Economic Analysis of the Delaware Bay Shoreline Management Alternatives

January 13, 2012

Approach

OVERVIEW -AGENDA

- Goals/Context of Economics Study
- Refresher on Approach
- DNREC Actions Since Last Workgroup Meeting
- Next Steps
- Discussion

GOALS/CONTEXT

Determine the distribution of benefits for different management scenarios.

Approach

OVERVIEW

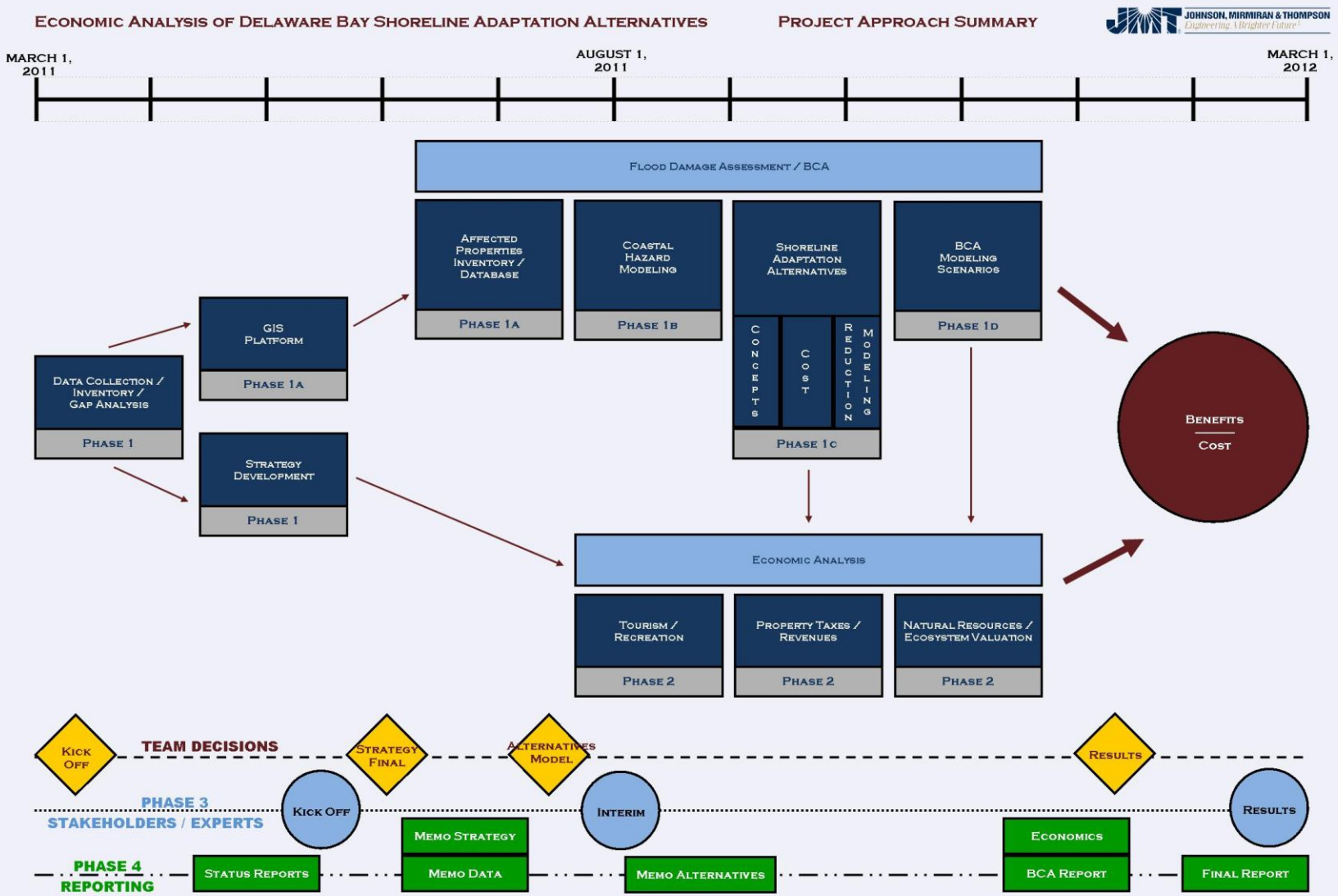
- Developing Strategy with DNREC – Integrated Partner Throughout
- Determine desired range of outcomes and economic assessments
- Collect Data in support of selected scenarios and economic assessments
- Complete coastal engineering modeling and alternative protection concept development and model scenarios
- Complete economic models
- Develop presentation materials for policy makers, agencies and public

Approach

General Scope Outline

- Data Collection/Assessment – Strategy Development (PHASE 1)
- Economic Analyses following FEMA/USACE standard protocols (PHASE 1)
  - Flood Damage Assessment
    - Affected Property Inventories – Surveys (PHASE 1A)
    - Coastal Hazard Modeling – Flood/Surge Elevations (PHASE 1B)
    - Shoreline Adaptation Alternatives Development (PHASE 1C)
      - Storm Damage Reduction
      - Cost Estimates
  - FEMA BCA models (PHASE 1D)
- Economic Analyses determining regional benefits from proposed actions (PHASE 2)
  - Tourism/Recreation
  - Property Valuation
  - Ecosystem Benefits – Natural Resources Valuation
- Public Outreach/Education/Expert Testimony (PHASE 3 - throughout)
  - General Public
  - Stakeholder Coordination
    - Delaware Bay Shore Task Force
    - Affected Communities
- Documentation/Reporting (PHASE 4 – throughout)

Approach/Status



Study Area/Communities

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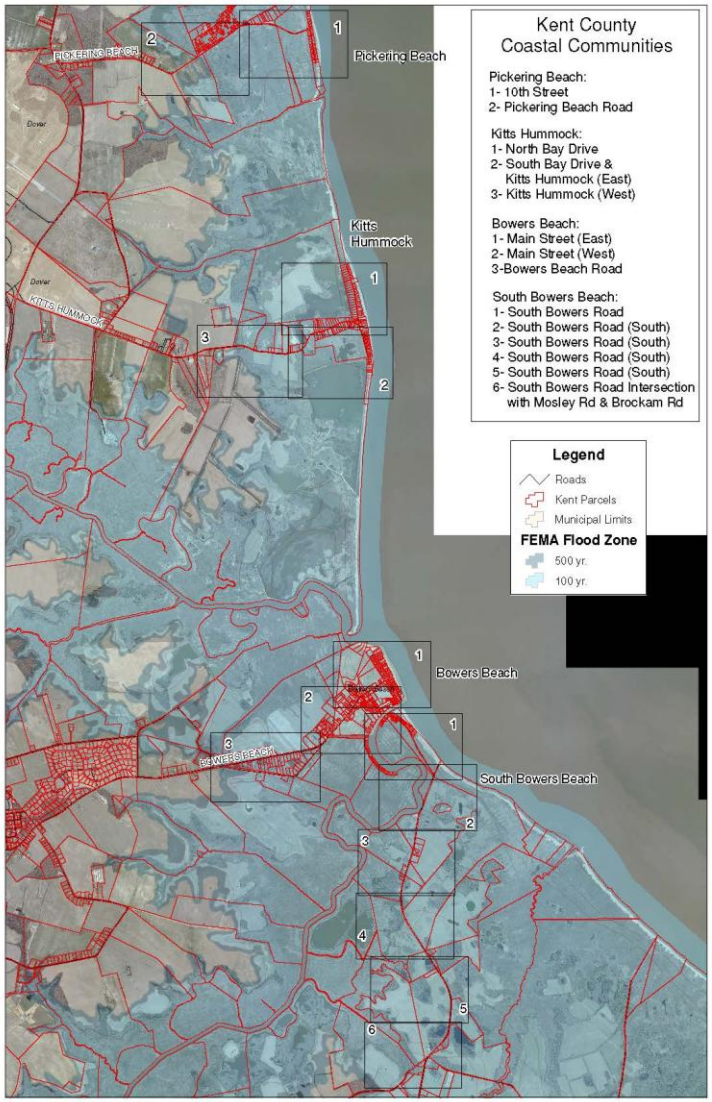
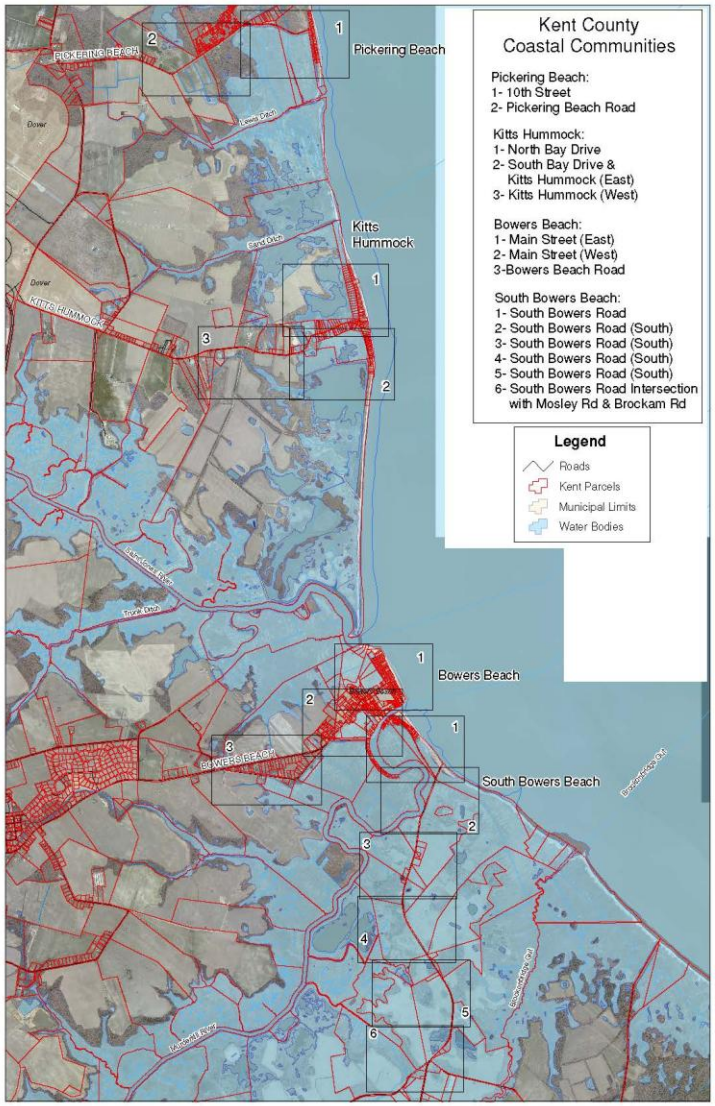
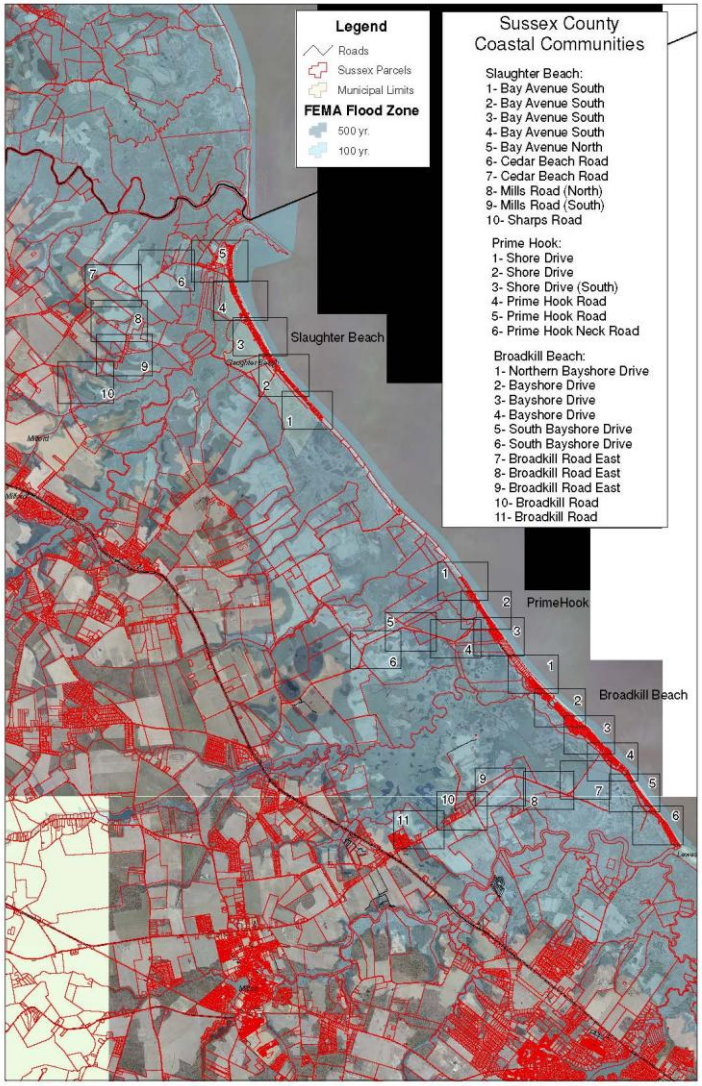
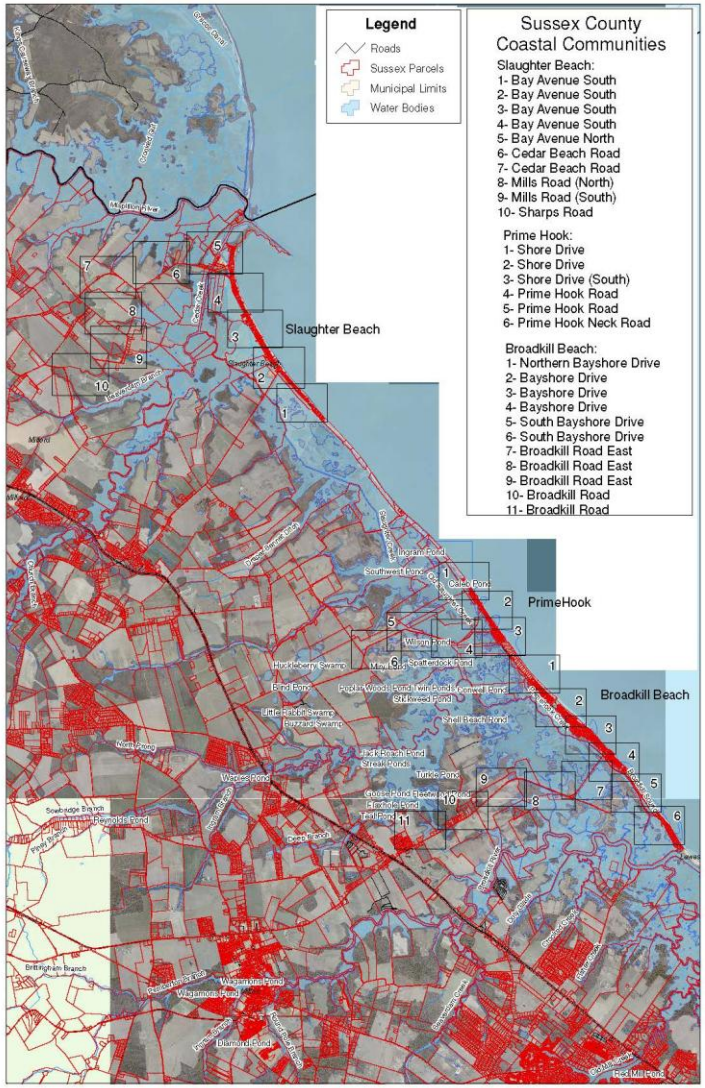


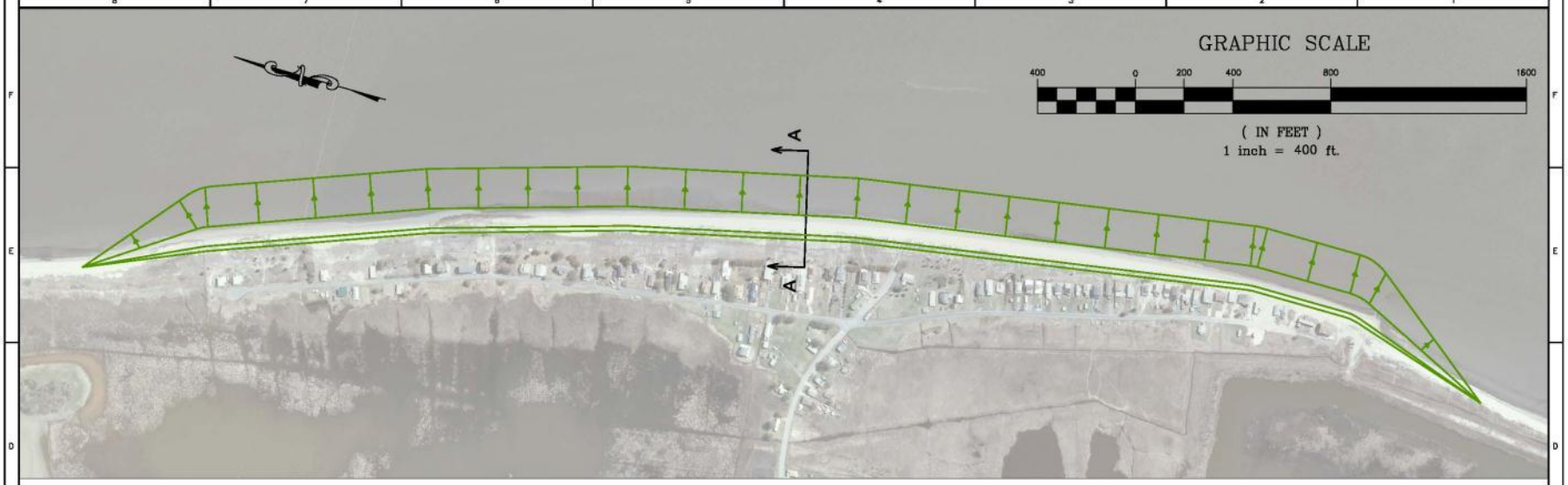


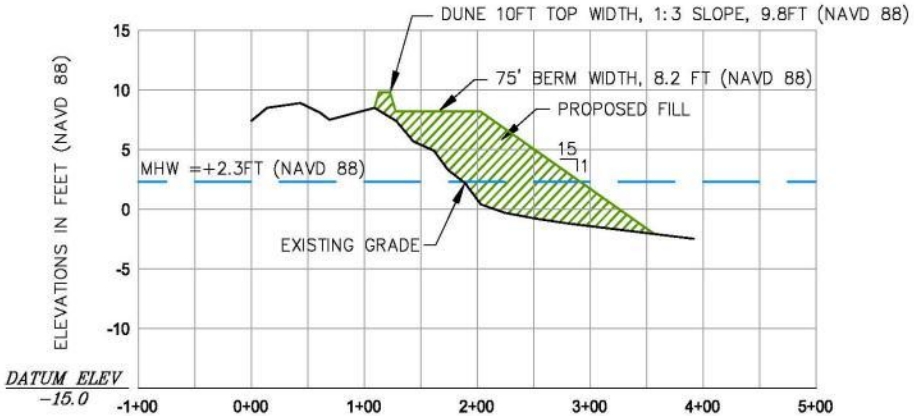
Study Area/Communities





Beach Nourishment - Defined



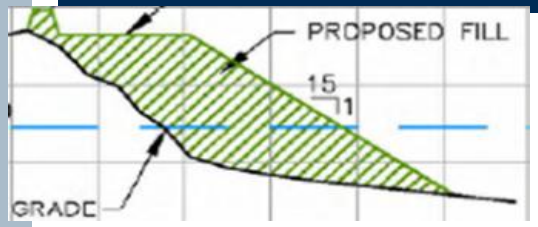


VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 100'

TYPICAL CROSS-SECTION A-A

PBSJ	CLIENT: DELAWARE DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL	PROJECT: KITTS HUMMOCK	TASK: 10 YEAR SCENARIO	FIGURE 7.18

Enhanced Retreat - Defined



Initially remove structure to allow a beach/dune width equal to the recommended beach nourishment templates for each community.

As additional erosion/shoreline migration occurs, additional structures are removed to maintain this beach width

Basic Retreat - Defined

Initially remove structures to allow a beach/dune width equal to the current widths in each community.

Where existing structures occupy the beach, initial removal occurs .

As additional erosion/shoreline migration occurs, additional structures removed to maintain this beach width.

Do Nothing - Defined

This alternative involves no action on the part of state shoreline managers. No beach fill or beach enhancement will occur, historic shoreline migration will cause increasing damage to structures. Houses will be destroyed or removed. Flood insurance is available, and generally covers damage and removal.

Do Nothing - Defined

This alternative involves no action on the part of state shoreline managers. No beach fill or beach enhancement will occur, historic shoreline migration will cause increasing damage to structures. Houses will be destroyed or removed. Flood insurance is available, and generally covers damage and removal.

Database

Attributes of DE_Bay_Bldgs

OBJECTID	SHAPE *	JMTID	ParcelID_PIN	St_Address	City	County	Community
981	Polygon Z	BK1759	235-3.12-26.00	6 NEW MEXICO AV	BROADKILL BEACH	Sussex County	Broadkill Beach
1840	Polygon Z	BK1796	235-3.12-103.00	3 MISSISSIPPI AV	BROADKILL BEACH	Sussex County	Broadkill Beach
992	Polygon Z	BK1881	235-8.00-134.00	IVY CT	BROADKILL BEACH	Sussex County	Broadkill Beach
991	Polygon Z	BK1880	235-8.00-139.00	IVY CT	BROADKILL BEACH	Sussex County	Broadkill Beach
990	Polygon Z	BK1879	235-8.00-138.00	IVY CT	BROADKILL BEACH	Sussex County	Broadkill Beach
989	Polygon Z	BK1878	235-8.00-136.00	IVY CT	BROADKILL BEACH	Sussex County	Broadkill Beach
988	Polygon Z	BK1768	235-3.12-10.01	1402 N BAY SHORE DR	BROADKILL BEACH	Sussex County	Broadkill Beach
987	Polygon Z	BK1767	235-3.12-67.00	2 TEXAS AV	BROADKILL BEACH	Sussex County	Broadkill Beach
986	Polygon Z	BK1765	235-3.12-30.00	7 ARIZONA AV	BROADKILL BEACH	Sussex County	Broadkill Beach
994	Polygon Z	BK1883	235-8.00-132.00	IVY CT	BROADKILL BEACH	Sussex County	Broadkill Beach
983	Polygon Z	BK1762	235-3.12-11.00	12 ARIZONA AV	BROADKILL BEACH	Sussex County	Broadkill Beach
1008	Polygon Z	BK286	235-9.00-28.00	TURKLE POND	BROADKILL BEACH	Sussex County	Broadkill Beach
980	Polygon Z	BK1758	235-3.12-29.01	5 ARIZONA AV	BROADKILL BEACH	Sussex County	Broadkill Beach
979	Polygon Z	BK1757	235-3.12-25.00	4 NEW MEXICO AV	BROADKILL BEACH	Sussex County	Broadkill Beach
978	Polygon Z	BK1756	235-3.12-13.00	8 ARIZONA AV	BROADKILL BEACH	Sussex County	Broadkill Beach
977	Polygon Z	BK1755	235-3.12-24.00	2 NEW MEXICO AV	BROADKILL BEACH	Sussex County	Broadkill Beach
976	Polygon Z	BK1754	235-3.12-23.00	1 ARIZONA AV	BROADKILL BEACH	Sussex County	Broadkill Beach
975	Polygon Z	BK1751	235-3.12-12.00	9 CALIFORNIA AV	BROADKILL BEACH	Sussex County	Broadkill Beach
974	Polygon Z	BK1750	235-3.12-22.00	3 ARIZONA AV	BROADKILL BEACH	Sussex County	Broadkill Beach
973	Polygon Z	BK1749	230-24.00-3.00	8 CALIFORNIA AV	BROADKILL BEACH	Sussex County	Broadkill Beach
984	Polygon Z	BK1763	235-3.12-66.00	1 NEW MEXICO AV	BROADKILL BEACH	Sussex County	Broadkill Beach
1026	Polygon Z	BK305	235-9.00-7.00	BROADKILL RD	BROADKILL BEACH	Sussex County	Broadkill Beach
1056	Polygon Z	BK336	235-10.00-38.00	2821 S BAY SHORE DR	BROADKILL BEACH	Sussex County	Broadkill Beach
1055	Polygon Z	BK335	235-10.00-13.00	2806 S BAY SHORE DR	BROADKILL BEACH	Sussex County	Broadkill Beach
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Record: 0 Show: All Selected Records (0 out of 1790 Selected) Options

Database

Attributes of DE_Bay_Bldgs

JMT_Classific	Res_Bldg_Type	NRes_Bld	NRes_Bldg_Name	Constr_Type	FoundationType	Kent Fo	FF_SQFT	Bldg_SQFT	Kent S
Residential	Two or More Stories without Basement	<Null>	<Null>	Engineered	Pile	<Null>	1423.8307	2847.661479	<Null>
Residential	Two or More Stories without Basement	<Null>	<Null>	Engineered	Slab	<Null>	1131.6068	2263.213629	<Null>
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Residential	One-Story without Basement	<Null>	<Null>	Engineered	Crawlspace	<Null>	3036.8643	3036.864387	<Null>
Residential	One-Story without Basement	<Null>	<Null>	Engineered	Pile	<Null>	1456.5210	1456.521015	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	1462.8861	1462.886106	<Null>
Residential	One-Story without Basement	<Null>	<Null>	Engineered	Pile	<Null>	1270.3472	1270.34724	<Null>
Residential	One-Story without Basement	<Null>	<Null>	Engineered	Crawlspace	<Null>	2405.1396	2405.13964	<Null>
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Residential	Two or More Stories without Basement	<Null>	<Null>	Engineered	Pile	<Null>	1190.1438	2380.2876	<Null>
Residential	One-Story without Basement	<Null>	<Null>	Engineered	Pile	<Null>	1791.8626	1791.862604	<Null>
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Residential	One-Story without Basement	<Null>	<Null>	Engineered	Pile	<Null>	1425.4747	1425.474749	<Null>
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Residential	Two or More Stories without Basement	<Null>	<Null>	Engineered	Pile	<Null>	2711.4743	5422.948714	<Null>
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Database

Attributes of DE_Bay_Bldgs

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none	22889.056	22889.05678	0	89200	0	7200	82000	<Null>	<Null	<Null>	6	<Null>	AE	No	On S
none	858.64762	858.647623	0	89200	0	7200	82000	<Null>	<Null	<Null>	6	<Null>	AE	No	On S
none	22819.923	22819.92394	0	89200	0	7200	82000	<Null>	<Null	<Null>	6	<Null>	AE	No	On S
none	3294.9498	6589.89972	0	139700	109900	6700	23100	<Null>	<Null	8.830113	6	2.830113	AE	Yes	On S
none	2110.6893	4221.378792	960	87300	41600	25300	20400	<Null>	<Null	10.749926	10	0.749926	AE	Yes	On S
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Database

Attributes of DE_Bay_Bldgs

Latitude	Longitude	FE_5YR	FE_10YR	FE_25YR	FE_50YR	FE_100YR	BCR_Alt1	BCR_Alt2	BCR_Alt3	GIS_Comments
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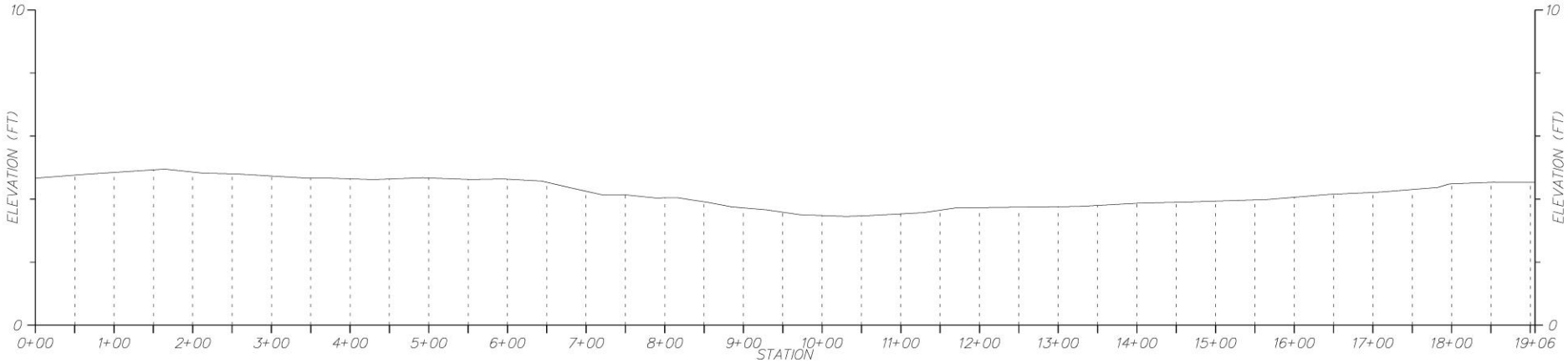
Baker Mobile LiDAR Truck

LiDAR Point Clouds

LiDAR Point Clouds

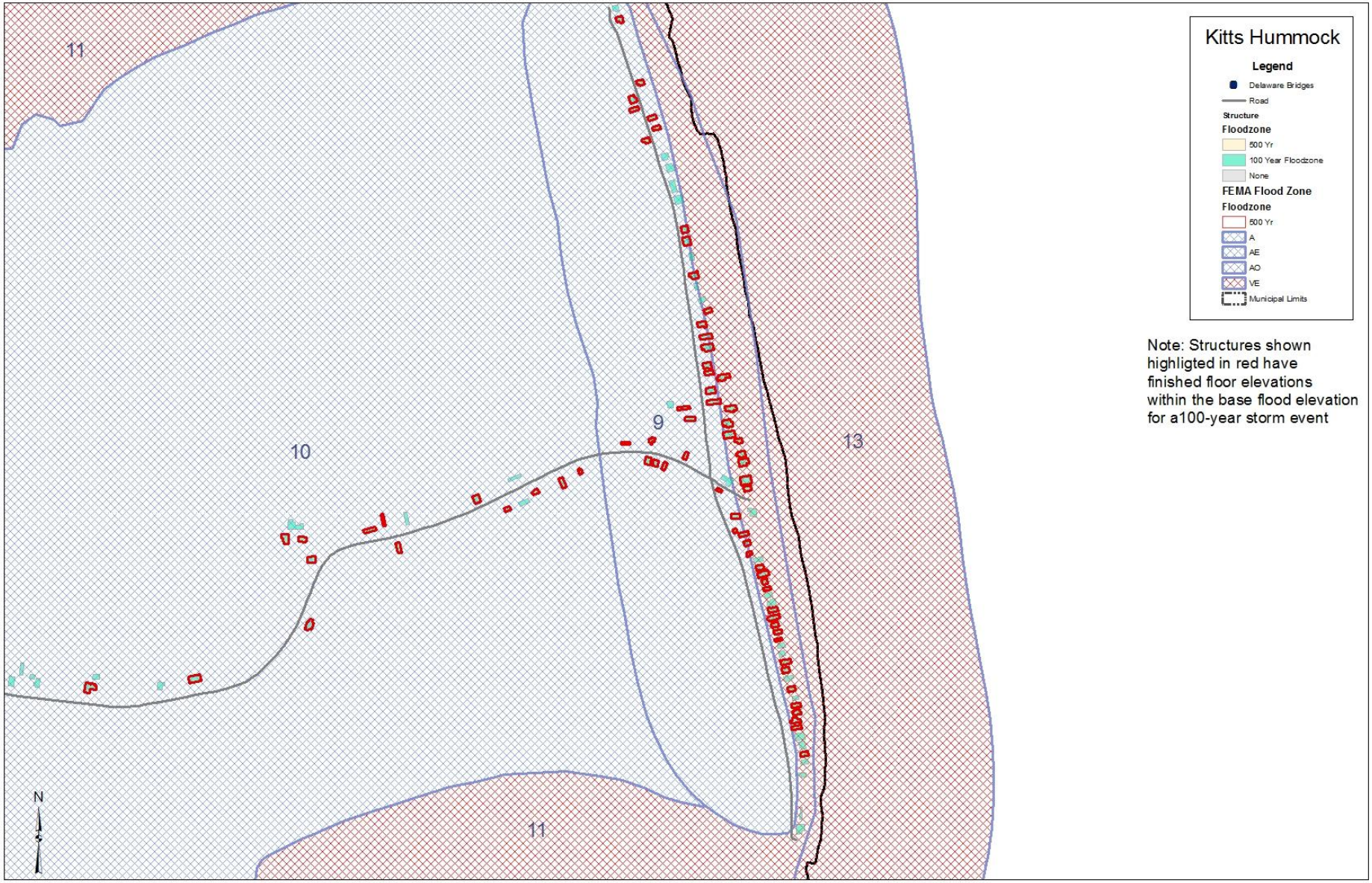
LiDAR Point Clouds

Kitts Hummock LiDAR Coverage Map



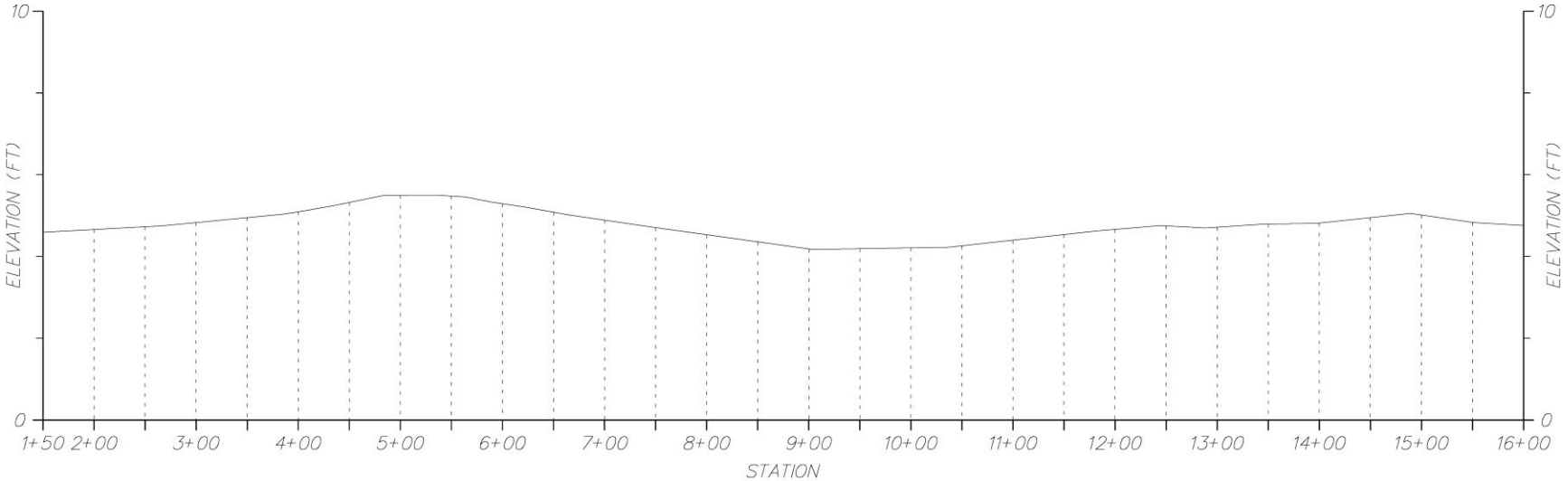
KITTS HUMMOCK ROAD

Kitts Hummock Floodzone Map



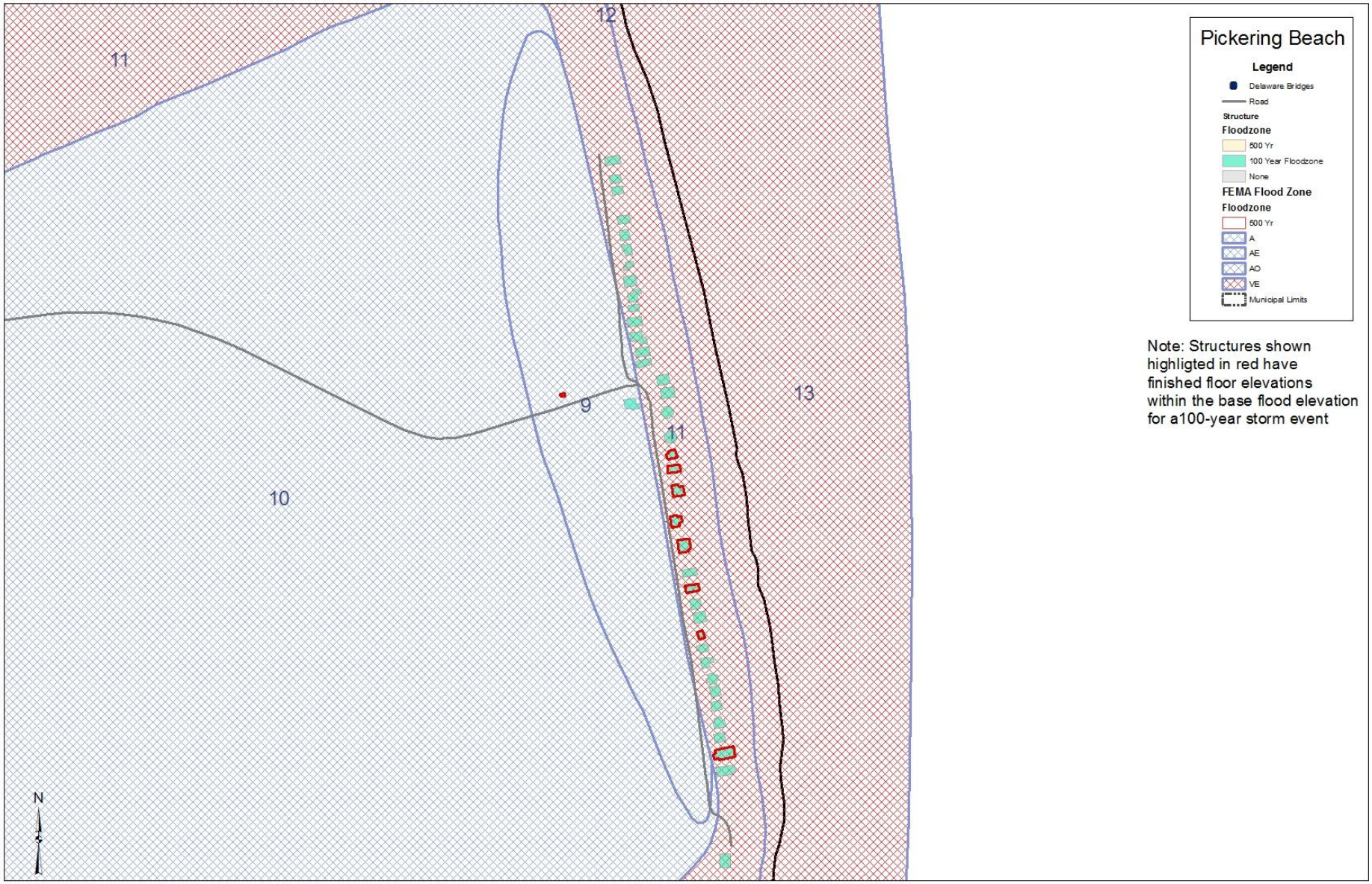
Note: Structures shown highligted in red have finished floor elevations within the base flood elevation for a100-year storm event

Pickering Beach LiDAR Coverage



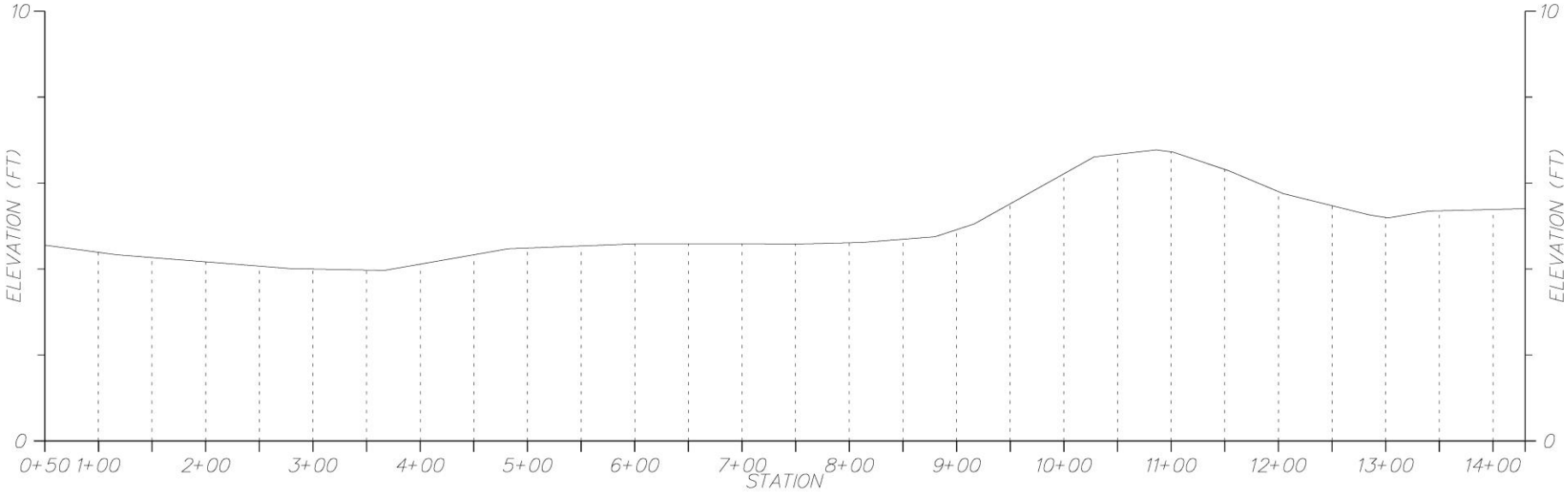
PICKERING BEACH ROAD

Pickering Beach Floodzone Map



Note: Structures shown highligted in red have finished floor elevations within the base flood elevation for a100-year storm event

Bowers Beach LiDAR Coverage Map

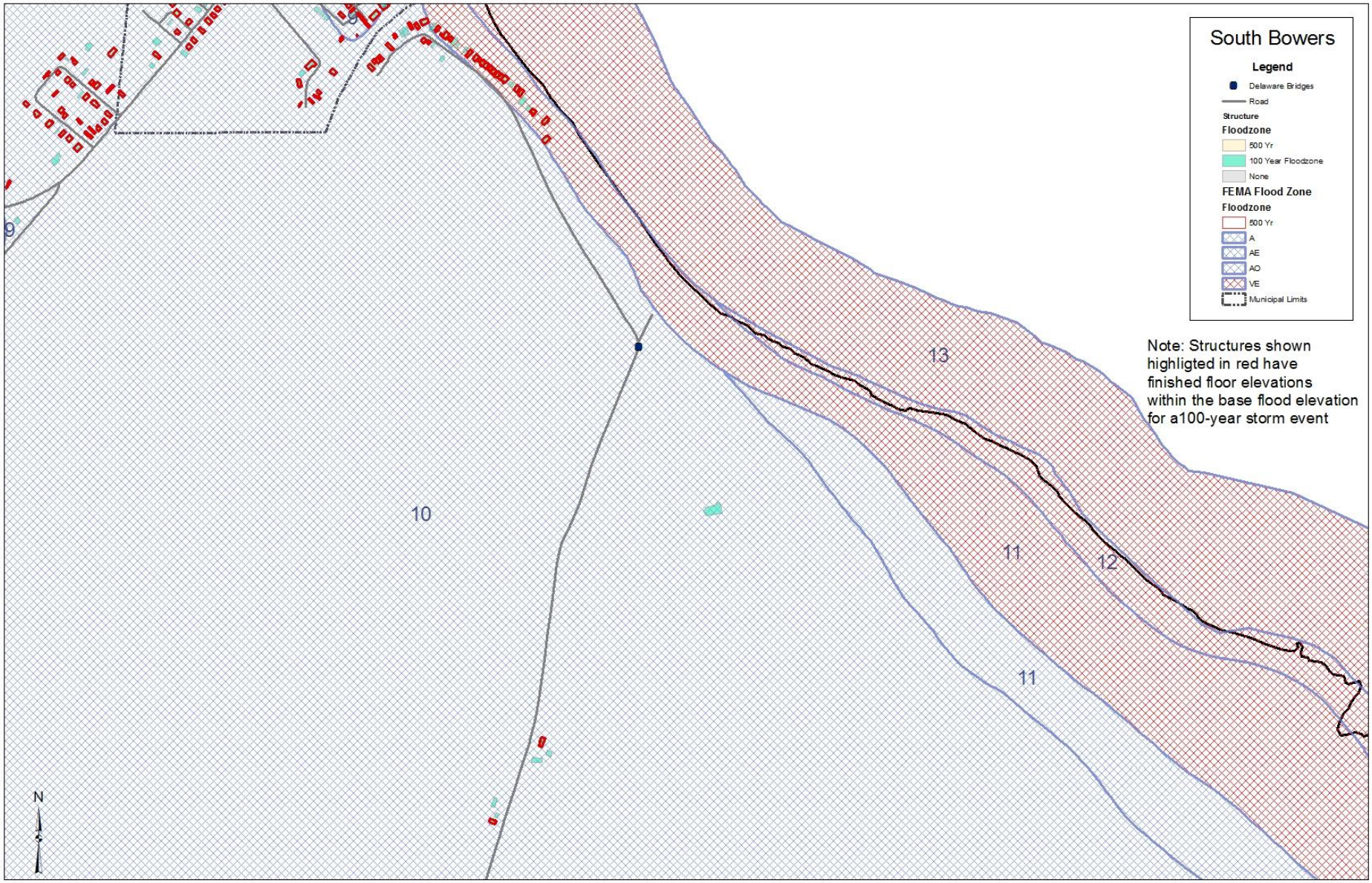


BOWERS BEACH ROAD

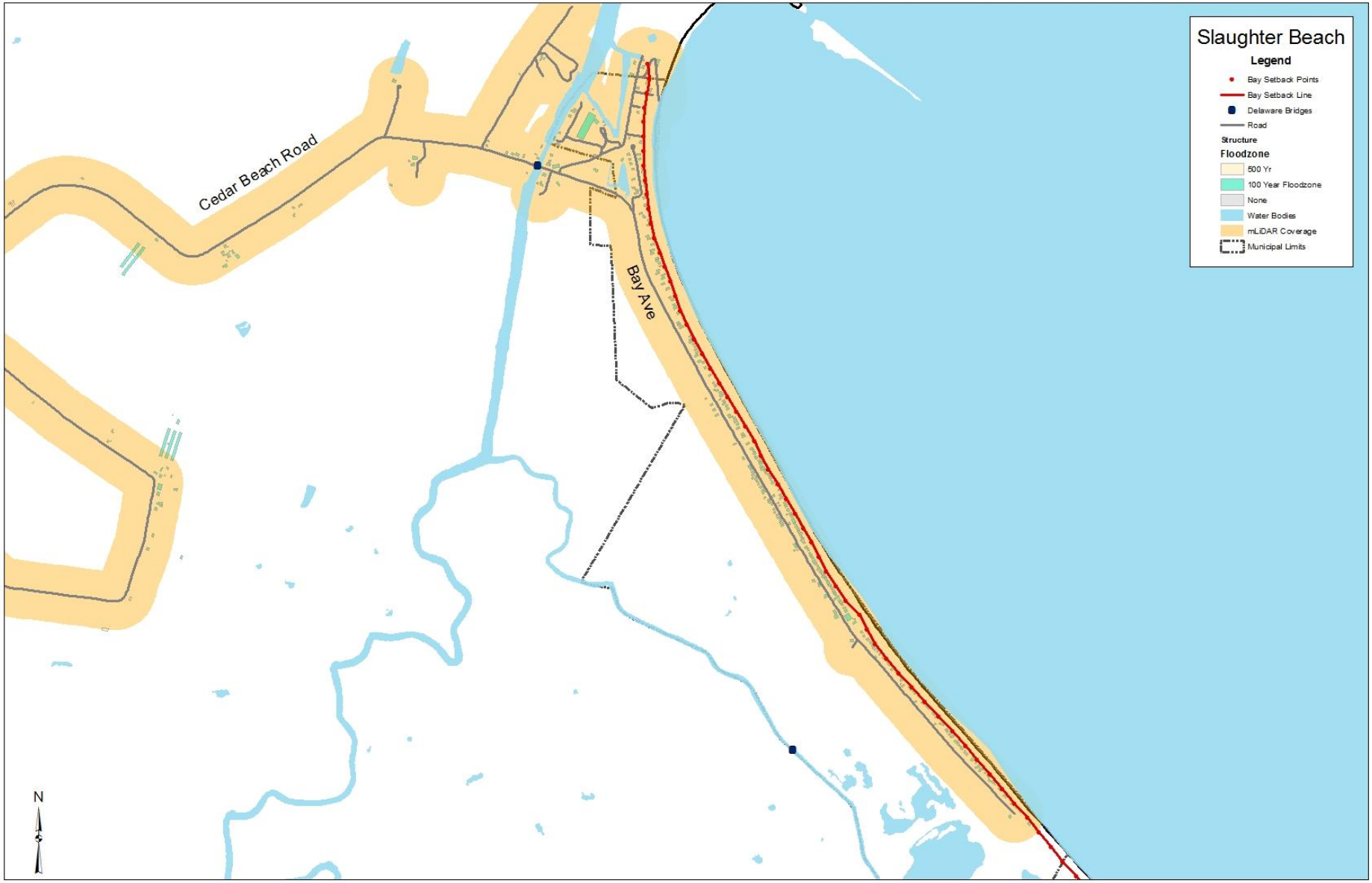
Bowers Beach Floodzone Map

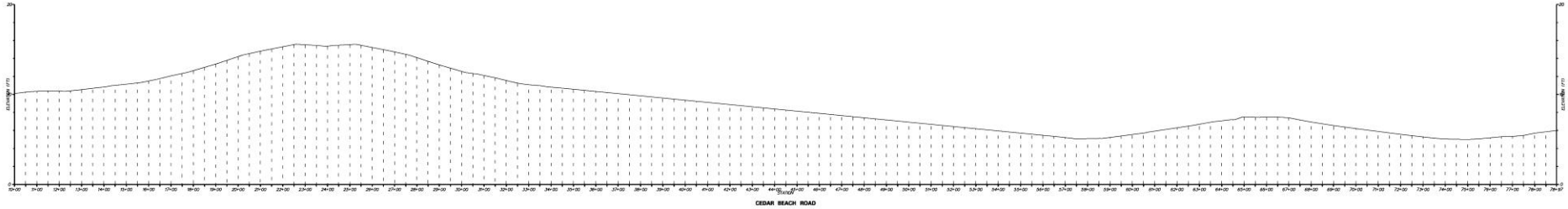
South Bowers Beach LiDAR Coverage

South Bowers Beach Floodzone Map

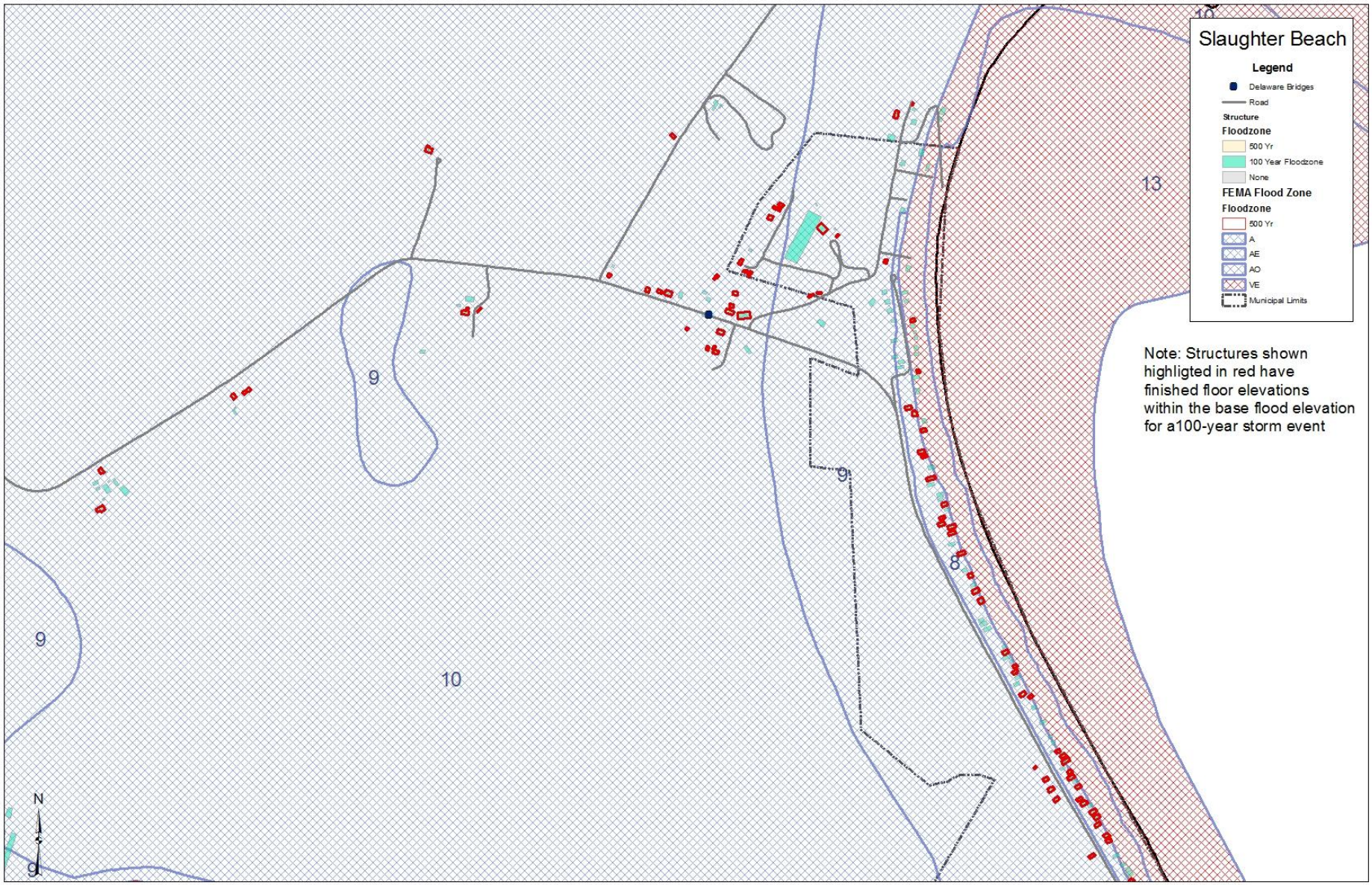


Slaughter Beach LiDAR Coverage

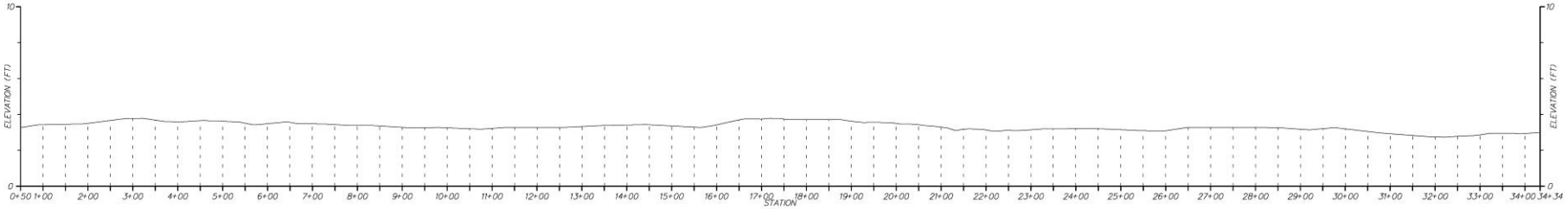



20
ELEVATION (FT)
0
Station
CEDAR BEACH ROAD

Slaughter Beach Floodzone Map

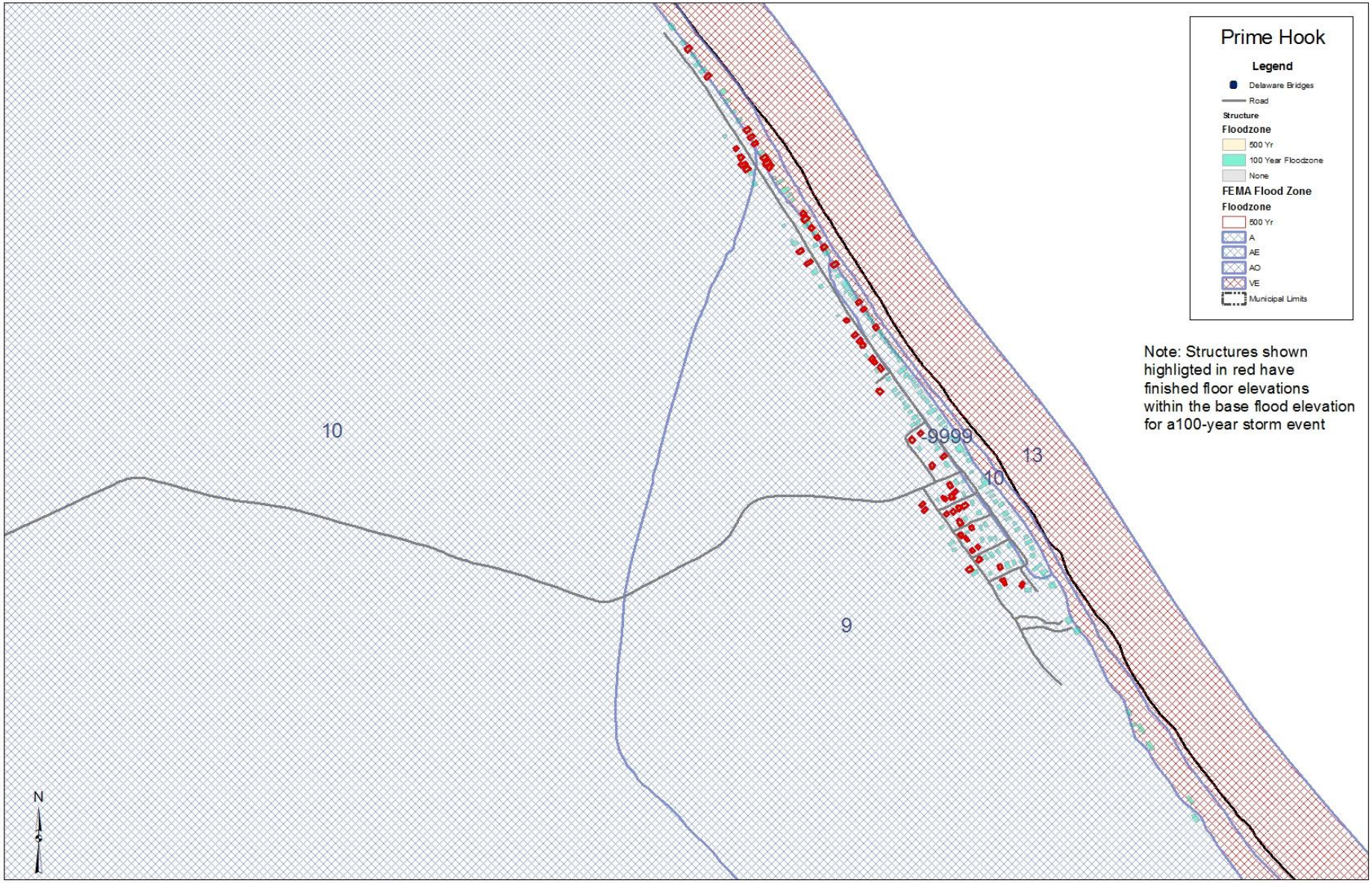


Prime Hook LiDAR Coverage

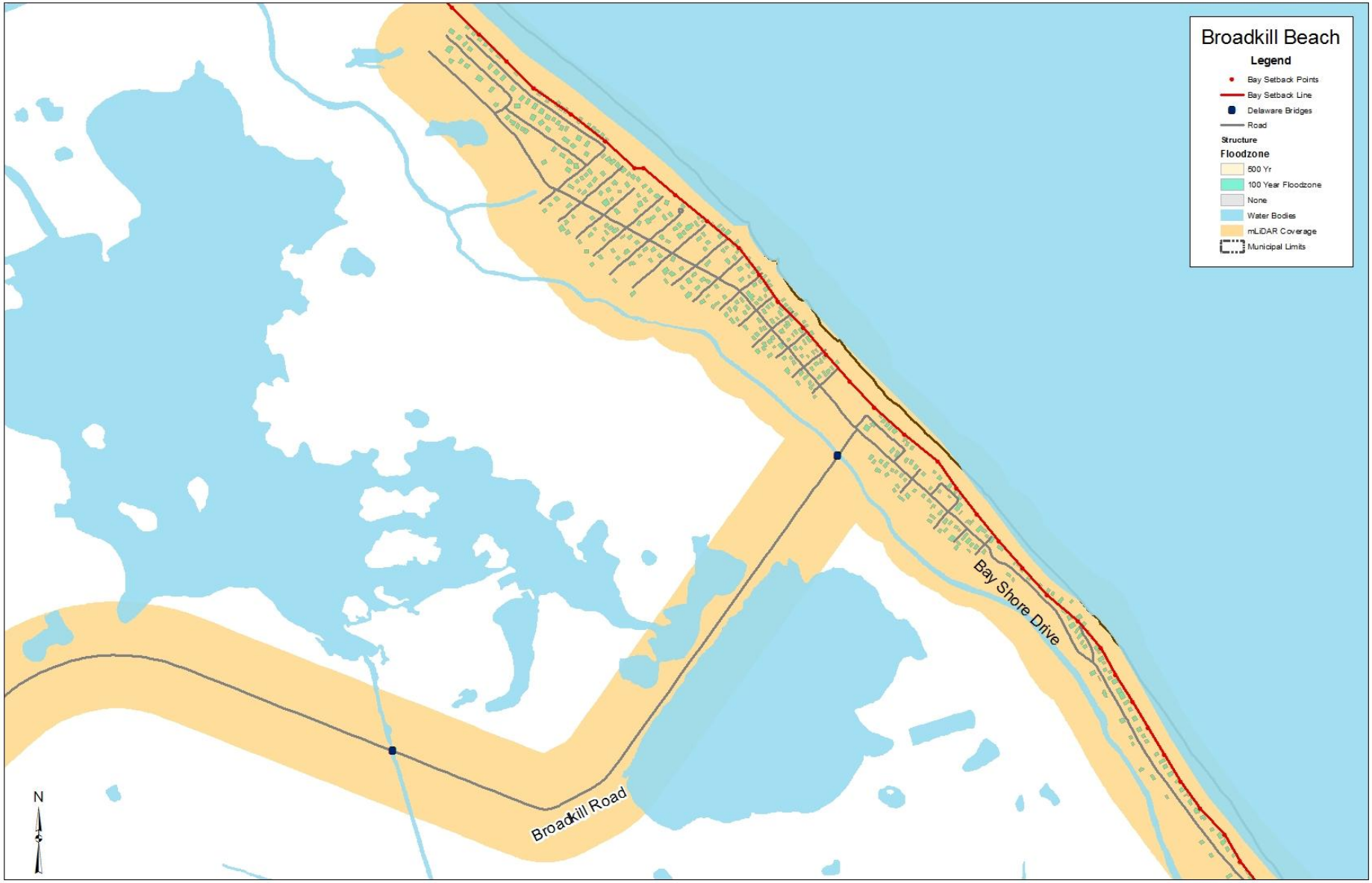


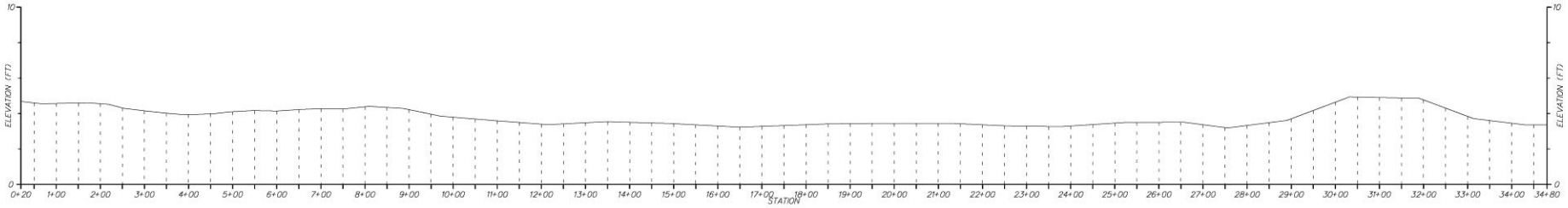
PRIME HOOK ROAD

Prime Hook Floodzone Map



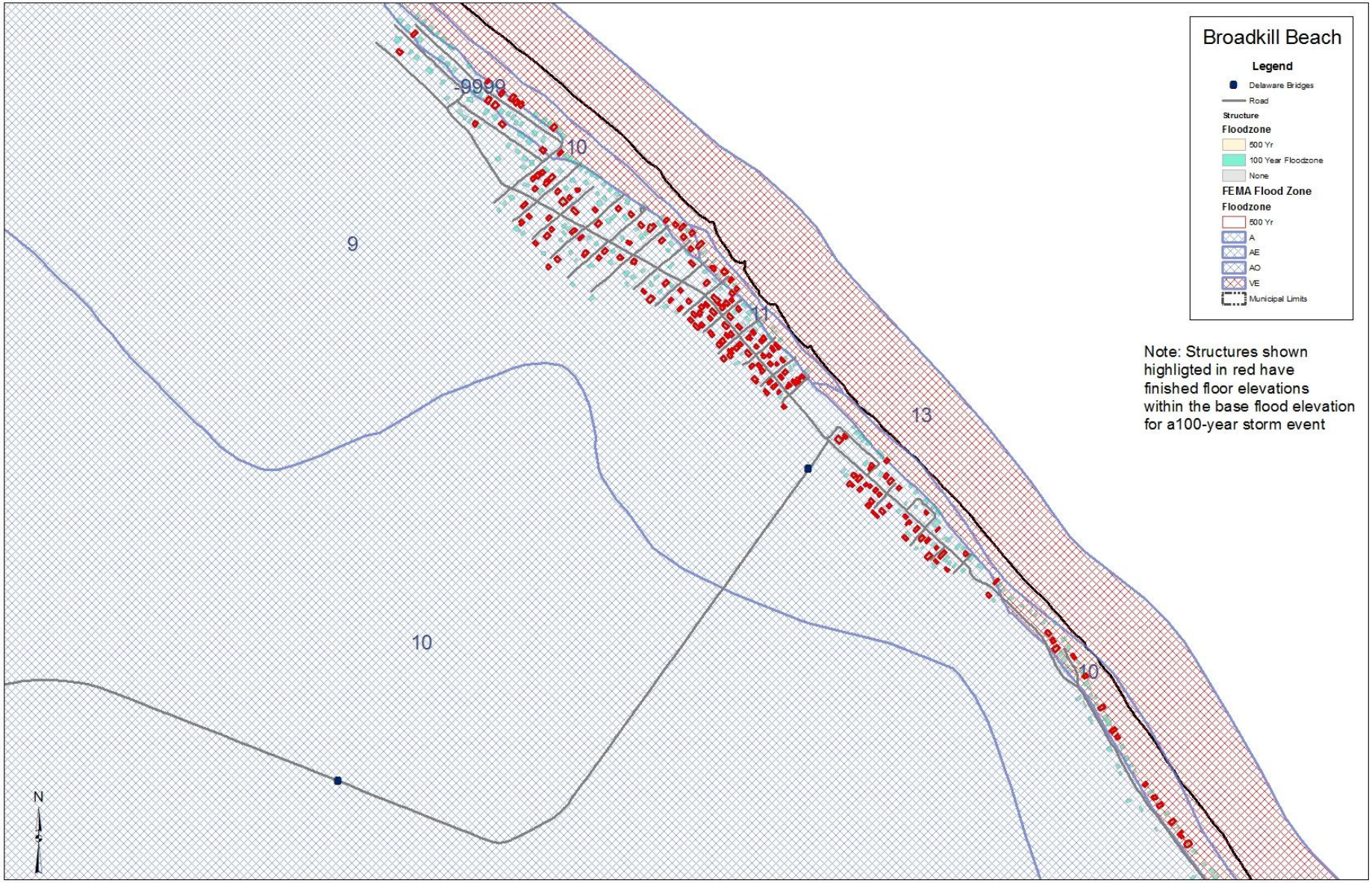
Broadkill Beach LiDAR Coverage





BROADKILL ROAD

Broadkill Beach Floodzone Map



Approach

ECONOMIC ANALYSES - INTEGRATED

- FEMA / USACE BCA/Risk Assessment – traditional flood damage reductions

Baker

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- Natural Resource Value Capital

- Tourism / Tax Base – Land Use Projections

Baker

Community / Benefactor Identification

Approach

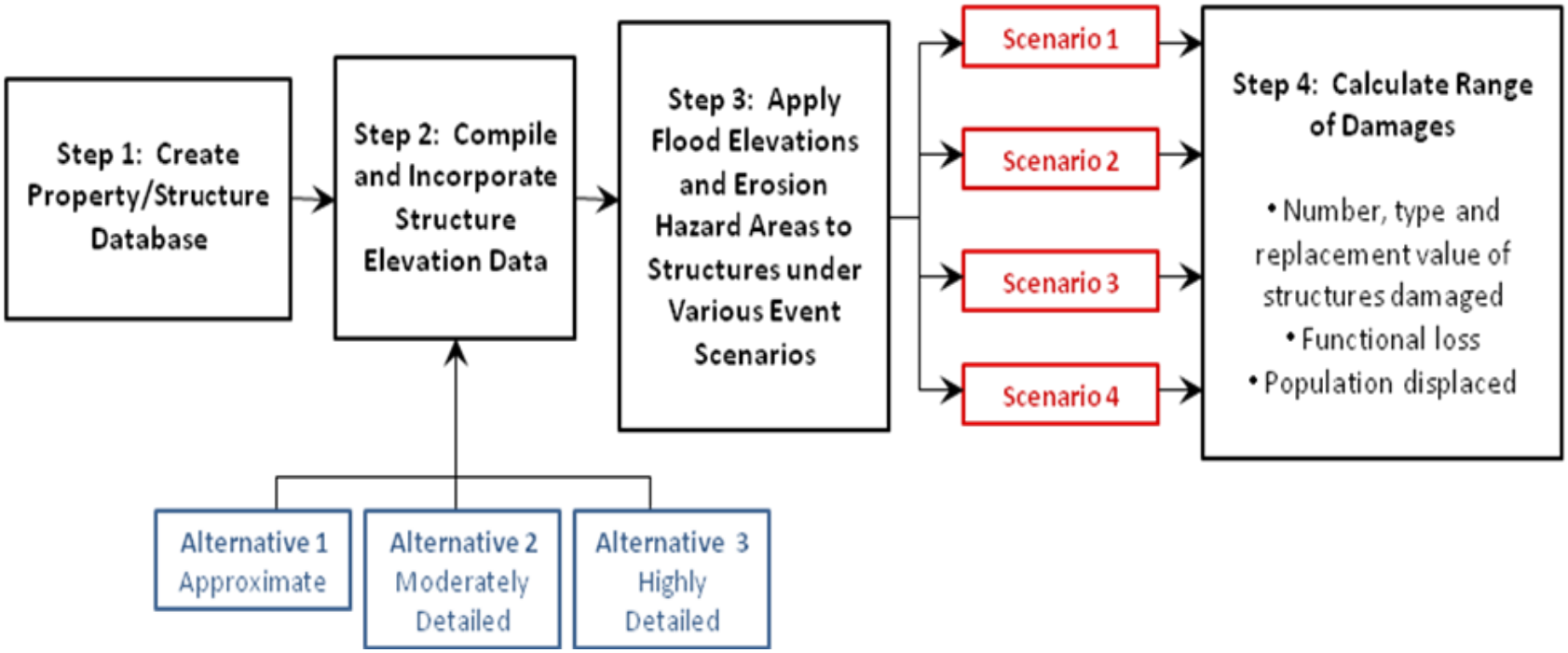
ECONOMIC ANALYSES -

- Categories of Economic Effects Projected to be Analyzed
  - Structures/Assets Damages
  - Tourism Revenues
  - Recreation
  - Property values
  - Local/Statewide business revenues
  - Population demographics – shifts
  - Natural Resource Capital Valuation

    Wetlands, Wildlife, Fisheries, Etc.
  - Others

Approach

Flood Damage Assessments -

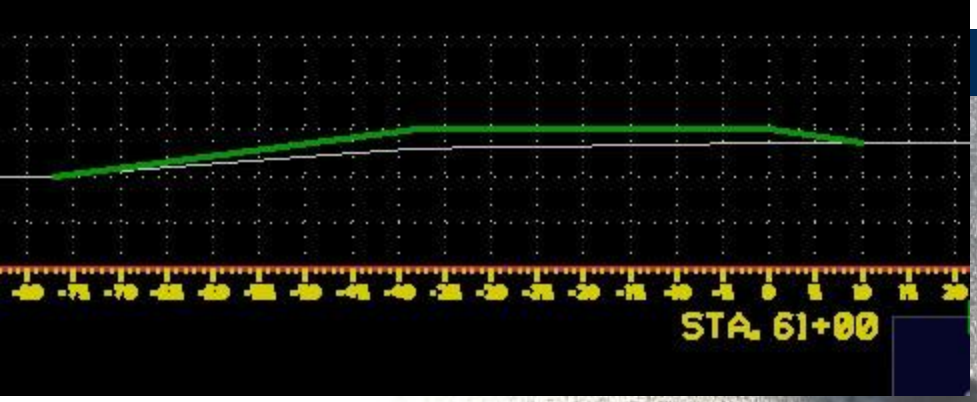


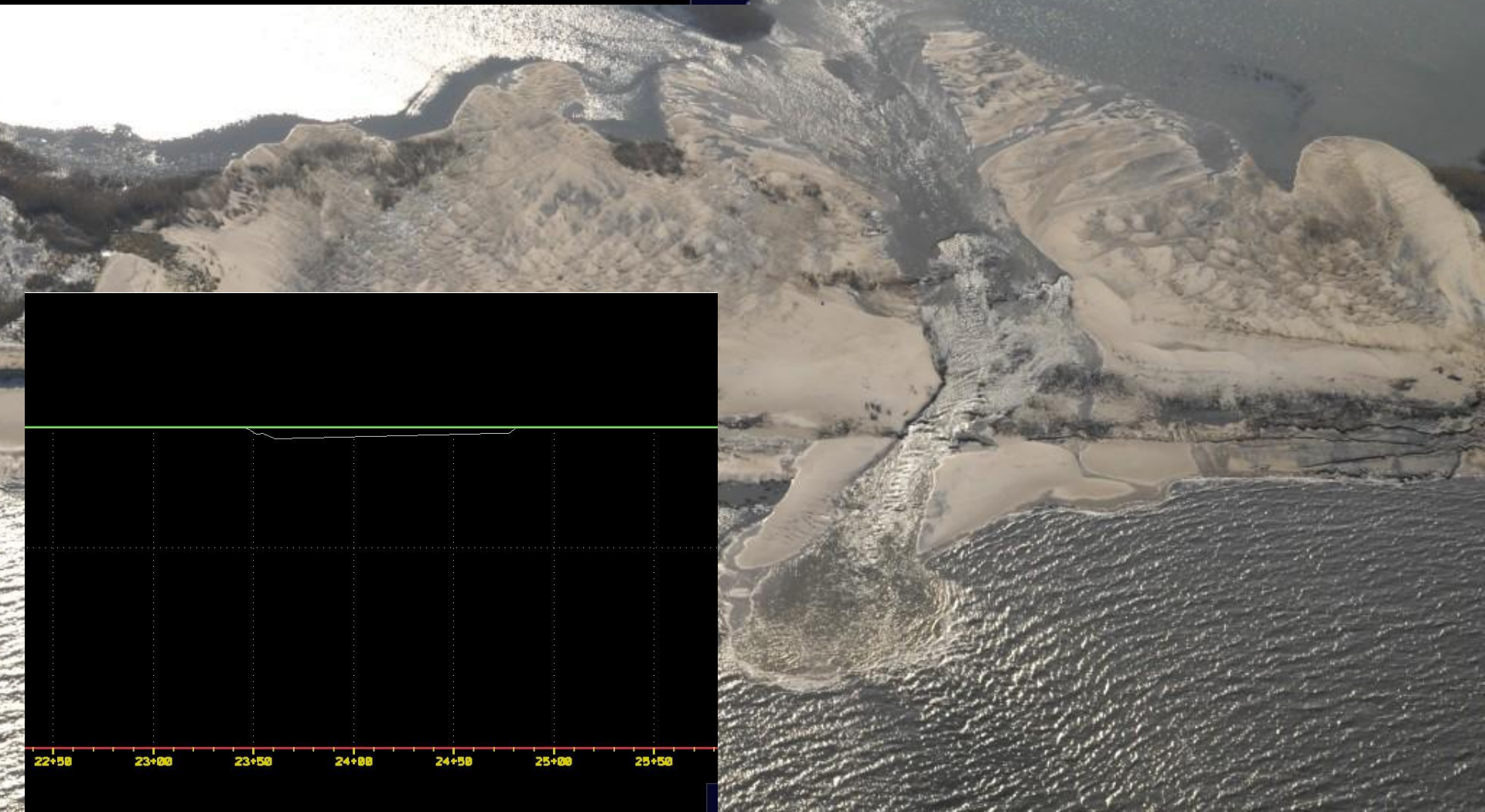
Sea Level Rise – Added task to consider a scenario that addresses an acceleration of sea level rise to determine potential impacts

Approach

ECONOMIC ANALYSES -

- Review Economists Matrix


STA. 61+00



22+50
23+00
23+50
24+00
24+50
25+00
25+50

Approach

Schedule: 12 Months

- Refer to Flow Diagram
  - NTP – March 1, 2011
  - Flood Damage Assessment Inventory complete – April 15
  - Management alternatives/projections selected – May
  - Phase 1 Data collection complete – May
  - Initiate FEMA BCA tasks – May 1
  - Complete FEMA BCA evaluations – August 1 (March)
  - Complete GIS/Database Reports/Images – September 1
  - Initiate development of economic models – May 1
  - Complete economic models – November 1 (February)
  - Vette results with DNREC – November (March)
  - Present results to Workgroup – December/January, 2012 (February considering holidays) (April, 2012)

Questions

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