inundation or soil saturation: N/A

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 1 – 2U

Note: if a more detailed site description is necessary, provide detail here: Upland between roadway and wetland, sparsely vegetated area

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>High Tide Bush (Iva frutescens)</u>	<u>70</u>	<u>FACW</u>	<u>Shrub</u>
2.	<u>Salt Marsh Goldenrod (Solidago sempervirens)</u>	<u>2</u>	<u>FACW</u>	<u>Herbaceous</u>
3.	<u>Poison Ivy (Toxicodendron radicans)</u>	<u>30</u>	<u>FAC</u>	<u>Herbaceous</u>
4.	<u>Common Reed (Phragmites australis)</u>	<u>2</u>	<u>FACW</u>	<u>Herbaceous</u>
5.	<u>Virginia Creeper (Parthenocissus quinquefolia)</u>	<u>5</u>	<u>FACU</u>	<u>Woody Vine</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 66.7

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Entisols Subgroup: Aquents

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☐ No ☒

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-4" 7.5YR 5/8, 4-8" 2.4Y 7/4 clay sand

Mottle Colors: N/A

Other hydric soil indicators: N/A

Is the hydric soil criterion met? Yes ☐ No ☒

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☐ No ☒

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: N/A

Is the wetland hydrology criterion met? Yes ☐ No ☒

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 1 – 2W

Note: if a more detailed site description is necessary, provide detail here: Tidal Wetland

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Glasswort (Salicornia depressa)</u>	<u>25</u>	<u>OBL</u>	<u>Herbaceous</u>
2.	<u>Smooth Cordgrass (Spartina alterniflora)</u>	<u>40</u>	<u>OBL</u>	<u>Herbaceous</u>
3.	<u>Seaside Goldenrod (Solidago sempervirens)</u>	<u>20</u>	<u>FACW</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 100

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Entisols Subgroup: Aquents

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☒ No ☐

Is the soil: Mottled? Yes ☒ No ☐ Gleyed? Yes ☐ No ☒

Matrix Color: 0-6" 10YR 4/2 (80%) sandy loam

Mottle Colors: 5YR 4/6 (20%)

Other hydric soil indicators: ionized channels

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: oxidized rhizospheres on living roots

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 1 – 3U

Note: if a more detailed site description is necessary, provide detail here: Upland between road and wetland

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Eastern Red Cedar (Juniperus virginiana)</u>	<u>5</u>	<u>FACU</u>	<u>Shrub</u>
2.	<u>High Tide Bush (Iva frutescens)</u>	<u>40</u>	<u>FACW</u>	<u>Shrub</u>
3.	<u>Virginia Creeper (Parthenocissus quinquefolia)</u>	<u>60</u>	<u>FACU</u>	<u>Woody Vine</u>
4.	<u>Grass sp.</u>	<u>10</u>	<u>NA</u>	<u>Herbaceous</u>
5.	<u>Goldenrod (Solidago canadensis)</u>	<u>5</u>	<u>FACU</u>	<u>Herbaceous</u>
6.	<u>Yarrow (Achillea millefolium)</u>	<u>10</u>	<u>FACU</u>	<u>Herbaceous</u>
7.	<u>Spotted Knapweed (Centaurea stoebe)</u>	<u>5</u>	<u>NA</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 25%

Is the hydrophytic vegetation criterion met? Yes ☐ No ☒

Rationale:

SOILS

Series/Phase: Entisols Subgroup: Aquents

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☐ No ☒

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-5 10YR 4/2 sandy loam' restriction/compaction at 5"

Mottle Colors: N/A

Other hydric soil indicators: N/A

Is the hydric soil criterion met? Yes ☐ No ☒

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☐ No ☒

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: N/A

Is the wetland hydrology criterion met? Yes ☐ No ☒

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 1 – 3W

Note: if a more detailed site description is necessary, provide detail here: Tidal Wetland

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Glasswort (Salicornia depressa)</u>	<u>25</u>	<u>OBL</u>	<u>Herbaceous</u>
2.	<u>Smooth Cordgrass (Spartina alterniflora)</u>	<u>40</u>	<u>OBL</u>	<u>Herbaceous</u>
3.	<u>Seaside Goldenrod (Solidago sempervirens)</u>	<u>20</u>	<u>FACW</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 100%

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Water Subgroup: Water

Is the soil on the hydric soils list? Yes ☐ No ☐ Undetermined ☒

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☒ No ☐

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-2" 10YR 4/2; 2-8" 10YR 2/1

Mottle Colors: N/A

Other hydric soil indicators: hydrogen sulfide odor

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: oxidized rhizospheres on living roots

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 1 – 4W

Note: if a more detailed site description is necessary, provide detail here: Tidal Wetland

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Glasswort (Salicornia depressa)</u>	<u>25</u>	<u>OBL</u>	<u>Herbaceous</u>
2.	<u>Saltmeadow Cordgrass (Spartina patens)</u>	<u>40</u>	<u>FACW</u>	<u>Herbaceous</u>
3.	<u>Sea Lavender (Limonium carolinianum)</u>	<u>20</u>	<u>OBL</u>	<u>Herbaceous</u>
4.	<u>Common Reed (Phragmites australis)</u>	<u>20</u>	<u>FACW</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 100%

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Entisols Subgroup: Aquents

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☒ No ☐

Is the soil: Mottled? Yes ☒ No ☐ Gleyed? Yes ☐ No ☒

Matrix Color: 0-6 10YR 5/3; 6-14 10YR 5/2 (75%)

Mottle Colors: 6-14 5YR 4/6 (25%)

Other hydric soil indicators: Hydrogen Sulfide Odor

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: 5"

List of other field evidence of surface inundation or soil saturation: Hydrogen sulfide smell, oxidized rhizospheres on living roots

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 1 – 5W

Note: if a more detailed site description is necessary, provide detail here: Tidal PEM Wetland

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Saltmeadow cordgrass (Spartina patens)</u>	<u>60</u>	<u>FACW</u>	<u>Herbaceous</u>
2.	<u>Spartina alterniflora (Spartina alterniflora)</u>	<u>20</u>	<u>OBL</u>	<u>Herbaceous</u>
3.	<u>Common Reed (Phragmites australis)</u>	<u>20</u>	<u>FACW</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 100%

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Entisols Subgroup: Aquents

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☒ No ☐

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-10 10YR 4/1 very rooty, sandy soil with organic matter

Mottle Colors: N/A

Other hydric soil indicators: Hydrogen sulfide smell

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: 10"

List of other field evidence of surface inundation or soil saturation: hydrogen sulfide odor

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 2 – 1W

Note: if a more detailed site description is necessary, provide detail here: PEM

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Saltmeadow Cordgrass (<i>Spartina patens</i>)</u>	<u>50</u>	<u>FACW</u>	<u>Herbaceous</u>
2.	<u>Common Reed (<i>Phragmites australis</i>)</u>	<u>50</u>	<u>FACW</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 100

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Entisols Subgroup: Aquents

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☒ No ☐

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-10 10YR 4/1 very rooty, sandy soils with organic matter

Mottle Colors: N/A

Other hydric soil indicators: hydrogen sulfide smell

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: 10"

List of other field evidence of surface inundation or soil saturation: hydrogen sulfide smell

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 2 – 1U

Note: if a more detailed site description is necessary, provide detail here:

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Bird's-foot trefoil (Lotus corniculatus)</u>	<u>20</u>	<u>FACU</u>	<u>Herbaceous</u>
2.	<u>Lance Leaf plantain (Plantago lanceolate)</u>	<u>15</u>	<u>FACU</u>	<u>Herbaceous</u>
3.	<u>Roadside mowed upland grass</u>	<u>55</u>	<u>NA</u>	<u>Herbaceous</u>
4.	<u>Common Reed (Phragmites australis)</u>	<u>5</u>	<u>FACW</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 0

Is the hydrophytic vegetation criterion met? Yes ☐ No ☒

Rationale:

SOILS

Series/Phase: Entisols Subgroup: Aquents

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☐ No ☒

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-3" 10YR 3/2 disturbed roadside gravelly sand

Mottle Colors: N/A

Other hydric soil indicators: N/A

Is the hydric soil criterion met? Yes ☐ No ☒

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☐ No ☒

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: N/A

Is the wetland hydrology criterion met? Yes ☐ No ☒

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 2 – 2W

Note: if a more detailed site description is necessary, provide detail here: PEM in a bowl shaped depression between roadway and attached ramp.

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☒ No ☐ (If yes, explain) soils disturbed most likely due to past roadwork (fill from placement of roadway and associated ramp)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Common Reed (Phragmites australis)</u>	<u>85</u>	<u>FACW</u>	<u>Herbaceous</u>
2.	<u>Poison Ivy (Toxicodendron radicans)</u>	<u>10</u>	<u>FAC</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 100

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Entisols Subgroup: Aquents

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☐ No ☒

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-5 10YR 3/2; 5-12 2.5Y 5/4 disturbed soils with fill

Mottle Colors: N/A

Other hydric soil indicators: sulfide odor

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale: problematic soils, disturbed area that obviously lays wet for a significant point of the year. Most likely disturbed for building roadway and associated ramps

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: water stained leaves, landscape position

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 2 – 2U

Note: if a more detailed site description is necessary, provide detail here: upland point between roadway and wetland

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Crab apple (Malus sp.)</u>	<u>70</u>	<u>NA</u>	<u>Tree</u>
2.	<u>Prickly-ash (Zanthoxylum americanum)</u>	<u>20</u>	<u>FAC</u>	<u>Tree</u>
3.	<u>Inkberry (Ilex glabra)</u>	<u>40</u>	<u>FACW</u>	<u>Shrub</u>
4.	<u>Multiflora Rose (Rosa multiflora)</u>	<u>5</u>	<u>FACU</u>	<u>Shrub</u>
5.	<u>Purple Crown Vetch (Securigera varia)</u>	<u>80</u>	<u>NA</u>	<u>Herbaceous</u>
6.	<u>Poison Ivy (Toxicodendron radicans)</u>	<u>60</u>	<u>FAC</u>	<u>Herbaceous</u>
7.	<u>Common Reed (Phragmites australis)</u>	<u>5</u>	<u>FACW</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 50%

Is the hydrophytic vegetation criterion met? Yes ☐ No ☒

Rationale:

SOILS

Series/Phase: Entisols Subgroup: Aquents

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☐ No ☒

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-4" 10YR 4/4, restriction at 4"

Mottle Colors: N/A

Other hydric soil indicators: N/A

Is the hydric soil criterion met? Yes ☐ No ☒

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☐ No ☒

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: N/A

Is the wetland hydrology criterion met? Yes ☐ No ☒

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 3 – 1W

Note: if a more detailed site description is necessary, provide detail here: PEM tidal wetland

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>High-Tide Bush (Iva annua)</u>	<u>15</u>	<u>FAC</u>	<u>Shrub</u>
2.	<u>Saltmeadow Cordgrass (Spartina patens)</u>	<u>20</u>	<u>FACW</u>	<u>Herbaceous</u>
3.	<u>Smooth Cordgrass (Spartina alterniflora)</u>	<u>25</u>	<u>OBL</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 100%

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Entisols Subgroup: Aquents

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☒ No ☐

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: Unable to access soils, perennial stream present

Mottle Colors: N/A

Other hydric soil indicators: N/A

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale: Soils too saturated/mucky to access sample

HYDROLOGY

Is the ground surface inundated? Yes ☒ No ☐ Surface water depth: 2"+

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: 0"

List of other field evidence of surface inundation or soil saturation: N/A

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 3 – 2W

Note: if a more detailed site description is necessary, provide detail here: Tidal Wetland

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Eastern Red Cedar (Juniperus virginiana)</u>	<u>30</u>	<u>FACU</u>	<u>Tree</u>
2.	<u>High Tide Bush (Iva annua)</u>	<u>40</u>	<u>FAC</u>	<u>Shrub</u>
3.	<u>Glasswort (Salicornia depressa)</u>	<u>5</u>	<u>OBL</u>	<u>Herbaceous</u>
4.	<u>Smooth cordgrass (Spartina patens)</u>	<u>90</u>	<u>OBL</u>	<u>Herbaceous</u>
5.	<u>Grass sp.</u>	<u>40</u>	<u>NA</u>	<u>Herbaceous</u>
6.	<u>Common Reed (Phragmites australis)</u>	<u>5</u>	<u>FACW</u>	<u>Herbaceous</u>
7.	<u>Sea Lavender (Limonium carolinianum)</u>	<u>2</u>	<u>OBL</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 60%

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Entisols Subgroup: Aquents

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☒ No ☐

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-5" 10YR 3/2, 5-8" 10YR 4/1, 8-18 10YR 2/1; heavy organic matter, sandy some small rocks

Mottle Colors: N/A

Other hydric soil indicators: Depletions present

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: hydrogen sulfide smell

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 3 – 2U

Note: if a more detailed site description is necessary, provide detail here: Upland consisting of gravel roadbed that runs along wetland boundary

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☒ No ☐ (If yes, explain) gravel roadbed, no soil sample

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Eastern Redcedar (Juniperus virginiana)</u>	<u>5</u>	<u>FACU</u>	<u>Tree</u>
2.	<u>High Tide Bush (Iva annua)</u>	<u>5</u>	<u>FAC</u>	<u>Shrub</u>
3.	<u>Common Reed (Phragmites australis)</u>	<u>25</u>	<u>FACW</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 50%

Is the hydrophytic vegetation criterion met? Yes ☐ No ☒

Rationale:

SOILS

Series/Phase: Entisols Subgroup: Aquents

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☐ No ☒

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: Gravel Roadbed

Mottle Colors: N/A

Other hydric soil indicators: N/A

Is the hydric soil criterion met? Yes ☐ No ☒

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☐ No ☒

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: N/A

Is the wetland hydrology criterion met? Yes ☐ No ☒

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 4 – 1W

Note: if a more detailed site description is necessary, provide detail here: PEM

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Reed Canary Grass (Phalaris arundinacea)</u>	60	OBL	Herbaceous
2.	<u>Broadleaf Cattail (Typha latifolia)</u>	20	OBL	Herbaceous
3.	<u>Marsh Mallow (Althaea officinalis)</u>	15	FACW	Herbaceous
4.	<u>Common Rush (Juncus effuses)</u>	10	OBL	Herbaceous
5.	<u>Shallow sedge (Carex lurida)</u>	10	OBL	Herbaceous

Percent of Dominant Species that are OBL, FACW, and/or FAC: 100%

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Spodosols Subgroup: Aquods

Is the soil on the hydric soils list? Yes ☒ No ☐ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☐ No ☒

Is the soil: Mottled? Yes ☒ No ☐ Gleyed? Yes ☐ No ☒

Matrix Color: 0-18" 10YR 2/1 (85%)

Mottle Colors: 5YR 4/6 (15%)

Other hydric soil indicators: N/A

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: geomorphic position, water stained leaves

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 4 – 1U

Note: if a more detailed site description is necessary, provide detail here:

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Spotted Knapweed (Centaurea stoebe)</u>	<u>10</u>	<u>NA</u>	<u>Herbaceous</u>
2.	<u>Japanese clover (Kummerowia striata)</u>	<u>30</u>	<u>FACU</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 0%

Is the hydrophytic vegetation criterion met? Yes ☐ No ☒

Rationale:

SOILS

Series/Phase: Spodosols Subgroup: Aquods

Is the soil on the hydric soils list? Yes ☒ No ☐ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☐ No ☒

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-10" 10YR 4/1. 10-18" 5YR 5/8

Mottle Colors: N/A

Other hydric soil indicators: N/A

Is the hydric soil criterion met? Yes ☐ No ☒

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☐ No ☒

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: N/A

Is the wetland hydrology criterion met? Yes ☐ No ☒

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 5 – 1W

Note: if a more detailed site description is necessary, provide detail here: Gully between forest line and pedestrian bike path

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Japanese Stiltgrass (Microstegium vimineum)</u>	<u>5</u>	<u>FAC</u>	<u>Herbaceous</u>
2.	<u>Slender Path Rush (Juncus tenuis)</u>	<u>10</u>	<u>FAC</u>	<u>Herbaceous</u>
3.	<u>Hairgrass (Deschampsia cespitosa)</u>	<u>75</u>	<u>FACW</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 66.7

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Ultisols Subgroup: Udults

Is the soil on the hydric soils list? Yes ☒ No ☐ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☒ No ☐

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-5" 5YR 2/1, 5-10" 10YR 2/1 organic loam

Mottle Colors: N/A

Other hydric soil indicators: N/A

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: low lying area

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 6 – 1W

Note: if a more detailed site description is necessary, provide detail here: Gully between forest line and pedestrian bike path

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Red Maple (Acer rubrum)</u>	<u>40</u>	<u>FAC</u>	<u>Tree</u>
2.	<u>Cherry (Prunus serotina)</u>	<u>2</u>	<u>FACU</u>	<u>Tree</u>
3.	<u>Spicebush (Lindera benzoin)</u>	<u>10</u>	<u>FACW</u>	<u>Shrub/Sapling</u>
4.	<u>Red Maple (Acer rubrum)</u>	<u>15</u>	<u>FAC</u>	<u>Shrub/Sapling</u>
5.	<u>Sassafras (Sassafras albidum)</u>	<u>1</u>	<u>FACU</u>	<u>Shrub/Sapling</u>
6.	<u>White Oak (Quercus alba)</u>	<u>1</u>	<u>FACU</u>	<u>Shrub/Sapling</u>
7.	<u>Greenbriar (Smilax rotundifolia)</u>	<u>20</u>	<u>FAC</u>	<u>Wood Vine</u>
8.	<u>Moss</u>	<u>40</u>	<u>NA</u>	<u>Herbaceous</u>
9.	<u>Japanese Stiltgrass (Microstegium vimineum)</u>	<u>5</u>	<u>FAC</u>	<u>Herbaceous</u>
10.	<u>Slender Path Rush (Juncus tenuis)</u>	<u>10</u>	<u>FAC</u>	<u>Herbaceous</u>
11.	<u>Hairgrass (Deschampsia cespitosa)</u>	<u>15</u>	<u>FACW</u>	<u>Herbaceous</u>
12.	<u>Sundew (Drosera rotundifolia)</u>	<u>2</u>	<u>OBL</u>	<u>Herbaceous</u>
13.	<u>Bladderwort (Utricularia foliosa)</u>	<u>5</u>	<u>OBL</u>	<u>Herbaceous</u>
14.	<u>Showy Goldenrod (Solidago speciose)</u>	<u>5</u>	<u>NA</u>	<u>Herbaceous</u>
15.	<u>Cinnamon fern (Osmunda cinnamomea)</u>	<u>5</u>	<u>FACW</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 66.7

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Ultisols Subgroup: Udults

Is the soil on the hydric soils list? Yes ☒ No ☐ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☒ No ☐

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-5" 5YR 2/1, 5-10" 10YR 2/1 organic loam

Mottle Colors: N/A

Other hydric soil indicators: N/A

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☒ No ☐ Surface water depth: 0.5"

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: low lying area with sparsely vegetated habitat

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 6 – 2W

Note: if a more detailed site description is necessary, provide detail here: PFO

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Red Maple (Acer rubrum)</u>	<u>95</u>	<u>FAC</u>	<u>Tree</u>
2.	<u>Black Gum (Nyssa sylvatica)</u>	<u>10</u>	<u>FAC</u>	<u>Tree</u>
3.	<u>Blueberry (Vaccinium corymbosum)</u>	<u>10</u>	<u>FACW</u>	<u>Shrub/Sapling</u>
4.	<u>Black Gum (Nyssa sylvatica)</u>	<u>5</u>	<u>FAC</u>	<u>Shrub/Sapling</u>
5.	<u>Holly (Ilex opaca)</u>	<u>2</u>	<u>FAC</u>	<u>Shrub/Sapling</u>
6.	<u>Moss</u>	<u>20</u>	<u>NA</u>	<u>Herbaceous</u>
7.	<u>Royal Fern (Osmunda regalis)</u>	<u>1</u>	<u>OBL</u>	<u>Herbaceous</u>
8.	<u>Grass sp.</u>	<u>10</u>	<u>NA</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 100

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Inceptisols Subgroup: Aquepts

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☒ No ☐

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-5" 5yr 2/1, 5-12" 10yr 2/1 organic loam

Mottle Colors: N/A

Other hydric soil indicators: N/A

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: 5"

List of other field evidence of surface inundation or soil saturation: moss trim lines, buttressed and eroded tree roots, wet leaves

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 6 – 1U

Note: if a more detailed site description is necessary, provide detail here: Hillslope between walking path and delineated wetland

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Sassafras (Sassafras albidum)</u>	<u>15</u>	<u>FACU</u>	<u>Shrub/Sapling</u>
2.	<u>Grey Birch (Betula populifolia)</u>	<u>5</u>	<u>FAC</u>	<u>Shrub/Sapling</u>
3.	<u>Black Oak (Quercus velutina)</u>	<u>10</u>	<u>NA</u>	<u>Shrub/Sapling</u>
4.	<u>Cherry (Prunus serotina)</u>	<u>15</u>	<u>FACU</u>	<u>Shrub/Sapling</u>
5.	<u>Magnolia (Magnolia virginiana)</u>	<u>10</u>	<u>FACW</u>	<u>Shrub/Sapling</u>
6.	<u>Pepper Bush (Clethra alnifolia)</u>	<u>10</u>	<u>FACW</u>	<u>Shrub/Sapling</u>
7.	<u>Spotted Knapweed (Centaurea stoebe)</u>	<u>10</u>	<u>NA</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 28.6

Is the hydrophytic vegetation criterion met? Yes ☐ No ☒

Rationale:

SOILS

Series/Phase: Ultisols Subgroup: Udults

Is the soil on the hydric soils list? Yes ☒ No ☐ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☐ No ☒

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-8" 10YR 3/3, 8-14" 10YR 4/6 sandy

Mottle Colors: N/A

Other hydric soil indicators: N/A

Is the hydric soil criterion met? Yes ☐ No ☒

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☐ No ☒

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: N/A

Is the wetland hydrology criterion met? Yes ☐ No ☒

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 7 – 1W

Note: if a more detailed site description is necessary, provide detail here: PFO – low drainage

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Red Maple (Acer rubrum)</u>	<u>85</u>	<u>FAC</u>	<u>Tree</u>
2.	<u>Pitch Pine (Pinus rigida)</u>	<u>5</u>	<u>FACU</u>	<u>Tree</u>
3.	<u>Black Gum (Nyssa sylvatica)</u>	<u>15</u>	<u>FAC</u>	<u>Sapling/Shrub</u>
4.	<u>Red Maple (Acer rubrum)</u>	<u>10</u>	<u>FAC</u>	<u>Sapling/Shrub</u>
5.	<u>Black Gum (Nyssa sylvatica)</u>	<u>5</u>	<u>FAC</u>	<u>Herbaceous</u>
6.	<u>Cinnamon Fern (Osmunda cinnamomea)</u>	<u>5</u>	<u>FACW</u>	<u>Herbaceous</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 100%

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Inceptisols

Subgroup: Aquepts

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☒ No ☐

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-3" 10yr 3/2, 3-4" 2.5y 6/3 (clay), 4-12" 10yr 2/1 saturated, sand masked with OM

Mottle Colors: N/A

Other hydric soil indicators: N/A

Is the hydric soil criterion met? Yes ☒ No ☐

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☒ No ☐

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: water stained leaves, geomorphic position

Is the wetland hydrology criterion met? Yes ☒ No ☐

Rationale:

Data Form

Routine Onsite Determination Form

Field Investigators: Matt Spadoni, Jacqueline McMillen

Date: 6/23/2020

Project/Site: Cardiff Wetland Delineation

State: NJ

County: Atlantic County

Applicant/Owner: Atlantic Shores Offshore Wind

Plant Community#/Name: Wetland 7 – 1U

Note: if a more detailed site description is necessary, provide detail here: Hillside between wetland and bike path

Do normal environmental conditions exist at the plant community?

Yes ☒ No ☐ (If no, explain)

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes ☐ No ☒ (If yes, explain)

VEGETATION

	Dominant Plant Species	Percent Cover	Indicator Status	Stratum
1.	<u>Pitch Pine (Pinus rigida)</u>	<u>60</u>	<u>FACU</u>	<u>Tree</u>
2.	<u>Red Maple (Acer rubrum)</u>	<u>40</u>	<u>FAC</u>	<u>Tree</u>
3.	<u>Black Gum (Nyssa sylvatica)</u>	<u>40</u>	<u>FAC</u>	<u>Tree</u>
4.	<u>Pepperbush (Clethra alnifolia)</u>	<u>5</u>	<u>FACW</u>	<u>Shrub/Sapling</u>
5.	<u>Atlantic Red Cedar (Juniperus virginiana)</u>	<u>2</u>	<u>FACU</u>	<u>Shrub/Sapling</u>
6.	<u>Blueberry (Vaccinium angustifolium)</u>	<u>2</u>	<u>FACU</u>	<u>Shrub/Sapling</u>
7.	<u>Greenbriar (Smilax rotundifolia)</u>	<u>5</u>	<u>FAC</u>	<u>Woody Vine</u>

Percent of Dominant Species that are OBL, FACW, and/or FAC: 57.1

Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale:

SOILS

Series/Phase: Inceptisols Subgroup: Aquepts

Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined ☐

Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☐ No ☒

Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒

Matrix Color: 0-2" 5yr 3/2, 2-6" 10yr 3/1, 6-14" 2.5y 5/4 sandy

Mottle Colors: N/A

Other hydric soil indicators: N/A

Is the hydric soil criterion met? Yes ☐ No ☒

Rationale:

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: N/A

Is the soil saturated? Yes ☐ No ☒

Depth to free-standing water in pit/soil probe hole: N/A

List of other field evidence of surface inundation or soil saturation: N/A

Is the wetland hydrology criterion met? Yes ☐ No ☒

Rationale:

EDR Stream Determination Data Form

Project Name: Cardiff Wetland Delineation Project Number: 20043

Survey Date: 6/22-6/24/2020

Evaluators: Matt Spadoni, Jacqueline McMillen

Stream ID: Watercourse 1 Data Point ID: WC - 1

Town: Atlantic City County: Atlantic State: New Jersey

Latitude: 39.357433 Longitude: -74.453935

Stream ID: Inside Thorofare, the Beach Thorofare, and the Great Thorofare

Previous Weather: Snow ☐ Heavy Rain ☐ Rain ☐ None ☒ Unknown ☐

Adjacent Landcover: Developed and Urban areas

Ecological Communities: urban habitat

Hydrologic Characteristics

Perceptible Flow? Yes ☒ No ☐

Flow Regime: R1-Tidal ☒ R2-Lower Perennial ☐
R3-Upper Perennial ☐ R4-Intermittent ☐
R5-Unknown Perennial ☐ R6-Ephemeral ☐

Flow Direction: Influenced by tides from the Atlantic Ocean

Surface Water Present: Yes ☒ No ☐

Surface Water Depth at Thalweg: inaccessible due to steep banks and areas protected by concrete banks

Wetted (Stream) Width: 520 feet

Geomorphologic Characteristics

Gradient: Gentle (0-5 %) ☒ Moderate (6-11 %) ☐ Steep (>12 %) ☐
Substrate: Silt/Clay (<0.062 mm) ☐ Sand (0.062–2 mm) ☐ Gravel (2-64 mm) ☐
Cobble (64-256 mm) ☐ Boulder (256-4096 mm) ☐ Bedrock (>4096 mm) ☐

Bankful Width: 520 feet

Bank Height: unknown, due to inaccessibility

Stream Conditions

Undercut Banks: Yes ☐ No ☒ Description:

Overhanging Vegetation: Yes ☐ No ☒ Description:

Deep Pools Present: Yes ☒ No ☐ Description:

Coarse Woody Debris: Yes ☐ No ☒ Description:

Channel Alteration: Channelization ☒ Channel Armoring ☒ Impoundment ☐ Other:

Is the stream a Drainage Ditch: Yes ☐ No ☒

Additional Notes

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EDR Stream Determination Data Form

Project Name: Cardiff Wetland Delineation Project Number: 20043

Survey Date: 6/22-6/24/2020

Evaluators: Matt Spadoni, Jacqueline McMillen

Stream ID: Watercourse 2 Data Point ID: WC - 2

Town: Atlantic City County: Atlantic State: New Jersey

Latitude: 39.375548 Longitude: -74.483255

Stream ID: Tidal creek associated with the Great Thorofare

Previous Weather: Snow ☐ Heavy Rain ☐ Rain ☐ None ☐ Unknown ☐

Adjacent Landcover: Tidal emergent wetlands, developed area, abandoned developed area, roadways

Ecological Communities: tidal emergent wetlands and urban habitat

Hydrologic Characteristics

Perceptible Flow? Yes ☒ No ☐

Flow Regime: R1-Tidal ☒ R2-Lower Perennial ☐
R3-Upper Perennial ☐ R4-Intermittent ☐
R5-Unknown Perennial ☐ R6-Ephemeral ☐

Flow Direction: influenced by tides from the Great Thorofare

Surface Water Present: Yes ☒ No ☐

Surface Water Depth at Thalweg: 1 foot or greater

Wetted (Stream) Width: 2 feet to 40 feet depending on location. (narrowest at highest elevation and widest at the mouth)

Geomorphologic Characteristics

Gradient: Gentle (0-5 %) ☒ Moderate (6-11 %) ☐ Steep (>12 %) ☐

Substrate: Silt/Clay (<0.062 mm) ☐ Sand (0.062–2 mm) ☐ Gravel (2-64 mm) ☐
Cobble (64-256 mm) ☐ Boulder (256-4096 mm) ☐ Bedrock (>4096 mm) ☐

Bankful Width: 2 to 40 feet

Bank Height: ranged from 0.5 feet to 2 or more feet

Stream Conditions

Undercut Banks: Yes ☐ No ☒ Description:

Overhanging Vegetation: Yes ☒ No ☐ Description:

Deep Pools Present: Yes ☒ No ☐ Description:

Coarse Woody Debris: Yes ☐ No ☒ Description:

Channel Alteration: Channelization ☒ Channel Armoring ☐ Impoundment ☐ Other:

Is the stream a Drainage Ditch: Yes ☐ No ☒

Additional Notes

Channelization along roadways and culverts transport water under roads and bridges.

EDR Stream Determination Data Form

Project Name: Cardiff Wetland Delineation Project Number: 20043

Survey Date: 6/22-6/24/2020

Evaluators: Matt Spadoni, Jacqueline McMillen

Stream ID: Watercourse 3 Data Point ID: WC - 3

Town: Atlantic City/Pleasantville/Egg Harbor Township County: Atlantic State: New Jersey

Latitude: 39.378122 Longitude: -74.487429

Stream ID: Tidal creek directly connected to the Great Thorofare

Previous Weather: Snow ☐ Heavy Rain ☐ Rain ☐ None ☐ Unknown ☐

Adjacent Landcover: tidal wetlands, urban develop areas, roadways

Ecological Communities: tidal wetlands, urban habitat

Hydrologic Characteristics

Perceptible Flow? Yes ☒ No ☐

Flow Regime: R1-Tidal ☒ R2-Lower Perennial ☐
R3-Upper Perennial ☐ R4-Intermittent ☐
R5-Unknown Perennial ☐ R6-Ephemeral ☐

Flow Direction: influenced by tide from the Great Thorofare

Surface Water Present: Yes ☒ No ☐

Surface Water Depth at Thalweg: inaccessible due to steep and often soft banks

Wetted (Stream) Width: 4 to 80 feet depending on location, narrowest at furthest point from the Great Thorofare and widest at the mouth.

Geomorphologic Characteristics

Gradient: Gentle (0-5 %) ☒ Moderate (6-11 %) ☐ Steep (>12 %) ☐

Substrate: Silt/Clay (<0.062 mm) ☐ Sand (0.062–2 mm) ☐ Gravel (2-64 mm) ☐
Cobble (64-256 mm) ☐ Boulder (256-4096 mm) ☐ Bedrock (>4096 mm) ☐

Bankful Width: 4 to 80 feet

Bank Height: 2 to 4+ feet, soft banks

Stream Conditions

Undercut Banks: Yes ☐ No ☒ Description:

Overhanging Vegetation: Yes ☒ No ☐ Description:

Deep Pools Present: Yes ☒ No ☐ Description:

Coarse Woody Debris: Yes ☐ No ☒ Description:

Channel Alteration: Channelization ☒ Channel Armoring ☐ Impoundment ☐ Other:

Is the stream a Drainage Ditch: Yes ☐ No ☐

Additional Notes

..

EDR Stream Determination Data Form

Project Name: Cardiff Wetland Delineation Project Number: 20043

Survey Date: 6/22-6/24/2020

Evaluators: Matt Spadoni, Jacqueline McMillen

Stream ID: Watercourse 4 Data Point ID: WC - 4

Town: Egg Harbor County: Atlantic State: New Jersey

Latitude: 39.417936 Longitude: -74.611167

Stream ID: Mill Branch

Previous Weather: Snow ☐ Heavy Rain ☐ Rain ☐ None ☐ Unknown ☐

Adjacent Landcover: young growth wooded area between roadways and divided by a bike path

Ecological Communities: young-growth forest/shrub habitat, disturbed herbaceous habitat

Hydrologic Characteristics

Perceptible Flow? Yes ☐ No ☒

Flow Regime: R1-Tidal ☐ R2-Lower Perennial ☐
R3-Upper Perennial ☐ R4-Intermittent ☐
R5-Unknown Perennial ☐ R6-Ephemeral ☒

Flow Direction: north to south

Surface Water Present: Yes ☐ No ☒

Surface Water Depth at Thalweg: N/A

Wetted (Stream) Width: N/A

Geomorphologic Characteristics

Gradient: Gentle (0-5 %) ☒ Moderate (6-11 %) ☐ Steep (>12 %) ☐
Substrate: Silt/Clay (<0.062 mm) ☒ Sand (0.062–2 mm) ☒ Gravel (2-64 mm) ☒
Cobble (64-256 mm) ☐ Boulder (256-4096 mm) ☐ Bedrock (>4096 mm) ☐

Bankful Width: 5 feet

Bank Height: 3 – 4 feet

Stream Conditions

Undercut Banks: Yes ☐ No ☒ Description:

Overhanging Vegetation: Yes ☒ No ☐ Description:

Deep Pools Present: Yes ☐ No ☒ Description:

Coarse Woody Debris: Yes ☐ No ☒ Description:

Channel Alteration: Channelization ☒ Channel Armoring ☒ Impoundment ☐ Other:

Is the stream a Drainage Ditch: Yes ☐ No ☒

Additional Notes

A channelized swale that flows via culvert under a pedestrian bike path. Substrate consisted of sand, silt and gravel.

EDR Stream Determination Data Form

Project Name: Cardiff Wetland Delineation Project Number: 20043

Survey Date: 6/22-6/24/2020

Evaluators: Matt Spadoni, Jacqueline McMillen

Stream ID: Watercourse 5 Data Point ID: WC - 5

Town: Egg Harbor County: Atlantic State: New Jersey

Latitude: 39.418963 Longitude: -74.614547

Stream ID: Unnamed Tributary to Mill Branch

Previous Weather: Snow ☐ Heavy Rain ☐ Rain ☐ None ☐ Unknown ☐

Adjacent Landcover: young growth wooded area between roadways and divided by a bike path

Ecological Communities: young-growth forest/shrub habitat, disturbed herbaceous habitat

Hydrologic Characteristics

Perceptible Flow? Yes ☐ No ☒

Flow Regime: R1-Tidal ☐ R2-Lower Perennial ☐
R3-Upper Perennial ☐ R4-Intermittent ☐
R5-Unknown Perennial ☐ R6-Ephemeral ☒

Flow Direction: north to south

Surface Water Present: Yes ☐ No ☒

Surface Water Depth at Thalweg: N/A

Wetted (Stream) Width: N/A

Geomorphologic Characteristics

Gradient: Gentle (0-5 %) ☒ Moderate (6-11 %) ☐ Steep (>12 %) ☐
Substrate: Silt/Clay (<0.062 mm) ☒ Sand (0.062–2 mm) ☒ Gravel (2-64 mm) ☒
Cobble (64-256 mm) ☐ Boulder (256-4096 mm) ☐ Bedrock (>4096 mm) ☐

Bankful Width: 6 feet

Bank Height: 3 – 4 feet

Stream Conditions

Undercut Banks: Yes ☐ No ☒ Description:

Overhanging Vegetation: Yes ☒ No ☐ Description:

Deep Pools Present: Yes ☐ No ☒ Description:

Coarse Woody Debris: Yes ☐ No ☒ Description:

Channel Alteration: Channelization ☒ Channel Armoring ☒ Impoundment ☐ Other:

Is the stream a Drainage Ditch: Yes ☐ No ☒

Additional Notes

A channelized swale that flows via culvert under a pedestrian bike path. Substrate consisted of sand, silt and gravel.

APPENDIX C

Photo Documentation



Photo 1

Location:

39.361931, -74.465225

Looking East at Wetland 1



Photo 2

Location:

39.373242, -74.841108

Looking Northwest at
Wetland 2



Photo 3

Location:

39.372883, -74.479728

Looking Southeast at

Wetland 3



Photo 4

Location:

39.4044, -74.566825

Looking West at Wetland 4



Photo 5

Location:
39.412553, -74.593636

Looking Northwest at
Wetland 5



Photo 6

Location:
39.413503, -74.596572

Looking West at Wetland 6



Photo 7

Location:

39.419075, -74.61515

Looking North at Wetland 7



Photo 8

Location:

39.363547, -74.467408

Representative Photo
of Hydric Soils in Tidal
Wetlands



Photo 9

Location:

39.404381, -74.566772

Representative Photo
of Hydric Soils in Inland
Wetlands



Photo 10

Location:

39.356847, -74.453444

Looking Northwest at
Watercourse 1



Photo 11

Location:
39.376128, -74.484628

Looking West at
Watercourse 2



Photo 12

Location:
39.377936, -74.487183

Looking Southwest at
Watercourse 3



Photo 13

Location:

39.417931, -74.611244

Looking Southeast at

Watercourse 4



Photo 14

Location:

39.391006, -74.523331

Representative View of On-
Site Uplands



Photo 15

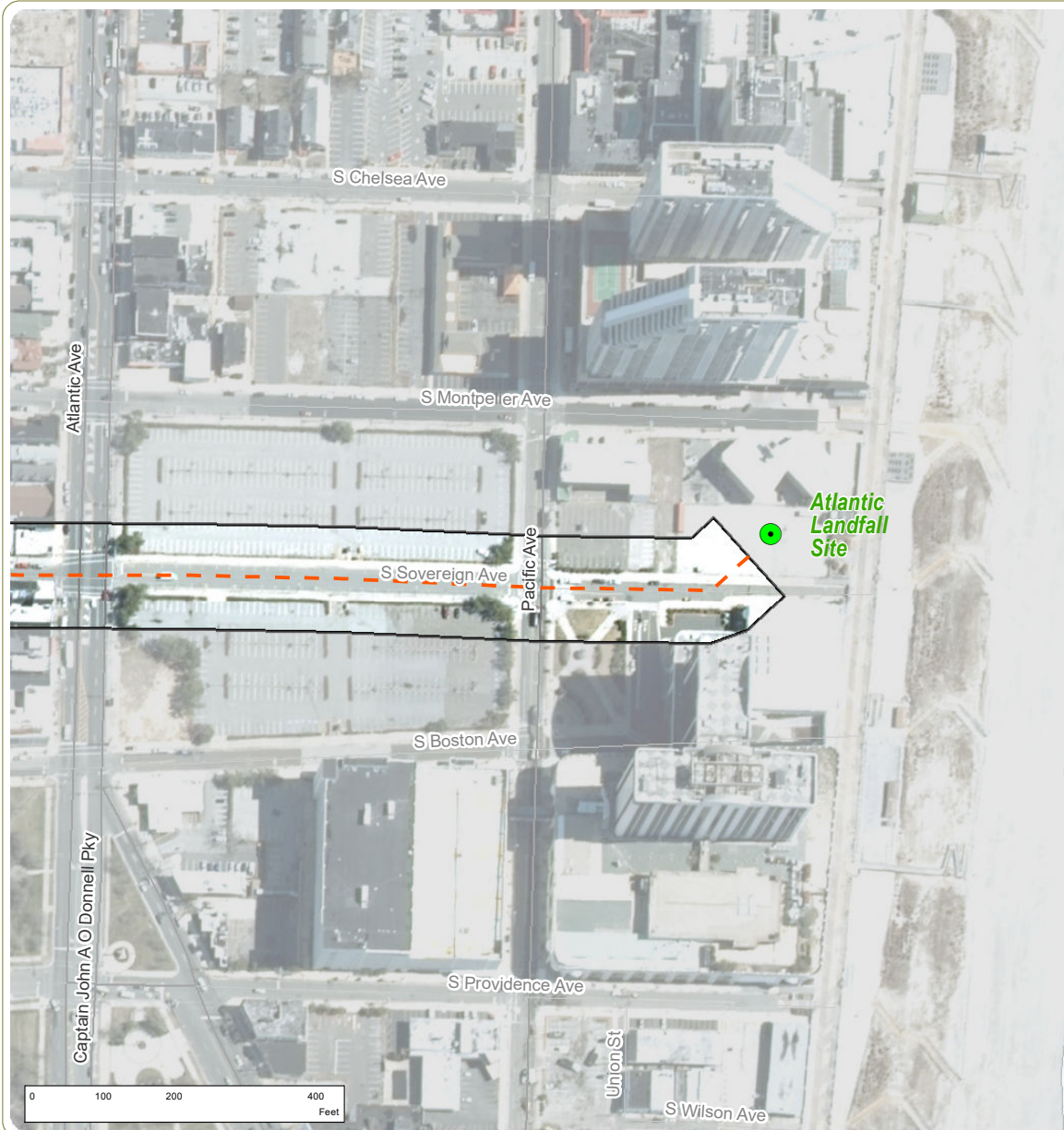
Location:

39.410381, -74.586631

Representative View of On-Site Uplands

APPENDIX D

Field Delineated Wetlands and Streams Plans

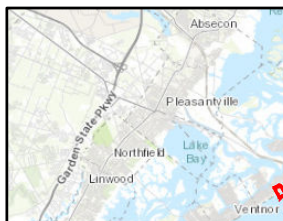


Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan Sheet 1 of 30

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on March 8, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



— Onshore Route
□ Study Area



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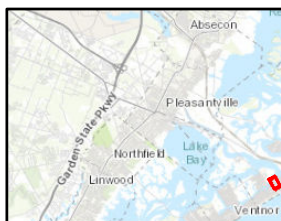


Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan Sheet 2 of 30

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 21, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

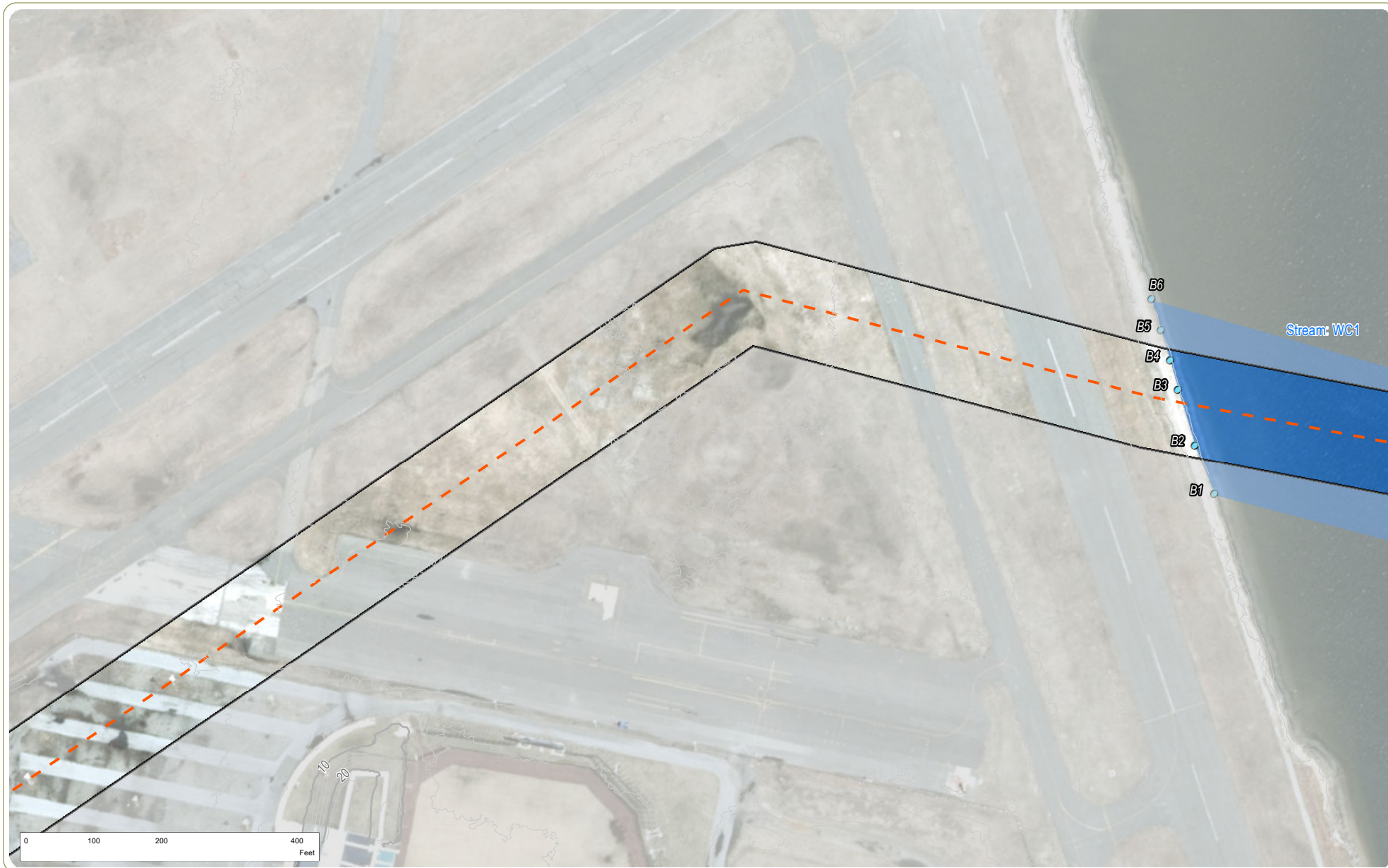


- Onshore Route
- Study Area
- Stream Flag
- Delineated Stream



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offshore wind

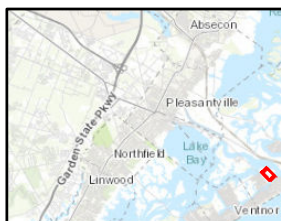
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Wetland and Stream Delineation Report **Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route** Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan **Sheet 3 of 30**

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 21, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

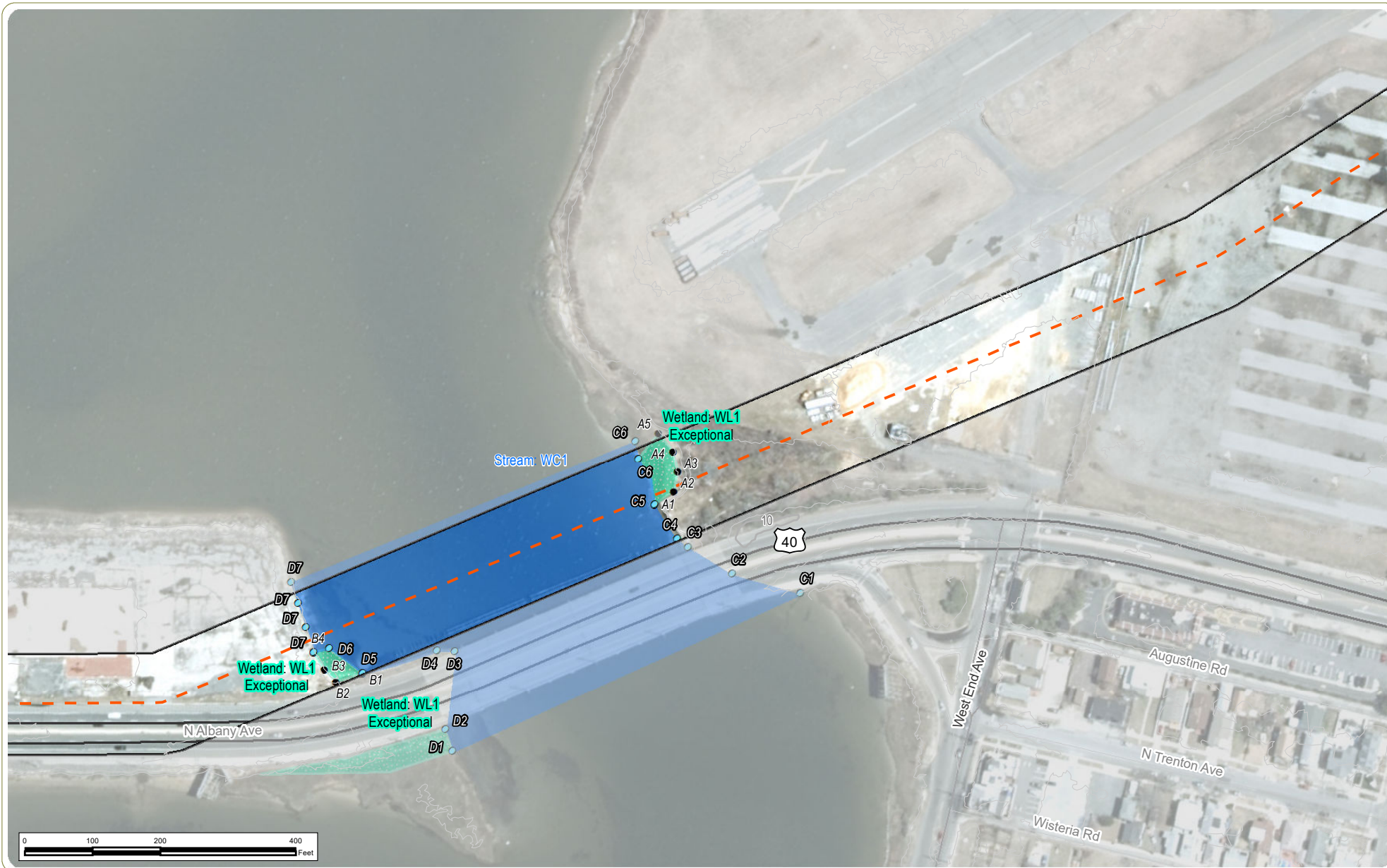


- Onshore Route
- Study Area
- Stream Flag
- Delineated Stream



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 offshore wind

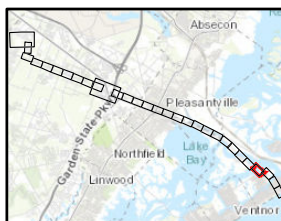
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Wetland and Stream Delineation Report **Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route** Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan **Sheet 4 of 30**

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- Onshore Route
- Study Area
- Wetland Flag
- Delineated Wetland
- Stream Flag
- Delineated Stream



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 offshore wind

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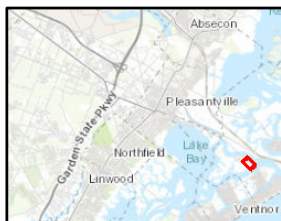


Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

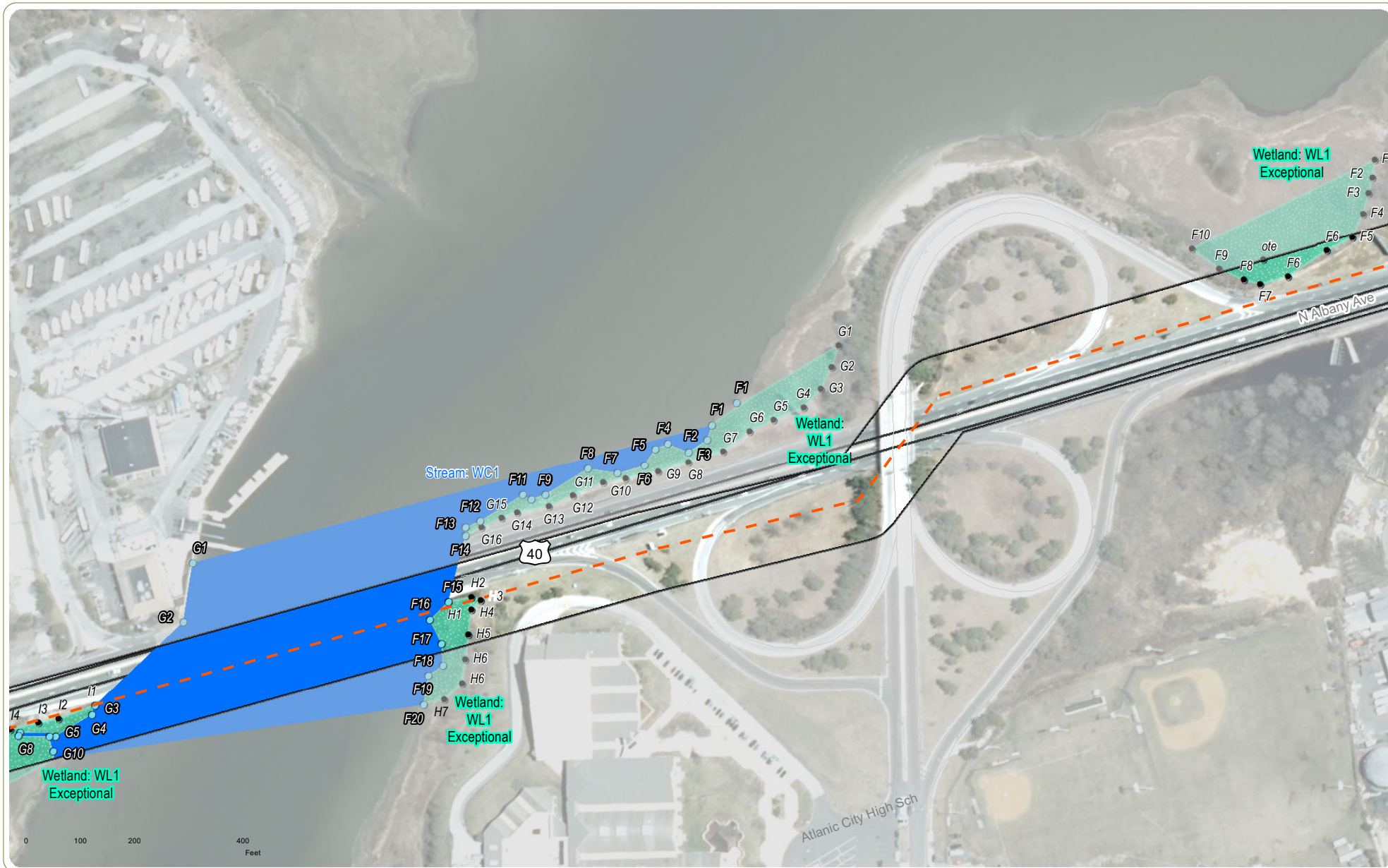
Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan Sheet 5 of 30

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 21, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- Study Area
- Wetland Flag
- Delineated Wetland
- Stream Flag
- Delineated Stream

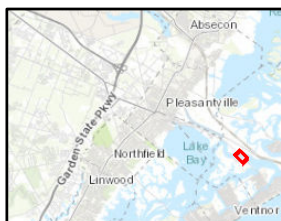


Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan Sheet 6 of 30

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on March 8, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- ▭ Study Area
- Wetland Flag
- ▨ Delineated Wetland
- Stream Flag
- ▬ Delineated Stream



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offshore wind



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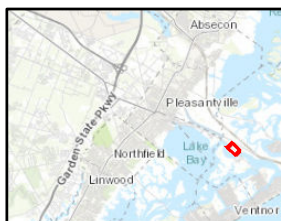


Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan Sheet 7 of 30

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on March 8, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



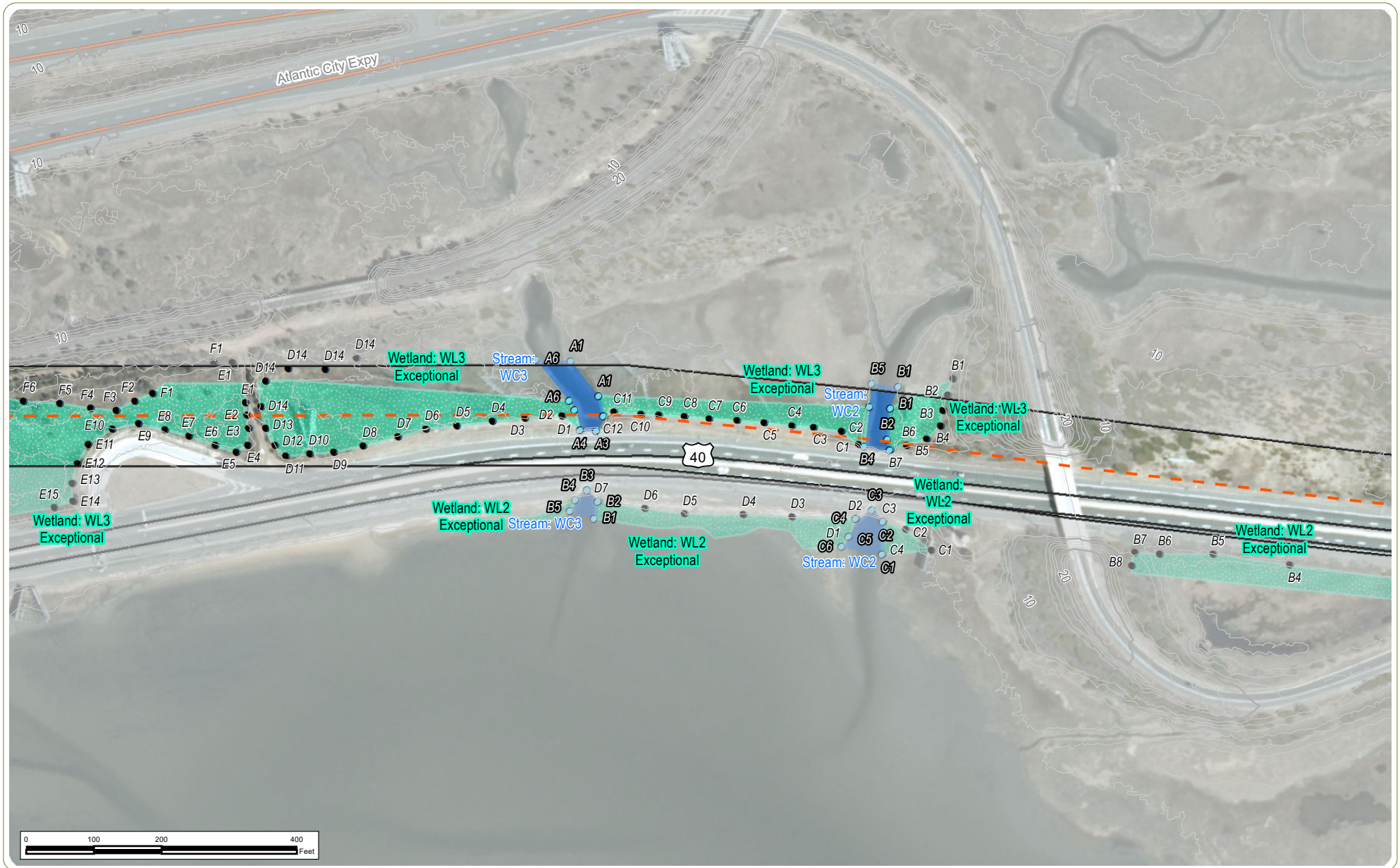
- Onshore Route
- Study Area
- Wetland Flag
- Delineated Wetland
- Stream Flag
- Delineated Stream



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Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan Sheet 8 of 30

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 21, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

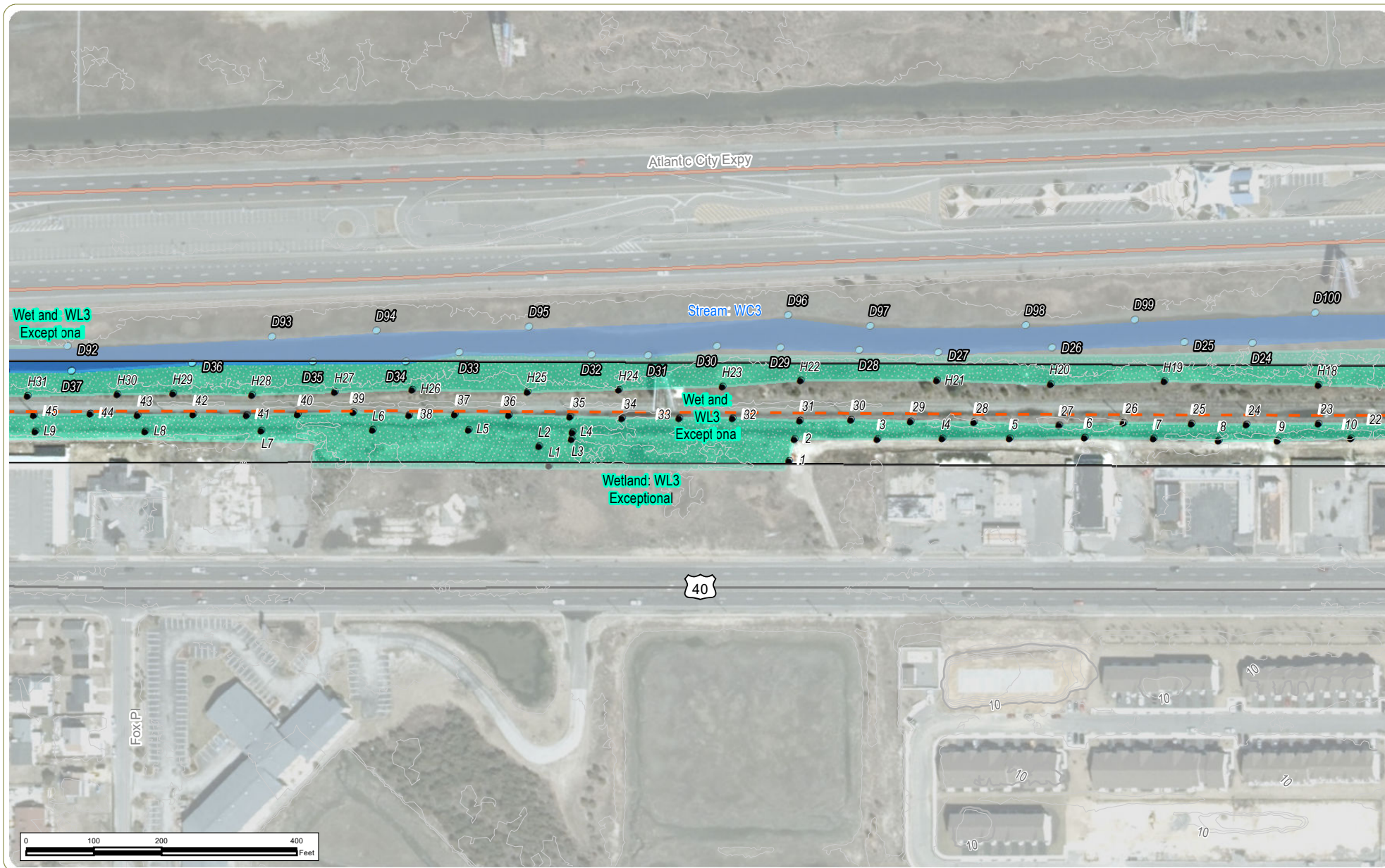


- Onshore Route
- ▭ Study Area
- Wetland Flag
- ▨ Delineated Wetland
- Stream Flag
- ▨ Delineated Stream



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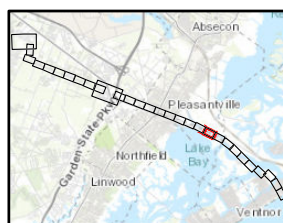


Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan Sheet 10 of 30

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 21, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



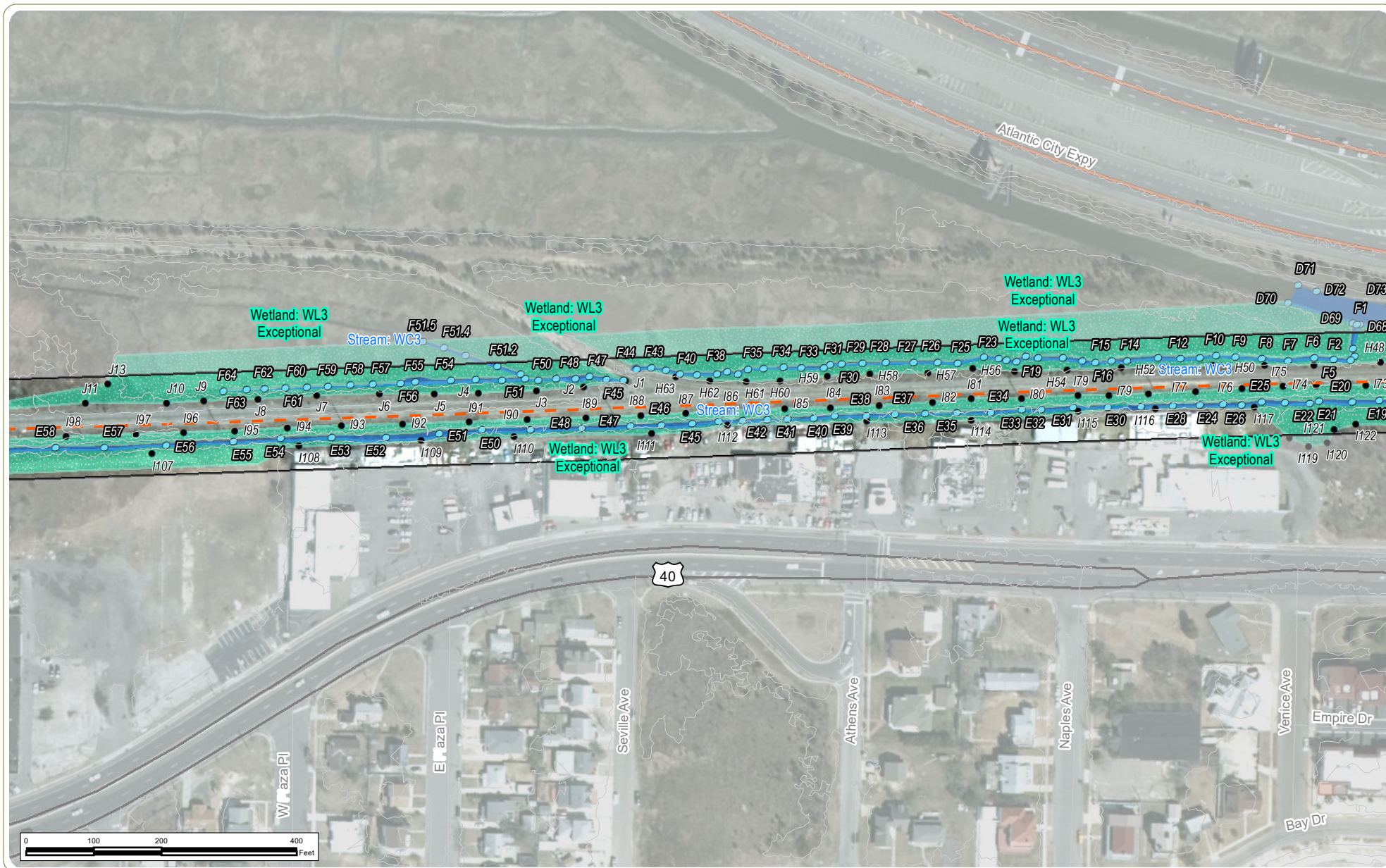
- Onshore Route
- Study Area
- Wetland Flag
- Delineated Wetland
- Stream Flag
- Delineated Stream



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Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan Sheet 12 of 30

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery 2. This map was generated in ArcMap on January 21, 2021. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.



- Onshore Route
- ▭ Study Area
- Wetland Flag
- ▨ Delineated Wetland
- Stream Flag
- ▨ Delineated Stream



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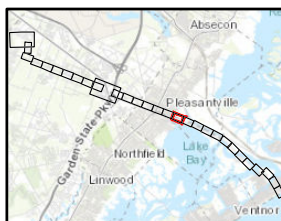


Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan Sheet 13 of 30

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- Onshore Route
- Study Area
- Wetland Flag
- ▨ Delineated Wetland
- Stream Flag
- ▨ Delineated Stream



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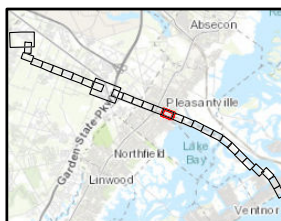


Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
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— Onshore Route
— Study Area



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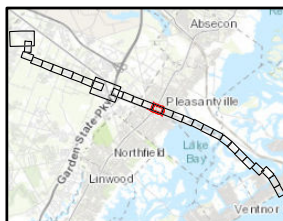


Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan Sheet 15 of 30

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— Onshore Route
□ Study Area

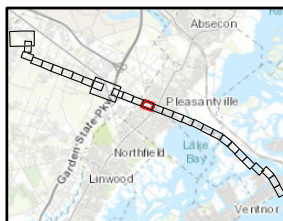


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Wetland and Stream Delineation Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route
 Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
 Atlantic County, New Jersey
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— Onshore Route
 Study Area



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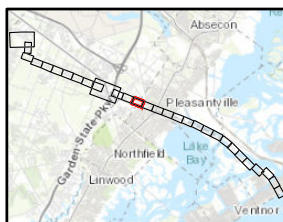
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Wetland and Stream Delineation Report **Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route** Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan **Sheet 17 of 30**

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— Onshore Route
 — Study Area



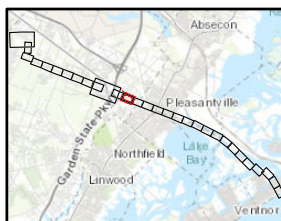
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Wetland and Stream Delineation Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route
 Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
 Atlantic County, New Jersey

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— Onshore Route
 Study Area

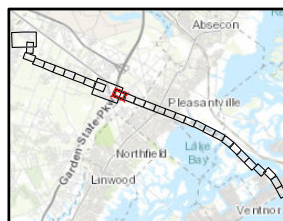
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Wetland and Stream Delineation Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route
 Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
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— Onshore Route
 Study Area

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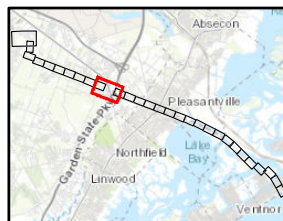


Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan Sheet 20 of 30

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- Onshore Route
- ▭ Study Area
- Wetland Flag
- ▨ Delineated Wetland



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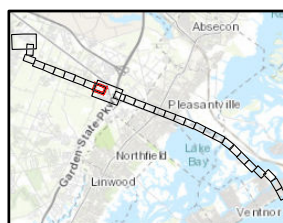
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Wetland and Stream Delineation Report **Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route** Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan **Sheet 21 of 30**

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- Onshore Route
- Study Area
- Wetland Flag
- Delineated Wetland

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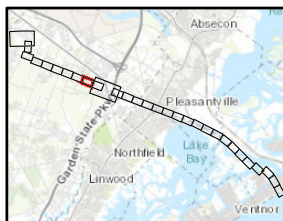
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Wetland and Stream Delineation Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route
 Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
 Atlantic County, New Jersey

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— Onshore Route
 Study Area



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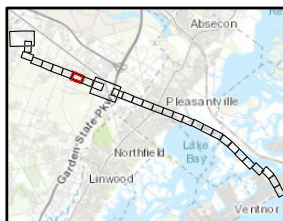


Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan Sheet 23 of 30

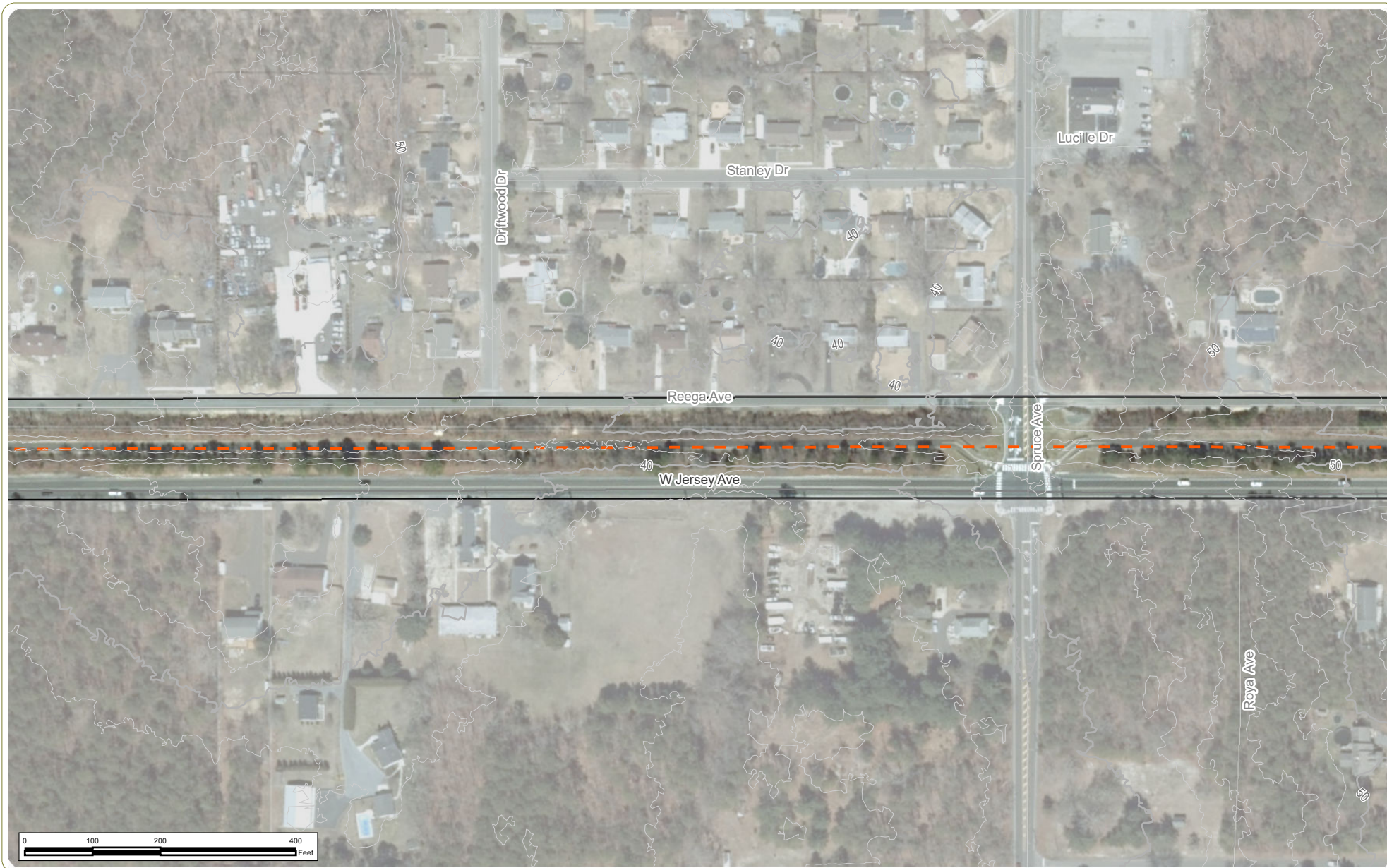
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— Onshore Route
□ Study Area



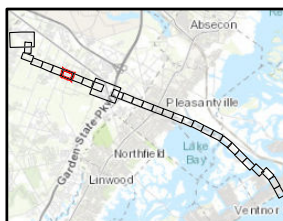
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Wetland and Stream Delineation Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route
 Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
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— Onshore Route
 Study Area



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Wetland and Stream Delineation Report

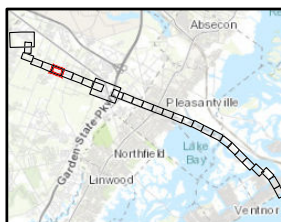
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan

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- Onshore Route
- ▭ Study Area
- Wetland Flag
- ▨ Delineated Wetland



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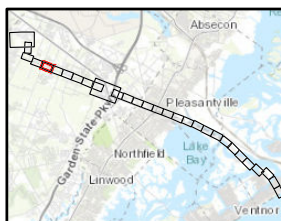
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Wetland and Stream Delineation Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route
 Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
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Field Delineated Wetland and Stream Plan
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— Onshore Route
 Study Area



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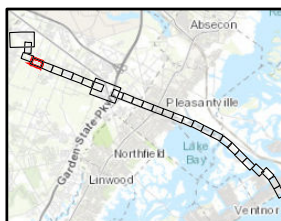


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Wetland and Stream Delineation Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route
 Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
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Field Delineated Wetland and Stream Plan
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- Onshore Route
- ▭ Study Area
- Stream Flag
- Delineated Stream

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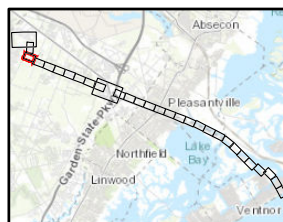




Wetland and Stream Delineation Report **Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route** Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City Atlantic County, New Jersey

Field Delineated Wetland and Stream Plan **Sheet 28 of 30**

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- Onshore Route
- ▭ Study Area
- Wetland Flag
- ▨ Delineated Wetland
- Stream Flag
- ▨ Delineated Stream

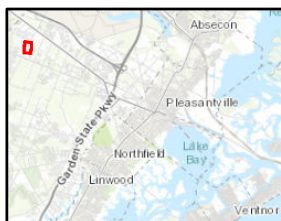


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Wetland and Stream Delineation Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route
 Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
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Field Delineated Wetland and Stream Plan
Sheet 29 of 30

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— Onshore Route
 □ Study Area



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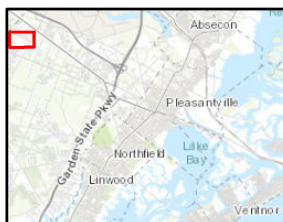


Wetland and Stream Delineation Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

Borough of Egg Harbor Township, Pleasantville City, and the City of Atlantic City
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Field Delineated Wetland and Stream Plan Sheet 30 of 30

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— Onshore Route
□ Study Area



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