

Appendix K
Flood Hazard Engineering Report
Oyster Creek

**ENGINEERING REPORT for
FLOOD HAZARD AREA & RIPARIAN ZONE LINE
VERIFICATION**

For:

**THE OYSTER CREEK SUBSTATION AND ONSHORE
CABLE ROUTE**

**BLOCK 100, LOTS 1.05, 1.06
BLOCK 1001, LOTS 4.02, 4.05, 4.06
LACEY TOWNSHIP, OCEAN COUNTY
NEW JERSEY**

Applicant/Owner:

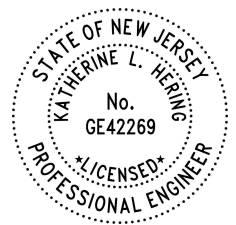
Ocean Wind 1
An Ørsted & PSEG project

Ocean Wind, LLC

Prepared By:



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July 2022, *Revised December 29, 2022*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining and preparing the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment.

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-

1.0 Executive Summary

This Flood Hazard Area and Riparian Zone Line Verification Engineering Report is being submitted as the material required to fulfill the regulatory requirements for the Flood Hazard Control Act (FHACA) Rules (N.J.A.C. 7:13-1.1 et seq.) for determining the flood hazard area design flood elevation (FHADFE), limits of the flood hazard area (FHA) and the riparian zone line for the proposed Oyster Creek Substation in Lacey Township, and the onshore electrical cable route that will run from the Oyster Creek Substation, through Lacey Township in Ocean County, to the Barnegat Bay. The cable route will continue across Island Beach State Park and connect to the offshore cable route in the Atlantic Ocean. This report serves as the Engineering Report for the application and has been prepared in accordance with the following:

- NJDEP Flood Hazard Area Control Act (FHACA) Rules (N.J.A.C. 7:13), last amended October 5, 2021; and
- NJDEP Flood Hazard Technical Manual (2018).

FHA verification is required because flood hazard areas are shown on FEMA's Flood Insurance Rate Maps (FIRMs) in the vicinity of the project area. All elevations within this report refer to the NAVD 88 vertical datum unless otherwise noted.

The proposed improvements are part of the Ocean Wind 1 project, which is a 1.1 GW offshore wind farm being proposed approximately 15 miles off the coast of Atlantic City, New Jersey. An offshore substation will be constructed to collect wind turbine partial outputs from the offshore wind farm. As part of this project, two (2) circuit of offshore 275 kV sub-sea cables, also known as export cables, will make landfall in Lacey Township, New Jersey and terminate at the proposed Oyster Creek Substation (see Figures 1 and 2). The Oyster Creek Substation and the export cable routes through Lacey Township are the primary points of discussion within this report.

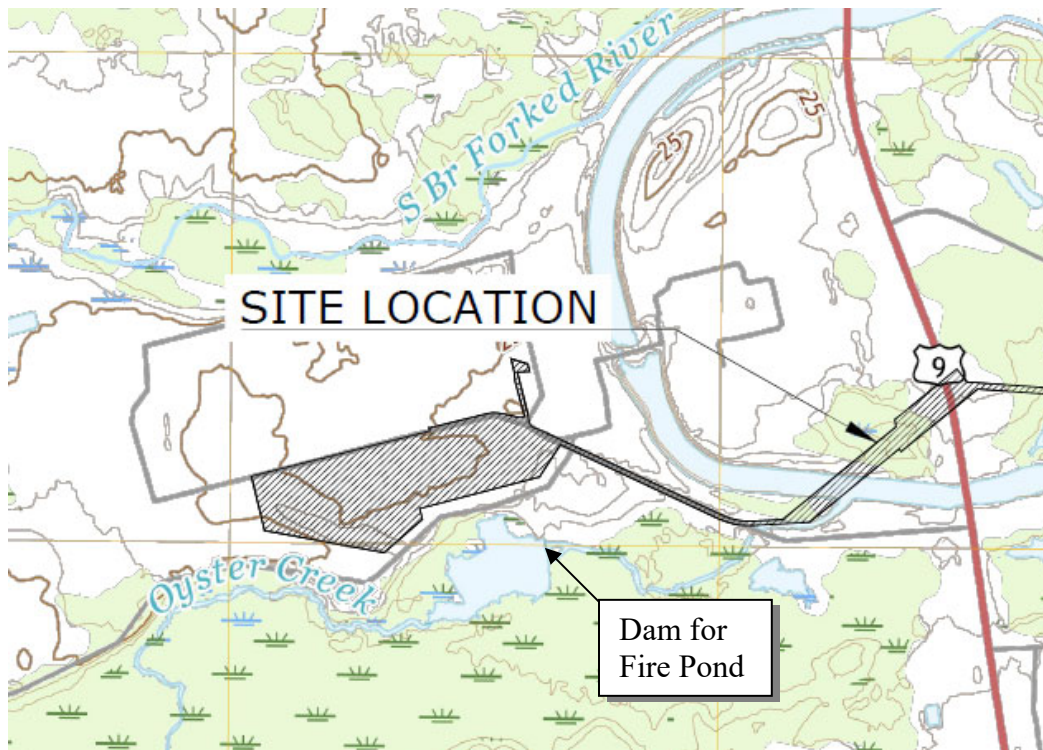
1.1 Site and Project Description

The Oyster Creek Substation is planned to be a 275/230kV high voltage alternating current (AC) substation and is proposed to be located near the decommissioned Oyster Creek Nuclear Generating Station on Block 1001, Lot 4.05 in Lacey Township, New Jersey. In general, the purpose of the substation is to transmit the power from the 275kV connection from the wind farm to the 230kV rated facility commonly used in New Jersey as well as to provide filtration and reactive compensation for power stability. The export cables will enter the proposed Oyster Creek Substation property off Discharge Drive, the private road located just to the north of the project. The cable route runs south/southeast down Discharge Drive where it changes course traveling north/northeast crossing under the Oyster Creek and New Jersey State Highway Route 9. The cable route then runs due east through undeveloped forested wetland areas where it eventually enters the Barnegat Bay. The cable route continues under the Barnegat Bay, makes landfall at Island Beach State Park, and then enters the Atlantic Ocean to connect to the offshore wind farm. (See Figures 1 through 2C).

Oyster Creek Substation Site

The Oyster Creek Substation will be located on Block 1001, Lot 4.05, which is a 31.49-acre parcel located behind/to the west of the decommissioned Oyster Creek Nuclear Generating Station located off New Jersey State Highway Route 9. Block 1001, Lot 4.05 is generally bound by Discharge Drive to the north and east, the Oyster Creek to the south, and undeveloped open space to the west, beyond which is the Garden State Parkway. The portion of the site to be disturbed for the construction of the Oyster Creek Substation is approximately 12.14 acres, with existing grades being generally flat varying from elevation 21 to elevation 27 (NAVD 88).

As depicted on the USGS map below, the Oyster Creek is located directly to the south of the proposed Oyster Creek Substation. As part of the Oyster Creek Nuclear Power Plant operations, a dam was installed on the Oyster Creek to impound water as a source of water for emergency firefighting. Below this dam, the Oyster Creek is tidally influenced, for which this application seeks FHA verification under Method 2. Above the dam, the Oyster Creek is fluvial and mapped by FEMA, for which this application seeks FHA verification under Method 3.



Onshore Export Cable Route

The underground onshore export cable will be installed between the Oyster Creek Substation and the Barnegat Bay within undeveloped portions of private property in Lacey Township, New Jersey, as shown on Figures 1 through 2C.

As stated previously, the proposed Oyster Creek Substation and export cable route are located in flood hazard areas identified on FEMA FIRMs. This application is being submitted for NJDEP verification of the flood hazard areas to determine what activities proposed by the project will be regulated by the NJDEP under the FHACA rules.

2.0 Regulatory Requirements

2.1 Flood Hazard Area Verification Method 2 – FEMA Tidal Method

This application requests FHA Verification under Method 2 (N.J.A.C. 7:13-3.4(d)), FEMA delineation of tidally-influenced water bodies. Table 2-1 lists the effective FEMA FIRMs that cover the Oyster Creek Substation and export cable route which were referenced to determine the location of floodways and flood hazard areas that will be impacted by this project. It should be noted that the project area has not been studied or delineated by the NJDEP. For regulated waters for which a NJDEP delineation does not exist, the flood hazard area and floodway can be determined using Method 2 for tidally influenced surface waters mapped on FEMA FIRMs. If both a NJDEP delineated study (Method 1) and a FEMA flood insurance study (Method 2) are available for a regulated water, the flood hazard area and/or floodway are determined based on whichever method results in a higher flood hazard area design flood elevation (FHADFE) and wider floodway limit.

Table 2-1 – FEMA FIRM Maps

Location	Map			NJDEP Delineated Map
	Type	Number	Map Date	
Lacey Township, Ocean County, NJ; Starting at Block 1001, 4.05 to the NJ Route 9 crossing over the Oyster Creek	Preliminary Map	34029C0412G	03/28/2014	None
Lacey Township, Ocean County, NJ; Starting at NJ Route 9 crossing over the Oyster Creek to the eastern end of Block 100, Lot 1.05	Preliminary Map	34029C0404G	03/28/2014	None
Lacey Township, Ocean County, NJ; Starting at the eastern end of Block 100, Lot 1.05 to the eastern end of Block 100, Lot 1.06.	Preliminary Map	34029C0408G	03/28/2014	None
Lacey Township, Ocean County, NJ; Starting at the eastern end of Block 100, Lot 1.06 to the Barnegat Bay	Preliminary Map	34029C0416G	01/30/2015	None
Township of Berkeley, Ocean County, NJ; Block 1750, Lot 1	Preliminary Map	34029C0427G	03/28/2014	None

Based on the FEMA FIRMs listed in Table 2-1, the project area below/east of the Oyster Creek dam lies within the Zone AE – “Base Flood Elevations” determined for the tidally influenced portion of the Oyster Creek as well as the Barnegat Bay and Atlantic Ocean, which are also tidally influenced throughout the entirety of the water body (see Figures 4A, 4B, and Appendix A). Since all the regulated waterbodies are tidally influenced, the flood hazard area design flood elevation is the same as the 100-year base flood elevation in accordance with N.J.A.C. 7:13-3.4(d)1. Table 2-2 below provides the 100-year base flood elevation and flood hazard area design flood elevations (FHADFE) located throughout the project area.

Table 2-2 – 100-Base Flood and FHA Design Flood Elevation

Location/FIRM Map Number	Regulated Water Body	FEMA 100-Year Base Flood (NAVD 88)	FHADFE
Lacey Township, Ocean County, NJ; Starting at Block 1001, 4.05 to the NJ Route 9 crossing over the Forked River / 34029C0412G	Oyster Creek (Tidally Influenced Portion)	7	7
Lacey Township, Ocean County, NJ; Starting at NJ Route 9 crossing over the Oyster Creek to the eastern end of Block 100, Lot 1.05 / 34029C0404G	Oyster Creek (Tidally Influenced Portion)	7	7
Lacey Township, Ocean County, NJ; Starting at the eastern end of Block 100, Lot 1.05 to the eastern end of Block 100, Lot 1.06/ 34029C0408G	Oyster Creek (Tidally Influenced Portion)	7	7
Lacey Township, Ocean County, NJ; Starting at the eastern end of Block 100, Lot 1.05 to the eastern end of Block 100, Lot 1.06/ 34029C0408G	Barnegat Bay	8	8
Lacey Township, Ocean County, NJ; Starting at the eastern end of Block 100, Lot 1.05 to the eastern end of Block 100, Lot 1.06/ 34029C0408G	Barnegat Bay	7	7
Lacey Township, Ocean County, NJ; Starting at the eastern end of Block 100, Lot 1.06 to the Barnegat Bay / 34029C0416G	Barnegat Bay	10	10
Township of Berkeley, Ocean County, NJ; Block 1750, Lot 1	Atlantic Ocean	7	7

Township of Berkeley, Ocean County, NJ; Block 1750, Lot 1	Atlantic Ocean	13	13
Township of Berkeley, Ocean County, NJ; Block 1750, Lot 1	Atlantic Ocean	15	15

The 100-year base flood elevations and FHADFEs listed above were used to delineate the flood hazard areas for the project based on local topography. Where local/surveyed topography is not available beyond the project limits, the FHA line from the effective FEMA FIRMs becomes the FHA for verification. The existing flood hazard verification was delineated and shown on the plan entitled “Block 1001, Lot 4.05 and Partial 4.04 & 4.06, South Main Street, Township of Lacey, Ocean County, NJ Boundary and Topographic Survey” prepared by PSE&G Survey and Mapping and dated June 16, 2022, last revised November 15, 2022. This has been uploaded to the Department’s On-Line Service in support of the application. The proposed flood hazard verification and delineation is shown on Figures 5 through 10. No flood hazard verification is required for the proposed improvements outside of Block 1001, Lot 4.05 in accordance with N.J.A.C. 7:13-5.5(b)1 as the remainder of the proposed improvements consist of subsurface utilities that will not result in any changes to the existing topography. However, the flood hazard area has been delineated on Figures 6-10 based on FEMA mapping.

2.2 Flood Hazard Area Verification Method 3 – FEMA Fluvial Method

This application also requests FHA Verification under Method 3 (N.J.A.C. 7:13-3.4(e)), FEMA delineation of fluvial water bodies. For regulated waters for which a NJDEP delineation does not exist, the flood hazard area and floodway can be determined using Method 3 for fluvial waters mapped on FEMA FIRMs. If both a NJDEP delineated study (Method 1) and a FEMA flood insurance study (Method 3) are available for a regulated water, the flood hazard area and/or floodway are determined based on whichever method results in a higher flood hazard area design flood elevation (FHADFE) and wider floodway limit. Under Method 3, the FHADFE is equal to one foot above the FEMA 100-year flood elevation. Table 2-3 lists the effective FEMA FIRM that covers the proposed Oyster Creek Substation and area upstream of the dam, along with the 100-year base flood elevation and FHADFE.

Table 2-3 – 100-Base Flood and FHA Design Flood Elevation

Location/FIRM Map Number	Regulated Water Body	FEMA 100-Year Base Flood (NAVD 88)	FHADFE
Lacey Township, Ocean County, NJ; Upstream of fire water pond dam/ 34029C0412G	Oyster Creek (Fluvial Portion)	6	7

3.0 Determining the Riparian Zone

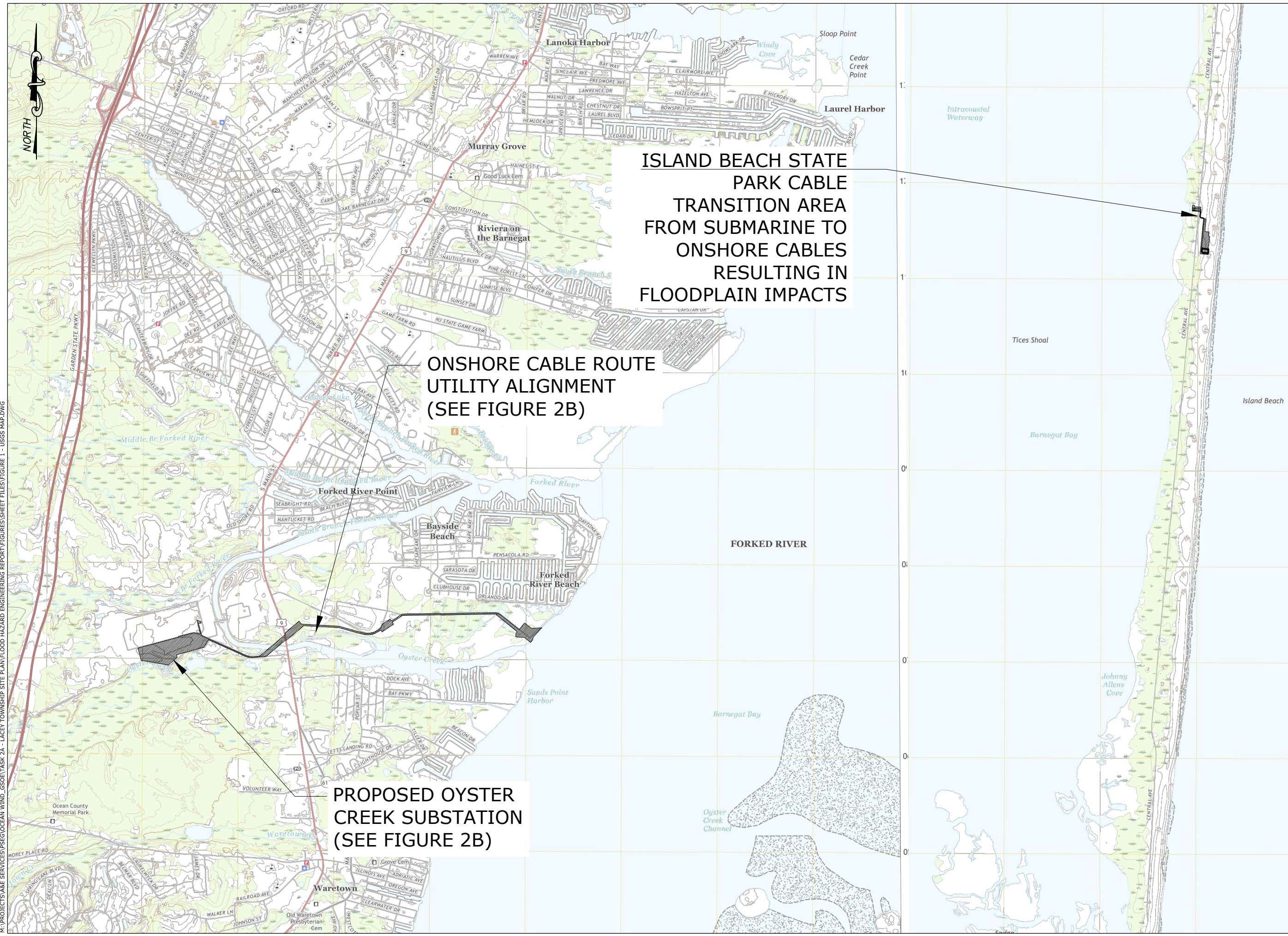
The riparian zone has been depicted on the permitting plans in accordance with N.J.A.C. 7:13-4.1(c)3. According to the NJDEP GIS digital data layer entitled, "Surface Water Quality Classifications", the Oyster Creek is classified as a FW2-NT/SE1. It is not utilized for trout production or trout maintenance. Therefore, the width of the riparian zone is 50 feet, as measured landward from the top of bank, or the edge of open water where no discernable top of bank exists.

Conclusion

The primary purpose of the FHA verification application is to establish the limits of the FHA along the Oyster Creek, the Barnegat Bay, and the Atlantic Ocean. Secondly, this application also requests verification of the riparian zone along the Oyster Creek, as measured outward fifty feet (50') from the top of bank upstream of the dam on the creek.

~END~


FIGURES



**ISLAND BEACH STATE
PARK CABLE
TRANSITION AREA
FROM SUBMARINE TO
ONSHORE CABLES
RESULTING IN
FLOODPLAIN IMPACTS**

**ONSHORE CABLE ROUTE
UTILITY ALIGNMENT
(SEE FIGURE 2B)**

**PROPOSED OYSTER
CREEK SUBSTATION
(SEE FIGURE 2B)**

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<p>I CERTIFY THAT THESE PLANS HAVE BEEN PREPARED UNDER MY SUPERVISION</p>				
<p>PROJECT NAME OCEAN WIND OFFSHORE WIND OYSTER CREEK ONSHORE SUBSTATION AND ONSHORE CABLE ROUTE LACEY TOWNSHIP, NEW JERSEY BLOCK 1001, LOTS 1.05 AND 1.06 BLOCK 1001, LOTS 4.02, 4.05, 4.06</p>				
<p>DRAWING TITLE</p> <p>USGS SITE LOCATION MAP</p>				
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SCALE: NTS				
PROJECT #: P-21-58-01		FIRST ISSUE: 01/13/2022		
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FIG 1				

M:\PROJECTS\B&E SERVICES\B&E\OCEAN WIND_GSOE\TASK 2A - LACEY TOWNSHIP SITE PLAN\FLOOD HAZARD ENGINEERING REPORT\FIGURES\SHEET FILES\FIGURE 1 - USGS MAP.DWG

M:\PROJECTS\A&E SERVICES\PS&E\OCEAN WIND_GSOE\TASK 2A - LACEY TOWNSHIP SITE PLAN\FLOOD HAZARD ENGINEERING REPORT\FIGURES\SHEET FILES\FIGURE 2 - AERIAL.DWG



ISLAND BEACH STATE
PARK CABLE
TRANSITION AREA
FROM SUBMARINE TO
ONSHORE CABLES
RESULTING IN
FLOODPLAIN IMPACTS

ONSHORE CABLE ROUTE
UTILITY ALIGNMENT
(SEE FIGURE 2B)

PROPOSED OYSTER
CREEK SUBSTATION
(SEE FIGURE 2B)

BARNEGAT BAY

ATLANTIC
OCEAN

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OCEAN WIND OFFSHORE WIND
OYSTER CREEK ONSHORE
SUBSTATION AND
ONSHORE CABLE ROUTE
LACEY TOWNSHIP, NEW JERSEY
BLOCK 100, LOTS 1.05 AND 1.06
BLOCK 1001, LOTS 4.02, 4.05, 4.06

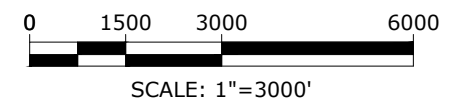
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AERIAL SITE LOCATION MAP

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FIG 2A



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OYSTER CREEK ONSHORE
SUBSTATION AND
ONSHORE CABLE ROUTE
LACEY TOWNSHIP, NEW JERSEY
BLOCK 100, LOTS 1.05 AND 1.06
BLOCK 1001, LOTS 4.02, 4.05, 4.06

DRAWING TITLE

AERIAL SITE LOCATION MAP

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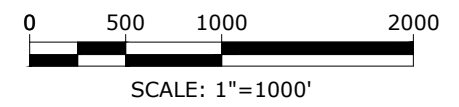
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FIG 2B

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BARNEGAT BAY



ISLAND BEACH STATE
PARK CABLE
TRANSITION AREA
FROM SUBMARINE TO
ONSHORE CABLES
RESULTING IN
FLOODPLAIN IMPACTS

ISLAND BEACH STATE
PARK CABLE
TRANSITION AREA
FROM SUBMARINE TO
ONSHORE CABLES
RESULTING IN
FLOODPLAIN IMPACTS

ATLANTIC
OCEAN

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OYSTER CREEK ONSHORE
SUBSTATION AND
ONSHORE CABLE ROUTE
LACEY TOWNSHIP, NEW JERSEY
BLOCK 100, LOTS 1.05 AND 1.06
BLOCK 1001, LOTS 4.02, 4.05, 4.06

DRAWING TITLE

AERIAL SITE LOCATION MAP

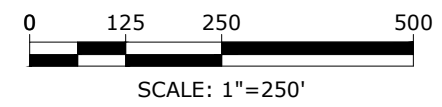
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FIG 2C



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SUBSTATION AND
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LACEY TOWNSHIP, NEW JERSEY
BLOCK 100, LOTS 1.05 AND 1.06
BLOCK 1001, LOTS 4.02, 4.05, 4.06

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WATERSHED
MANAGEMENT AREA MAP

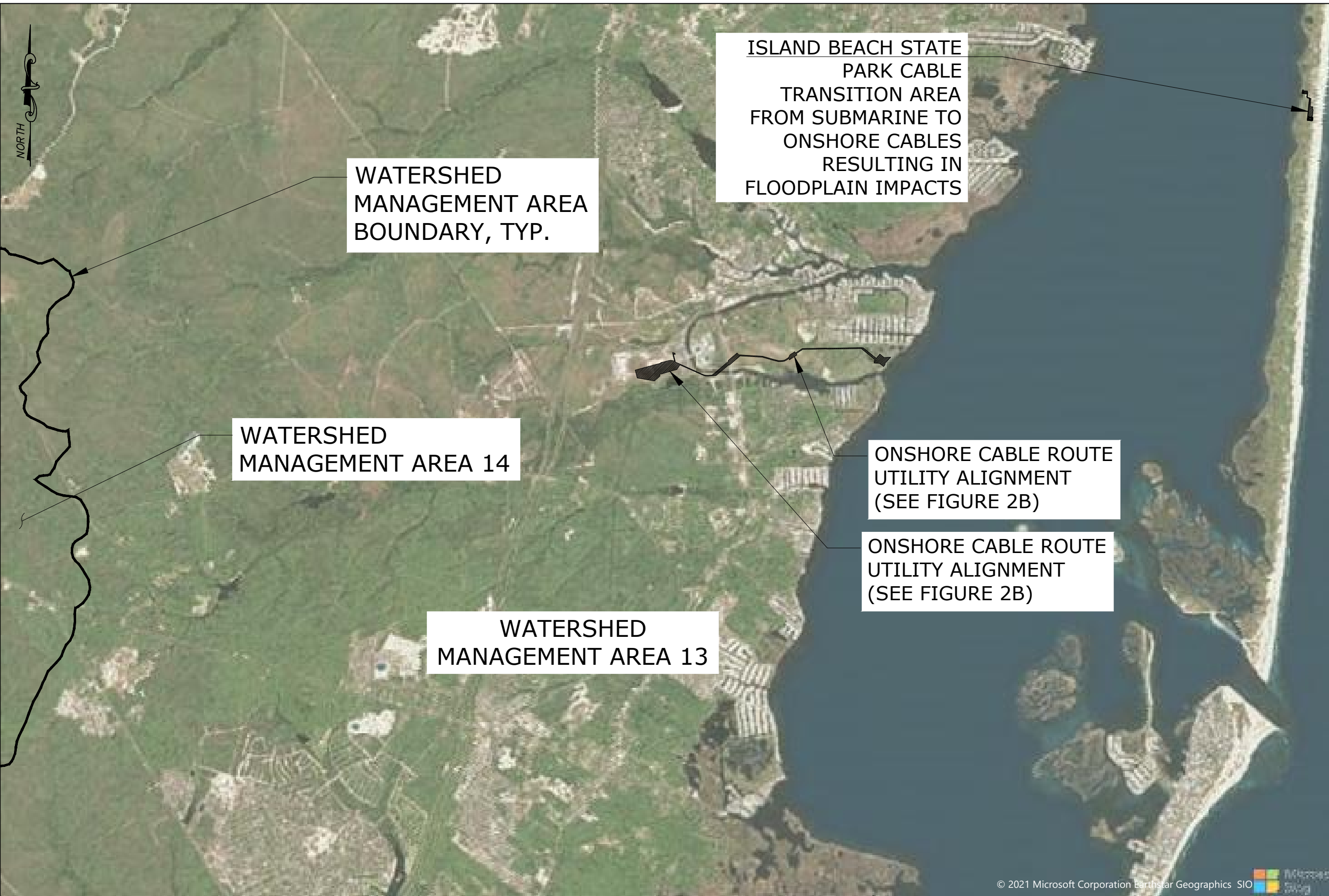
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FIG 3



ISLAND BEACH STATE
PARK CABLE
TRANSITION AREA
FROM SUBMARINE TO
ONSHORE CABLES
RESULTING IN
FLOODPLAIN IMPACTS

WATERSHED
MANAGEMENT AREA
BOUNDARY, TYP.

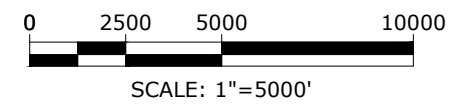
WATERSHED
MANAGEMENT AREA 14

ONSHORE CABLE ROUTE
UTILITY ALIGNMENT
(SEE FIGURE 2B)

ONSHORE CABLE ROUTE
UTILITY ALIGNMENT
(SEE FIGURE 2B)

WATERSHED
MANAGEMENT AREA 13

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PROPOSED OYSTER CREEK SUBSTATION LOCATION

SOUTH BRANCH OF FORKED RIVER

NJ ROUTE 9

OYSTER CREEK

OYSTER CREEK

EXISTING DAM. BOUNDARY BETWEEN METHOD 2 AND METHOD 3 FLOOD HAZARD AREA DESIGN FLOOD ELEVATION VERIFICATIONS.

ONSHORE CABLE ROUTE UTILITY ALIGNMENT

BARNEGAT BAY

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I CERTIFY THAT THESE PLANS HAVE BEEN PREPARED UNDER MY SUPERVISION

PROJECT NAME
OCEAN WIND OFFSHORE WIND OYSTER CREEK SUBSTATION AND ONSHORE CABLE ROUTE LACEY TOWNSHIP, NEW JERSEY BLOCK 100, LOTS 1.05 AND 1.06 BLOCK 1001, LOTS 4.02, 4.05, 4.06

DRAWING TITLE
FEMA FLOOD MAP (SUBSTATION AND CABLE ROUTE)

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PROJECT #: P-21-58-01 FIRST ISSUE: 01/13/2022

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REFERENCES:
THE BASE MAP SHOWN HEREIN IS FROM PRELIMINARY FLOOD INSURANCE RATE MAPS NUMBER 34029C0404G, 34029C0408G, AND 34029C0412G DATED MARCH 28, 2014 AND FIRM MAP NUMBER 34029C0416G DATED JANUARY 30, 2015. THE PRELIMINARY MAPS ARE SHOWN HEREIN AS THEY SHOW HIGHER BASE FLOOD ELEVATIONS THAN THE RESPECTIVE EFFECTIVE MAPS.

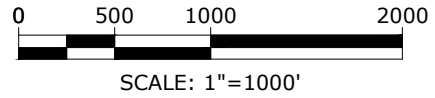
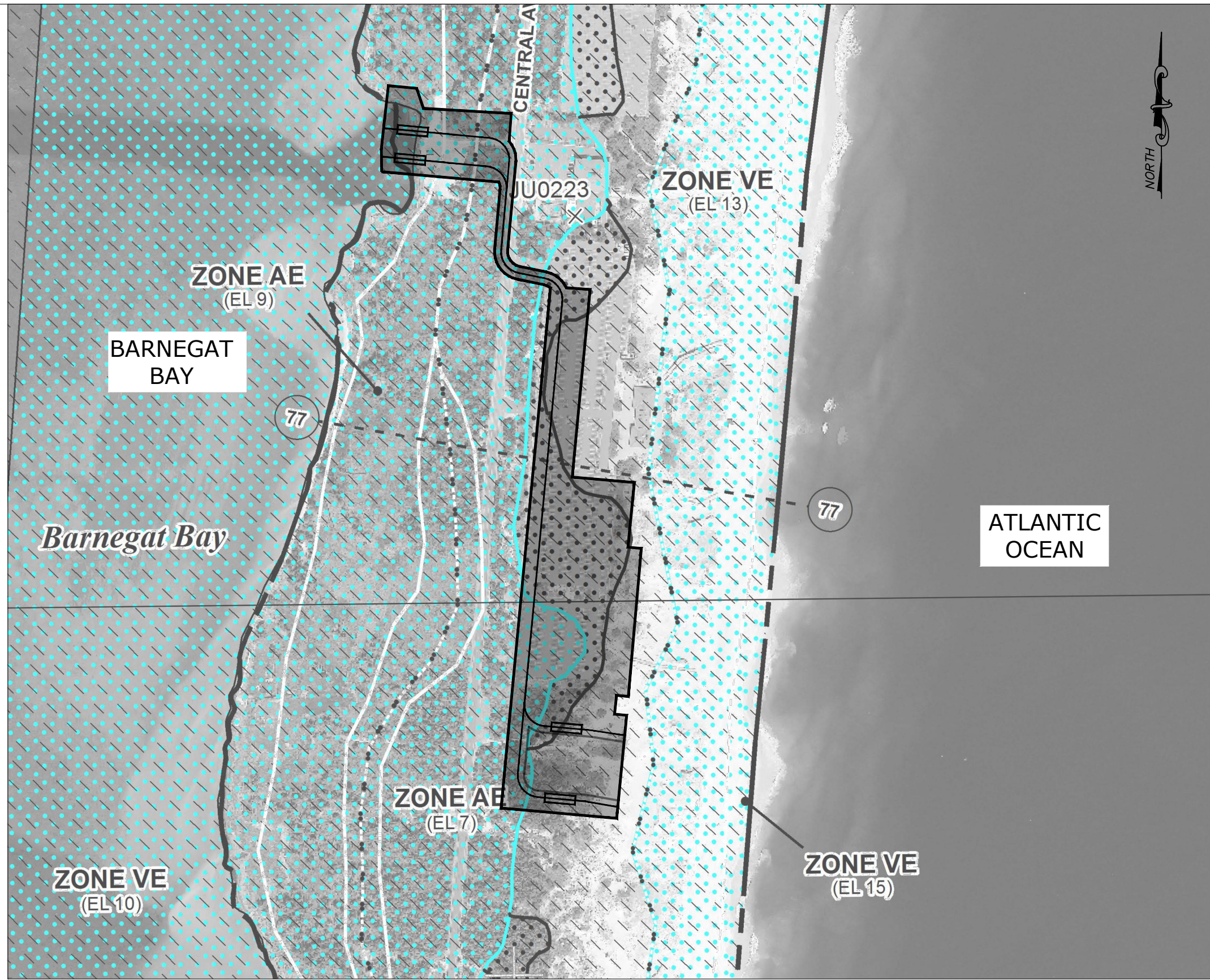


FIG 4A



SCHEDULE OF REVISIONS				
REV.	DATE	DESCRIPTION OF CHANGES	DRAWN BY	CHK BY

NOTES

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 ROCKAWAY, N.J. 07866
 PHONE: (973) 299-5200
 FAX: (973) 299-5059
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N.J. ENGINEERING CERTIFICATE OF AUTHORIZATION No. 24GA28118200

I CERTIFY THAT THESE PLANS HAVE BEEN PREPARED UNDER MY SUPERVISION

PROJECT NAME
 OCEAN WIND OFFSHORE WIND
 OYSTER CREEK ONSHORE
 SUBSTATION AND
 ONSHORE CABLE ROUTE
 LACEY TOWNSHIP, NEW JERSEY
 BLOCK 100, LOTS 1.05 AND 1.06
 BLOCK 1001, LOTS 4.02, 4.05, 4.06

DRAWING TITLE
 FEMA FLOOD MAP
 (ISLAND BEACH STATE PARK
 SUBMARINE TO LAND CABLE
 TRANSITION)

CHECKED BY: ENS DRAWN BY: ENS

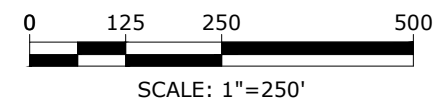
SCALE: 1" = 250'

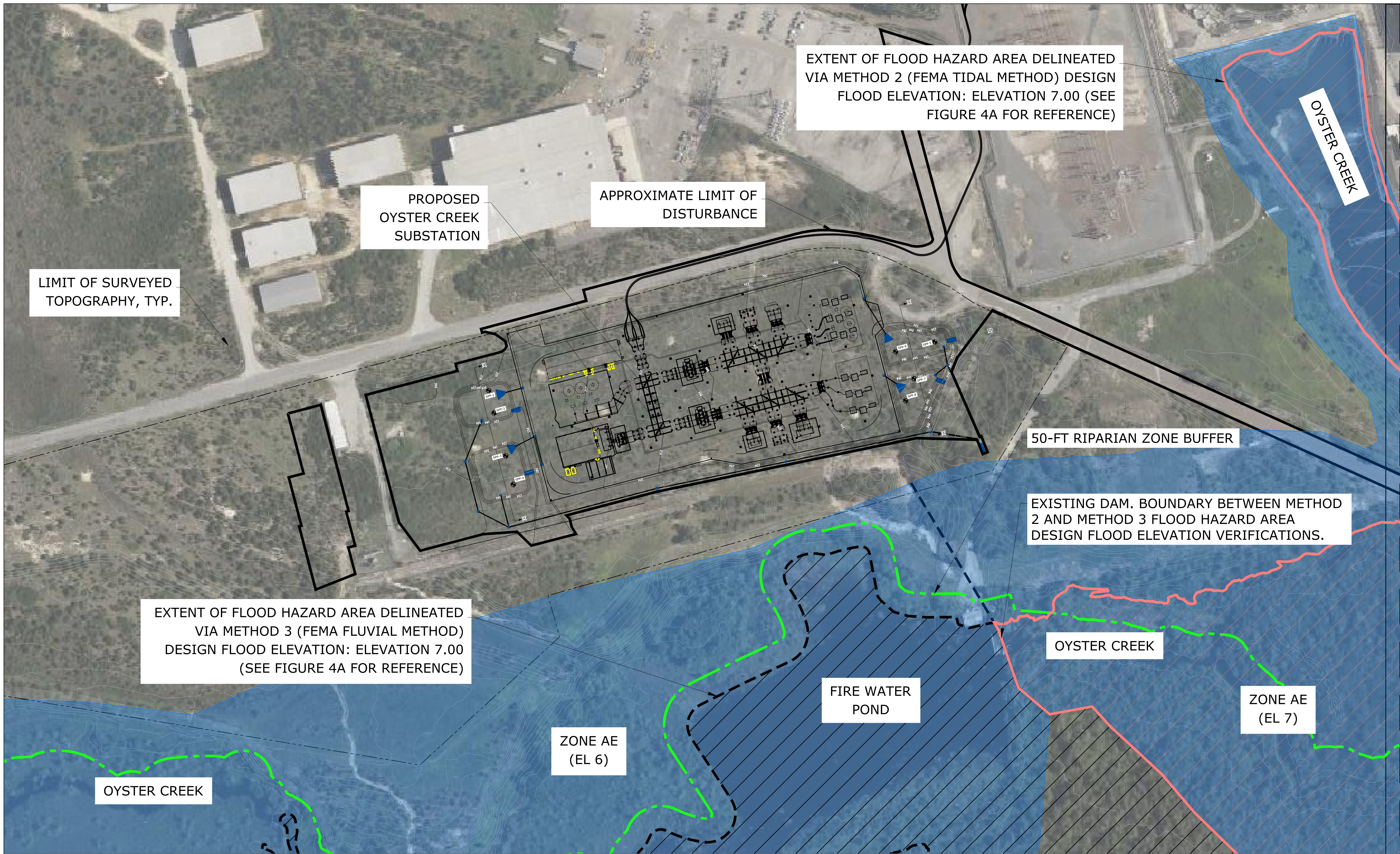
PROJECT #: P-21-58-01 FIRST ISSUE: 01/13/2022

DRAWING NO.

FIG 4B

REFERENCES:
 THE BASE MAP SHOWN HEREIN IS FROM PRELIMINARY FLOOD INSURANCE RATE MAP NUMBER 34029C0427G DATED MARCH 28, 2014. THE PRELIMINARY MAPS ARE SHOWN HEREIN AS THEY SHOW HIGHER BASE FLOOD ELEVATIONS THAN THE RESPECTIVE EFFECTIVE MAPS.





MATCH LINE SEE FIGURE 6

SCHEDULE OF REVISIONS

REV.	DATE	DESCRIPTION OF CHANGES	DRAWN BY	CHK. BY
1.	11/04/2022	ADDED RIPARIAN LINEWORK	ENS	KLH

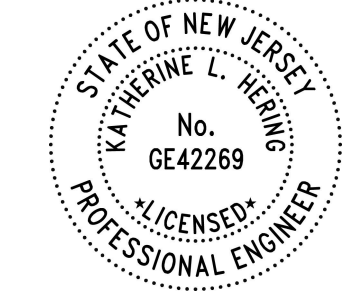
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KATHERINE L. HERING, P.E. N.J. NO. 24GE04226900
LICENSED PROFESSIONAL ENGINEER

OCEAN WIND OFFSHORE WIND
OYSTER CREEK ONSHORE SUBSTATION
AND ONSHORE CABLE ROUTE
LACEY TOWNSHIP, NEW JERSEY
BLOCK 100, LOTS 1.05 AND 1.06
BLOCK 1001, LOTS 4.02, 4.05, 4.06

DRAWING TITLE

FLOOD HAZARD AREA
DELINEATION PLAN

CHECKED BY: ENS DRAWN BY: ENS

SCALE: AS SHOWN SHEET NO:

PROJECT #: P-21-58-01 FIRST ISSUE: 01/13/2022

DRAWING NO.

FIG 5

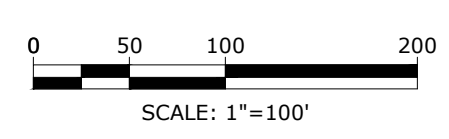
LEGEND	
	LIMIT OF DISTURBANCE
	CHANGE IN BASE FLOOD ELEVATION
	LIMIT OF MODERATE WAVE ACTION
	RIPARIAN ZONE LIMIT (SEE REFERENCE NOTE 3)
	LIMIT OF SURVEY TOPOGRAPHY
	EXISTING CONTOUR
	FLOOD HAZARD AREA (DETERMINE VIA METHOD 2)
	FLOOD HAZARD AREA (DETERMINE VIA METHOD 3 AND PER NJDEP EMERGENCY FLOOD HAZARD RULES)
	APPROXIMATE EXTENT OF ZONE 'AE' BASE FLOOD ELEVATIONS DETERMINED PER FEMA MAPPING SEE FIGURE 4A

REFERENCES:

1. THE FLOOD HAZARD AREA DESIGN FLOOD ELEVATIONS DETERMINED VIA METHOD 2 FEMA TIDAL METHOD SHOWN HEREIN WERE DETERMINED FROM PRELIMINARY FLOOD INSURANCE RATE MAP NUMBER 34029C0412G, DATED MARCH 28, 2014. THE PRELIMINARY MAPS ARE SHOWN HEREIN AS THEY SHOW HIGHER BASE FLOOD ELEVATIONS THAN THE RESPECTIVE EFFECTIVE MAPS.
2. THE DELINEATED FLOOD HAZARD AREA IS LOCATED ENTIRELY OUTSIDE THE LIMITS OF BLOCK 1001, LOT 4.05. AS SUCH, NO METES AND BOUNDS DESCRIPTION IS REQUIRED.
3. ACCORDING TO NJDEP'S SURFACE QUALITY STANDARDS (N.J.A.C. 7:9B, ADOPTED AMENDMENTS N.J.A.C. 7:9B-1.15), THE OYSTER CREEK IS CLASSIFIED AS FW2-N7/SE1. IT IS NOT UTILIZED FOR TROUT PRODUCTION OR MAINTENANCE. AS SUCH, THE OYSTER CREEK HAS A 50-FT-WIDE RIPARIAN ZONE. AS THE PROPOSED OYSTER CREEK SUBSTATION IS LOCATED BEYOND 50 FEET FROM THE TOP OF BANK FROM THE OYSTER CREEK, THERE IS NO RIPARIAN ZONE ENCROACHING ONTO THE SUBSTATION PROPERTY.
4. OYSTER CREEK SUBSTATION ONSHORE SUBSTATION GENERAL ARRANGEMENT PLAN PREPARED BY BURNS AND MCDONNELL.

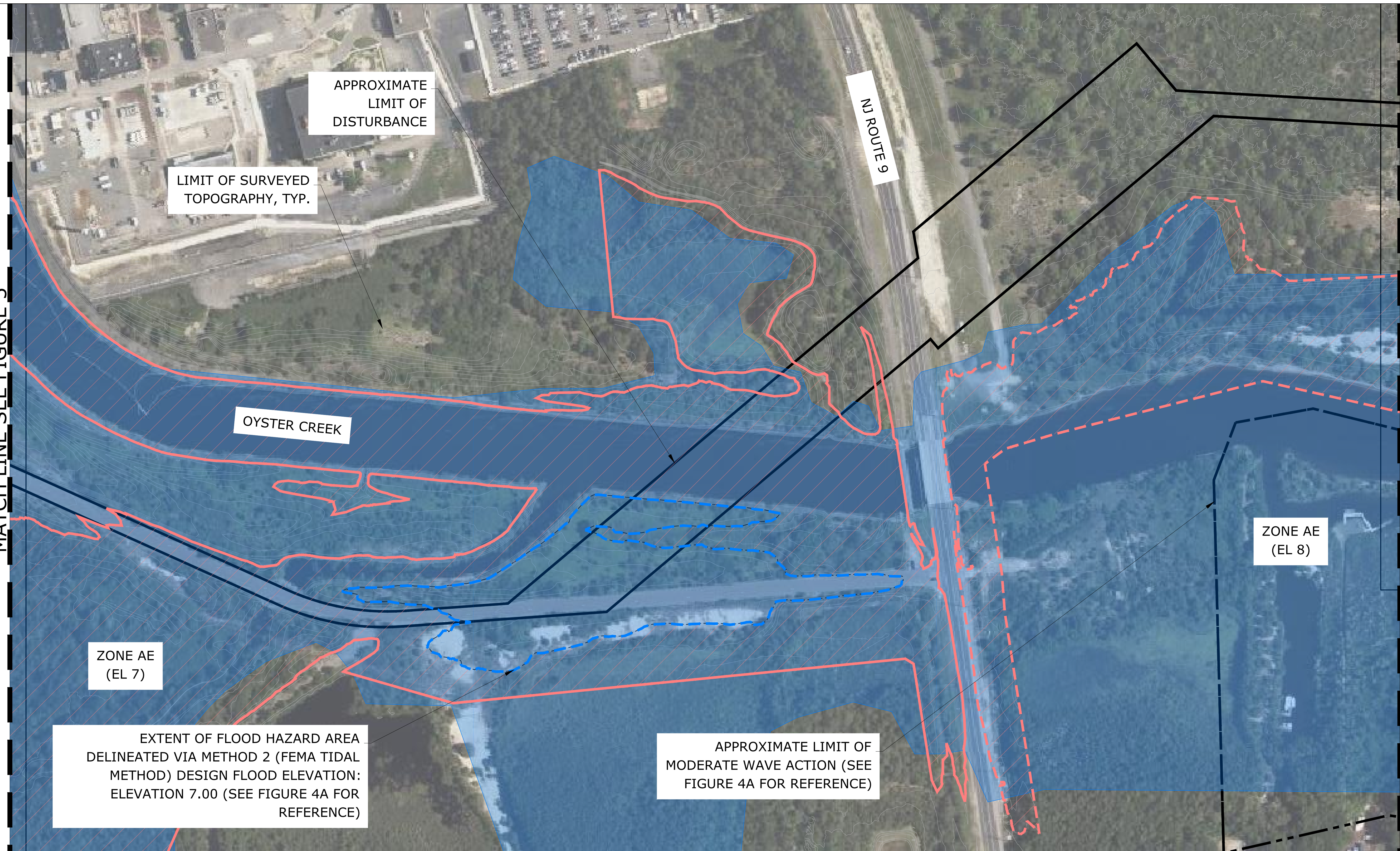
SURVEY REFERENCES:

1. TOPOGRAPHIC DATA FOR THE OYSTER CREEK SUBSTATION AREA AND CABLE ROUTE ALIGNMENT WAS OBTAINED FROM A MAP ENTITLED "OFFSHORE WIND, OYSTER CREEK - FARMLAND ROUTE, EXISTING CONDITIONS," PREPARED BY PSEG SERVICES CORPORATION, SURVEYS & MAPPING, 80 PARK PLAZA, TSB, NEWARK, N.J. 07102, AND DATED SEPTEMBER 30, 2021 AND REVISED ON JANUARY 7, 2022.
2. TOPOGRAPHIC DATA FOR THE OYSTER CREEK SUBSTATION AREA AND CABLE ROUTE ALIGNMENT WAS OBTAINED FROM AERIAL TOPOGRAPHY PREPARED BY ROBINSON AERIAL SURVEYS INC., 1 EDGEVIEW DRIVE, HACKETTSTOWN, N.J. 07840 FROM 5.0 CM GROUND SAMPLING DISTANCE IMAGERY CAPTURED ON JUNE 18, 2021.
3. TOPOGRAPHIC DATA FOR ISLAND BEACH STATE PARK AREA WAS OBTAINED FROM A MAP ENTITLED "PUBLIC SERVICE ELECTRIC & GAS CO., PRJ 19048 OFFSHORE WIND PROJECT, ISLAND BEACH STATE PARK, BERKLEY TOWNSHIP, OCEAN COUNTY, GREEN ACRES SURVEY" PREPARED BY FRALINGER ENGINEERING, 629 SHILOH PIKE, BRIDGETON, N.J. 08302 AND DATED SEPTEMBER 30, 2021 AND REVISED ON JANUARY 7, 2022.
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MATCH LINE SEE FIGURE 5

MATCH LINE SEE FIGURE 7



SCHEDULE OF REVISIONS				
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 LICENSED PROFESSIONAL ENGINEER

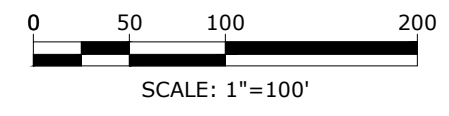
OCEAN WIND OFFSHORE WIND
 OYSTER CREEK ONSHORE SUBSTATION
 AND ONSHORE CABLE ROUTE
 LACEY TOWNSHIP, NEW JERSEY
 BLOCK 100, LOTS 1.05 AND 1.06
 BLOCK 1001, LOTS 4.02, 4.05, 4.06

- REFERENCES:
1. THE FLOOD HAZARD AREA DESIGN FLOOD ELEVATIONS DETERMINED VIA METHOD 2 FEMA TIDAL METHOD SHOWN HEREIN WERE DETERMINED FROM PRELIMINARY FLOOD INSURANCE RATE MAP NUMBER 34029C04040 AND 34029C0412G DATED MARCH 28, 2014. THE PRELIMINARY MAPS ARE SHOWN HEREIN AS THEY SHOW HIGHER BASE FLOOD ELEVATIONS THAN THE RESPECTIVE EFFECTIVE MAPS. NO VERIFICATION IS REQUIRED FOR THE WORK OUTSIDE OF BLOCK 1001, LOT 4.05 IN ACCORDANCE WITH N.J.C. 7-13-5.5(b)1 AS THE PROPOSED IMPROVEMENTS CONSIST OF SUBSURFACE UTILITIES THAT WILL NOT RESULT IN ANY CHANGES TO THE EXISTING TOPOGRAPHY.
 2. OYSTER CREEK SUBSTATION ONSHORE SUBSTATION GENERAL ARRANGEMENT PLAN PREPARED BY BURNS AND MCDONNELL.

- SURVEY REFERENCES:
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 3. TOPOGRAPHIC DATA FOR ISLAND BEACH STATE PARK AREA WAS OBTAINED FROM A MAP ENTITLED "PUBLIC SERVICE ELECTRIC & GAS CO. PRJ 16048 OFFSHORE WIND PROJECT, ISLAND BEACH STATE PARK, BERKLEY TOWNSHIP, OCEAN COUNTY, GREEN ACRES SURVEY" PREPARED BY FRALINGER ENGINEERING, 629 SHILOH PIKE, BRIDGETON, N.J. 08302 AND DATED SEPTEMBER 30, 2021 AND REVISED ON JANUARY 7, 2022.
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LEGEND

- SOLID BLACK LINE: LIMIT OF DISTURBANCE
- DASHED BLACK LINE: CHANGE IN BASE FLOOD ELEVATION
- DOTTED BLACK LINE: LIMIT OF MODERATE WAVE ACTION
- SOLID BLACK LINE: LIMIT OF SURVEY TOPOGRAPHY
- SOLID BLACK LINE: EXISTING CONTOUR
- RED HATCHED AREA: FLOOD HAZARD AREA (DETERMINE VIA METHOD 2)
- BLUE HATCHED AREA: FLOOD HAZARD AREA (DETERMINE VIA METHOD 3)
- SOLID BLUE AREA: APPROXIMATE EXTENT OF ZONE 'AE' BASE FLOOD ELEVATIONS DETERMINED PER FEMA MAPPING SEE FIGURE 4A



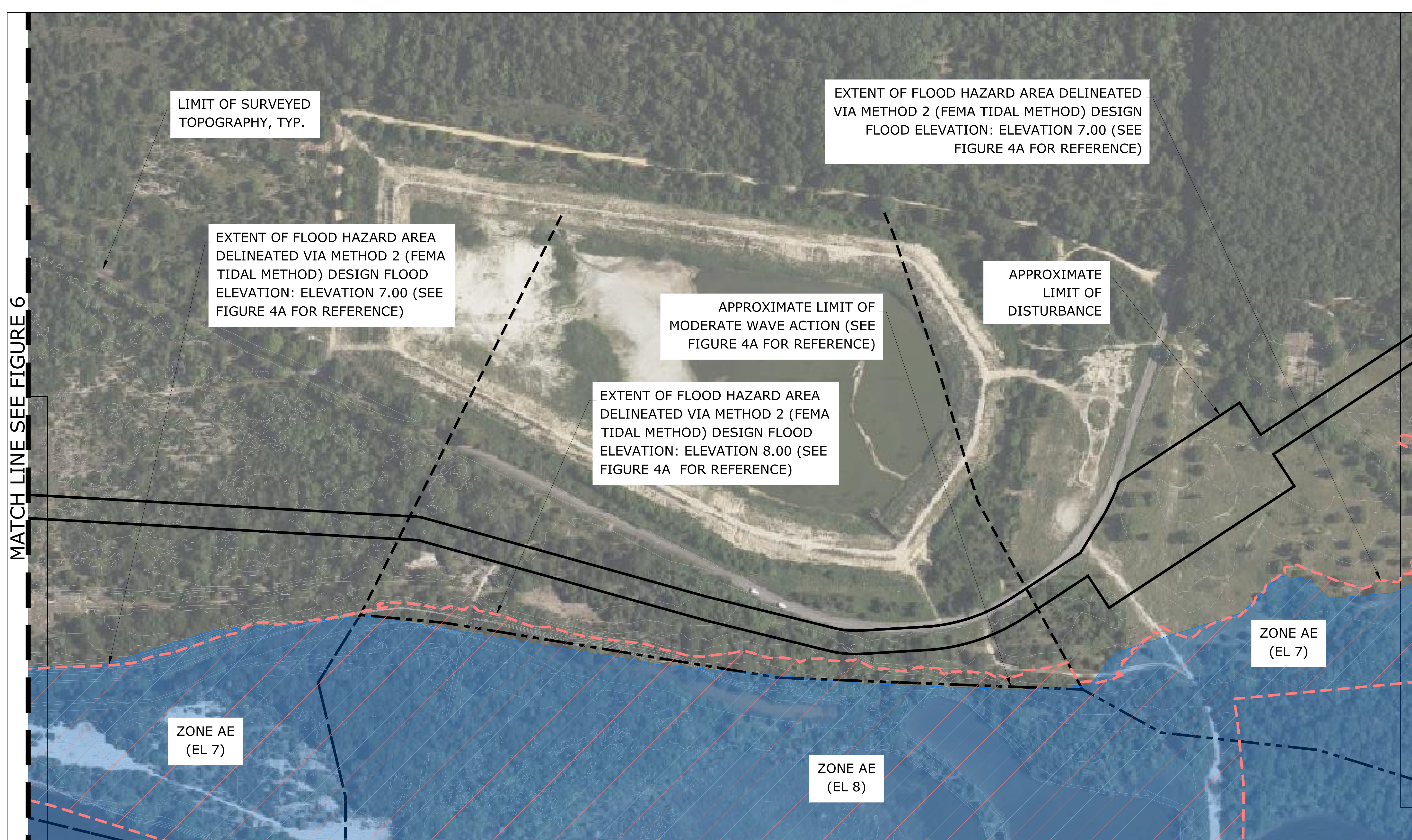
DRAWING TITLE
**FLOOD HAZARD AREA
 DELINEATION PLAN**

CHECKED BY: ENS	DRAWN BY: ENS
SCALE: AS SHOWN	SHEET NO:
PROJECT #: P-21-58-01	FIRST ISSUE: 01/13/2022

DRAWING NO.
FIG 6

MATCH LINE SEE FIGURE 6

MATCH LINE SEE FIGURE 8

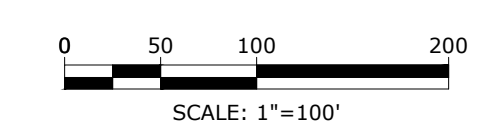


LEGEND	
	LIMIT OF DISTURBANCE
	CHANGE IN BASE FLOOD ELEVATION
	LIMIT OF MODERATE WAVE ACTION
	LIMIT OF SURVEY TOPOGRAPHY
	EXISTING CONTOUR
	FLOOD HAZARD AREA (DETERMINE VIA METHOD 2)
	FLOOD HAZARD AREA (DETERMINE VIA METHOD 3)
	APPROXIMATE EXTENT OF ZONE 'AE' BASE FLOOD ELEVATIONS DETERMINED PER FEMA MAPPING SEE FIGURE 4A

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REFERENCES:

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2. OYSTER CREEK SUBSTATION ONSHORE SUBSTATION GENERAL ARRANGEMENT PLAN PREPARED BY BURNS AND MCDONNELL.



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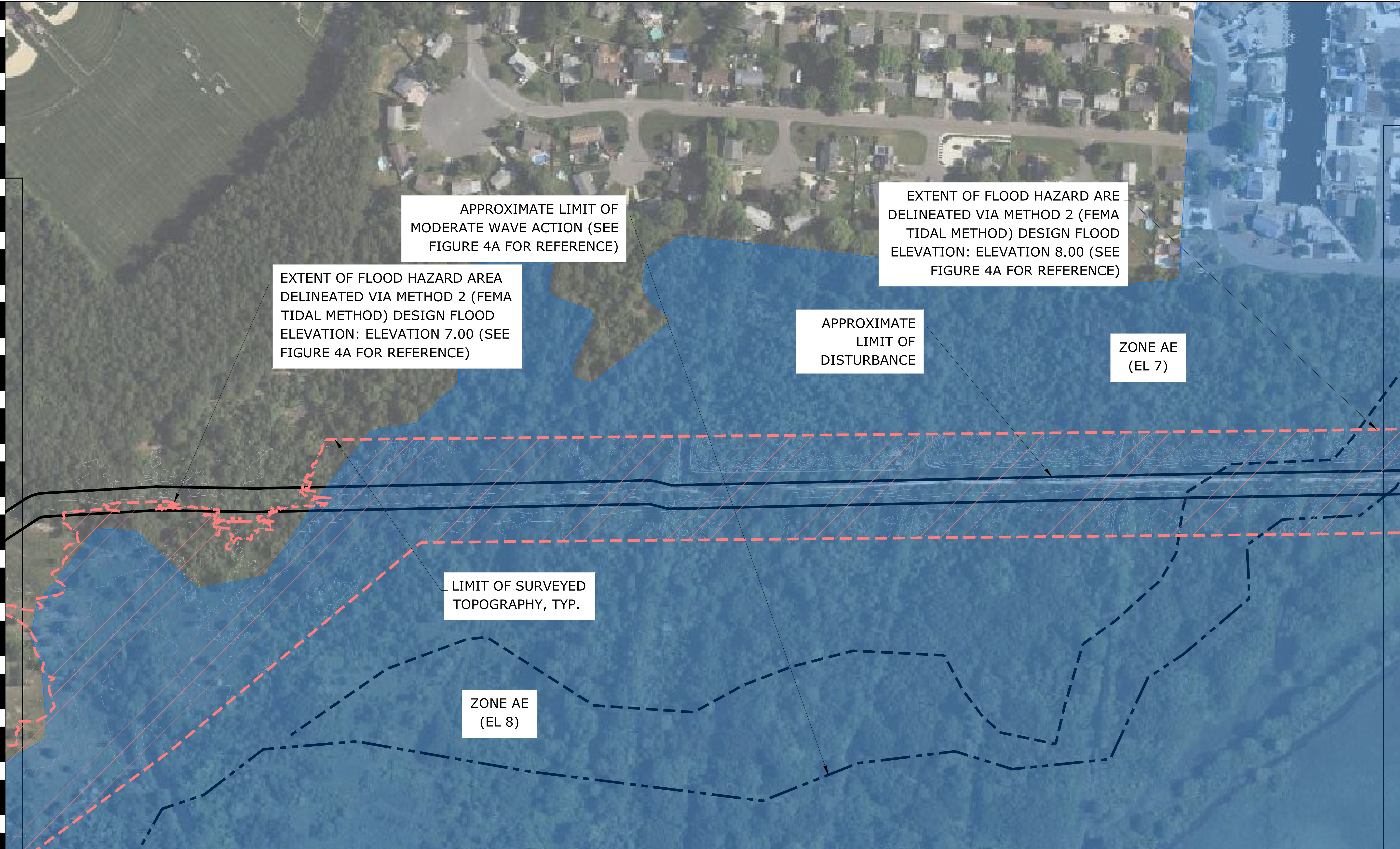
KATHERINE L. HERING, P.E. N.J. NO. 24GE04226900
 LICENSED PROFESSIONAL ENGINEER

OCEAN WIND OFFSHORE WIND OYSTER CREEK ONSHORE SUBSTATION AND ONSHORE CABLE ROUTE LACEY TOWNSHIP, NEW JERSEY BLOCK 100, LOTS 1.05 AND 1.06 BLOCK 1001, LOTS 4.02, 4.05, 4.06

DRAWING TITLE	
FLOOD HAZARD AREA DELINEATION PLAN	
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PROJECT #: P-21-58-01	FIRST ISSUE: 01/13/2022
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FIG 7	

MATCH LINE SEE FIGURE 7

MATCH LINE SEE FIGURE 9



APPROXIMATE LIMIT OF MODERATE WAVE ACTION (SEE FIGURE 4A FOR REFERENCE)

EXTENT OF FLOOD HAZARD ARE DELINEATED VIA METHOD 2 (FEMA TIDAL METHOD) DESIGN FLOOD ELEVATION: ELEVATION 8.00 (SEE FIGURE 4A FOR REFERENCE)

EXTENT OF FLOOD HAZARD AREA DELINEATED VIA METHOD 2 (FEMA TIDAL METHOD) DESIGN FLOOD ELEVATION: ELEVATION 7.00 (SEE FIGURE 4A FOR REFERENCE)

APPROXIMATE LIMIT OF DISTURBANCE

ZONE AE (EL 7)

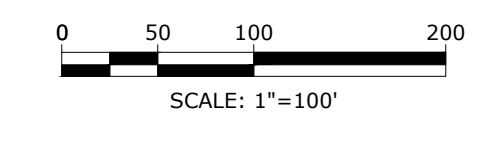
LIMIT OF SURVEYED TOPOGRAPHY, TYP.

ZONE AE (EL 8)

LEGEND	
	LIMIT OF DISTURBANCE
	CHANGE IN BASE FLOOD ELEVATION
	LIMIT OF MODERATE WAVE ACTION
	LIMIT OF SURVEY TOPOGRAPHY
	EXISTING CONTOUR
	FLOOD HAZARD AREA (DETERMINE VIA METHOD 2)
	FLOOD HAZARD AREA (DETERMINE VIA METHOD 3)
	APPROXIMATE EXTENT OF ZONE 'AE' BASE FLOOD ELEVATIONS DETERMINED PER FEMA MAPPING SEE FIGURE 4A

- SURVEY REFERENCES:**
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- REFERENCES:**
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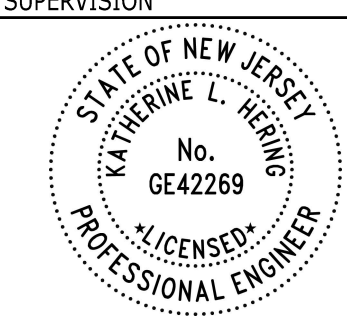
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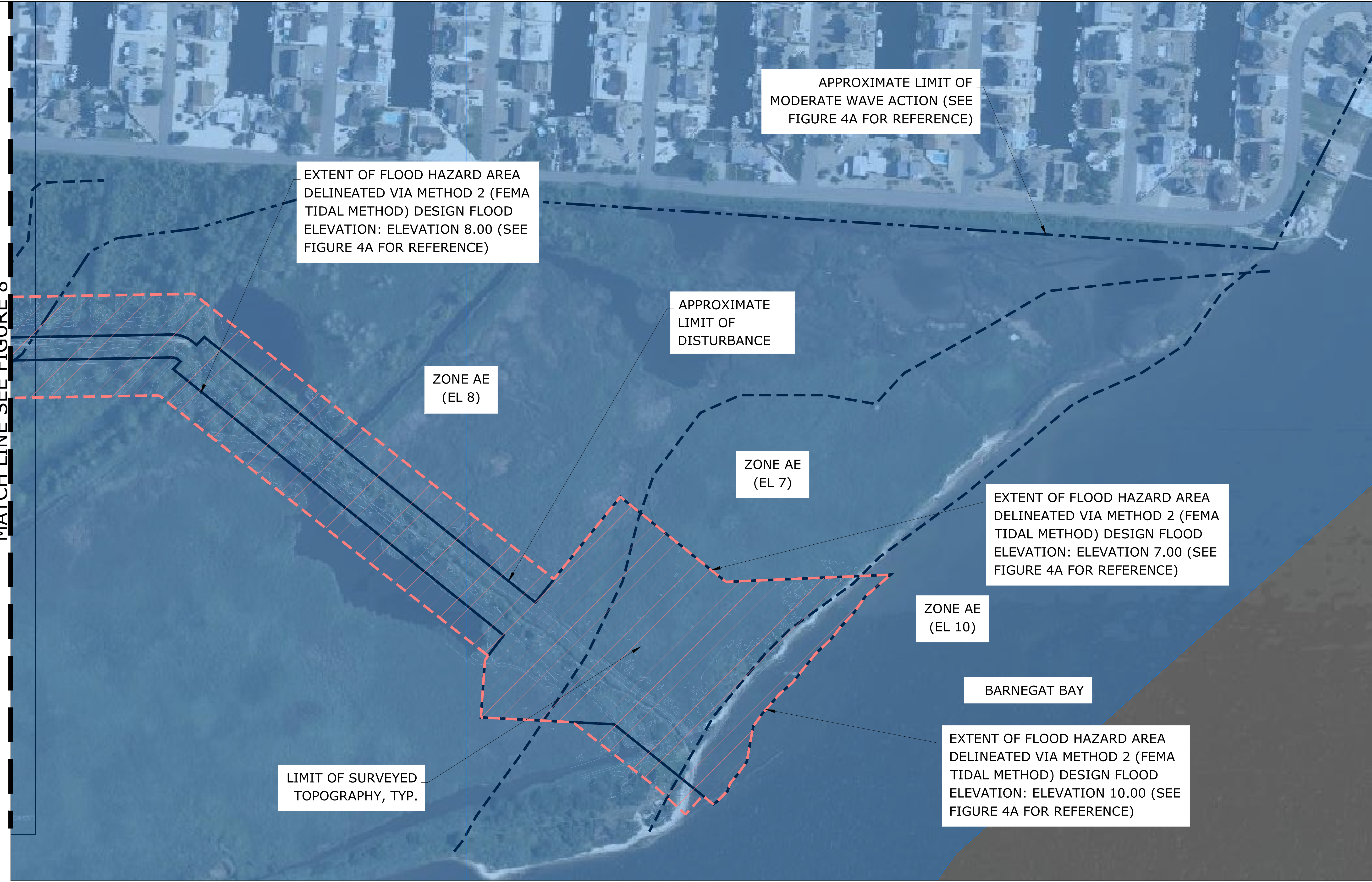
OCEAN WIND OFFSHORE WIND
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 AND ONSHORE CABLE ROUTE
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 BLOCK 100, LOTS 1.05 AND 1.06
 BLOCK 1001, LOTS 4.02, 4.05, 4.06

DRAWING TITLE
**FLOOD HAZARD AREA
 DELINEATION PLAN**

CHECKED BY: ENS	DRAWN BY: ENS
SCALE: AS SHOWN	SHEET NO:
PROJECT #: P-21-58-01	FIRST ISSUE: 01/13/2022

DRAWING NO.
FIG 8

MATCH LINE SEE FIGURE 8



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E 2 PROJECT MANAGEMENT LLC
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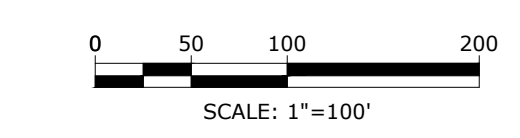
I CERTIFY THAT THESE PLANS HAVE BEEN PREPARED UNDER MY SUPERVISION

KATHERINE L. HERING, P.E. N.J. NO. 24GE04226900
 LICENSED PROFESSIONAL ENGINEER

OCEAN WIND OFFSHORE WIND OYSTER CREEK ONSHORE SUBSTATION AND ONSHORE CABLE ROUTE LACEY TOWNSHIP, NEW JERSEY BLOCK 100, LOTS 1.05 AND 1.06 BLOCK 1001, LOTS 4.02, 4.05, 4.06

LEGEND	
	LIMIT OF DISTURBANCE
	CHANGE IN BASE FLOOD ELEVATION
	LIMIT OF MODERATE WAVE ACTION
	LIMIT OF SURVEY TOPOGRAPHY
	EXISTING CONTOUR
	FLOOD HAZARD AREA (DETERMINE VIA METHOD 2)
	FLOOD HAZARD AREA (DETERMINE VIA METHOD 3)
	APPROXIMATE EXTENT OF ZONE 'AE' BASE FLOOD ELEVATIONS DETERMINED PER FEMA MAPPING SEE FIGURE 4A

- REFERENCES:**
- THE FLOOD HAZARD AREA DESIGN FLOOD ELEVATIONS DETERMINED VIA METHOD 2 FEMA TIDAL METHOD SHOWN HEREIN WERE DETERMINED FROM PRELIMINARY FLOOD INSURANCE RATE MAP NUMBER 34029C0404G DATED MARCH 28, 2014 AND 34029C0416G DATED JANUARY 30, 2015. THE PRELIMINARY MAPS ARE SHOWN HEREIN AS THEY SHOW HIGHER BASE FLOOD ELEVATIONS THAN THE RESPECTIVE EFFECTIVE MAPS. NO VERIFICATION IS REQUIRED FOR THE WORK OUTSIDE OF BLOCK 1001, LOT 4.05 IN ACCORDANCE WITH N.J.A.C. 7:13-5.5(B)1 AS THE PROPOSED IMPROVEMENTS CONSIST OF SUBSURFACE UTILITIES THAT WILL NOT RESULT IN ANY CHANGES TO THE EXISTING TOPOGRAPHY.
 - OYSTER CREEK SUBSTATION ONSHORE SUBSTATION GENERAL ARRANGEMENT PLAN PREPARED BY BURNS AND MCDONNELL.
- SURVEY REFERENCES:**
- TOPOGRAPHIC DATA FOR THE OYSTER CREEK SUBSTATION AREA AND CABLE ROUTE ALIGNMENT WAS OBTAINED FROM A MAP ENTITLED "OFFSHORE WIND, OYSTER CREEK - FARMLAND ROUTE, EXISTING CONDITIONS" PREPARED BY PSEG SERVICES CORPORATION, SURVEYS & MAPPING, 80 PARK PLAZA, T88, NEWARK, N.J. 07102, AND DATED SEPTEMBER 30, 2021 AND REVISED ON JANUARY 7, 2022.
 - TOPOGRAPHIC DATA FOR THE OYSTER CREEK SUBSTATION AREA AND CABLE ROUTE ALIGNMENT WAS OBTAINED FROM AERIAL TOPOGRAPHY PREPARED BY ROBINSON AERIAL SURVEYS INC., 1 EDGEVIEW DRIVE, HACKETTSTOWN, N.J. 07840 FROM 5.0 CM GROUND SAMPLING DISTANCE IMAGERY CAPTURED ON JUNE 18, 2021.
 - TOPOGRAPHIC DATA FOR ISLAND BEACH STATE PARK AREA WAS OBTAINED FROM A MAP ENTITLED "PUBLIC SERVICE ELECTRIC & GAS CO., PJ1 19048 OFFSHORE WIND PROJECT, ISLAND BEACH STATE PARK, BERKLEY TOWNSHIP, OCEAN COUNTY, GREEN ACRES SURVEY" PREPARED BY FRALINGER ENGINEERING, 629 SHILOH PIKE, BRIDGETON, N.J. 08302 AND DATED SEPTEMBER 30, 2021 AND REVISED ON JANUARY 7, 2022.
 - TOPOGRAPHIC DATA FOR ISLAND BEACH STATE PARK AREA WAS OBTAINED FROM AERIAL TOPOGRAPHY PREPARED BY ROBINSON AERIAL SURVEYS INC., 1 EDGEVIEW DRIVE, HACKETTSTOWN, N.J. 07840 FROM 5.0 CM GROUND SAMPLING DISTANCE IMAGERY CAPTURED ON JUNE 30, 2021.



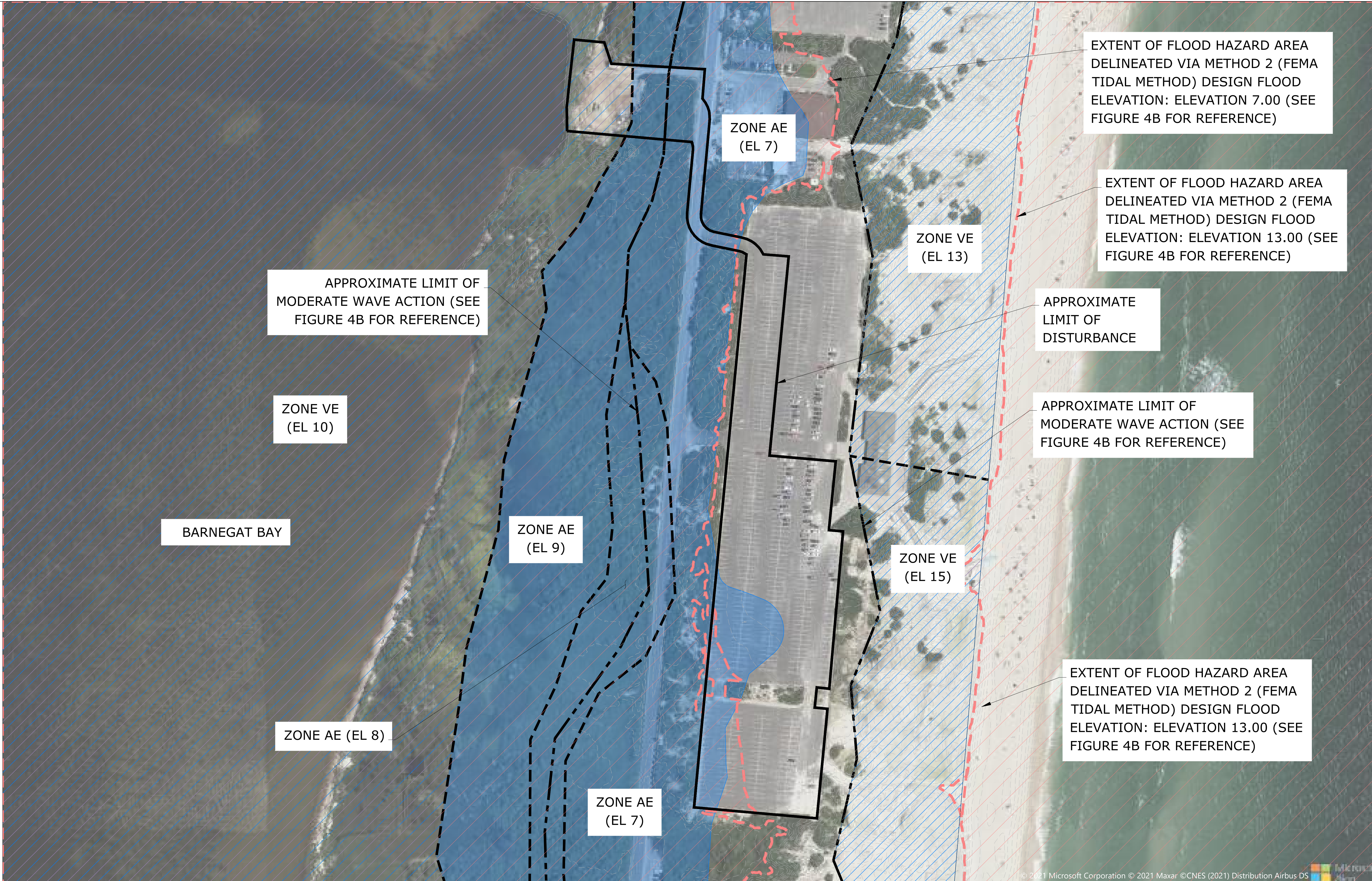
DRAWING TITLE

FLOOD HAZARD AREA DELINEATION PLAN

CHECKED BY: ENS	DRAWN BY: ENS
SCALE: AS SHOWN	SHEET NO:
PROJECT #: P-21-58-01	FIRST ISSUE: 01/13/2022

DRAWING NO.

FIG 9



SCHEDULE OF REVISIONS				
REV.	DATE	DESCRIPTION OF CHANGES	DRAWN BY	CHK BY

THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THEREBY APPLICABLE. THIS DRAWING AND THE DESIGN THEREOF OR CONSTRUCTION CONDITIONS ARE HEREBY SET TO THE PROJECT MANAGER, LLC AND SHALL NOT BE REPRODUCED, ALTERED OR COPIED WITHOUT WRITTEN PERMISSION. SHALL NOT BE USED IN ANY MANNER DEVIANT FROM ITS INTENT AND SHALL BE RETURNED UPON REQUEST.

I CERTIFY THAT THESE PLANS HAVE BEEN PREPARED UNDER MY SUPERVISION

E 2 PROJECT MANAGEMENT LLC
 87 HIBERNIA AVENUE
 ROCKAWAY, N.J. 07866
 PHONE: (973) 299-5200
 FAX: (973) 299-9059
 www.E2PM.com

KATHERINE L. HERING, P.E. N.J. NO. 24GE04226900
 LICENSED PROFESSIONAL ENGINEER

OCEAN WIND OFFSHORE WIND
 OYSTER CREEK ONSHORE SUBSTATION
 AND ONSHORE CABLE ROUTE
 LACEY TOWNSHIP, NEW JERSEY
 BLOCK 100, LOTS 1.05 AND 1.06
 BLOCK 1001, LOTS 4.02, 4.05, 4.06

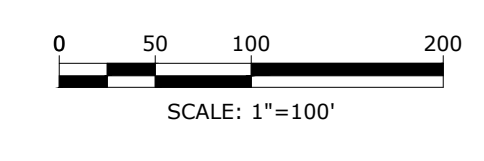
LEGEND	
	LIMIT OF DISTURBANCE
	CHANGE IN BASE FLOOD ELEVATION
	LIMIT OF MODERATE WAVE ACTION
	LIMIT OF SURVEY TOPOGRAPHY
	EXISTING CONTOUR
	FLOOD HAZARD AREA (DETERMINE VIA METHOD 2)
	FLOOD HAZARD AREA (DETERMINE VIA METHOD 3)
	APPROXIMATE EXTENT OF ZONE 'AE' BASE FLOOD ELEVATIONS DETERMINED PER FEMA MAPPING SEE FIGURE 4B
	APPROXIMATE EXTENT OF ZONE 'VE' COASTAL FLOOD ZONE WITH VELOCITY HAZARD (WAVE ACTION) BASE FLOOD ELEVATIONS DETERMINED PER FEMA MAPPING SEE FIGURE 4B

SURVEY REFERENCES:

- TOPOGRAPHIC DATA FOR THE OYSTER CREEK SUBSTATION AREA AND CABLE ROUTE ALIGNMENT WAS OBTAINED FROM A MAP ENTITLED "OFFSHORE WIND, OYSTER CREEK - FARMLAND ROUTE, EXISTING CONDITIONS," PREPARED BY PSEG SERVICES CORPORATION, SURVEYS & MAPPING, 80 PARK PLAZA, T6B, NEWARK, N.J. 07102, AND DATED SEPTEMBER 30, 2021 AND REVISED ON JANUARY 7, 2022.
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- TOPOGRAPHIC DATA FOR ISLAND BEACH STATE PARK AREA WAS OBTAINED FROM A MAP ENTITLED "PUBLIC SERVICE ELECTRIC & GAS CO., PRJ 19048 OFFSHORE WIND PROJECT, ISLAND BEACH STATE PARK, BERKLEY TOWNSHIP, OCEAN COUNTY, GREEN ACRES SURVEY" PREPARED BY FRALINGER ENGINEERING, 629 SHILOH PIKE, BRIDGETON, N.J. 08302 AND DATED SEPTEMBER 30, 2021 AND REVISED ON JANUARY 7, 2022.
- TOPOGRAPHIC DATA FOR ISLAND BEACH STATE PARK AREA WAS OBTAINED FROM AERIAL TOPOGRAPHY PREPARED BY ROBINSON AERIAL SURVEYS, INC., 1 EDGEVIEW DRIVE, HACKETTSTOWN, N.J. 07840 FROM 5.0 CM GROUND SAMPLING DISTANCE IMAGERY CAPTURED ON JUNE 30, 2021.

REFERENCES:

- THE FLOOD HAZARD AREA DESIGN FLOOD ELEVATIONS DETERMINED VIA METHOD 2 FEMA TIDAL METHOD SHOWN HEREIN WERE DETERMINED FROM PRELIMINARY FLOOD INSURANCE RATE MAP NUMBER 34029C04270 DATED MARCH 28, 2014. THE PRELIMINARY MAPS ARE SHOWN HEREIN AS THEY SHOW HIGHER BASE FLOOD ELEVATIONS THAN THE RESPECTIVE EFFECTIVE MAPS. NO VERIFICATION IS REQUIRED FOR THE WORK OUTSIDE OF BLOCK 1001, LOT 4.05 IN ACCORDANCE WITH N.J.A.C. 7-13-5(B)1 AS THE PROPOSED IMPROVEMENTS CONSIST OF SUBSURFACE UTILITIES THAT WILL NOT RESULT IN ANY CHANGES TO THE EXISTING TOPOGRAPHY.
- OYSTER CREEK SUBSTATION ONSHORE SUBSTATION GENERAL ARRANGEMENT PLAN PREPARED BY BURNS AND MCDONNELL.



DRAWING TITLE

FLOOD HAZARD AREA DELINEATION PLAN

CHECKED BY: ENS	DRAWN BY: ENS
SCALE: AS SHOWN	SHEET NO:
PROJECT #: P-21-58-01	FIRST ISSUE: 01/13/2022

DRAWING NO.

FIG 10

APPENDIX A – FEMA FLOOD MAPS

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was New Jersey State Plane (FIPS Zone 2900). The **horizontal datum** was North America Datum 1983 (NAD 83), Geodetic Reference System 1980 (GRS 80) spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSM/C-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was derived from New Jersey Office of Information Technology (NJ-OIT), Office of Geographic Information Systems (OGIS). This information was derived from digital orthophotos produced at a scale of 1:2400 (1"=200') with a 1 foot pixel resolutions from photography dated 2012.

Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

The AE Zone category has been divided by a **Limit of Moderate Wave Action (LIMWA)**. The LIMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LIMWA (or between the shoreline and the LIMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

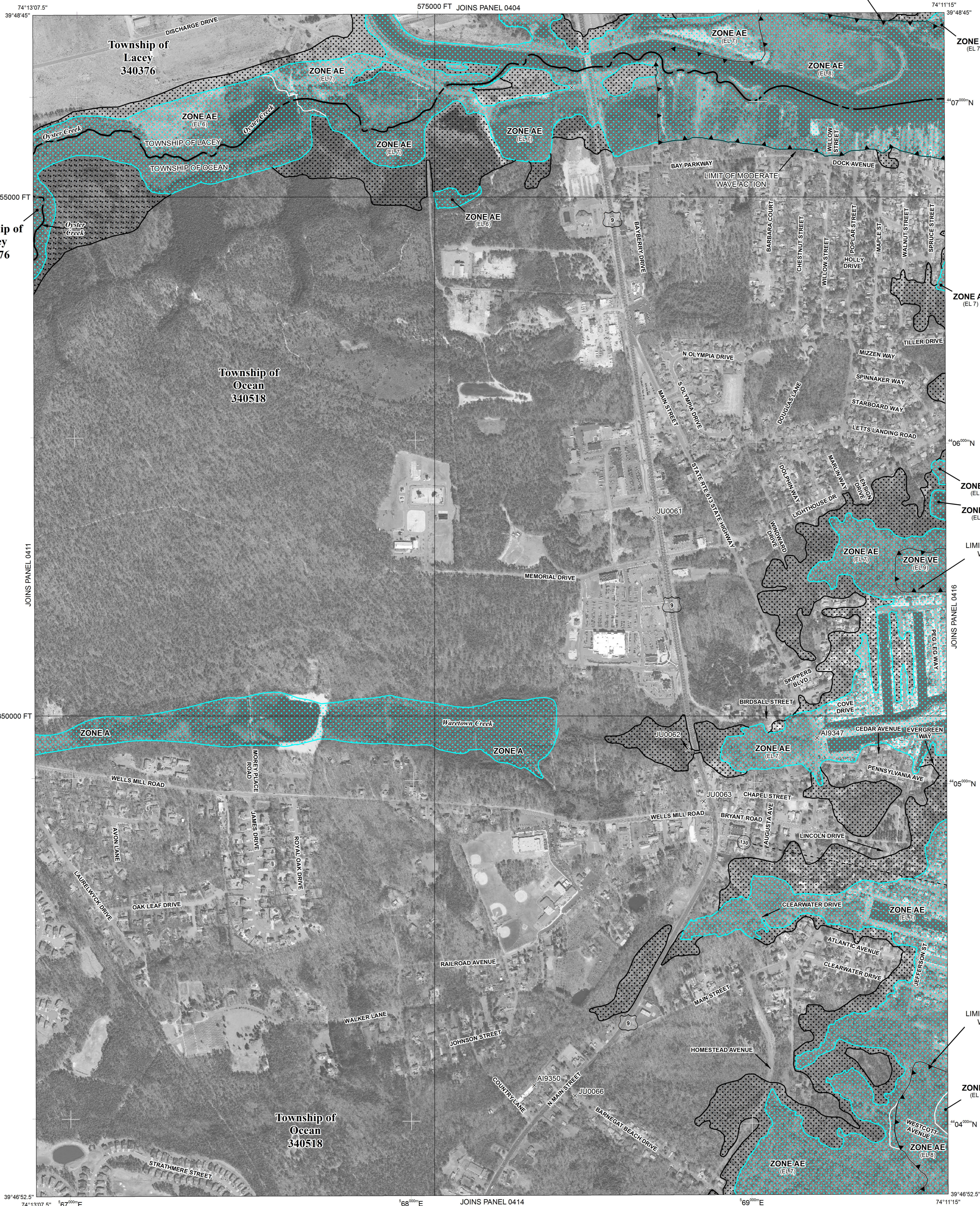
Contact the **FEMA Map Information eXchange** at 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Information eXchange may also be reached by Fax at 1-800-358-9620 and their website at <http://www.msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfp>.

Township of Lacey 340376

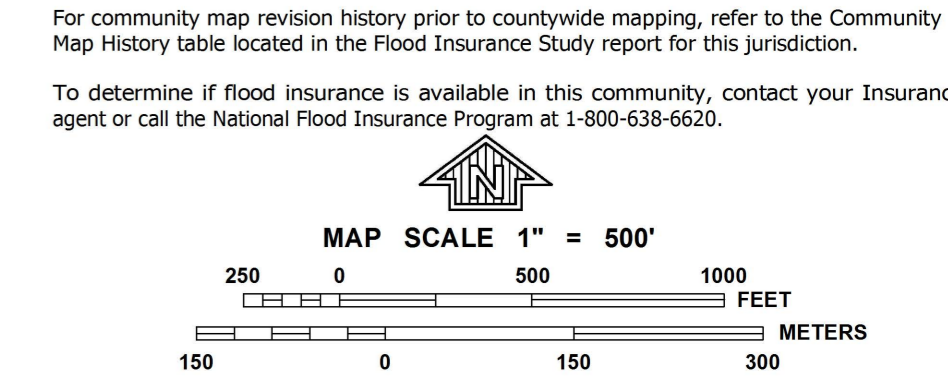
Township of Ocean 340518

Township of Ocean 340518



LEGEND

- SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD
- The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently identified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE
- The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS**
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS**
- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OPAs)**
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*
- * Referenced to the North American Vertical Datum of 1988
- Cross section line
- Transsect line
- Geographic coordinates: referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000-meter Universal Transverse Mercator grid values, zone 18Q
- 5000-foot grid values: New Jersey State Plane coordinate system (FIPSZONE 2900), Transverse Mercator projection
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile
- MAP REPOSITORY**
Refer to listing of Map Repositories on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP**
September 29, 2008
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL**



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0412G

FIRM

FLOOD INSURANCE RATE MAP

OCEAN COUNTY, NEW JERSEY (ALL JURISDICTIONS)

PANEL 412 OF 660

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LACEY, TOWNSHIP OF	340376	0412	G
OCEAN, TOWNSHIP OF	340518	0412	G

PRELIMINARY
MARCH 28, 2014

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
34029C0412G

MAP REVISED

Federal Emergency Management Agency

NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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The **projection** used in the preparation of this map was New Jersey State Plane (FIPS Zone 2900). The **horizontal datum** was North America Datum 1983 (NAD 83), Geodetic Reference System 1980 (GRS 80) spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NNGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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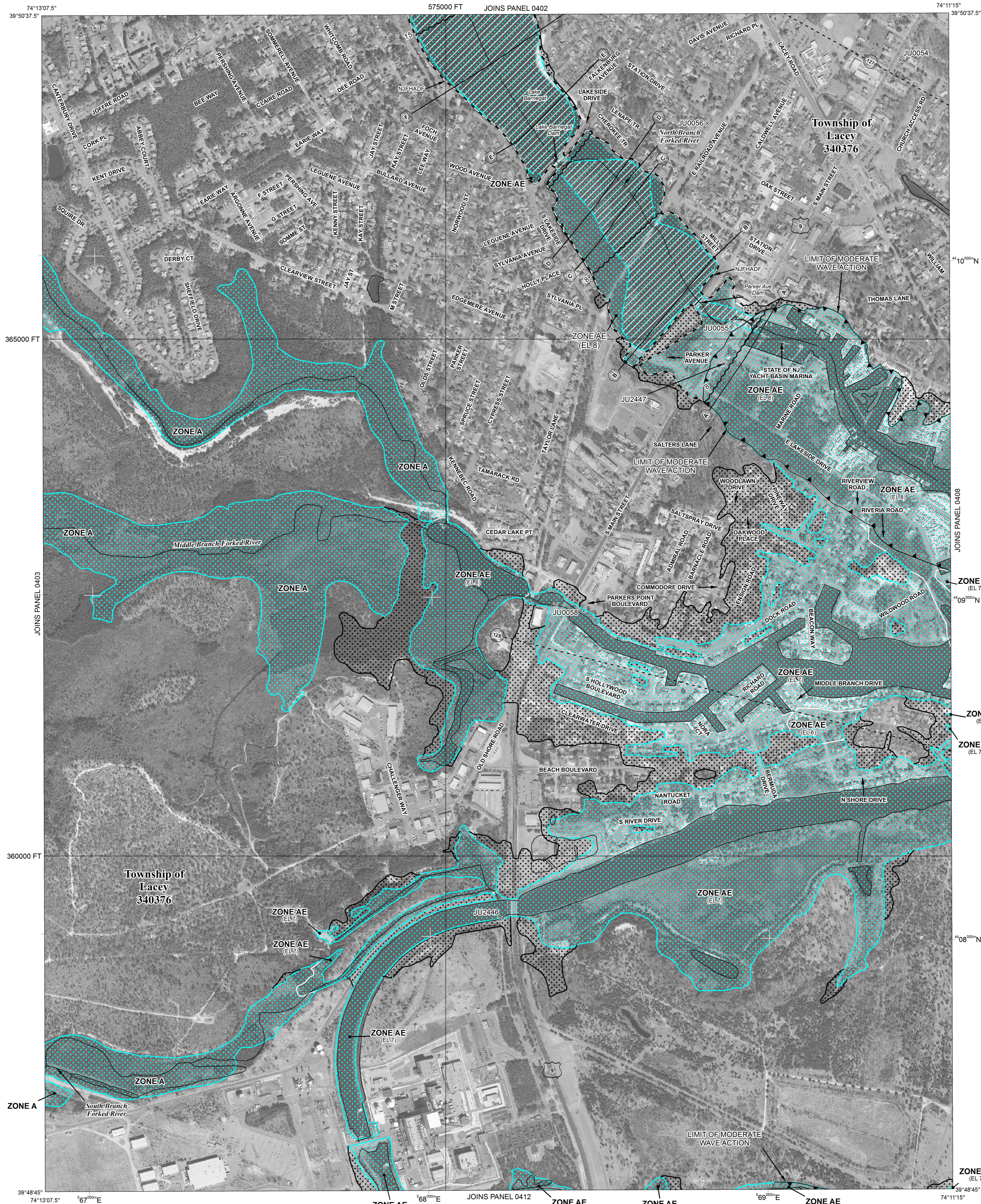
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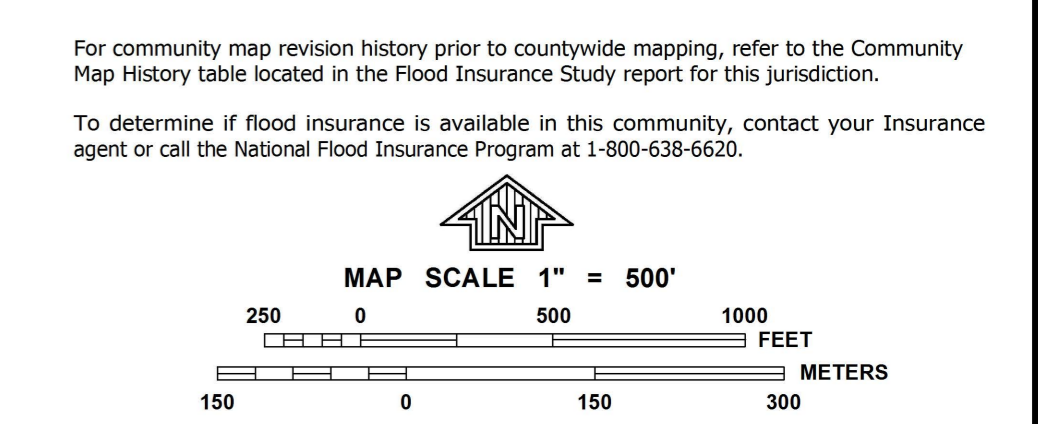
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfp>.

NJFHADF is equal to the 1-percent-annual chance flood plus an additional 25% in flow, and not to exceed the 0.2-percent-annual chance flood. NJFHADF boundary is to regulate disturbance to the land and vegetation within flood hazard area of a water body. This regulation is set forth by the State of New Jersey Flood Hazard Area Control Act Rules N.J.A.C. 7:13, and is administered by New Jersey Department of Environmental Protection (NJDEP).



LEGEND

- SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD
- The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
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- ZONE AE** Base Flood Elevations determined.
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- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE
- The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS**
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS**
- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OPAs)**
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% annual chance floodplain boundary
- New Jersey Flood Hazard Area Design Flood (NJFHADF)
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- Base Flood Elevation line and value; elevation in feet* (EL 987)
- Base Flood Elevation value where uniform within zone; elevation in feet*
- * Referenced to the North American Vertical Datum of 1988
- Cross section line
- Transverse line
- 87°07'45", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000-meter Universal Transverse Mercator grid values, zone 18N
- 5000-foot grid values: New Jersey State Plane coordinate system (FIPSZONE 2900), Transverse Mercator projection
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile
- MAP REPOSITORY**
- Refer to listing of Map Repositories on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP**
- September 29, 2008
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL**



PANEL 0404G

FIRM
FLOOD INSURANCE RATE MAP

**OCEAN COUNTY,
NEW JERSEY
(ALL JURISDICTIONS)**

PANEL 404 OF 660
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LACEY, TOWNSHIP OF	340376	0404	G

PRELIMINARY
MARCH 28, 2014

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
34029C0404G

MAP REVISED

Federal Emergency Management Agency

NOTES TO USERS

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSM/C-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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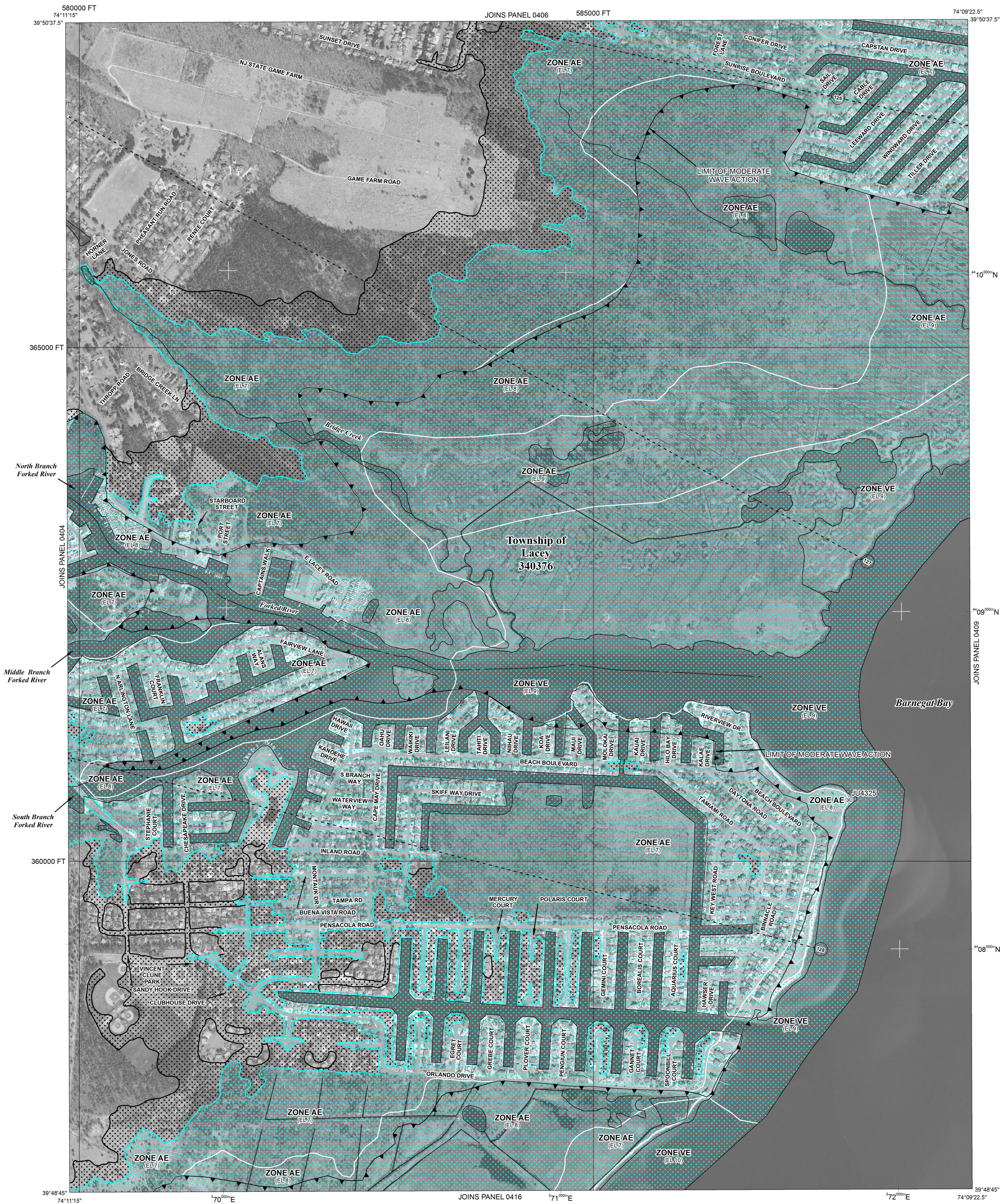
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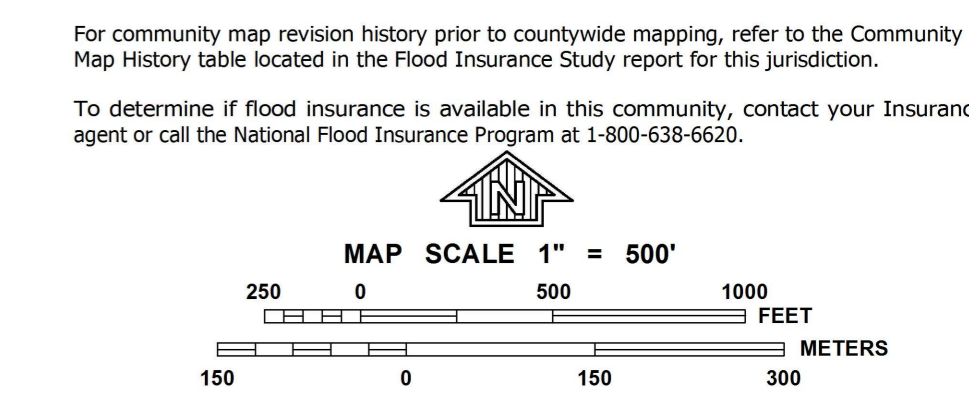
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LEGEND

- SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD
- The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
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- OTHER FLOOD AREAS**
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- OTHER AREAS**
- ZONE D** Areas determined to be outside the 0.2% annual chance floodplain. Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OPAs)**
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- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- 513 Base Flood Elevation line and value; elevation in feet* (EL 513)
- Base Flood Elevation value where uniform within zone; elevation in feet*
- * Referenced to the North American Vertical Datum of 1988
- Cross section line
- Transect line
- 87°07'45", 32°22'30" Geographic coordinates; referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 600000 FT 1000-meter Universal Transverse Mercator grid values, zone 18Q
- DX5510 x Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile
- MAP REPOSITORY Refer to listing of Map Repositories on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP September 29, 2008
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL



PANEL 0408G

FIRM
FLOOD INSURANCE RATE MAP

OCEAN COUNTY,
NEW JERSEY
(ALL JURISDICTIONS)

PANEL 408 OF 660
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LACEY, TOWNSHIP OF	340376	0408	G

PRELIMINARY
MARCH 28, 2014

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
34029C0408G

MAP REVISED

Federal Emergency Management Agency

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National Geodetic Survey
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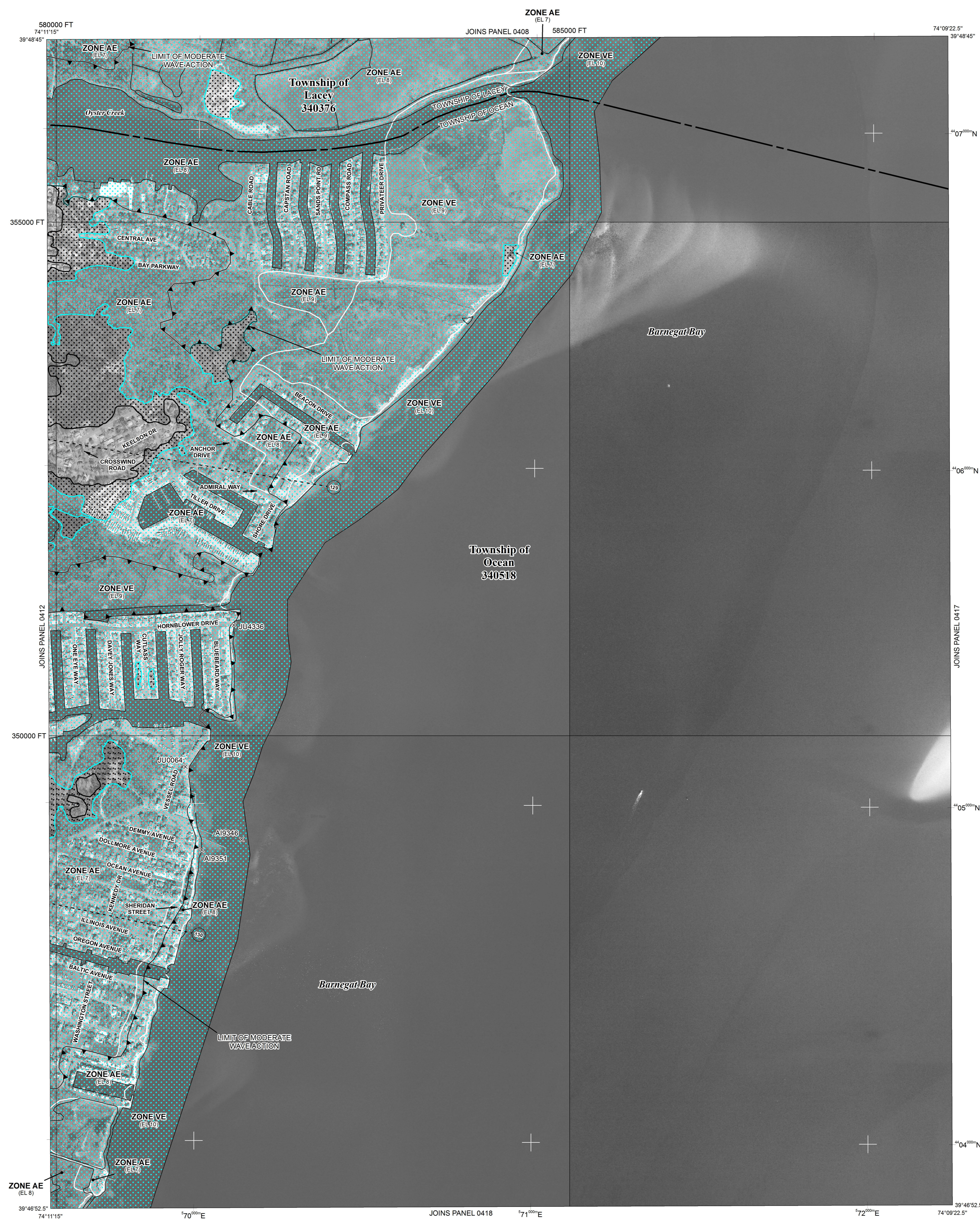
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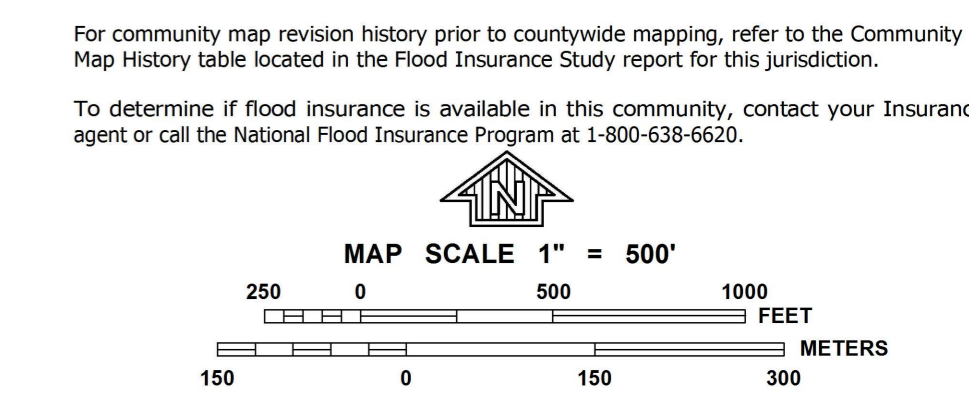
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- Transect line
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- 1000-meter Universal Transverse Mercator grid values, zone values
- 5000-foot grid values: New Jersey State Plane coordinate system (FIPSZONE 2900), Transverse Mercator projection
- 60000 FT
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M.1.5
- River Mile
- MAP REPOSITORY
- Refer to listing of Map Repositories on Map Index
- EFFECTIVE DATE OF COUNTY-WIDE FLOOD INSURANCE RATE MAP
- September 29, 2008
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL



PANEL 0416G

FIRM
FLOOD INSURANCE RATE MAP

**OCEAN COUNTY,
NEW JERSEY
(ALL JURISDICTIONS)**

PANEL 416 OF 660
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LACEY, TOWNSHIP OF	340376	0416	G
OCEAN, TOWNSHIP OF	340518	0416	G

**REVISED PRELIMINARY
JANUARY 30, 2015**

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**MAP NUMBER
34029C0416G**

MAP REVISED

Federal Emergency Management Agency

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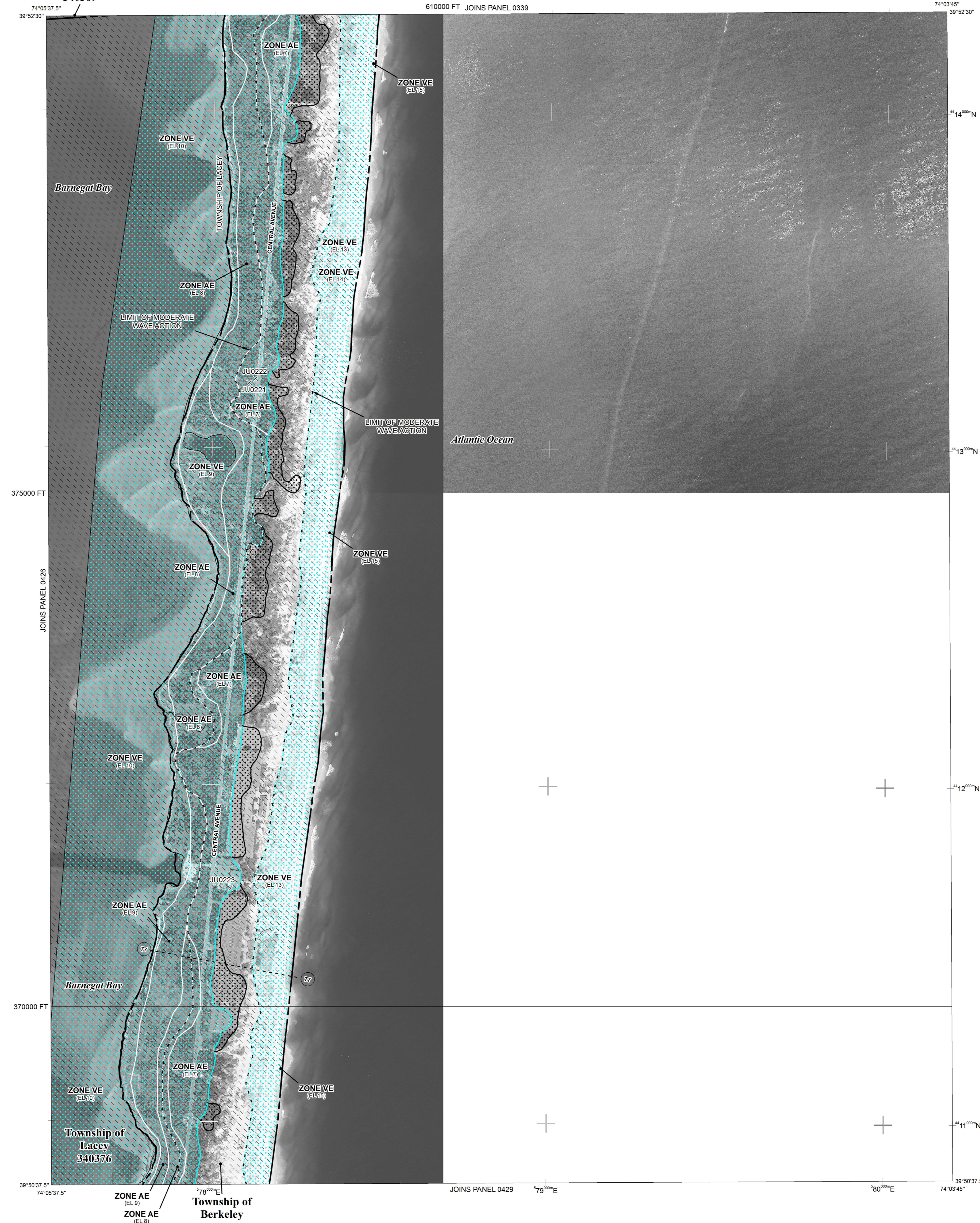
COASTAL BARRIER RESOURCES SYSTEM (CBRS) LEGEND

11-16-1991 Otherwise Protected Area (OPA)

FLOOD INSURANCE NOT AVAILABLE FOR STRUCTURES NEWLY BUILT OR SUBSTANTIALLY IMPROVED ON OR AFTER NOVEMBER 16, 1991 - IN DESIGNATED OPAs WITHIN THE CBRS

Boundaries of the **John H. Chafee Coastal Barrier Resources System (CBRS)** shown on this FIRM were transferred from the official CBRS source map(s) for this area and are depicted on this FIRM for informational purposes only. The official CBRS maps are enacted by Congress via the Coastal Barrier Resources Act, as amended, and maintained by the U.S. Fish and Wildlife Service (FWS). The official CBRS maps used to determine whether or not an area is located within the CBRS are available for download at <http://www.fws.gov>. For an official determination of whether or not an area is located within the CBRS, or for any questions regarding the CBRS, please contact the FWS field office for this area at (609) 646-9310.

Township of Berkeley
340369



Township of Lacey
340376

Township of Berkeley
340369

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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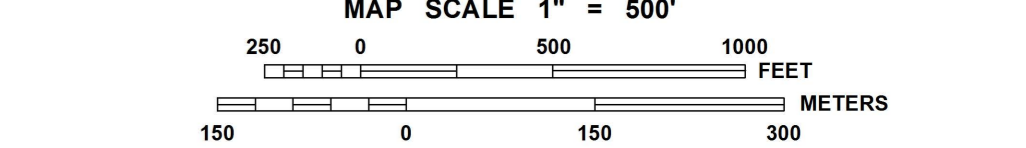
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- EFFECTIVE DATE OF COUNTY-WIDE FLOOD INSURANCE RATE MAP September 29, 2008
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



PANEL 0427G

FIRM
FLOOD INSURANCE RATE MAP

**OCEAN COUNTY,
NEW JERSEY
(ALL JURISDICTIONS)**

PANEL 427 OF 660
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)


CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
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PRELIMINARY
MARCH 28, 2014 *NOTE*

THIS MAP INCLUDES BOUNDARIES OF THE COASTAL BARRIER RESOURCES SYSTEM ESTABLISHED UNDER THE COASTAL BARRIER RESOURCES ACT OF 1982 AND/OR SUBSEQUENT ENABLING LEGISLATION.

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



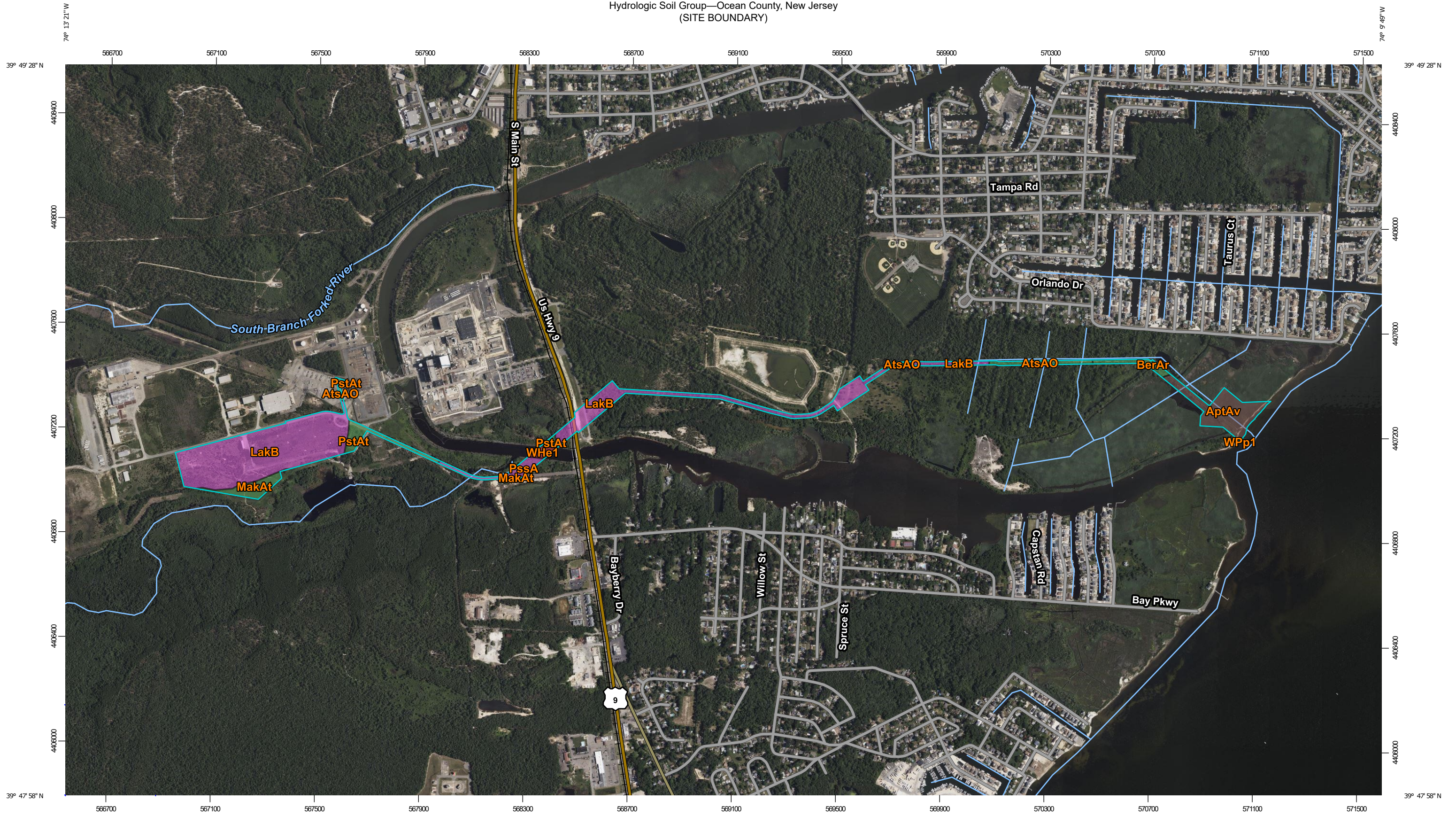
MAP NUMBER
34029C0427G

MAP REVISED

Federal Emergency Management Agency

APPENDIX B – SOIL MAP

Hydrologic Soil Group—Ocean County, New Jersey
(SITE BOUNDARY)



Map Scale: 1:13,600 if printed on B landscape (17" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84




Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points






 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ocean County, New Jersey
 Survey Area Data: Version 19, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 13, 2021—Sep 14, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AptAv	Appoquinimink- Transquaking- Mispillion complex, 0 to 1 percent slopes, very frequently flooded	B/D	7.8	13.1%
AtsAO	Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area	A/D	2.2	3.7%
BerAr	Berryland sand, 0 to 2 percent slopes, rarely flooded	A/D	1.4	2.4%
LakB	Lakehurst sand, 0 to 5 percent slopes	A	40.0	66.8%
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	A/D	2.7	4.6%
PssA	Psammets, 0 to 2 percent slopes	A	2.1	3.4%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	A/D	2.8	4.7%
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	D	0.7	1.2%
WPp1	Pasture Point loamy fine sand, 0 to 1 meter water depth	D	0.0	0.0%
WTs2	Truitt-Southpoint complex, 1 to 2 meter water depth	D	0.0	0.0%
Totals for Area of Interest			59.8	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

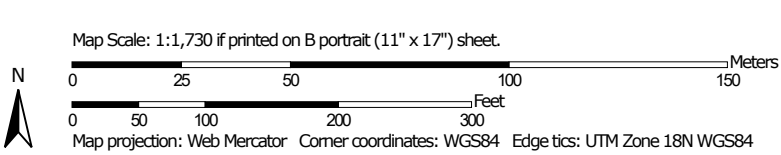
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Soil Group—Ocean County, New Jersey
(Island Beach Soil Map)




Soil Map may not be valid at this scale.



Hydrologic Soil Group—Ocean County, New Jersey
(Island Beach Soil Map)

MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Lines

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Points


-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available


Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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Survey Area Data: Version 19, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 13, 2021—Sep 14, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HorsC	Hooksan fine sand, 2 to 10 percent slopes	A	2.1	29.8%
UR	Urban land		4.8	70.2%
Totals for Area of Interest			6.9	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

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If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher