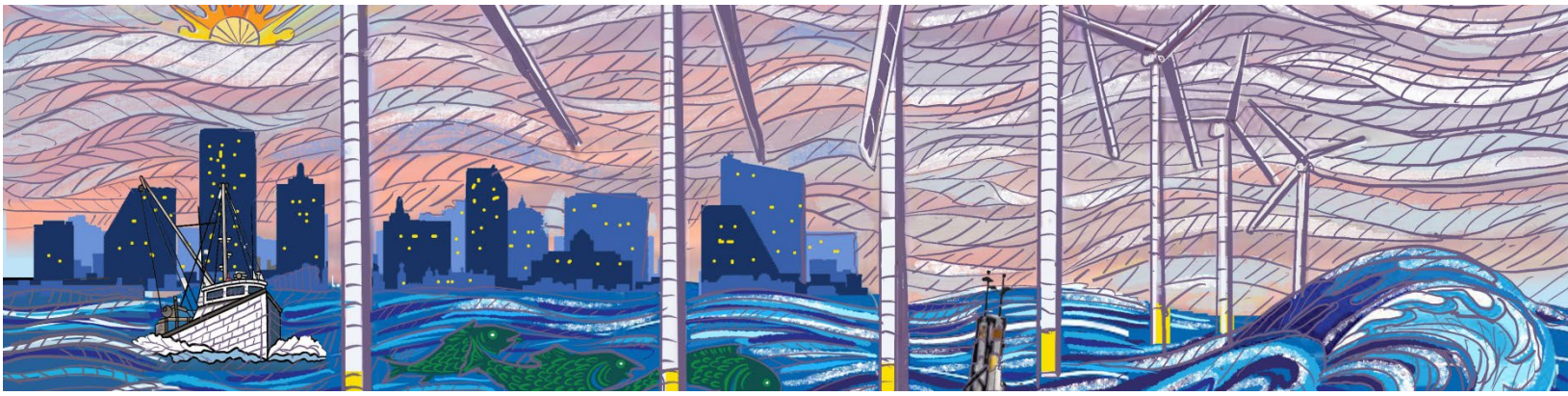

Appendix II-A

Geology, Hazard, and Soils Reports

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 Atlantic Shores' December 2021 COP revision.

Appendix II-A1

Geophysical and Geohazard Report

CONFIDENTIAL

Appendix II-A2

Atlantic Shores Offshore Wind Farm Geoscience-focused Desktop Study

CONFIDENTIAL

Appendix II-A3

Appendix II-A3a: Munitions and Explosives of Concern (MEC) Hazard Assessment

Appendix II-A3b: Munitions and Explosives of Concern (MEC) Risk Assessment with Risk Mitigation Strategy

CONFIDENTIAL

Appendix II-A4

Appendix II-A4a: Natural Resources Conservation Service Mapped Soils Report – Larrabee Onshore Cable Route

Appendix II-A4b: Natural Resources Conservation Service Mapped Soils Report – Cardiff Onshore Cable Route

Natural Resources Conservation Service Mapped Soils Report

Atlantic Shores Offshore Wind - Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell

Monmouth County, New Jersey

Prepared for:

ATLANTIC SHORES offshore wind

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Prepared by:

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December 2020

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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 identify the Natural Resources Conservation Service (NRCS) soils types mapped within an approximate 100-foot area of the proposed Larrabee onshore interconnection cable route (cable route) and associated substation locations from the from the Monmouth Landfall of the submarine export cable at the Army National Guard training facility in the Borough of Sea Girt to the Point of Interconnection (POI) at the Larrabee Substation located in Howell Township, herein referred to as the Project Area (Figure 1).

1.1 PURPOSE

The purpose of this report is to identify NRCS soil units that are mapped within the Project Area and describe specific characteristics such as physical characteristics, soil inclusions, hydric status, acidity, construction suitability, and other notable characteristics.

This report is intended to provide the information necessary to guide the identification of onshore geotechnical investigation locations within the Project Area.

1.2 DATA SOURCES

Information supporting this report was largely obtained from the Natural Resources Conservation Service (NRCS) Web Soil Survey (Soil Survey Staff, 2020) with supplemental information used from the NRCS List of Hydric Soils of the State of New Jersey (NRCS, 2018).

2.0 SOIL DESCRIPTIONS

The Project Area is located within the Coastal Plain physiographic province of the state of New Jersey. The geography in this province consists of unconsolidated deposits that dip gently to the southeast. The drainage divide between the Delaware River and the Atlantic Ocean contain mostly flat land with a maximum elevation of 391 feet. The streams and waterbodies that flow northwest to the Delaware River consist of narrow valleys and have steeper gradients than the streams that flow to the southeast. Elevations within the Project Area range from 0 to 120 feet above mean sea level (see Figure 1).

Section 2.1 and 2.2 identifies the soil types mapped within the Project Area, provides a physical description and summary of other soil characteristics such as hydric rating, acidity, and construction limitations.

2.1 SOIL TYPES

A total of 28 soils are mapped within the Project Area as shown in Figure 2. Table 1 below provides a list of the soil types, inclusions, and acres within the Project Area.

Table 1. Project Area Soils

Mapping Unit Symbol	Series	Slope (%)	Area in Project Area (Acres)	Soil Series Inclusions
AtsAO	Atsion sand	0 to 2	41.9	Berryland, occasionally flooded (5%), Lakehurst (5%)
BerAt	Berryland sand	0 to 2	6.0	Mullica, rarely flooded (5%), Atsion (5%), and Manahawkin, frequently flooded (5%)
DocBO	Downer loamy sand	0 to 5	2.5	Hammonton (10%), Atsion (5%), and Evesboro (5%)
DocCO	Downer loamy sand	5 to 10	10.3	Galestown (10%), Ingleside (5%), and Hammonton (5%)
DoeBO	Downer sandy loam	2 to 5	68.5	Galestown (10%), Ingleside (5%), and Hammonton (5%)
DouB	Downer-Urban land complex	0 to 5	52.4	Sassafras (5%) and Woodstown (5%)
EveB	Evesboro sand	0 to 5	39.5	Lakehurst (5%), Atsion (5%), Mullica, rarely flooded (5%), and Downer (5%)
EveC	Evesboro sand	5 to 10	19.0	Downer (5%)
EveD	Evesboro sand	10 to 15	8.8	Downer (5%)
EveE	Evesboro sand	15 to 25	0.4	Westphalia (5%)

Mapping Unit Symbol	Series	Slope (%)	Area in Project Area (Acres)	Soil Series Inclusions
FapA	Fallsington loams	0 to 2	6.9	Woodstown (8%), Hammonton (7%), Mullica, undrained (5%), and Othello (5%)
HboB	Hammonton sandy loam	2 to 5	2.8	Glassboro (5%), Fallsington (5%), and Downer (5%)
HumAt	Humaquepts	0 to 3	14.4	Atsion (5%), Manahawkin, frequently flooded (5%), and Mullica, occasionally flooded (5%)
KkgB	Klej loamy sand	0 to 5	149.2	Atsion (5%) and Humaquepts, frequently flooded (5%)
KkgkB	Klej loamy sandy clayey substratum	0 to 5	6.1	Shrewsbury (5%) and Atsion (5%)
LakB	Lakehurst sand	0 to 5	9.9	Quakerbridge (5%), Atsion, rarely flooded (5%), and Berryland, rarely flooded (5%)
LasB	Lakewood sand	0 to 5	4.1	Quakerbridge (5%), Atsion, rarely flooded (5%), and Lakehurst (5%)
LasC	Lakewood sand	5 to 10	1.2	Evesboro (5), Atsion, rarely flooded (5%), and Lakehurst (5%)
PHG	Pits sand and gravel	--	2.6	None
SacBO	Sassafras sandy loam	2 to 5	1.4	Ingleside (9%), Woodstown (4%), Downer (4%), and Aura (3%)
SacC	Sassafras sandy loam	5 to 10	0.9	Ingleside (4%), Woodstown (4%), Downer (4%), Fallsington, drained (4%) and Aura (3%)
SadB	Sassafras gravelly sandy loam	2 to 5	1.5	Fallsington (5%) and Aura (5%)
SadC	Sassafras gravelly sandy loam	5 to 10	6.3	Aura (5%)
SafA	Sassafras loam	0 to 2	7.6	Ingleside (4%), Woodstown (4%), Downer (4%), Fallsington, drained (4%) and Aura (4%)
UdaB	Udorthents	0 to 8	4.9	None
USBROA	Urban land-Brockatonnorton complex	0 to 2	12.8	Psamments, wet substratum, occasionally flooded (10%)
WATERs	Water, saline	--	1.3	None

Mapping Unit Symbol	Series	Slope (%)	Area in Project Area (Acres)	Soil Series Inclusions
WogA	Woodstown loam	0 to 2	21.8	Fallsington (7%), Hammonton (7%), and Hambrook (5%)

2.2 SOIL SERIES DESCRIPTIONS

Atsion sand – This soil series consists of sandy eolian deposits and/or fluviomarine deposits typically located in flats, drainageways, depressions and deflation flats. A typical profile ranges from peat (0 to 2 inches) to sand (2 to 80 inches), is poorly drained, and this soil is classified as a Farmland of unique importance. This soil series is designated as hydric and has the following inclusions: Berryland, occasionally flooded, five percent, hydric; and Lakehurst, five percent, not hydric.

Berryland sand – This soil series consists of sandy fluviomarine deposits located in flats and depressions. A typical profile ranges from sand (0 to 15 inches) to loamy sand (15 to 22 inches) to sand (22 to 35 inches) to stratified sand to sandy loam (35 to 60 inches), is very poorly drained and is not classified as prime farmland. This soil series is classified as hydric and has the following inclusions: Mullica, rarely flooded, five percent, hydric; Atsion, five percent, hydric; and Manahawkin, frequently flooded, five percent, hydric.

Downer loamy sand – This soil series consists of loamy fluviomarine deposits and is typically located in knolls and low hills. A typical profile ranges from loamy sand (0 to 16 inches) to sandy loam (16 to 28 inches) to loamy sand (28 to 48 inches) to sand (48 to 80 inches), is well drained, and is designated as Farmland of statewide importance. This soil series is not designated as hydric and contains the following inclusions: Hammonton, ten percent, not hydric; Atsion, five percent, hydric; and Evesboro, five percent, not hydric.

Downer sandy loam – This soil series consists of loamy fluvial marine deposits found in low hills, knolls, and flats. The soil profile ranges from sandy loam (0 to 16 inches) to loamy sand (9 to 48 inches) to sand (48 to 80 inches), is well drained, and is classified in all areas as prime farmland. This soil series is not designated as hydric and has the following inclusions: Galestown, ten percent, not hydric; Ingleside, five percent, not hydric; and Hammonton, five percent, not hydric.

Downer-Urban land complex – This soils series consists of loamy fluviomarine deposits and/or gravelly fluviomarine deposits located in knolls and low hills. The soil profile ranges from sandy loam (0 to 36 inches) to loamy sand (36 to 48 inches) to loamy sand (36 to 48 inches) to stratified sand to sandy loam (48 to 80 inches), is well drained, and is not classified as prime farmland. This soil series is designated as hydric and has the following inclusions: Sassafras, five percent, not hydric; and Woodstown, five percent, not hydric.

Evesboro sand – This soil series consists sandy eolian deposits and/or sandy fluviomarine deposits and is located in low hills. The soil profile consists of sand (0 to 31 inches) to stratified loamy sand to sand (31 to 80 inches), is excessively drained, and is not classified as prime farmland. This soil series is not designated as hydric and has the

following inclusions: Lakehurst, five percent, not hydric; Atsion, five percent, hydric; Mullica, rarely flooded, five percent, hydric; and Downer, five percent, not hydric.

Fallsington loams – This soil series consists of loamy fluviomarine deposits that is located in depressions, swales, flats, and drainageways. The soil profile consists of mucky peat (0 to 2 inches) to loam (2 to 10 inches) to sandy clay loam (10 to 32 inches) to loamy sand (32 to 39 inches) to sandy clay loam (39 to 46 inches) to sand (46 to 80 inches), is poorly drained, and if drained, is designated as farmland of statewide importance. This soil series is not designated as hydric and has the following inclusions: Woodstown, eight percent, not hydric; Hammonton, seven percent, not hydric; Mullica, undrained, five percent, hydric, and Othello, five percent, hydric.

Hammonton sandy loam – This soil series consists of coarse-loamy fluviomarine deposits found in flats and depressions. A typical profile ranges from sandy loam (0 to 48 inches) to sand (48 to 72 inches), it is well drained, and is classified as a Farmland of statewide importance. This soil series is designated as hydric and contains the following inclusions: Glassboro, five percent, not hydric; Fallsington, five percent, hydric; and Downer, five percent, not hydric.

Humaquepts – This soil series consists of loamy alluvium and is found in floodplains. The profile ranges from loam (0 to 18 inches) to sand (18 to 60 inches), it is poorly drained, and is not classified as prime farmland. This soil series is designated as hydric and has the following inclusions: Atsion, five percent, hydric; Manahawkin, frequently flooded, five percent, hydric; and Mullica, occasionally flooded, five percent, hydric.

Klej loamy sand – This soil series consists of unconsolidated sandy marine deposits and is located in dunes. The soil profile ranges from slightly decomposed plant material (0 to 4 inches) to loamy sand (4 to 40 inches) to sand (40 to 64 inches), is somewhat poorly drained, and is designated as farmland of statewide importance. This soil series is hydric and has the following inclusions: Atsion, five percent, hydric; and Humaquepts, frequently flooded, five percent, hydric.

Lakehurst sand – This soil series consists of sandy fluviomarine deposits located in flats and dunes. The profile ranges from slightly decomposed plant material (0 to 2 inches) to sand (2 to 80 inches), is moderately well drained, and is classified as not prime farmland. This soils series is designated as hydric and has the following inclusions: Quakerbridge, five percent, hydric; Astion, rarely flooded, five percent, hydric; and Berryland, rarely flooded, five percent, hydric.

Lakewood sand – This soil series consists of sandy fluviomarine deposits found in flats and knolls. The soil profile ranges from sand (0 to 11 inches) to loamy sand (11 to 13 inches) to sand (13 to 80 inches), it is excessively drained, and it is not considered to be prime farmland. This soils series is considered hydric and has the following inclusions: Quakerbridge, five percent, not hydric; Lakehurst, five percent, not hydric; Astion, rarely flooded, five percent, hydric.

Pits, sand and gravel – This soil series consists of sandy material distributed by human activity. There is not a full profile description regarding this series due to the manmade-nature of the soil. This soil series is not designated as hydric and does not contain any inclusions.

Sassafras sandy loam – This soil series consists of loamy fluviomarine deposits located in flats and fluviomarine terraces. The profile ranges from sandy loam (0 to 18 inches) to sandy clay loam (18 to 28 inches) to loamy sand (28

to 40 inches) to sand (40 to 80 inches), is well drained, and is classified for all areas as prime farmland. This soil series is designated as hydric and contains the following inclusions ingleside, nine percent, not hydric; Woodstown, four percent, not hydric; Downer, four percent, not hydric; and Aura, three percent, not hydric.

Sassafras gravelly sandy loam – This soil series consists of loamy and/or gravelly fluviomarine deposits found in knolls and low hills. The soil profile ranges from gravelly sandy loam (0 to 12 inches) to sandy loam (12 to 14 inches) to sandy clay loam (14 to 30 inches) to sandy loam (30 to 34 inches) to loamy sand (34 to 72 inches), is well drained, and is considered to be prime farmland in all areas. This soil series is designated as hydric and has the following inclusions: Fallsington, five percent, hydric; and Aura, five percent, not hydric.

Sassafras loam – This soil series consists of loamy fluviomarine deposits located in flats and fluviomarine terraces. The profile ranges from loam (0 to 12 inches) to sandy loam (12 to 18 inches) to sandy clay loam (18 to 28 inches) to loamy sand (28 to 40 inches) to sand (40 to 80 inches), is well drained, and is classified as prime farmland in all areas. This soil series is not designated as hydric and has the following inclusions: Aura, four percent, not hydric; Ingleside, four percent, not hydric; Woodstown, four percent, not hydric; Downer, four percent, not hydric; and Fallsington, drained, four percent, hydric.

Udorthents – This soil series consists of fill and/or distributed original soil matter located in low hills. The soil profile ranges from loam (0 to 12 inches) to loamy sand (12 to 72 inches), is well drained, and is not designated as prime farmland. This soil series is not designated as hydric and does not have any inclusions.

Urban land-Brockatonorton complex – This soil series consists of sandy eolian deposits and/or sandy marine deposits found in dunes, dune fields, and disturbed areas. The soil profile ranges from sand (0 to 50 inches) to mucky peat (50 to 60 inches) to sand (60 to 80 inches), is moderately well drained, and is not classified as prime farmland. This soil series is not designated as hydric and has the following inclusions: Psamments, wet substratum, occasionally flooded, ten percent, not hydric.

Woodstown sandy loam – This soil series consists of loamy fluviomarine deposits located in fluviomarine terraces, depressions, broad interstream divides, and flats. The profile ranges from loam (0 to 7 inches) to sandy loam (7 to 29 inches) to fine sandy loam (29 to 45 inches) to loamy sand (45 to 80 inches), is moderately well drained, and all areas are considered prime farmland. This soil series is not designated as hydric and contains the following inclusions: Fallsington, seven percent, not hydric; Hammonton, seven percent, not hydric; and Hambrook, five percent, not hydric.

Additional physical characteristics of these mapped soils such as slope, acidity, construction limitations and hydric ratings are summarized in Table 2.

Table 2. Soil Series Characteristics

Mapping Unit Symbol	Series	Slope (%)	pH (Acidity)	Construction Limitations/Suitability[1]	Hydric[2]
AtsAO	Atsion sand	0 to 2	4.1	Severe/Wetness, Sandiness, Flooding	Yes
DocBO	Berryland sand	0 to 2	6.3	Slight/Dusty	Yes
DocCO	Downer loamy sand	0 to 5	6.3	Slight/Dusty	No
DoeBO	Downer loamy sand	5 to 10	6.3	Slight/Dusty	No
DouB	Downer sandy loam	2 to 5	5.8	Slight/Dusty	No
EveB	Downer-Urban land complex	0 to 5	4.5	Moderate/Sandiness	Yes
EveC	Evesboro sand	0 to 5	4.5	Moderate/Sandiness	No
EveD	Evesboro sand	5 to 10	4.3	Slight	No
EveE	Evesboro sand	10 to 15	4.5	Moderate/Slope, Sandiness, Dusty	No
FapA	Evesboro sand	15 to 25	5.3	Slight/Dusty	Yes
HboB	Fallsington loams	0 to 2	4.5	Slight/Dusty	Yes
HumAt	Hammonton sandy loam	2 to 5	4.6	Severe/Flooding, Low Strength, Wetness, Dusty	Yes
KkgB	Humaquepts	0 to 3	4.6	Moderate/Wetness	Yes
KkgkB	Klej loamy sand	0 to 5	4.6	Slight	Yes
LakB	Klej loamy sandy clayey substratum	0 to 5	4.1	Moderate/Sandiness	Yes
LasB	Lakehurst sand	0 to 5	4.3	Moderate/Sandiness	Yes
LasC	Lakewood sand	0 to 5	4.3	Moderate/Sandiness	Yes
PHG	Lakewood sand	5 to 10	N/A	Not Rated	No
SacBO	Pits sand and gravel	--	6.3	Slight/Dusty	No
SacC	Sassafras sandy loam	2 to 5	6.3	Slight/Dusty	Yes
SadB	Sassafras sandy loam	5 to 10	4.6	Slight/Dusty	Yes
SadC	Sassafras gravelly sandy loam	2 to 5	4.6	Slight/Dusty	No
SafA	Sassafras gravelly sandy loam	5 to 10	5.3	Slight/Dusty	Yes
UdaB	Sassafras loam	0 to 2	5.5	Moderate/Low strength, Dusty	No
USBROA	Udorthents	0 to 8	N/A	Severe/Flooding, Sandiness	No
WATERs	Urban land-Brockatonnorton complex	0 to 2	N/A	Not Rated	N/A
WogA	Water, saline	--	5.3	Slight/Dusty	Yes
WogA	Woodstown loam	0 to 2	5.0	Slight	No

1 Construction suitability and limitations criteria are derived from NRCS Web Soil Survey.

2 Hydric soils were determined using the New Jersey Portion of the 2018 National Hydric Soil List.

The location and extent of the mapped soils within the Project Area are shown in Figure 2.

3.0 CONCLUSIONS

There is a total of 28 soil units mapped within the Project Area. The information provided in this report is based on publicly available NRCS soils data and is provided for the purpose of guiding the determination of geotechnical investigation locations within the Project Area to support onshore design.

4.0 REFERENCES

Natural Resources Conservation Service (NRCS). 2018. *New Jersey Portion of the 2018 National Hydric Soil List*. Available at: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1389479.html (Accessed December 2020).

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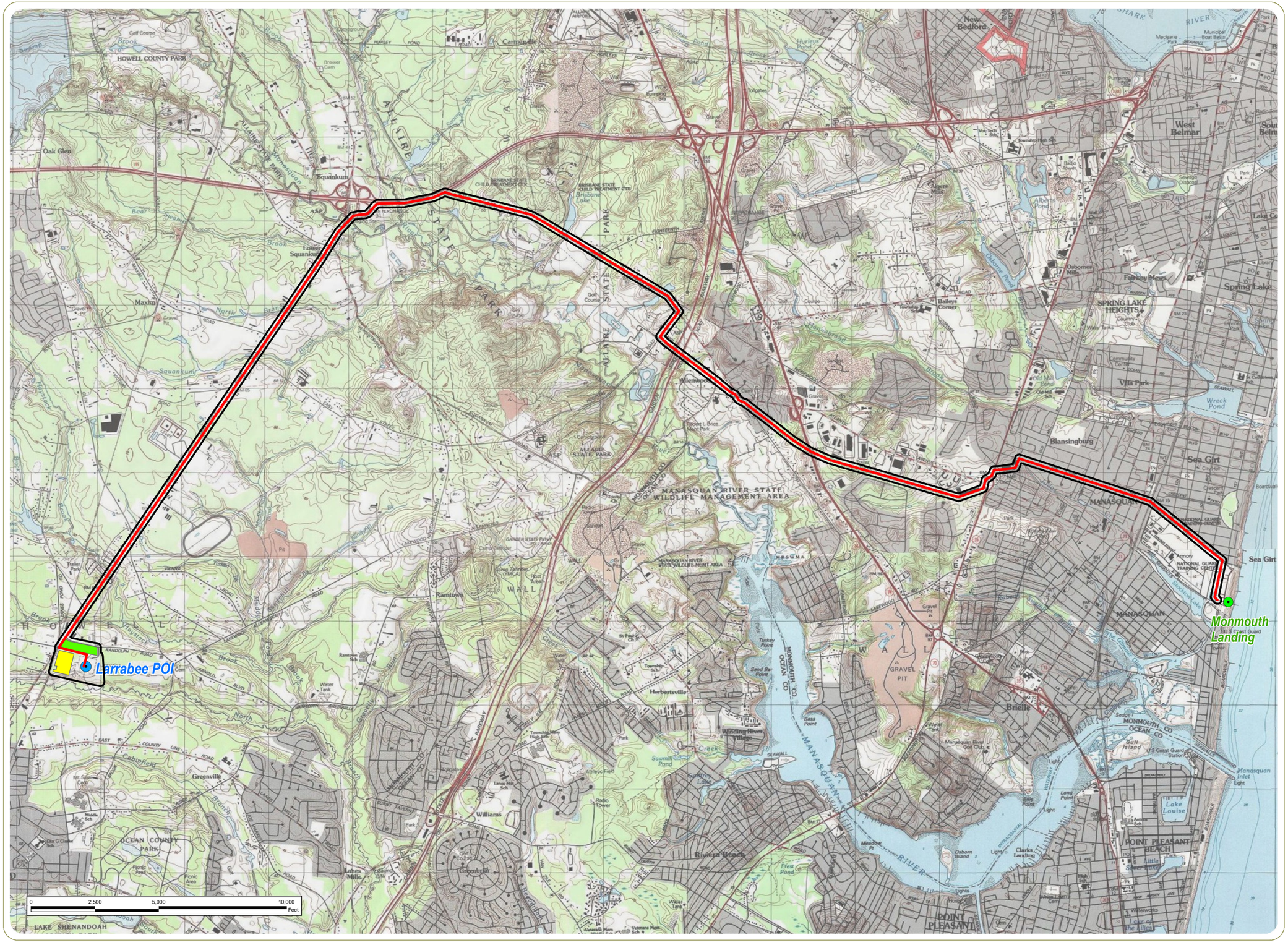
APPENDIX A

Figures

Natural Resources Conservation Service Soils Report Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 1:
USGS Project Location Map

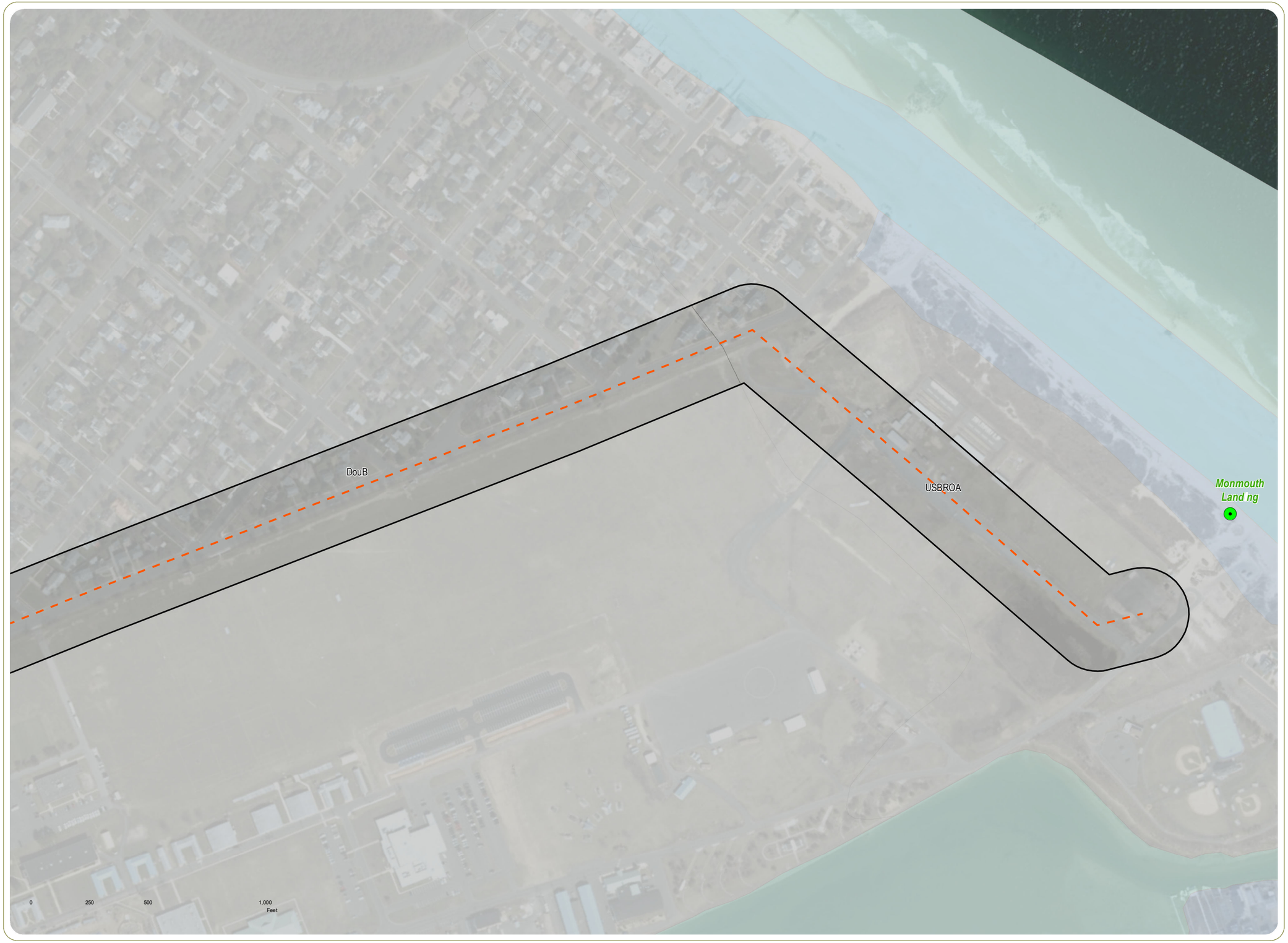


Notes: 1. Basemap: ESRI ArcGIS Online "USA Topo Maps" map service. **2.** This map was generated in ArcMap on December 4, 2020. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

Natural Resources Conservation Service Soils Report Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

Not Hydric

Soil Type

DouB - Downer-Urban land complex, 0 to 5 percent slopes

USBROA - Urban land-Brockatonorton complex, 0 to 2 percent slopes, occasionally flooded

Sheet 1 of 17

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery. **2.** This map was generated in ArcMap on December 4, 2020. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

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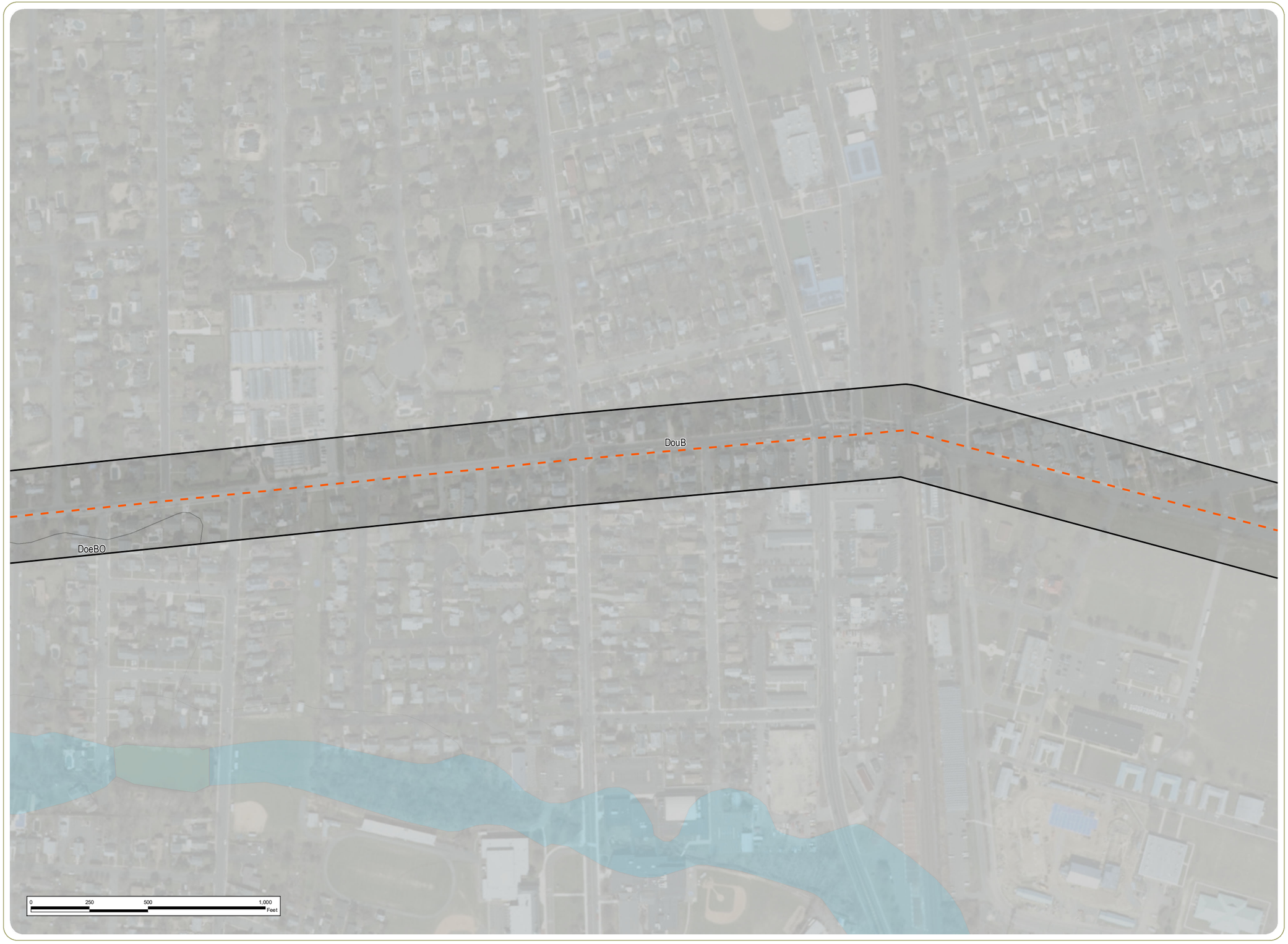


Natural Resources Conservation Service Soils Report Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map

Onshore Route

Project Area

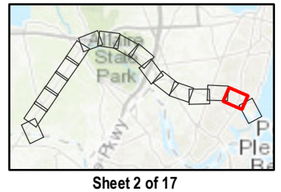
NRCS (SSURGO) Soils

Not Hydric

Soil Type

DoeBO - Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

DouB - Downer-Urban land complex, 0 to 5 percent slopes



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Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map

Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Partially Hydric

Not Hydric

Soil Type

DocCO - Downer loamy sand, 5 to 10 percent slopes, Northern Tidewater Area

DoeBO - Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

DouB - Downer-Urban land complex, 0 to 5 percent slopes

HumAt - Humaquepts, 0 to 3 percent slopes, frequently flooded

SacBO - Sassafras sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

SacC - Sassafras sandy loam, 5 to 10 percent slopes, Northern Coastal Plain

SadC - Sassafras gravelly sandy loam, 5 to 10 percent slopes

Sheet 3 of 17

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery. **2.** This map was generated in ArcMap on December 4, 2020. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

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Natural Resources Conservation Service Soils Report Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map

- Onshore Route
- Project Area

NRCS (SSURGO) Soils

- Hydric
- Partially Hydric
- Not Hydric

Soil Type

DocCO - Downer loamy sand, 5 to 10 percent slopes, Northern Tidewater Area

DoeBO - Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

DouB - Downer-Urban land complex, 0 to 5 percent slopes

EveC - Evesboro sand, 5 to 10 percent slopes

EveD - Evesboro sand, 10 to 15 percent slopes

HumAt - Humaquepts, 0 to 3 percent slopes, frequently flooded

SacBO - Sassafras sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

SacC - Sassafras sandy loam, 5 to 10

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery. **2.** This map was generated in ArcMap on December 4, 2020. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

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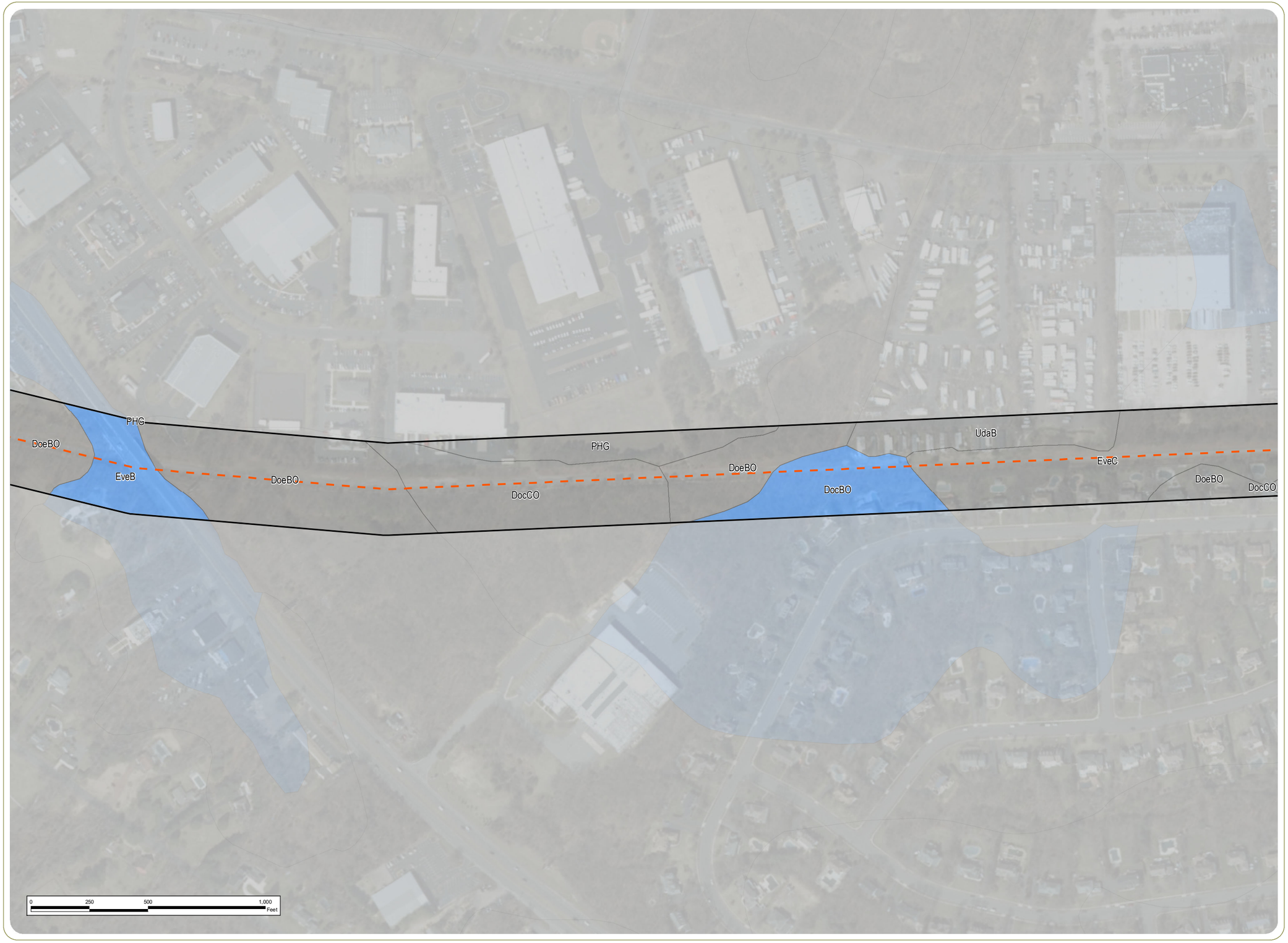
Natural Resources Conservation Service Soils Report Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

Partially Hydric

Not Hydric

Soil Type

DocBO - Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area

DocCO - Downer loamy sand, 5 to 10 percent slopes, Northern Tidewater Area

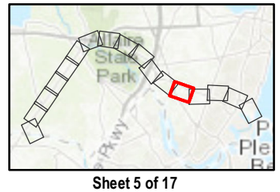
DoeBO - Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

EveB - Evesboro sand, 0 to 5 percent slopes

EveC - Evesboro sand, 5 to 10 percent slopes

PHG - Pits, sand and gravel

UdaB - Udorthents, 0 to 8 percent slopes



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Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map

Onshore Route

Project Area

NRCS (SSURGO) Soils

Partially Hydric

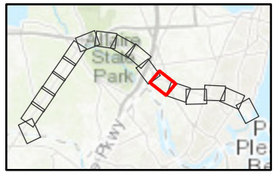
Not Hydric

Soil Type

DoeBO - Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

EveB - Evesboro sand, 0 to 5 percent slopes

PHG - Pits, sand and gravel



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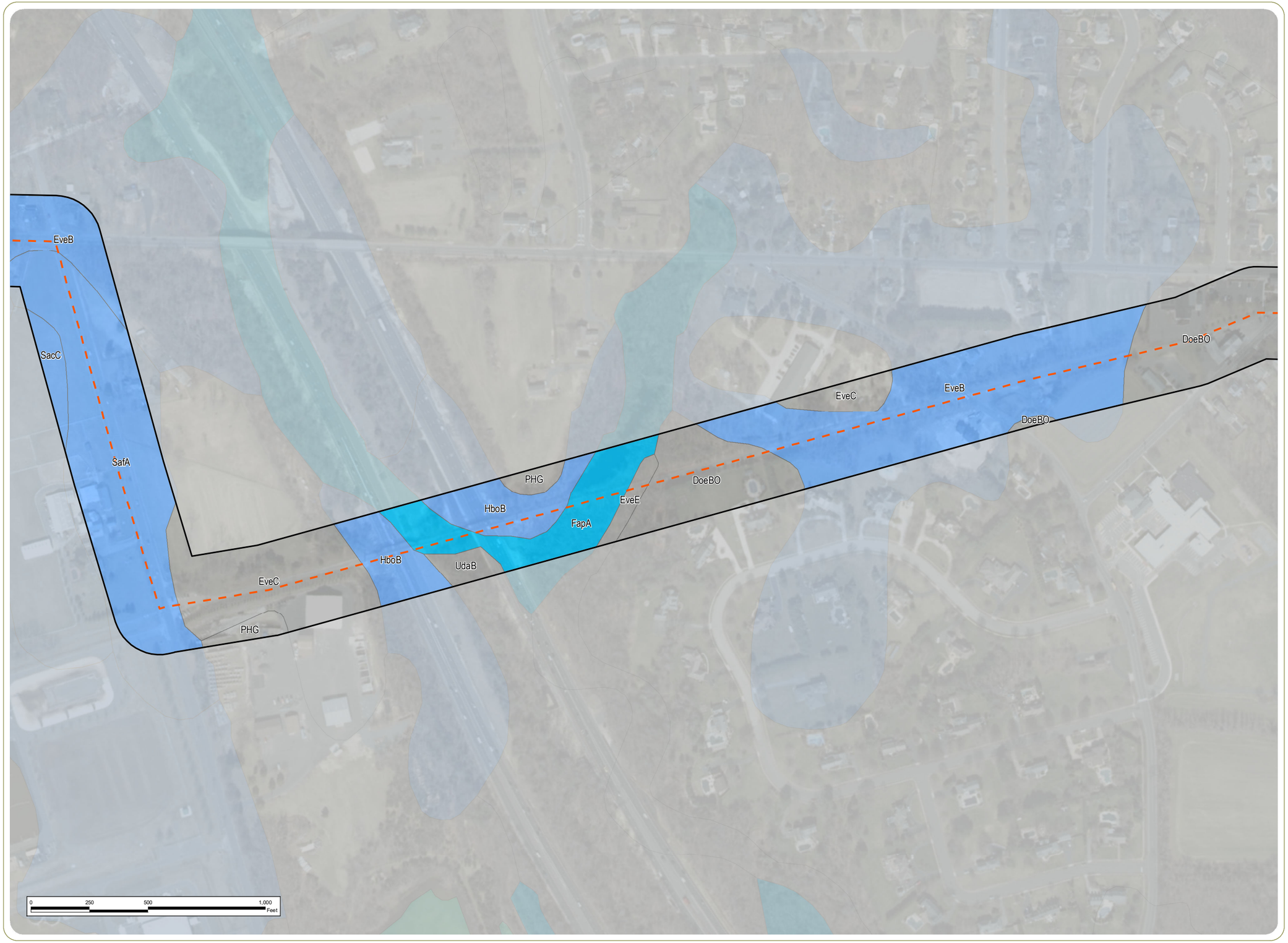
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map



- Onshore Route
- Project Area

NRCS (SSURGO) Soils

- Hydric
- Partially Hydric
- Not Hydric

Soil Type

DoeBO - Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

EveB - Evesboro sand, 0 to 5 percent slopes

EveC - Evesboro sand, 5 to 10 percent slopes

EveE - Evesboro sand, 15 to 25 percent slopes

FapA - Fallsington loams, 0 to 2 percent slopes, Northern Coastal Plain

HboB - Hammonton sandy loam, 2 to 5 percent slopes

PHG - Pits, sand and gravel

SacC - Sassafras sandy loam, 5 to 10 percent slopes, Northern Coastal Plain

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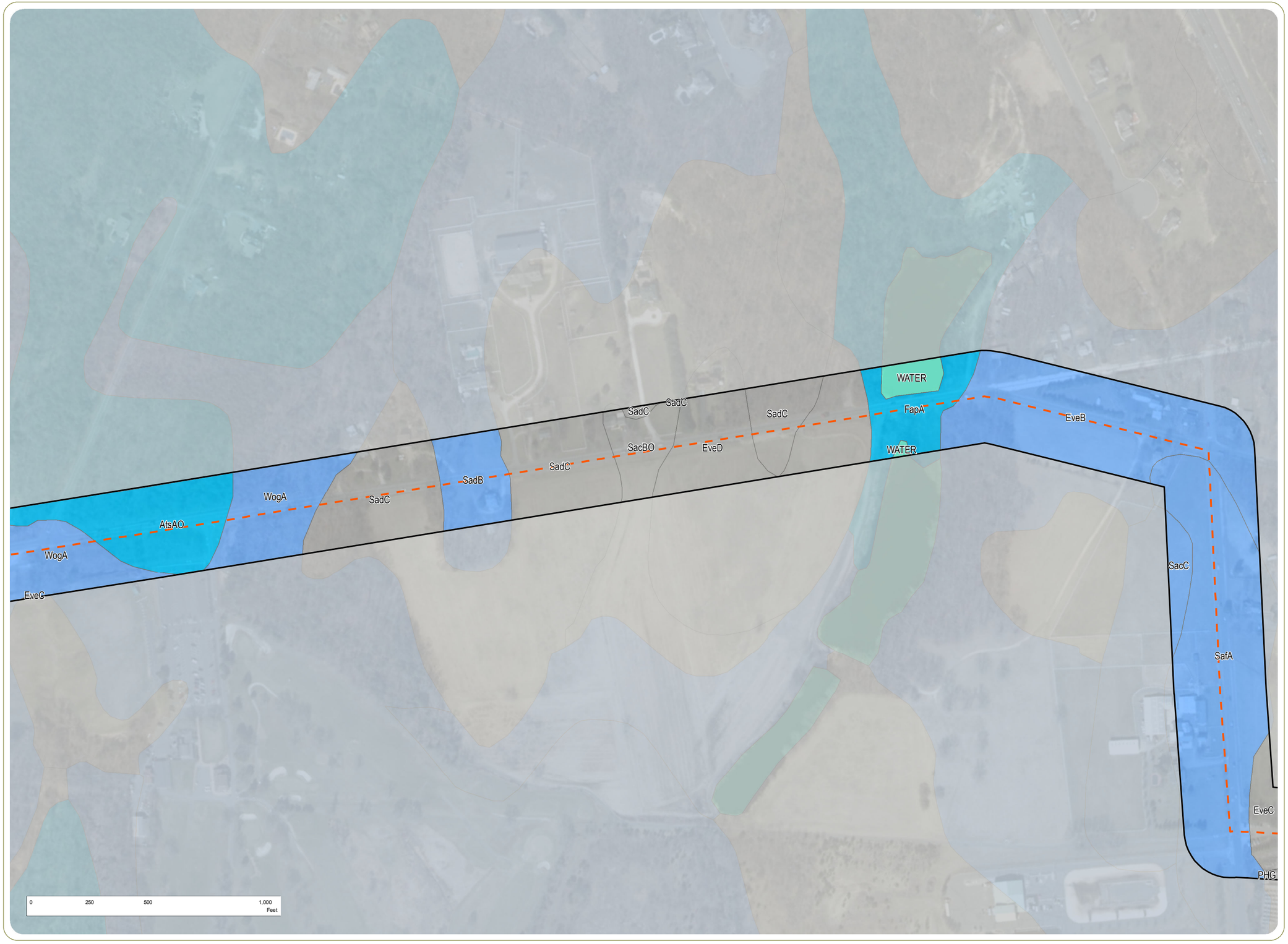
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

- Hydric
- Partially Hydric
- Water
- Not Hydric

Soil Type

AtsAO - Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area

EveB - Evesboro sand, 0 to 5 percent slopes

EveC - Evesboro sand, 5 to 10 percent slopes

EveD - Evesboro sand, 10 to 15 percent slopes

FapA - Fallsington loams, 0 to 2 percent slopes, Northern Coastal Plain

PHG - Pits, sand and gravel

SacBO - Sassafras sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

SacC - Sassafras sandy loam, 5 to 10 percent slopes, Northern Coastal Plain

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Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map

- Onshore Route
- Project Area

NRCS (SSURGO) Soils

- Hydric
- Partially Hydric
- Water
- Not Hydric

Soil Type

AtsAO - Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area

EveC - Evesboro sand, 5 to 10 percent slopes

EveD - Evesboro sand, 10 to 15 percent slopes

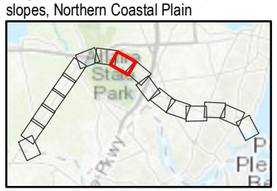
FapA - Fallsington loams, 0 to 2 percent slopes, Northern Coastal Plain

KkgB - Klej loamy sand, 0 to 5 percent slopes

LakB - Lakehurst sand, 0 to 5 percent slopes

WATER - Water

WogA - Woodstown loam, 0 to 2 percent slopes, Northern Coastal Plain



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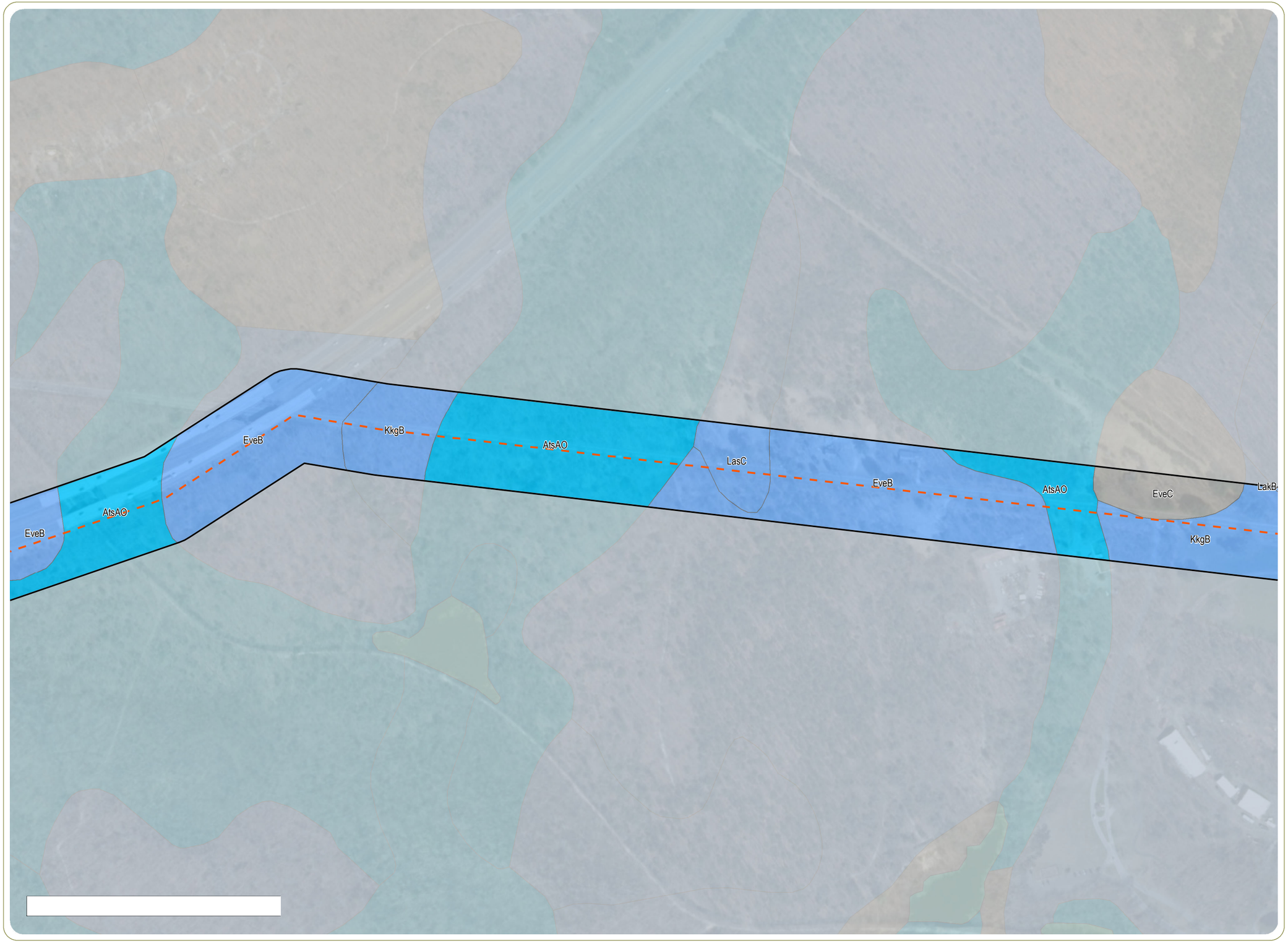
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Partially Hydric

Not Hydric

Soil Type

AtsAO - Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area

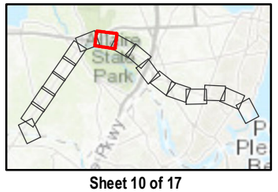
EveB - Evesboro sand, 0 to 5 percent slopes

EveC - Evesboro sand, 5 to 10 percent slopes

KkgB - Klej loamy sand, 0 to 5 percent slopes

LakB - Lakehurst sand, 0 to 5 percent slopes

LasC - Lakewood sand, 5 to 10 percent slopes



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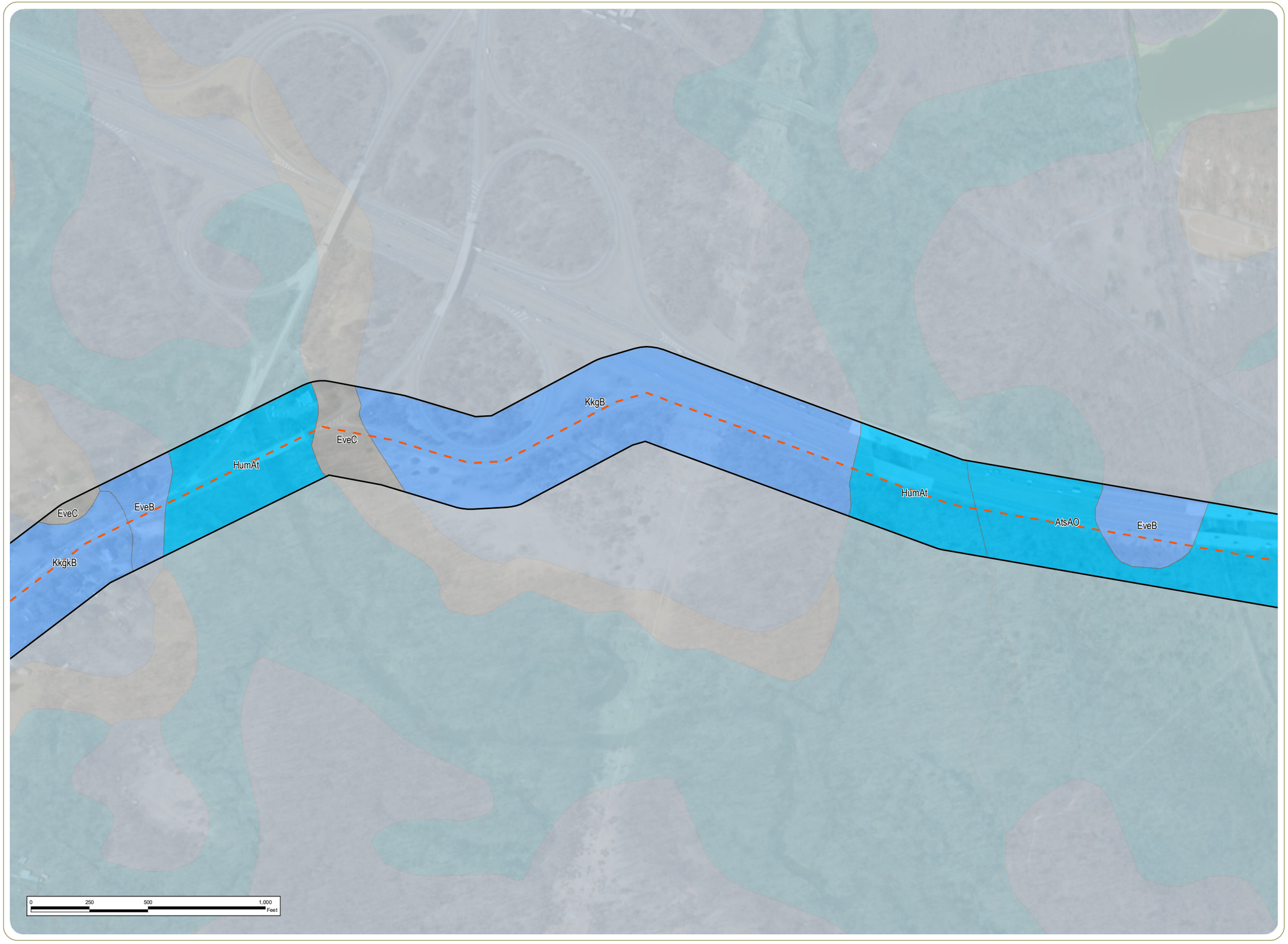


Natural Resources Conservation Service Soils Report Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map

Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Partially Hydric

Not Hydric

Soil Type

AtsAO - Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area

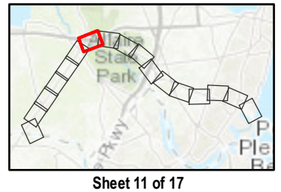
EveB - Evesboro sand, 0 to 5 percent slopes

EveC - Evesboro sand, 5 to 10 percent slopes

HumAt - Humaquepts, 0 to 3 percent slopes, frequently flooded

KkgB - Klej loamy sand, 0 to 5 percent slopes

KkgkB - Klej loamy sand, clayey substratum, 0 to 5 percent slopes



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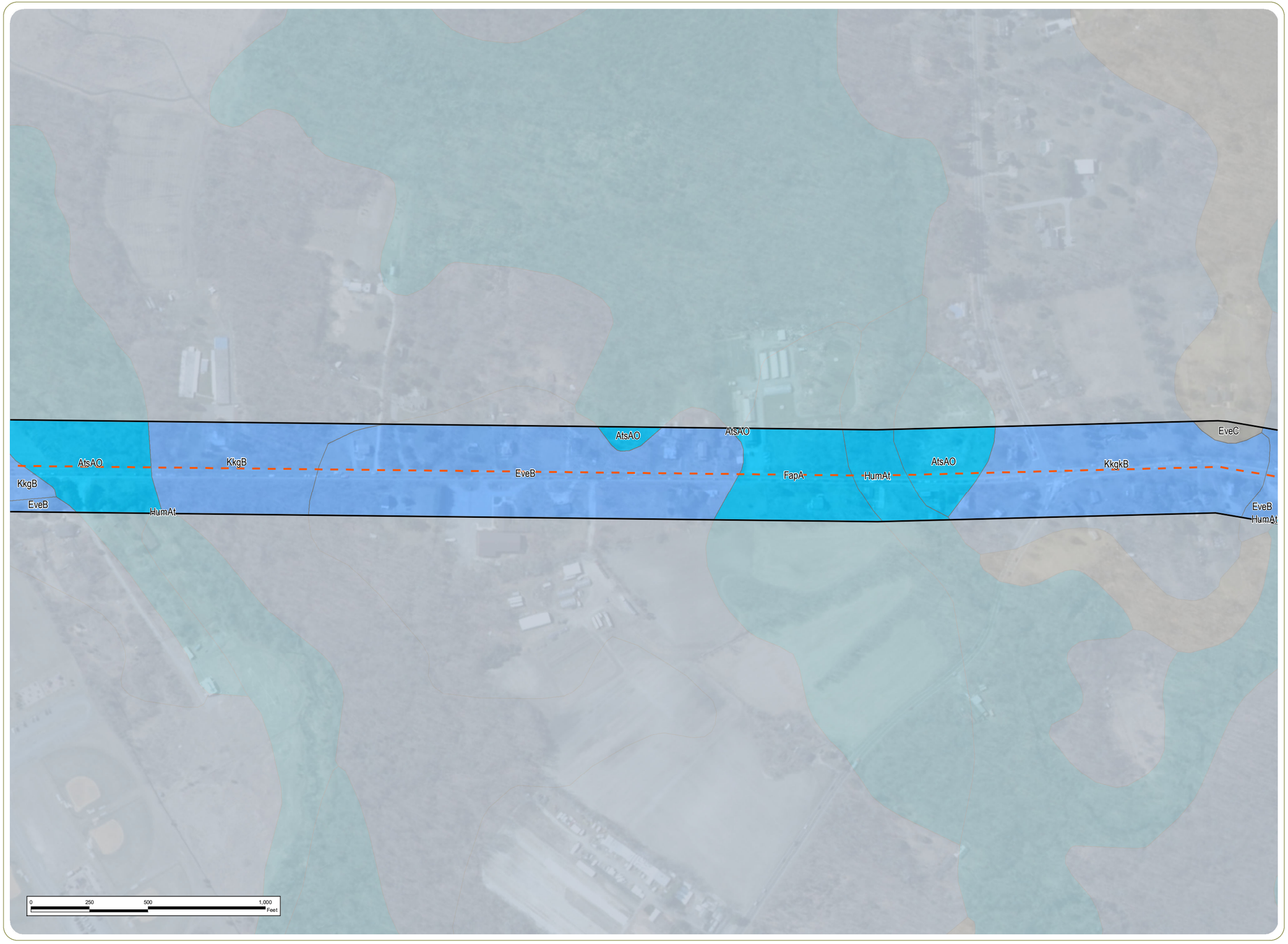
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map



- Onshore Route
- Project Area

NRCS (SSURGO) Soils

- Hydric
- Partially Hydric
- Not Hydric

Soil Type

AtsAO - Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area

EveB - Evesboro sand, 0 to 5 percent slopes

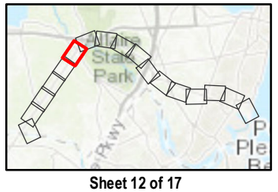
EveC - Evesboro sand, 5 to 10 percent slopes

FapA - Fallsington loams, 0 to 2 percent slopes, Northern Coastal Plain

HumAt - Humaquepts, 0 to 3 percent slopes, frequently flooded

KkgB - Klej loamy sand, 0 to 5 percent slopes

KkgkB - Klej loamy sand, clayey substratum, 0 to 5 percent slopes



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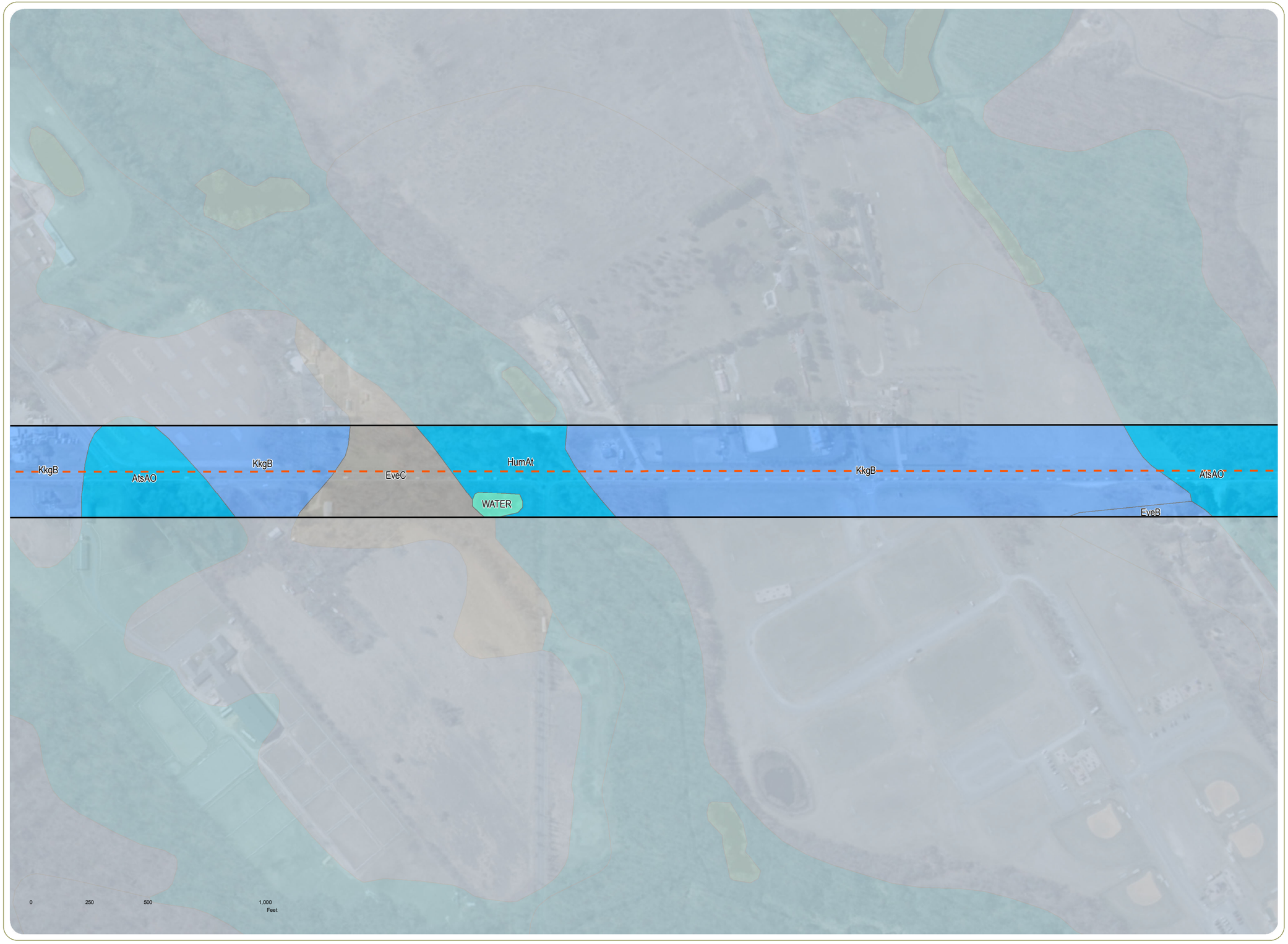


Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map

Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Partially Hydric

Water

Not Hydric

Soil Type

AtsAO - Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area

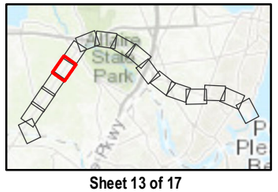
EveB - Evesboro sand, 0 to 5 percent slopes

EveC - Evesboro sand, 5 to 10 percent slopes

HumAt - Humaquepts, 0 to 3 percent slopes, frequently flooded

KkgB - Klej loamy sand, 0 to 5 percent slopes

WATER - Water



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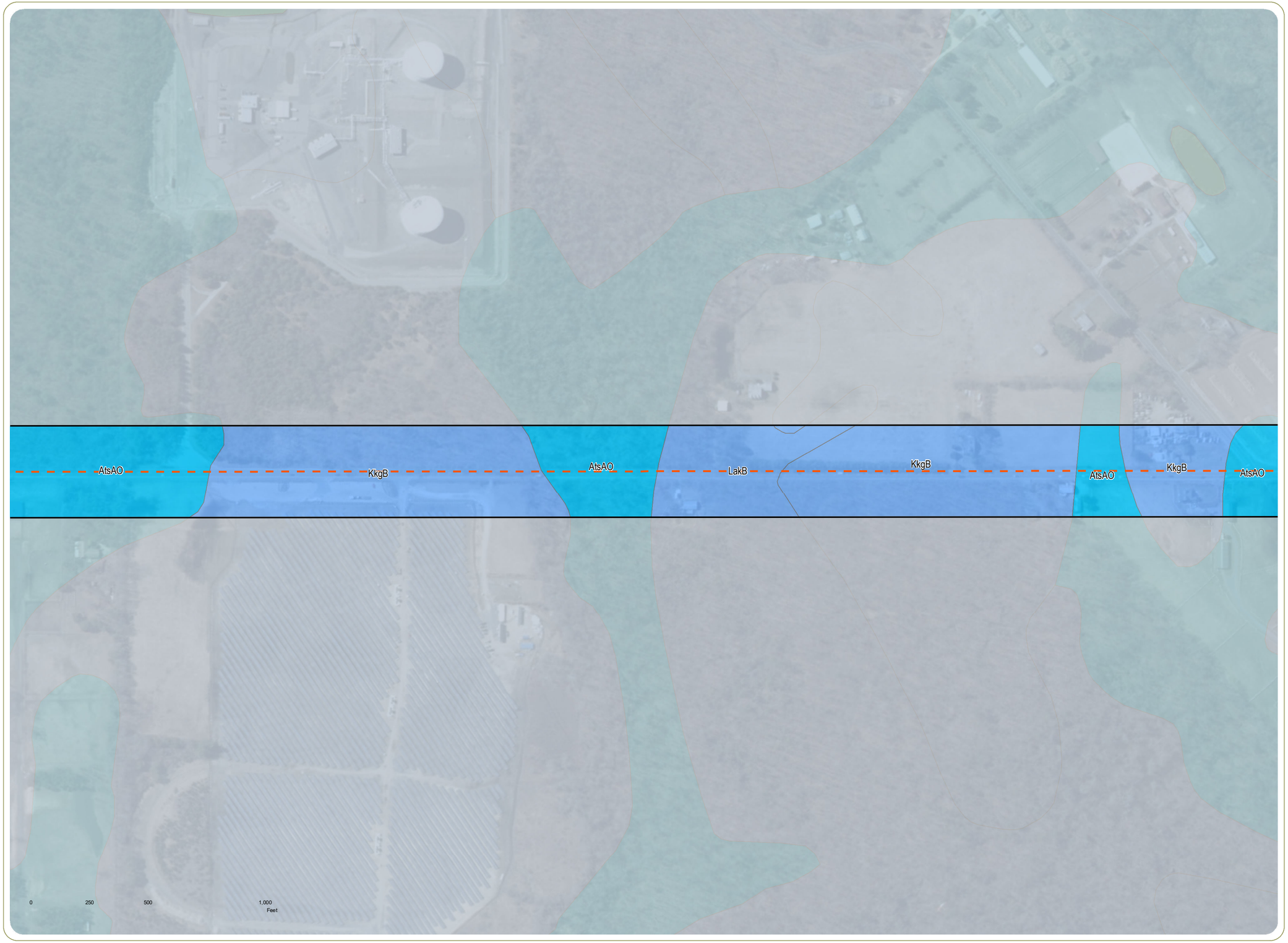
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Partially Hydric

Soil Type

AtsAO - Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area

KkgB - Klej loamy sand, 0 to 5 percent slopes

LakB - Lakehurst sand, 0 to 5 percent slopes

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Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map

Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Partially Hydric

Soil Type

AtsAO - Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area

KkgB - Klej loamy sand, 0 to 5 percent slopes

LakB - Lakehurst sand, 0 to 5 percent slopes

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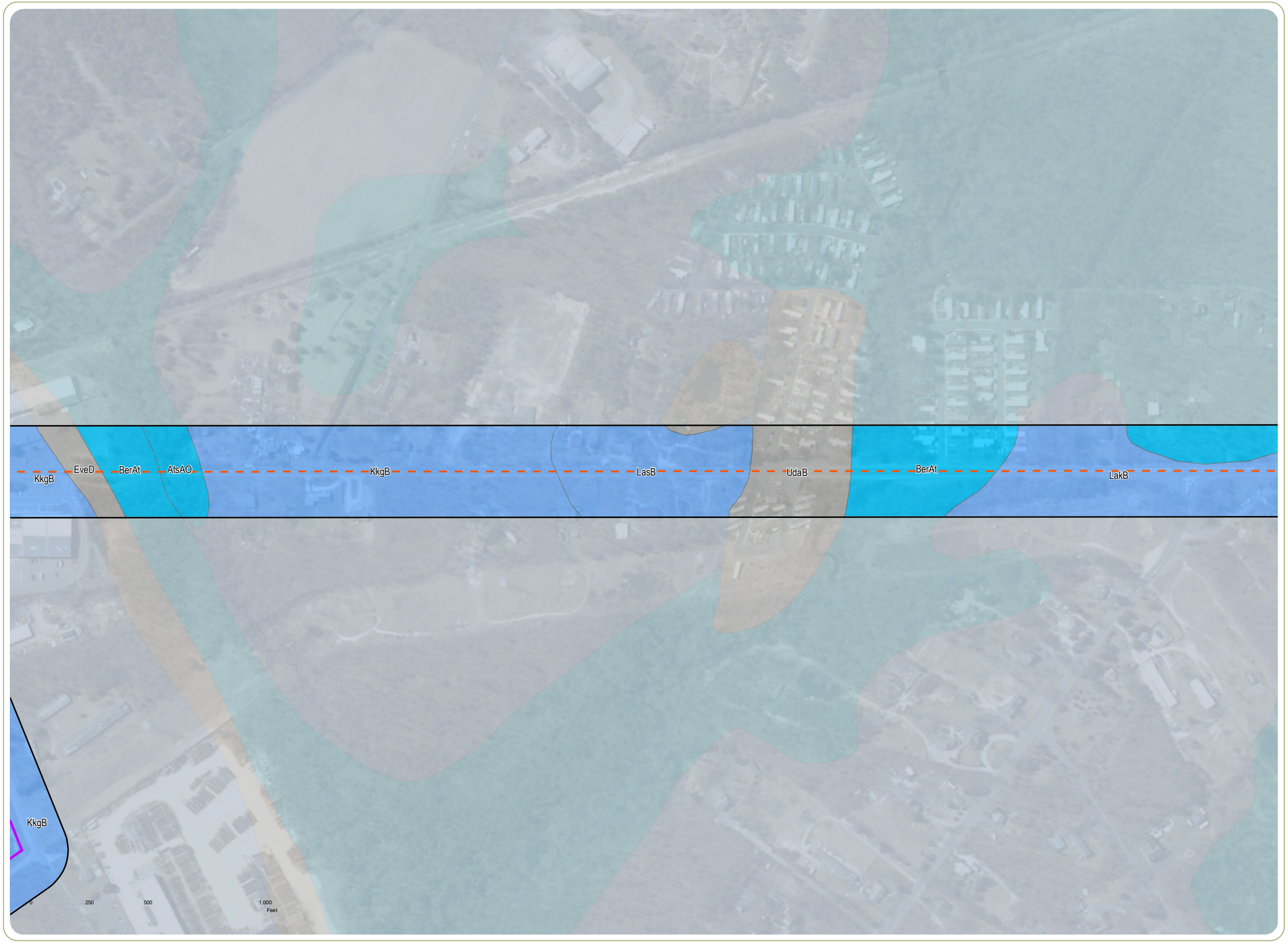
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map



- Onshore Route
- Preferred Onshore Substation
- Project Area

NRCS (SSURGO) Soils

- Hydric
- Partially Hydric
- Not Hydric

Soil Type

AtsAO - Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area

BerAt - Berryland sand, 0 to 2 percent slopes, frequently flooded

EveD - Evesboro sand, 10 to 15 percent slopes

KkgB - Klej loamy sand, 0 to 5 percent slopes

LakB - Lakehurst sand, 0 to 5 percent slopes

LasB - Lakewood sand, 0 to 5 percent slopes

PHG - Pits, sand and gravel

UdaB - Udorthents, 0 to 8 percent slopes

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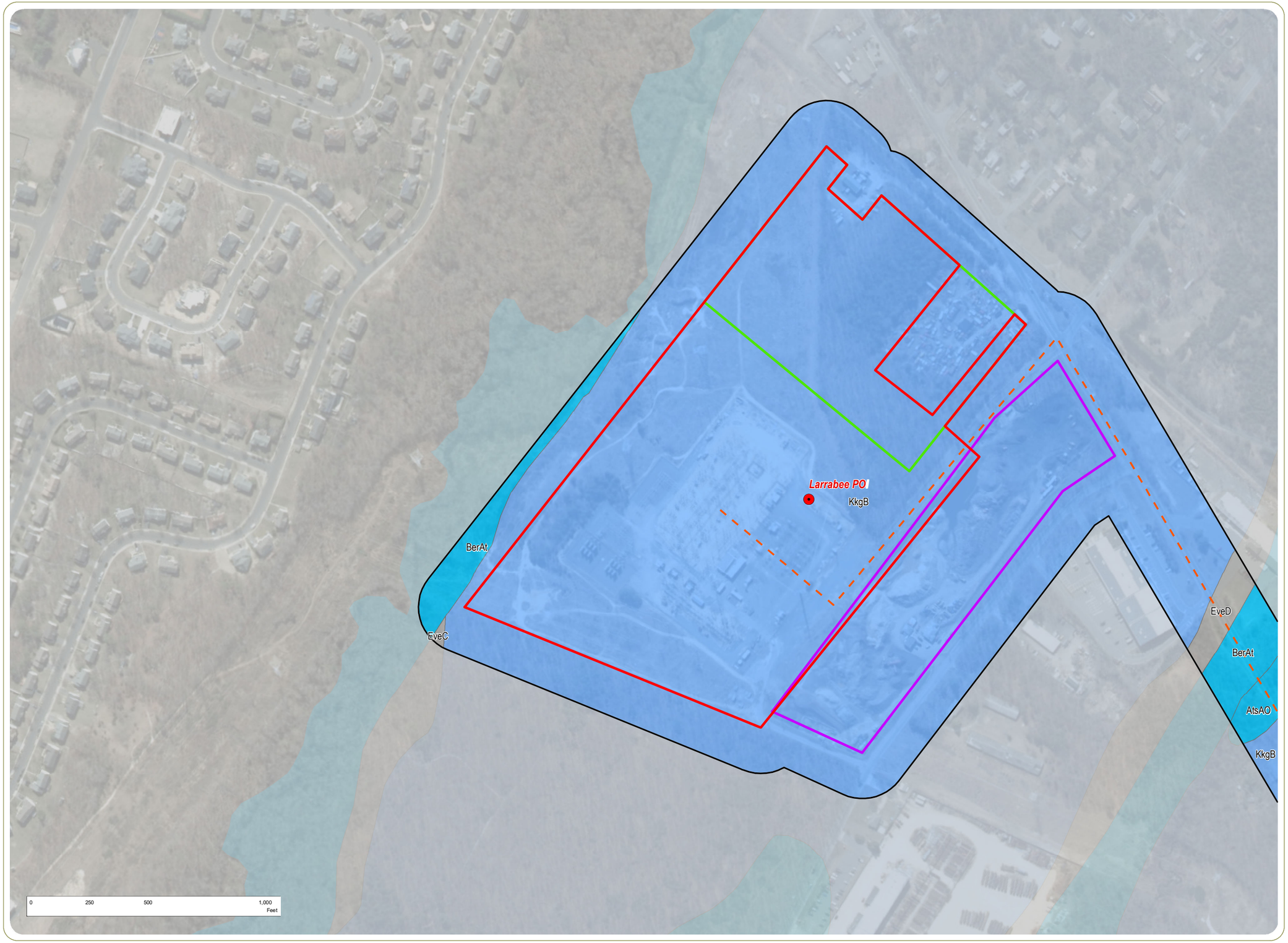
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Larrabee Onshore Cable Route

Borough of Sea Girt, Township of Wall, and Township of Howell
Monmouth County, New Jersey

Figure 2: Soils Map



- Onshore Route
- Preferred Onshore Substation
- Alternative Onshore Substation
- Substation POI
- Project Area

NRCS (SSURGO) Soils

- Hydric
- Partially Hydric
- Not Hydric

Soil Type

AtsAO - Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area

BerAt - Berryland sand, 0 to 2 percent slopes, frequently flooded

EveC - Evesboro sand, 5 to 10 percent slopes

EveD - Evesboro sand, 10 to 15 percent slopes

KkgB - Klej loamy sand, 0 to 5 percent slopes

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Natural Resources Conservation Service Mapped Soils Report

Atlantic Shores Offshore Wind - Cardiff Onshore Cable Route

Egg Harbor Township, Pleasantville City, and Atlantic City

Atlantic County, New Jersey

Prepared for:

ATLANTIC SHORES offshore wind

1 Dock 72, Floor 7
Brooklyn, NY 11205

Prepared by:

Environmental Design & Research,
Landscape Architecture, Engineering, & Environmental Services, D.P.C.
217 Montgomery Street, Suite 1000
Syracuse, New York 13202
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December 2020

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LIST OF APPENDICES

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 identify the Natural Resources Conservation Service (NRCS) soils types mapped within an approximate 100-foot area of the proposed Cardiff onshore interconnection cable route (cable route) from the Atlantic Landfall in the City of Atlantic City, Atlantic County, New Jersey to the Cardiff Substation Point of Interconnection in Egg Harbor Township, Atlantic County, New Jersey and associated onshore substation locations. Collectively, these areas are herein referred to as the Project Area (Figure 1).

1.1 PURPOSE

The purpose of this report is to identify NRCS soil units that are mapped within the Project Area and describe specific characteristics such as, physical characteristics, soil inclusions, hydric status, acidity, construction suitability, and other notable characteristics.

This report is intended to provide the information necessary to guide the identification of onshore geotechnical investigation locations within the Project Area.

1.2 DATA SOURCES

Information supporting this report was largely obtained from the Natural Resources Conservation Service (NRCS) Web Soil Survey (Soil Survey Staff, 2020) with supplemental information used from the NRCS List of Hydric Soils of the State of New Jersey (NRCS, 2018).

2.0 SOIL DESCRIPTIONS

The Project Area is located within the Coastal Plain physiographic province of the state of New Jersey. The geography in this province consists of unconsolidated deposits that dip gently to the southeast. The drainage divide between the Delaware River and the Atlantic Ocean contain mostly flat land with a maximum elevation of 391 feet above mean sea level. The streams and waterbodies that flow northwest to the Delaware River consist of narrow valleys and have steeper gradients than the streams that flow to the southeast. Elevations within the Project Area range from 0 to 20 feet above mean sea level (see Figure 1).

Sections 2.1 and 2.2 identifies the soil types mapped within the Project Area, provides a physical description and summary of other soil characteristics such as hydric rating, acidity and construction limitations.

2.1 SOIL TYPES

A total of 18 soil units are mapped within the Project Area as shown in Figure 2. Table 1 below provides a list of the soil types, inclusions, and acres mapped within the Project Area.

Table 1. Project Area Soils

Mapping Unit Symbol	Series	Slope (%)	Area in Project Area (Acres)	Soil Series inclusions
AtsAO	Atsion sand	0 to 2	6.7	Berryland, occasionally flooded (5%), Lakehurst (5%)
AugaA	Aura sandy loam	0 to 2	8.2	Sassafras (10%), Woodstown (5%), Downer (5%)
AugaB	Aura sandy loam	2 to 5	23.3	Woodstown (5%), Sassafras (5%), Downer (5%)
DocBO	Downer loamy sand	0 to 5	119.2	Hammonton (5%), Atsion (5%), Evesboro (5%)
FobB	Fort Mott sand	0 to 5	3.0	Evesboro (3%), Galloway (3%), Mullica, rarely flooded (3%), Aura (3%), Downer (3%)
GamB	Galloway loamy sand	0 to 5	42.6	Downer (5%), Mullica, rarely flooded (5%), Atsion (5%)
HbmB	Hammonton loamy sand	0 to 5	8.4	Fallsington (5%), Mullica, rarely flooded (5%), Atsion (5%), Glassboro (5%)
LakB	Lakehurst sand	0 to 5	7.2	Quakerbridge (5%), Atsion, rarely flooded (5%), Berryland, rarely flooded (5%)
MakAt	Manahawkin muck, frequently flooded	0 to 2	7.2	Atsion (5%), Berryland, occasionally flooded (5%), Mullica, rarely flooded (5%)
MumA	Mullica sandy loam	0 to 2	6.4	Fallsington (5%), Berryland (5%)

Mapping Unit Symbol	Series	Slope (%)	Area in Project Area (Acres)	Soil Series inclusions
PHG	Pits sand and gravel	--	26.6	None
PssA	Psamments	0 to 2	26.3	Mullica (5%), Atsion (5%), Berryland, rarely flooded (5%)
PstAt	Psammaquents sulfidic substratum	0 to 2	61.9	Pawcatuck, very frequently flooded (5%), Transquaking, very frequently flooded (5%), Appoquinimink, very frequently flooded (5%)
SacAO	Sassafras sandy loam	0 to 2	4.2	Ingleside (9%), Downer (4%), Woodstown (4%), Aura (3%)
SacBO	Sassafras sandy loam	2 to 5	13.2	Ingleside (9%), Downer (4%), Woodstown (4%), Aura (3%)
TrkAv	Transquaking peat	0 to 1	13.1	Appoquinimink, very frequently flooded (5%), Broadkill, very frequently flooded (5%)
WATERs	Water, saline	--	6.4	Beaches, very frequently flooded (5%)
WoeAO	Woodstown sandy loam	0 to 2	14.1	Fallsington (6%), Hammonton (6%), Hambrook (4%), Mattapex (4%)

2.2 SOIL SERIES DESCRIPTIONS

Atsion sand – This soil series consists of sandy eolian deposits and/or fluviomarine deposits typically located in flats, drainageways, depressions and deflation flats. A typical profile ranges from peat (0 to 2 inches) to sand (2 to 80 inches), is poorly drained, and this soil is classified as a Farmland of unique importance. This soil series is designated as hydric with the following inclusions: Berryland, occasionally flooded, five percent, hydric; and Lakehurst, five percent, not hydric.

Aura sandy loam – This soil series consists of coarse-loamy eolian deposits over loamy gravelly fluviomarine deposits that is located in fluviomarine terraces or flats. A typical profile ranges from sandy loam (0 to 23 inches), gravelly sandy loam (23 to 31 inches), gravelly sandy clay loam (31 to 45 inches), and gravelly loamy coarse sand (45 to 80 inches), is well drained, and is classified as prime farmland. This soil series is not designated as hydric and has the following inclusions: Sassafras, 10 percent, not hydric; Woodstown, five percent, not hydric; and Downer, five percent, not hydric.

Downer loamy sand – This soil series consists of loamy fluviomarine deposits and is typically located in knolls and low hills. A typical profile ranges from loamy sand (0 to 16 inches) to sandy loam (16 to 28 inches) to loamy sand (28 to 48 inches) to sand (48 to 80 inches), is well drained, and is designated as Farmland of statewide importance. This soil series is not designated as hydric and has the following inclusions: Hammonton, 10 percent, not hydric; Atsion, five percent, hydric; and Evesboro, five percent, not hydric.

Fort Mott sand – This soil series consists of sandy eolian deposits and/or fluviomarine deposits found in knolls. A typical profile ranges from moderately decomposed plant material (0 to 2 inches) to sand (2 to 24 inches) to sandy loam (24 to 35 inches) to stratified sand to sandy loam (35 to 49 inches) to loamy sand (49 to 72 inches), is well drained, and is classified as Farmland of statewide importance. This soil series is not designated as hydric and has the following inclusions: Evesboro, three percent, not hydric; Galloway, three percent, not hydric; Mullica, rarely flooded, three percent, hydric; Aura, three percent, not hydric; Downer, three percent, not hydric.

Galloway loamy sand – This soil series consists of unconsolidated sandy marine deposits located in flats and dunes. The profile ranges from loamy sand (0 to 36 inches) to sand (36 to 60 inches), is somewhat poorly drained, and is described as Farmland of statewide importance. This soil series is not designated as hydric and has the following inclusions: Downer, five percent, not hydric; Mullica, rarely flooded, five percent, hydric; and Atsion, five percent, hydric.

Hammonton loamy sand – This soil series consists of coarse-loamy fluviomarine deposits found in flats and depressions. A typical profile ranges from loamy sand (0 to 18 inches) to sandy loam (18 to 36 inches) to sand (36 to 80 inches), it is well drained, and is classified as a Farmland of statewide importance. This soil series is not designated as hydric and has the following inclusions: Fallsington, fiver percent, hydric; Mullica, rarely flooded, five percent, hydric; Atsion, five percent, hydric; and Glassboro, five percent, not hydric.

Lakehurst sand – This soil series consists of sandy fluviomarine deposits located in flats and dunes. The profile ranges from slightly decomposed plant material (0 to 2 inches) to sand (2 to 80 inches), and is moderately well drained. This soil series is not designated as hydric and has the following inclusions: Quakerbridge, five percent, not hydric; Atsion, rarely flooded, five percent, hydric; and Berryland, rarely flooded, five percent, hydric.

Manahawkin muck – This soil series consists of organic, woody material over sandy alluvium and is found in swamps and floodplains. The profile ranges from muck (0 to 47 inches) to sand (47 to 80 inches), is very poorly drained, and is designated as a Farmland of unique importance. This soil series is designated as hydric and has the following inclusions: Atsion, five percent, hydric; Berryland, occasionally flooded, five percent, hydric; and Mullica, rarely flooded, five percent, hydric.

Mullica sandy loam – This soil series consists of loamy and sandy fluviomarine deposits and is found in floodplains, depressions, and drainageways. The profile ranges from mucky peat (0 to 2 inches) to sandy loam (2 to 28 inches) to loamy sand (28 to 31 inches) to sand (31 to 40 inches), to gravelly loamy sand (40 to 80 inches), is very poorly drained, and is classified as Farmland of statewide importance, if drained. This soil series is not designated as hydric and has the following inclusions: Fallsington, five percent, hydric; Berryland, five percent, hydric.

Pits, sand and gravel – This soil series consists of sandy material distributed by human activity. There is no “typical” profile description regarding this series due to the significant disturbed-nature of the soil.

Psamments – This soil series consists of sandy human-transported material located in flats. The profile ranges from coarse sand (0 to 12 inches) to gravelly coarse sand (12 to 36 inches) to sand (36 to 80 inches), is well drained, and

is classified as Not prime farmland. This soil series is not designated as hydric and has the following inclusions: Mullica, five percent, hydric; Atsion, five percent, hydric; and Berryland, rarely flooded, hydric.

Psammaquents, sulfidic substratum – This soil series consists of sandy lateral spread deposits over organic material that is found in flats. The profile ranges from coarse sand (0 to 12 inches) to gravelly sand (12 to 36 inches) to mucky peat (36 to 80 inches), is very poorly drained, and is not classified as prime farmland. This soil series is designated as hydric and has the following inclusions: Pawcatuck, very frequently flooded, five percent, hydric; Transquaking, very frequently flooded, five percent, hydric; and Appoquinimink, very frequently flooded, five percent, hydric.

Sassafras sandy loam – This soil series consists of loamy fluviomarine deposits located in flats and fluviomarine terraces. The profile ranges from sandy loam (0 to 18 inches) to sandy clay loam (18 to 28 inches) to loamy sand (28 to 40 inches) to sand (40 to 80 inches), is well drained, and is classified for all areas as prime farmland. This soil series is not designated as hydric and has the following inclusions: Ingleside, nine percent, not hydric; Woodstown, four percent, not hydric; Downer, four percent, not hydric; and Aura, three percent, not hydric.

Transquaking peat – This soil series consists of herbaceous organic material over loamy fluviomarine deposits and is found in tidal marshes. The profile ranges from peat (0 to 9 inches) to mucky peat (9 to 46 inches) to muck (46 to 65 inches) to silty clay (65 to 80 inches), is very poorly drained, and is classified as Farmland of unique importance. This soil series is designated as hydric and has the following inclusions: Appoquinimink, very frequently flooded, five percent, hydric; and Broadkill, very frequently flooded, five percent, hydric.

Woodstown sandy loam – This soil series consists of loamy fluviomarine deposits located in fluviomarine terraces, depressions, broad interstream divides, and flats. The profile ranges from sandy loam (0 to 29 inches) to fine sandy loam (29 to 45 inches) to loamy sand (45 to 80 inches), is moderately well drained, and all areas are considered prime farmland. This soil series is not designated as hydric and has the following inclusions: Fallsington, six percent, hydric; Hammonton, six percent, not hydric; Hambrook, four percent, not hydric; and Mattapex, four percent, not hydric.

Additional physical characteristics of these mapped soil such as slope, acidity, construction limitations and hydric rating, are summarized in Table 2.

Table 2. Soil Series Characteristics

Mapping Unit Symbol	Series	Slope (%)	pH (Acidity)	Construction Limitations/Suitability[1]	Hydric[2]
AtsAO	Atsion sand	0 to 2	4.4	Severe/Wetness, Sandiness, Flooding	Yes
AugaA	Aura sandy loam	0 to 2	5.0	Slight/Dusty	No
AugaB	Aura sandy loam	2 to 5	5.0	Slight/Dusty	No
DocBO	Downer loamy sand	0 to 5	5.2	Slight/Dusty	No
FobB	Fort Mott sand	0 to 5	4.6	Moderate/Sandiness, Low strength, Dusty	No

Mapping Unit Symbol	Series	Slope (%)	pH (Acidity)	Construction Limitations/Suitability[1]	Hydric[2]
GamB	Galloway loamy sand	0 to 5	4.3	Moderate/Wetness	No
HbmB	Hammonton loamy sand	0 to 5	4.7	Slight	No
LakB	Lakehurst sand, 0 to 5% slopes	0 to 5	4.7	Moderate/Sandiness	No
MakAt	Manahawkin muck, frequently flooded, 0 to 2% slopes	0 to 2	4.8	Severe/Flooding, Low strength, Wetness, Dusty, Sandiness	Yes
MumA	Mullica sandy loam, 0 to 2% slopes	0 to 2	4.7	Severe/Wetness, Dusty, Sandiness	No
PHG	Pits sand and gravel	--	N/A	Not Rated	No
PssA	Psamments, 0 to 2% slopes	0 to 2	4.3	Severe/Flooding, Sandiness, Wetness, Dusty	No
PstAt	Psammaquents sulfidic substratum, 0 to 2% slopes	0 to 2	4.3	Severe/Flooding, Wetness, Sandiness, Low strength, Dusty	Yes
SacAO	Sassafras sandy loam, 0 to 2% slopes	0 to 2	5.4	Slight/Dusty	No
SacBO	Sassafras sandy loam, 2 to 5% slopes	2 to 5	5.4	Slight/Dusty	No
TrkAv	Transquaking peat, 0 to 1% slopes	0 to 1	6.5	Severe/Flooding, Low strength, Wetness, Dusty	Yes
WATERs	Water, saline	--	N/A	Not Rated	No
WoeAO	Woodstown sandy loam, 0 to 2% slopes	0 to 2	5.0	Slight/Dusty	No

1 Construction suitability and limitations criteria are derived from NRCS Web Soil Survey.

2 Hydric soil determined using the New Jersey Portion of the 2018 National Hydric Soil List.

The location and extent of the mapped soils within the Project Area are shown in Figure 2.

3.0 CONCLUSIONS

There are a total of 18 soil units mapped within the Project Area. The information provided in this report is based on publicly available NRCS soils data and is provided for the purpose of guiding the determination of geotechnical investigation locations within the Project Area to support onshore design

4.0 REFERENCES

Natural Resources Conservation Service (NRCS). 2018. *New Jersey Portion of the 2018 National Hydric Soil List*. Available at: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1389479.html (Accessed November 2020).

Soil Survey Staff. 2020. *Web Soil Survey*. Natural Resources Conservation Service, United States Department of Agriculture Available at: http://websoilsurvey.nrcs.usda.gov/ (Accessed November 2020).

United States Department of Agriculture (USDA). 1978. *Soil Survey Atlantic County, New Jersey*. United States Department of Agriculture, Soil Conservation Service. Washington, D.C.

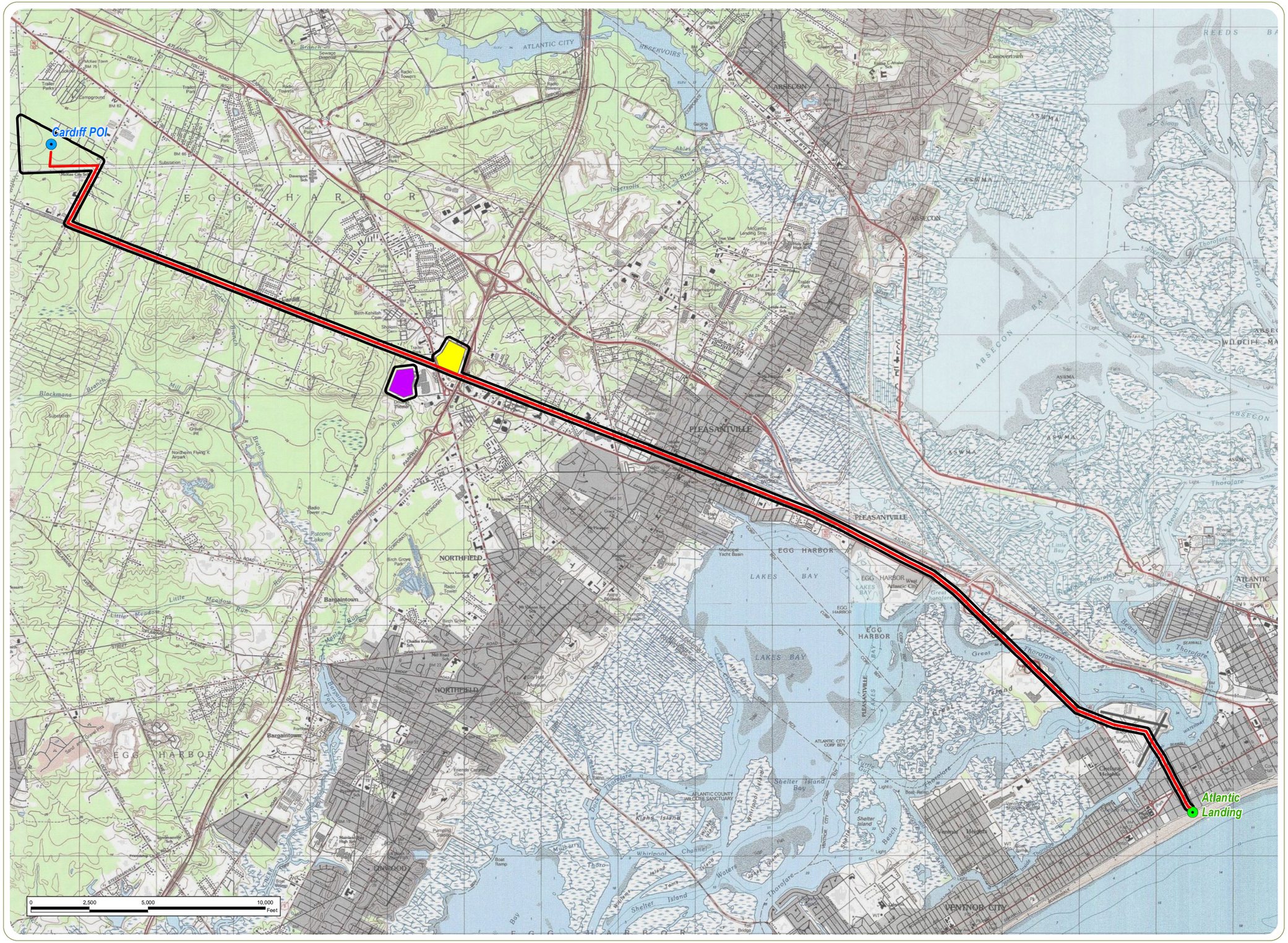
APPENDIX A

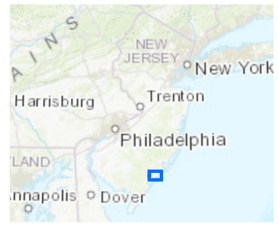
Figures

Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 1:
USGS Project Location Map



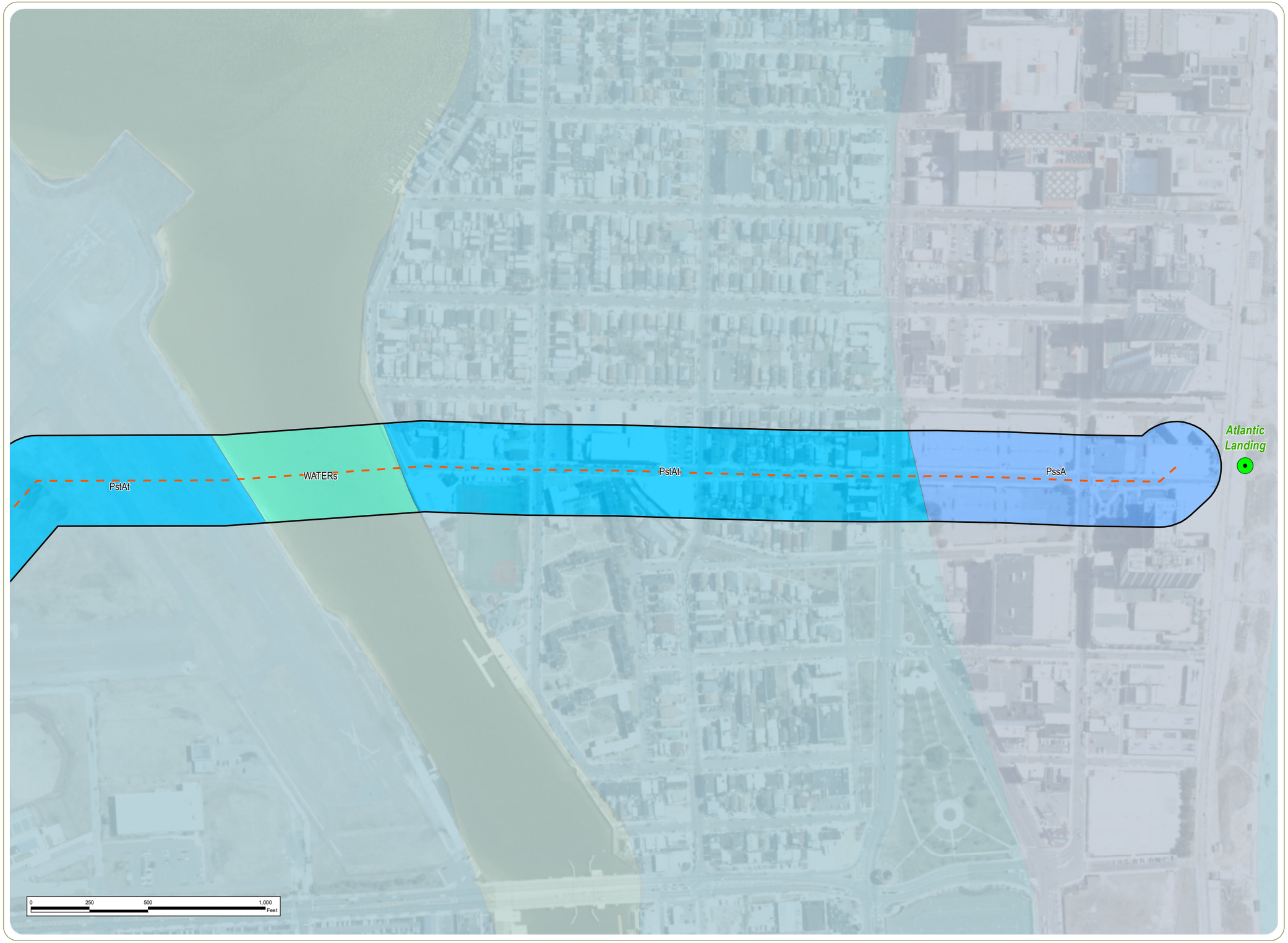


Notes: 1. Basemap: ESRI ArcGIS Online "USA Topo Maps" map service. **2.** This map was generated in ArcMap on December 4, 2020. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Partially Hydric

Water

Soil Type

PssA - Psamments, 0 to 2 percent slopes

PstAt - Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded

WATERs - Water, saline

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery. **2.** This map was generated in ArcMap on December 4, 2020. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

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Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map

Onshore Route

Project Area

NRCS (SSURGO) Soils

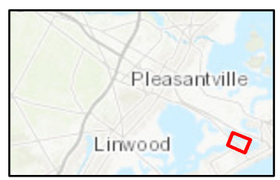
Hydric

Water

Soil Type

PstAt - Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded

WATERs - Water, saline



Sheet 2 of 16

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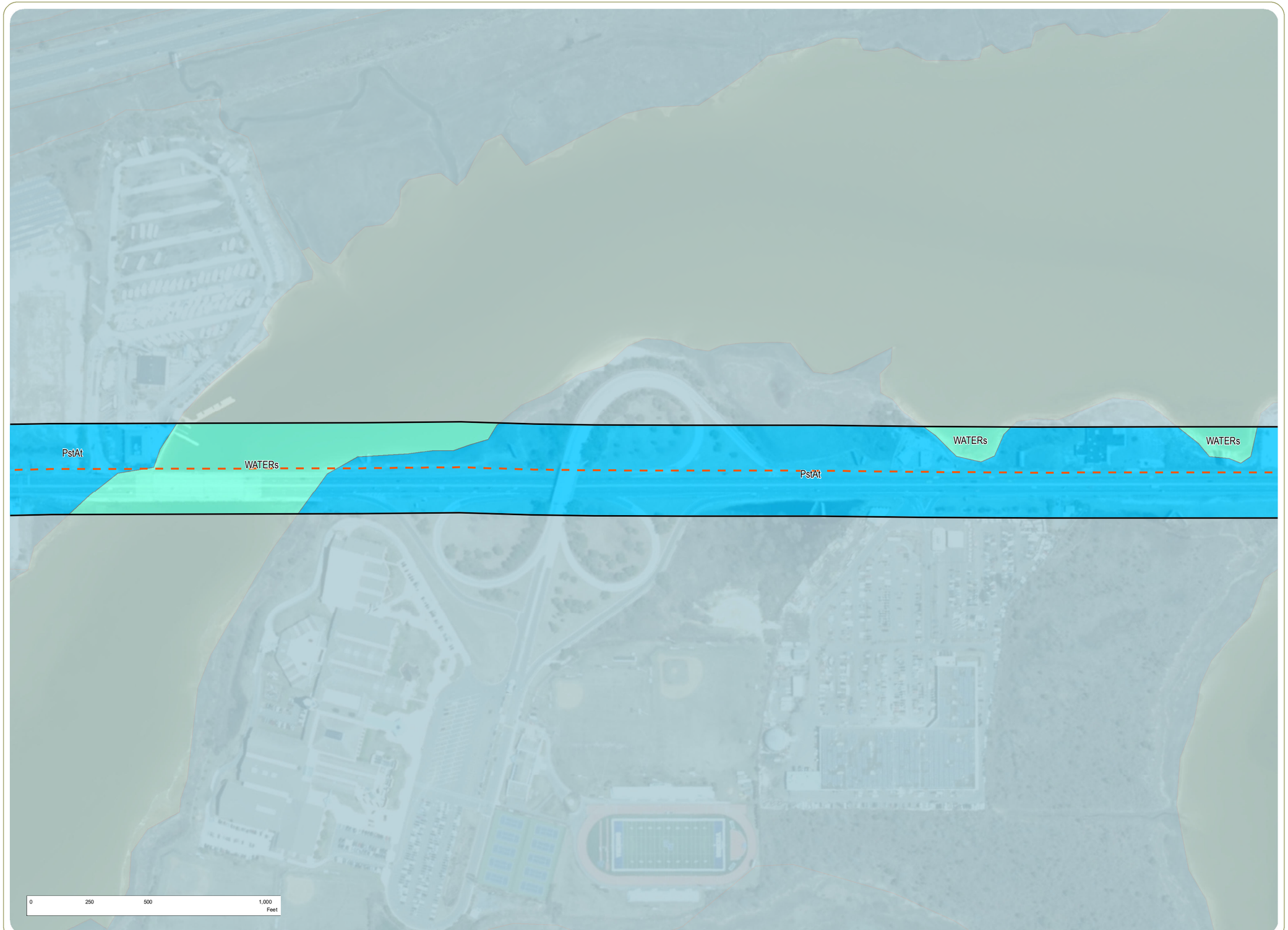
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Water

Soil Type

PstAt - Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded

WATERs - Water, saline

Sheet 3 of 16

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery. **2.** This map was generated in ArcMap on December 4, 2020. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

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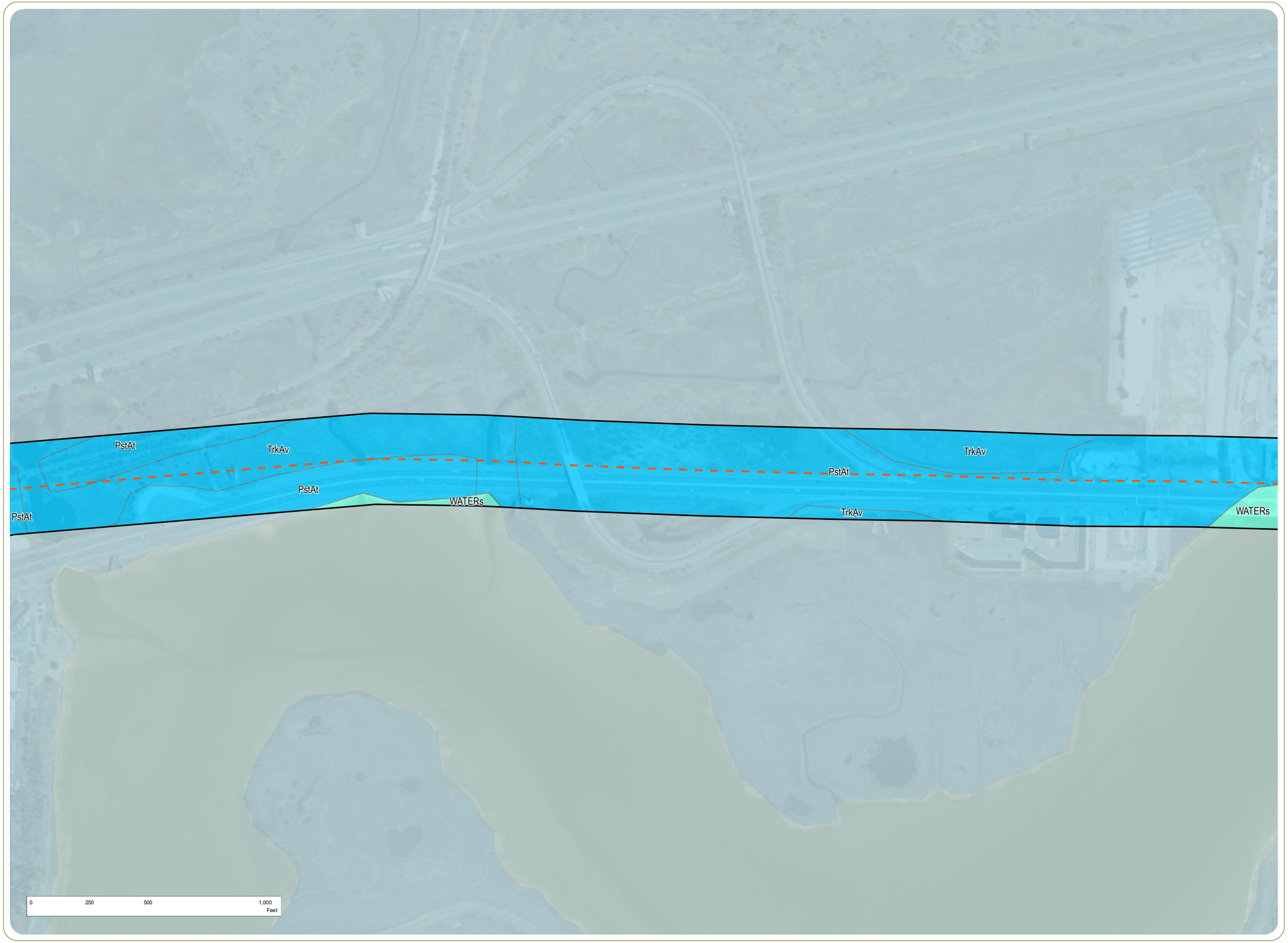
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Water

Soil Type

PstAt - Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded

TrkAv - Transquaking peat, 0 to 1 percent slopes, very frequently flooded

WATERs - Water, saline

Sheet 4 of 16

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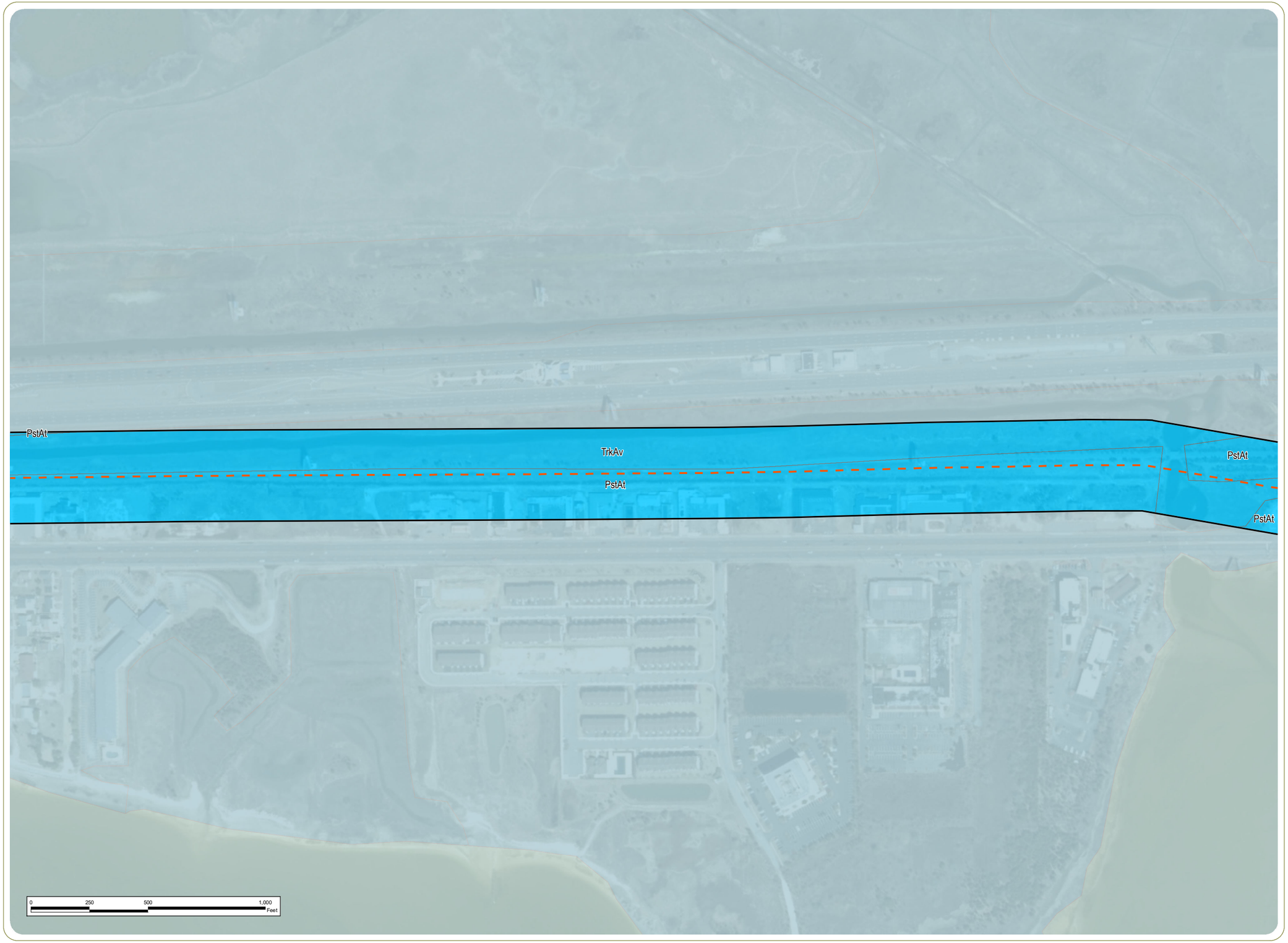
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Soil Type

PstAt - Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded

TrkAv - Transquaking peat, 0 to 1 percent slopes, very frequently flooded

Sheet 5 of 16

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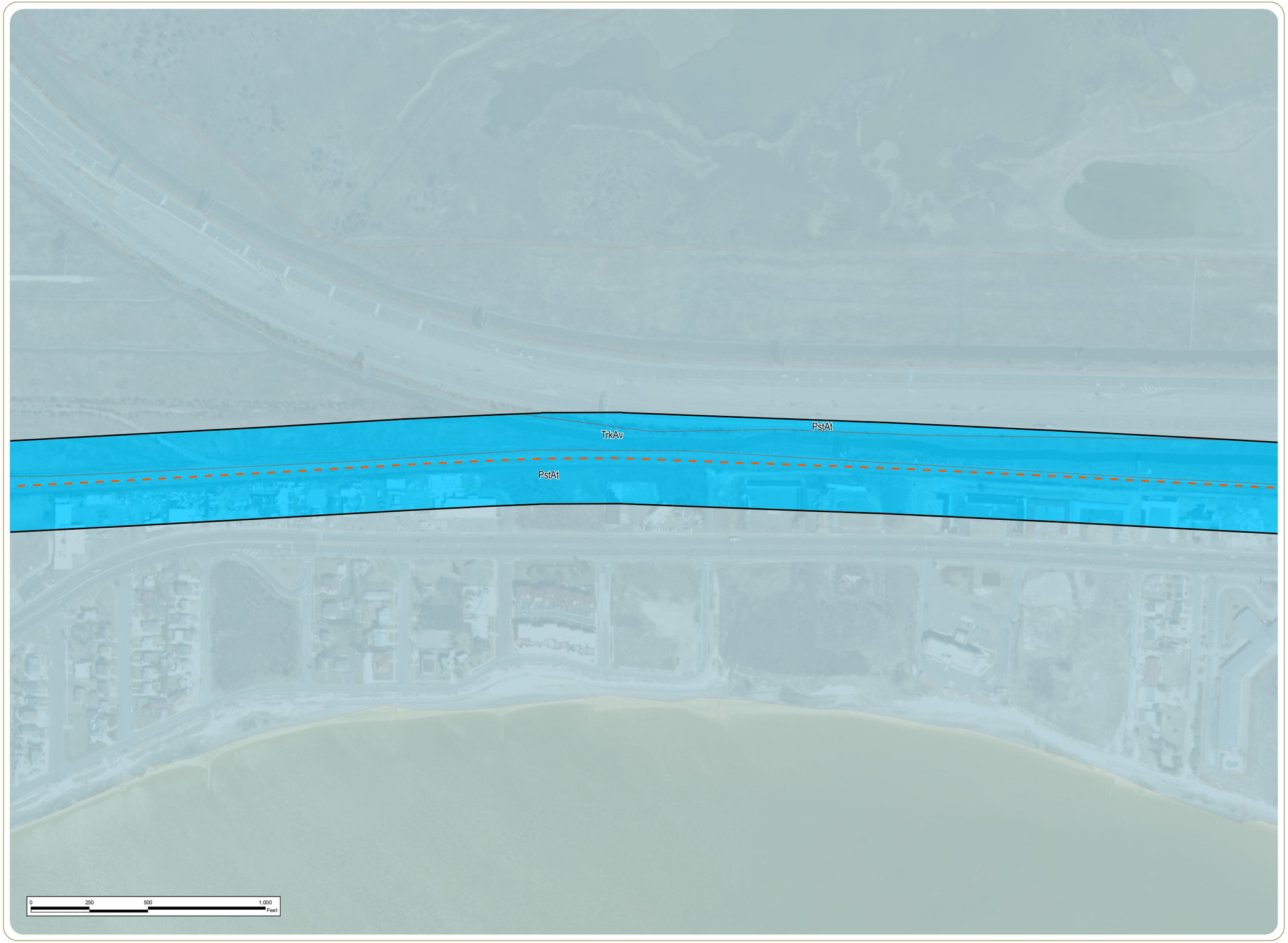

Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map

Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Soil Type

PstAt - Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded

TrkAv - Transquaking peat, 0 to 1 percent slopes, very frequently flooded

Sheet 6 of 16

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery. **2.** This map was generated in ArcMap on December 4, 2020. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

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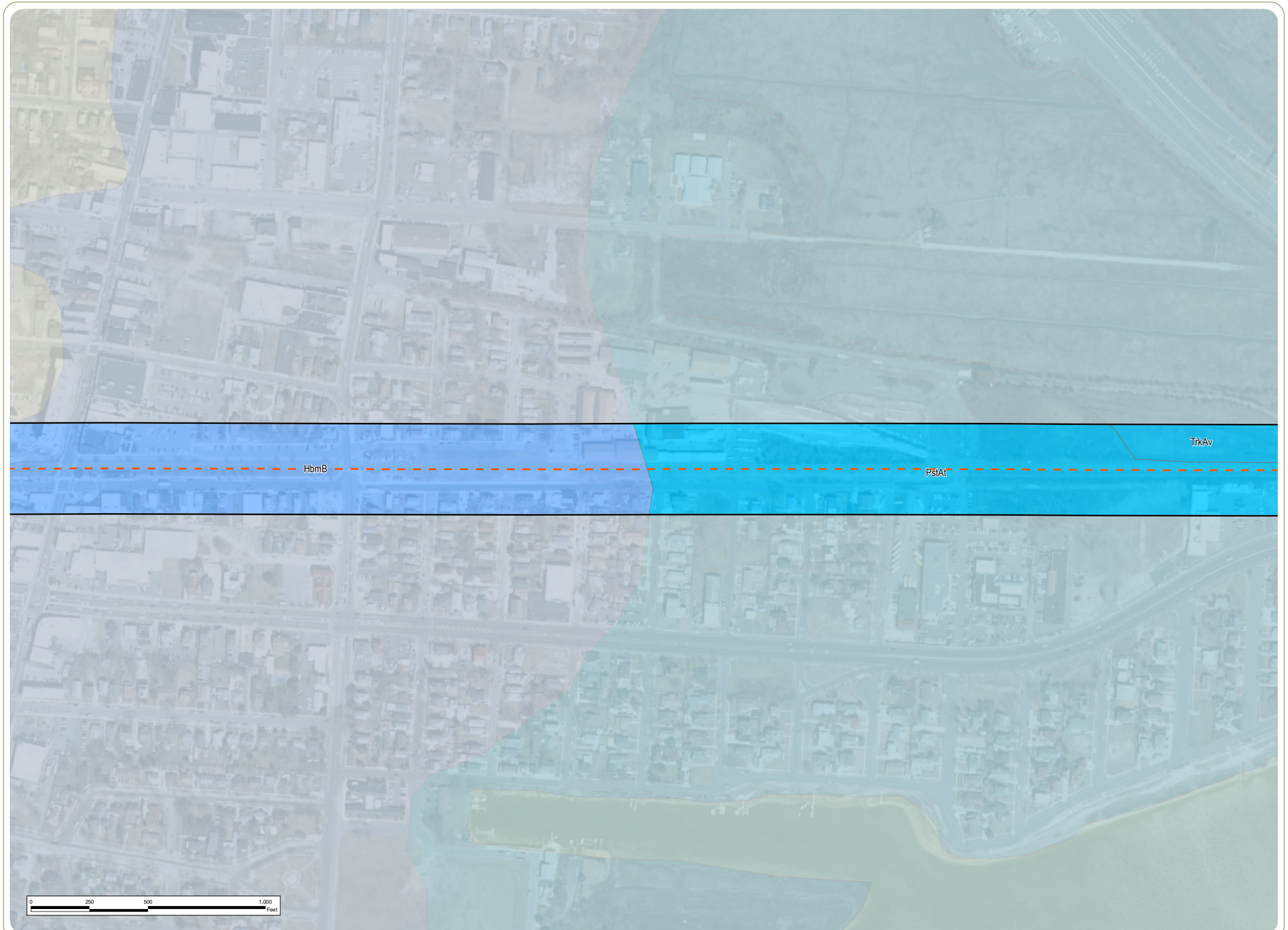
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Partially Hydric

Soil Type

HbmB - Hammonton loamy sand, 0 to 5 percent slopes

PstAt - Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded

TrkAv - Transquaking peat, 0 to 1 percent slopes, very frequently flooded

Sheet 7 of 16

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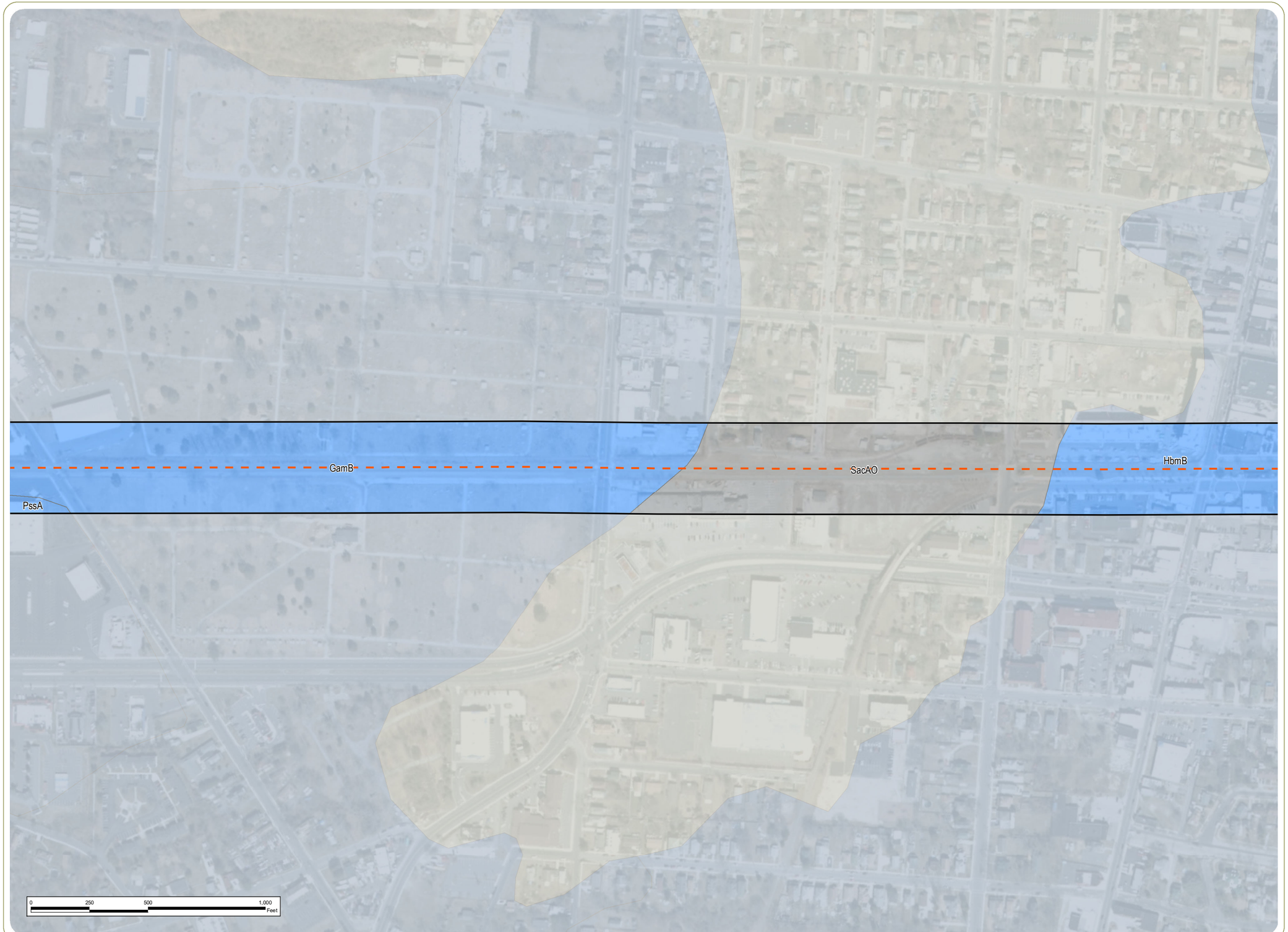
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

Partially Hydric

Not Hydric

Soil Type

GamB - Galloway loamy sand, 0 to 5 percent slopes

HbmB - Hammonton loamy sand, 0 to 5 percent slopes

PssA - Psamments, 0 to 2 percent slopes

SacAO - Sassafras sandy loam, 0 to 2 percent slopes, Northern Tidewater Area

Sheet 8 of 16

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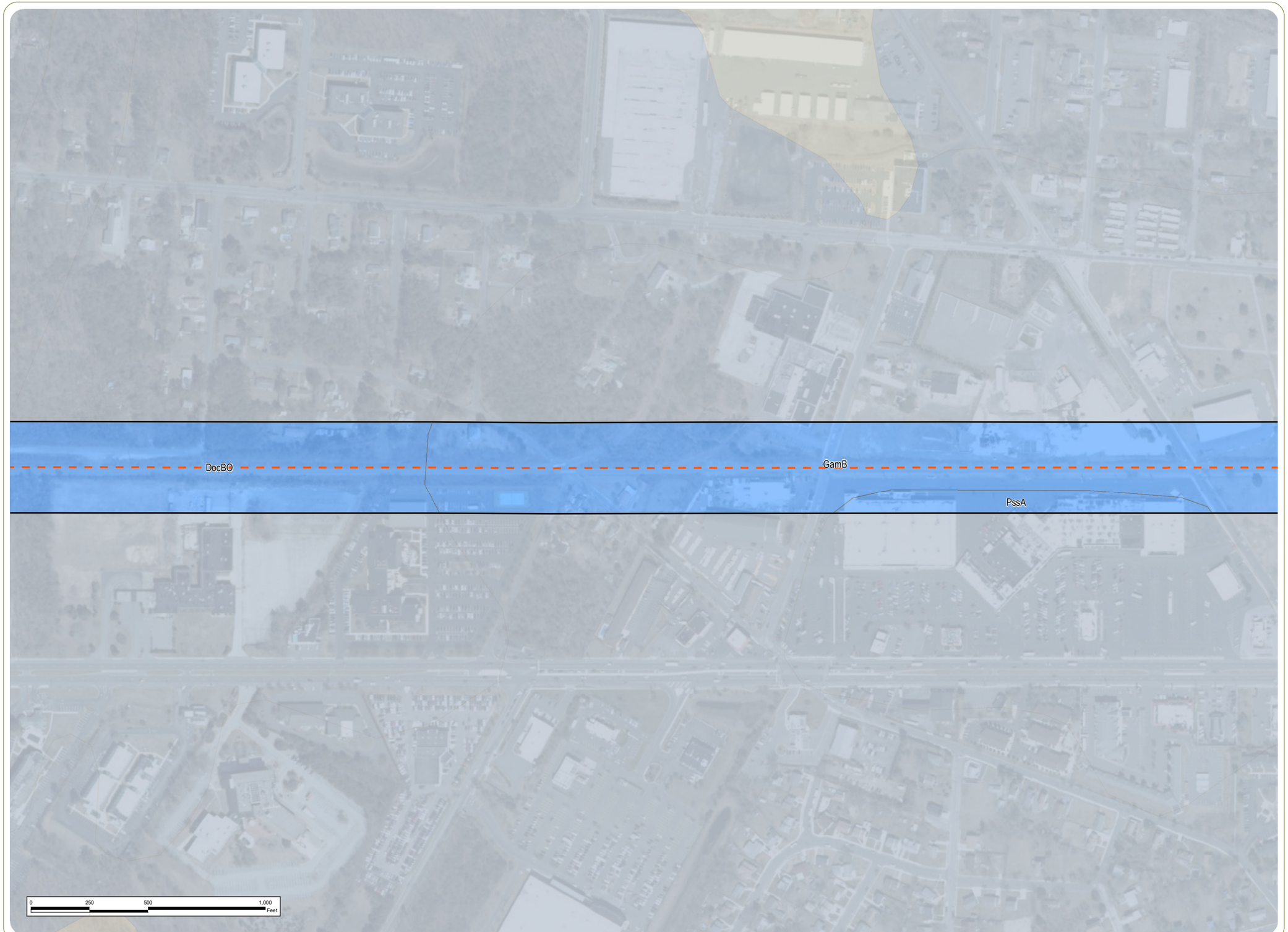
Natural Resources Conservation Service Soils Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

Partially Hydric

Soil Type

DocBO - Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area

GamB - Galloway loamy sand, 0 to 5 percent slopes

PssA - Psamments, 0 to 2 percent slopes

Sheet 9 of 16

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Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map

Onshore Route
Alternative Onshore Substation
Project Area
NRCS (SSURGO) Soils
Partially Hydric
Not Hydric

Soil Type

AugaA - Aura sandy loam, 0 to 2 percent slopes, Northern Tidewater Area

DocBO - Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area

EveB - Evesboro sand, 0 to 5 percent slopes

GamB - Galloway loamy sand, 0 to 5 percent slopes

PHG - Pits, sand and gravel

PssA - Psamments, 0 to 2 percent slopes

Sheet 10 of 16

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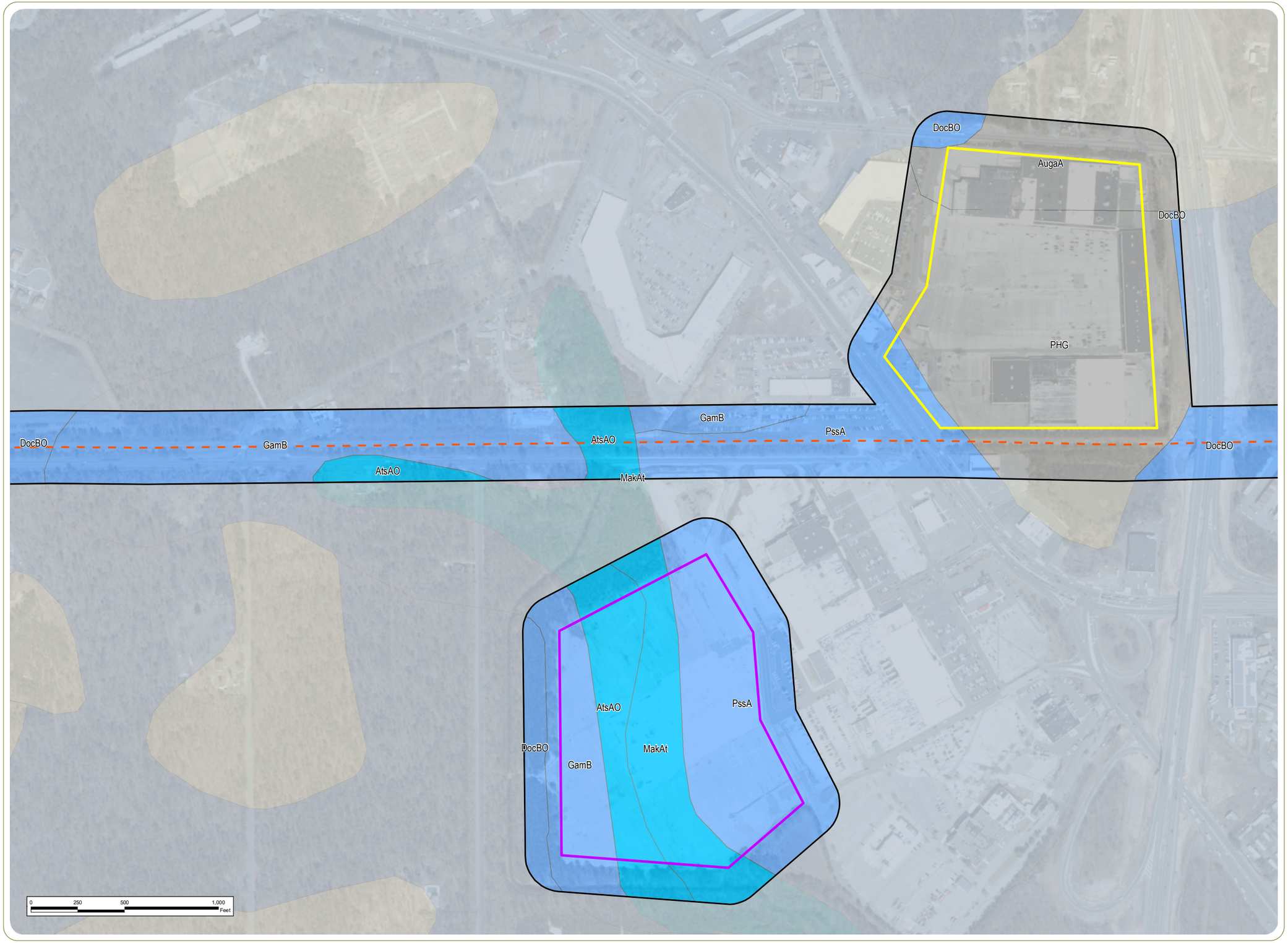

Natural Resources Conservation Service Soils Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map

- Onshore Route
- Preferred Onshore Substation
- Alternative Onshore Substation
- Project Area

NRCS (SSURGO) Soils

- Hydric
- Partially Hydric
- Not Hydric

Soil Type

AtsAO - Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area

AugaA - Aura sandy loam, 0 to 2 percent slopes, Northern Tidewater Area

DocBO - Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area

GamB - Galloway loamy sand, 0 to 5 percent slopes

MakAt - Manahawkin muck, 0 to 2 percent slopes, frequently flooded

PHG - Pits, sand and gravel

PssA - Psamments, 0 to 2 percent slopes

Sheet 11 of 16

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Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map

Onshore Route

Project Area

NRCS (SSURGO) Soils

Partially Hydric

Not Hydric

Soil Type

AugaB - Aura sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

DocBO - Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area

GamB - Galloway loamy sand, 0 to 5 percent slopes

SacBO - Sassafras sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

Sheet 12 of 16

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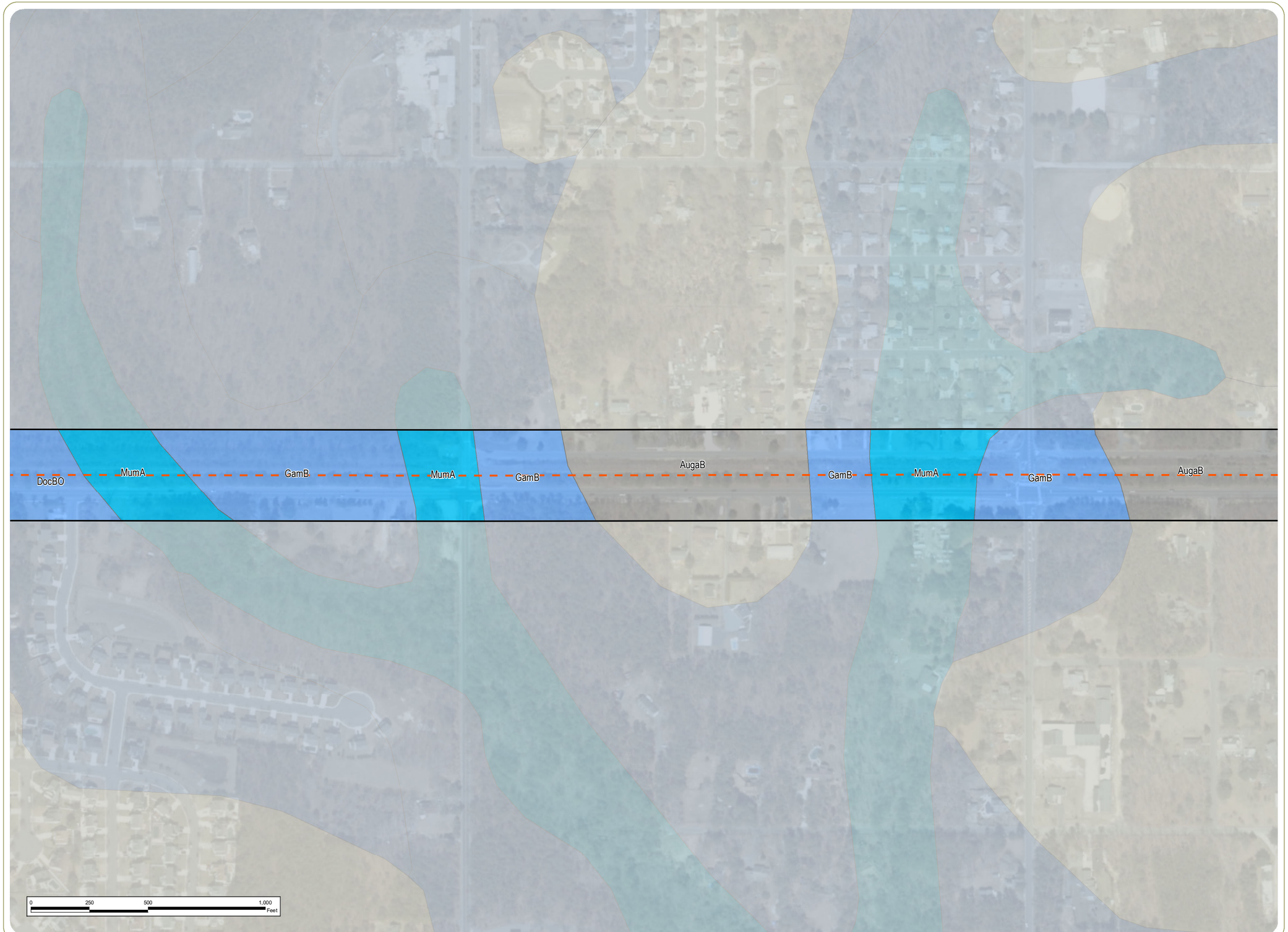
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Partially Hydric

Not Hydric

Soil Type

AugaB - Aura sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

DocBO - Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area

GamB - Galloway loamy sand, 0 to 5 percent slopes

MumA - Mullica sandy loam, 0 to 2 percent slopes

Sheet 13 of 16

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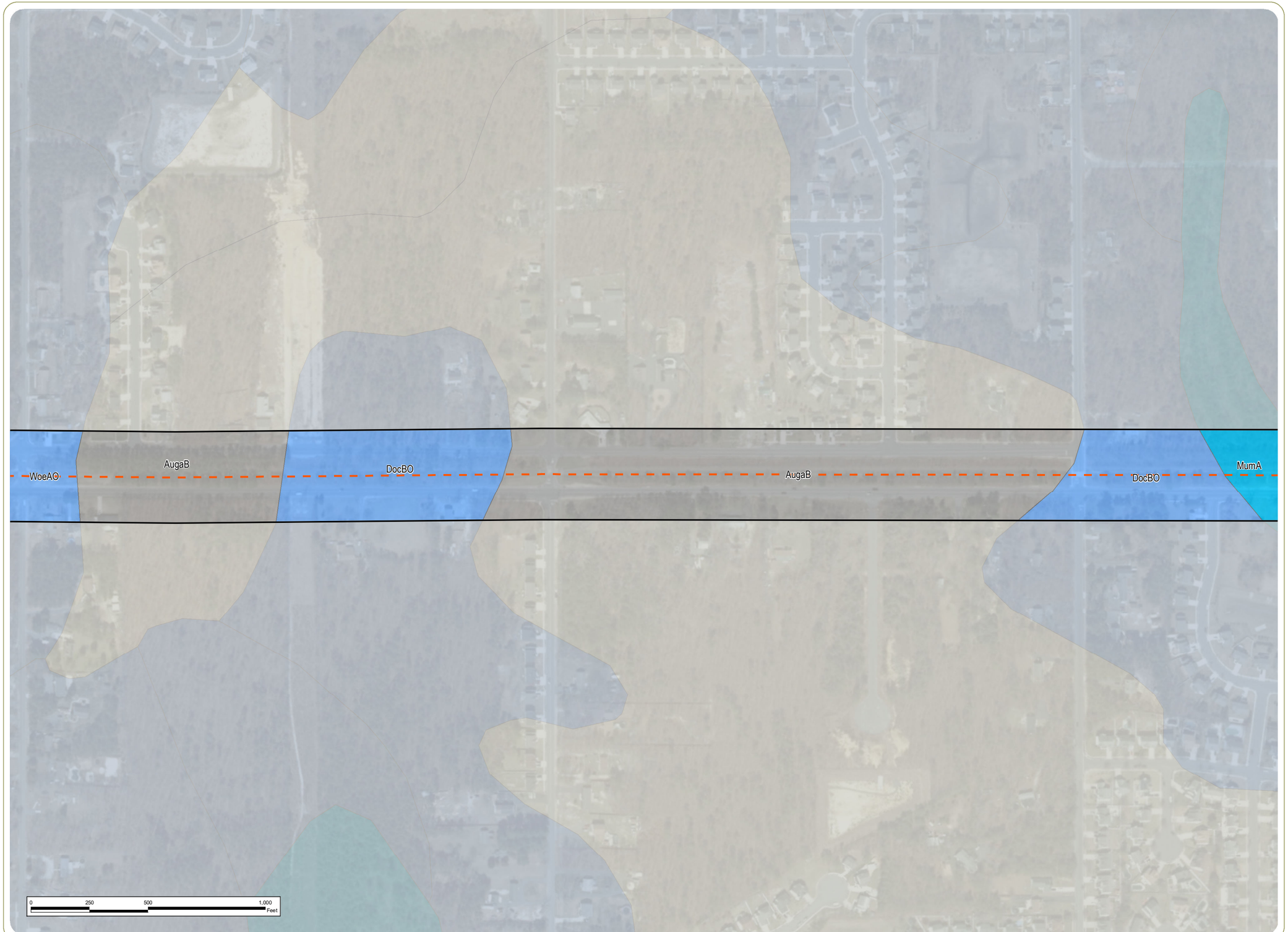
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Partially Hydric

Not Hydric

Soil Type

AugaB - Aura sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

DocBO - Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area

MumA - Mullica sandy loam, 0 to 2 percent slopes

WoeAO - Woodstown sandy loam, 0 to 2 percent slopes, Northern Tidewater Area

Notes: 1. Basemap: NJ Office of GIS 2015 Natural Color Imagery. **2.** This map was generated in ArcMap on December 4, 2020. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

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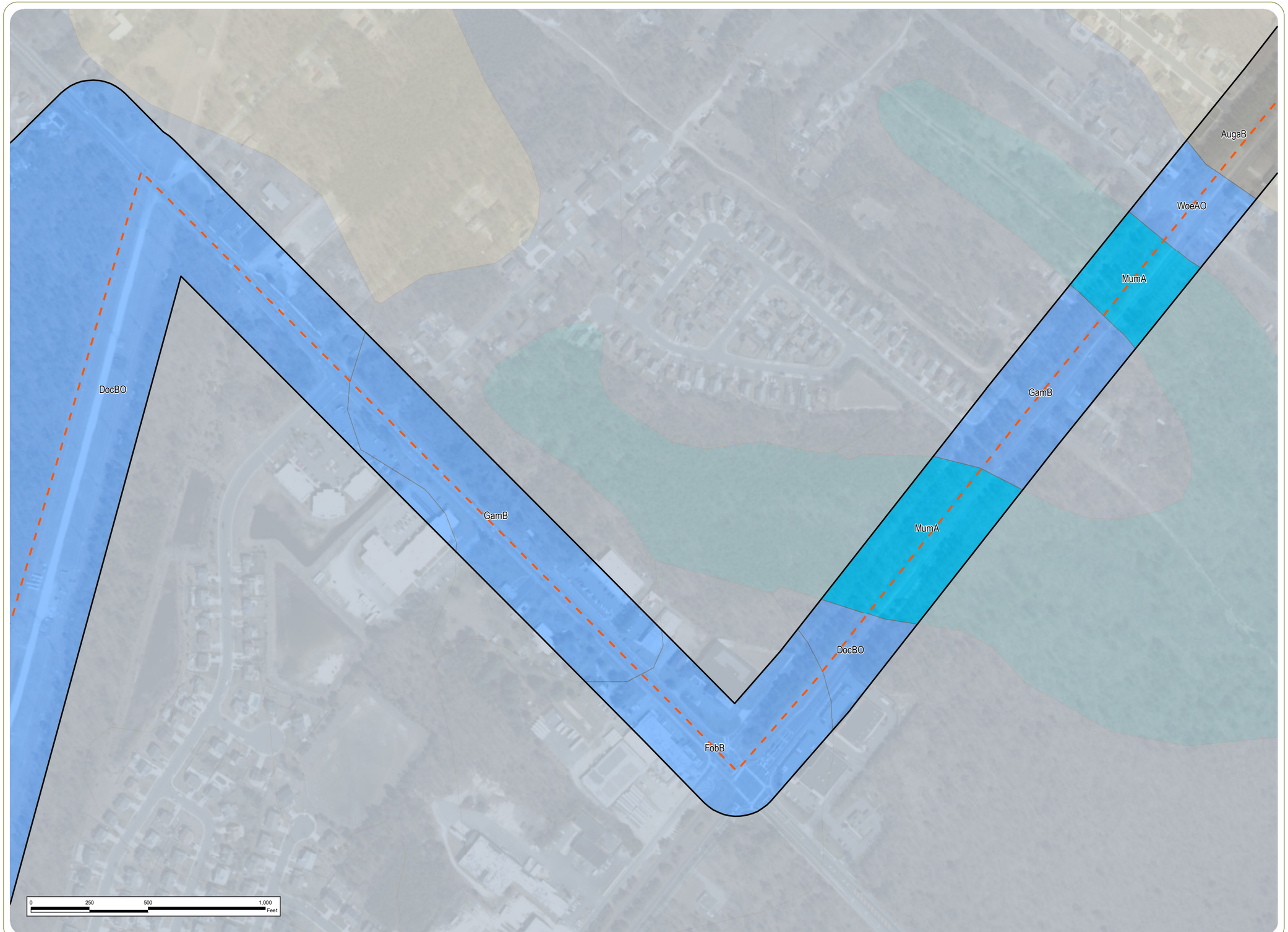
Natural Resources Conservation Service Soils Report
Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map



Onshore Route

Project Area

NRCS (SSURGO) Soils

Hydric

Partially Hydric

Not Hydric

Soil Type

AugaB - Aura sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

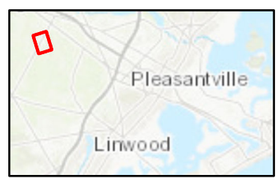
DocBO - Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area

FobB - Fort Mott sand, 0 to 5 percent slopes

GamB - Galloway loamy sand, 0 to 5 percent slopes

MumA - Mullica sandy loam, 0 to 2 percent slopes

WoeAO - Woodstown sandy loam, 0 to 2 percent slopes, Northern Tidewater Area



Sheet 15 of 16

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Natural Resources Conservation Service Soils Report Atlantic Shores Offshore Wind – Cardiff Onshore Cable Route

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

Figure 2: Soils Map

Onshore Route

Project Area

NRCS (SSURGO) Soils

Partially Hydric

Not Hydric

Soil Type

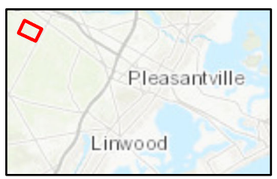
AugaB - Aura sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

DocBO - Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area

LakB - Lakehurst sand, 0 to 5 percent slopes

SacBO - Sassafras sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

WoeAO - Woodstown sandy loam, 0 to 2 percent slopes, Northern Tidewater Area



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