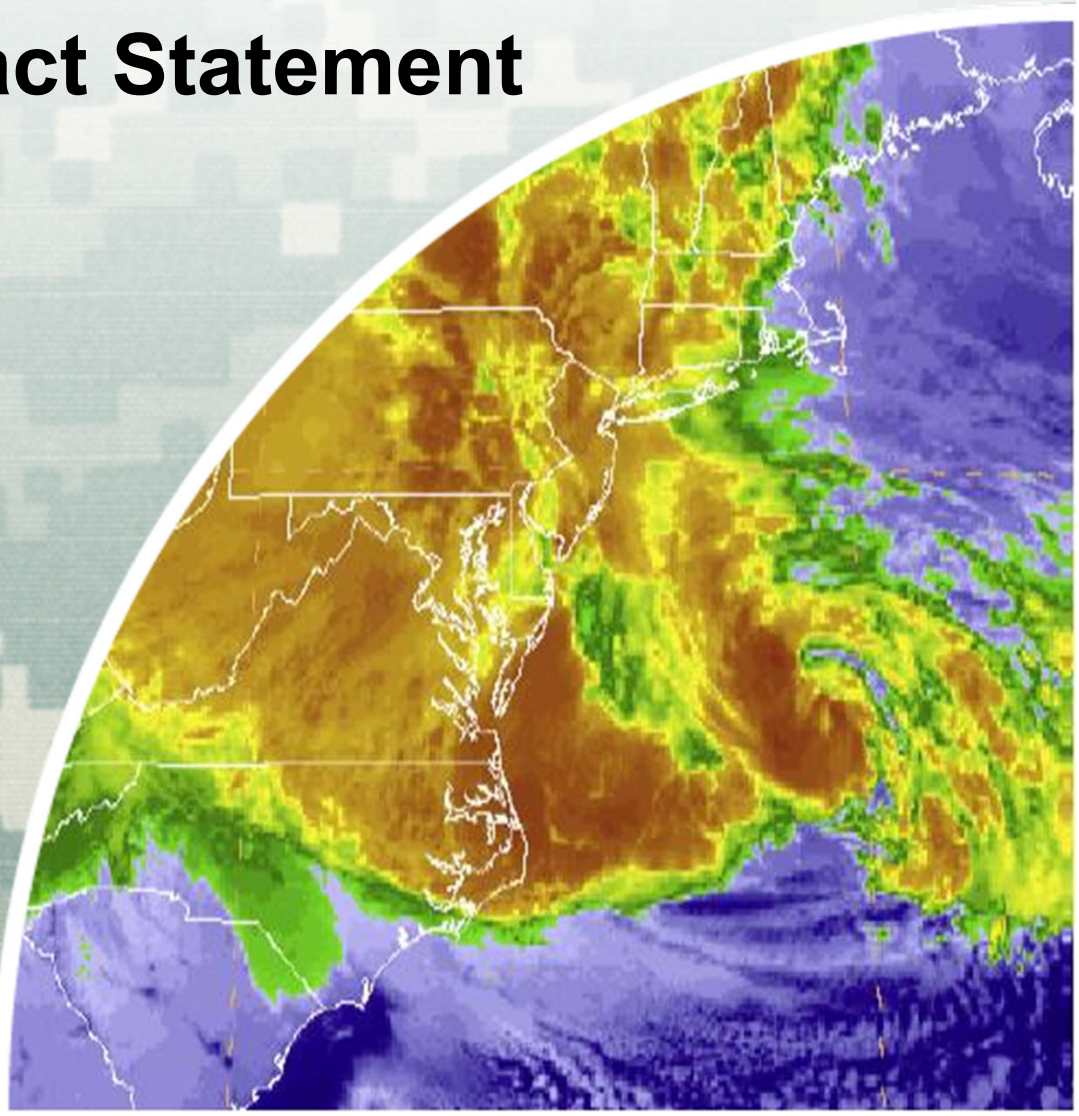
New Jersey Back Bays
Coastal Storm Risk Management Study
Draft Feasibility Report and Environmental Impact Statement

Interagency Virtual Meeting
11 May 2021
U.S. Army Corps of Engineers
Philadelphia District



US Army Corps of Engineers
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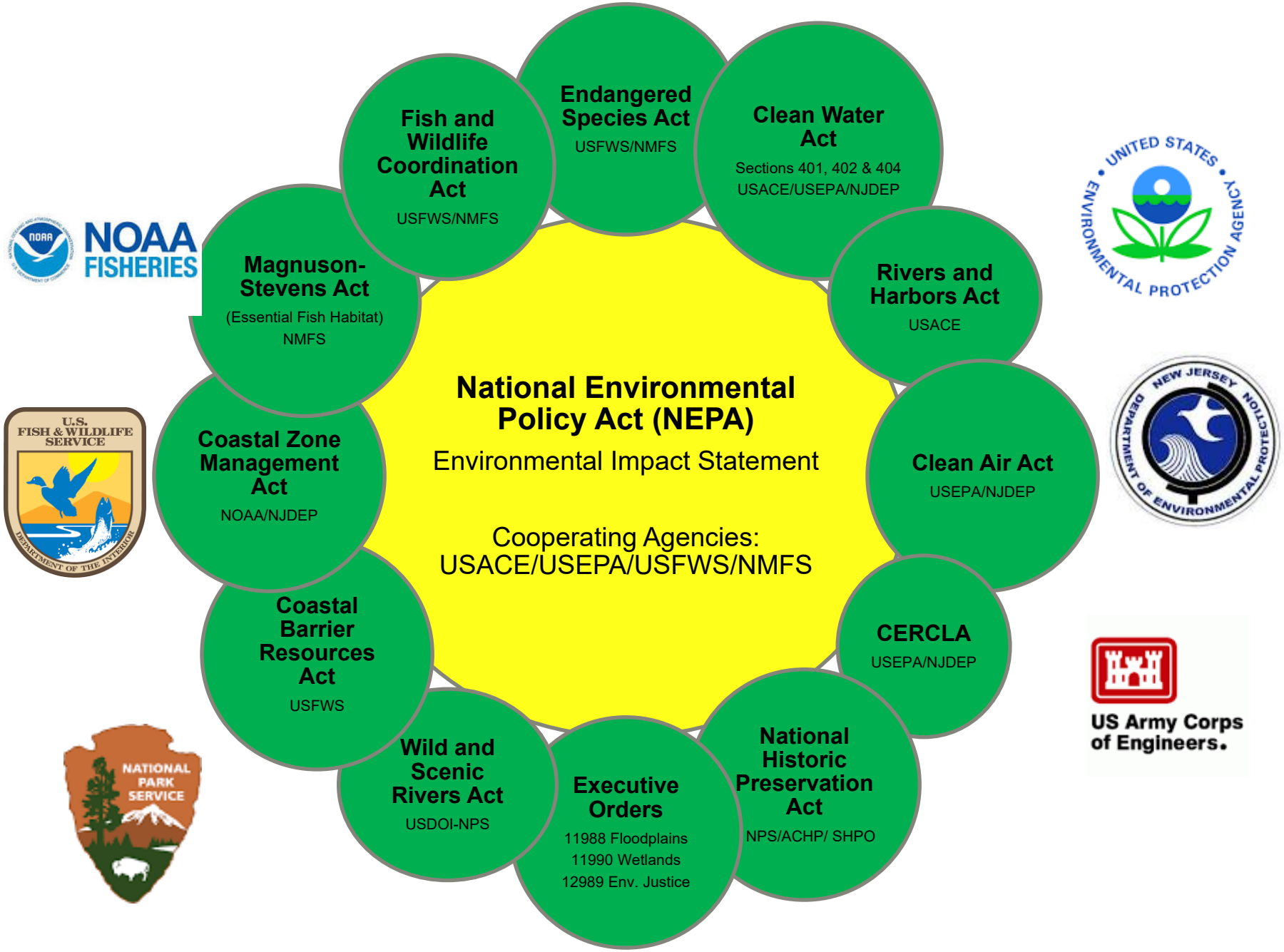
AGENDA

- Introductions
- Study Overview and Tentatively Selected Plan
- Tiered NEPA Approach and Review Schedule
- Questions and Discussion

AGENCY COORDINATION AND COMPLIANCE



http://www.nap.usace.army.mil/Missions/Civil-Works/New-Jersey-Back-Bays-Study/

New Jersey Back Bays Coastal Storm Risk Management Study

Historic storms, including Hurricane Sandy, have severely impacted the back bay communities of coastal New Jersey. The New Jersey Back Bay Study developed out of the larger North Atlantic Coast Comprehensive Study which identified nine high-risk areas on the Atlantic Coast for further in-depth analysis. The study area is located behind the New Jersey barrier islands of Monmouth, Ocean, Burlington, Atlantic and Cape May Counties and includes the set of interconnected water bodies and coastal lakes that are separated from the Atlantic Ocean. The purpose of the study is to investigate Coastal Storm Risk Management strategies and solutions to reduce damages from coastal flooding affecting population, critical infrastructure, critical facilities, property, and ecosystems. The Study will consider the full array of structural, non-structural, and natural and nature-based measures. Examples are highlighted in the below chart.

The study will consider past, current, and future coastal storm risk management and resilience planning initiatives and projects underway by the USACE and other Federal, State, and local agencies. Three overarching efforts will be performed:

- Assess the study area's problems, opportunities and future without project conditions;
- Assess the feasibility of implementing system-wide coastal storm risk management solutions such as policy/programmatic strategies, storm surge barriers at selected inlet entrances, or tidal gates at selected lagoon entrances;
- Assess the feasibility of implementing site-specific perimeter solutions such as a combination of structural, non-structural, and natural and nature-based features;
- Assess the impacts of back bay strategies and solutions on the Atlantic Coast Coastal Storm Risk Management Program towards developing recommendations within a systems context given likely future scenarios.

Submit Comments

Comments are accepted on an ongoing basis throughout the study process. Comments may be submitted via email or in writing:

By email: PDPA-NAP@usace.army.mil

In writing:

USACE Philadelphia District
Planning Division
100 Penn Square E.
Philadelphia, PA 19107

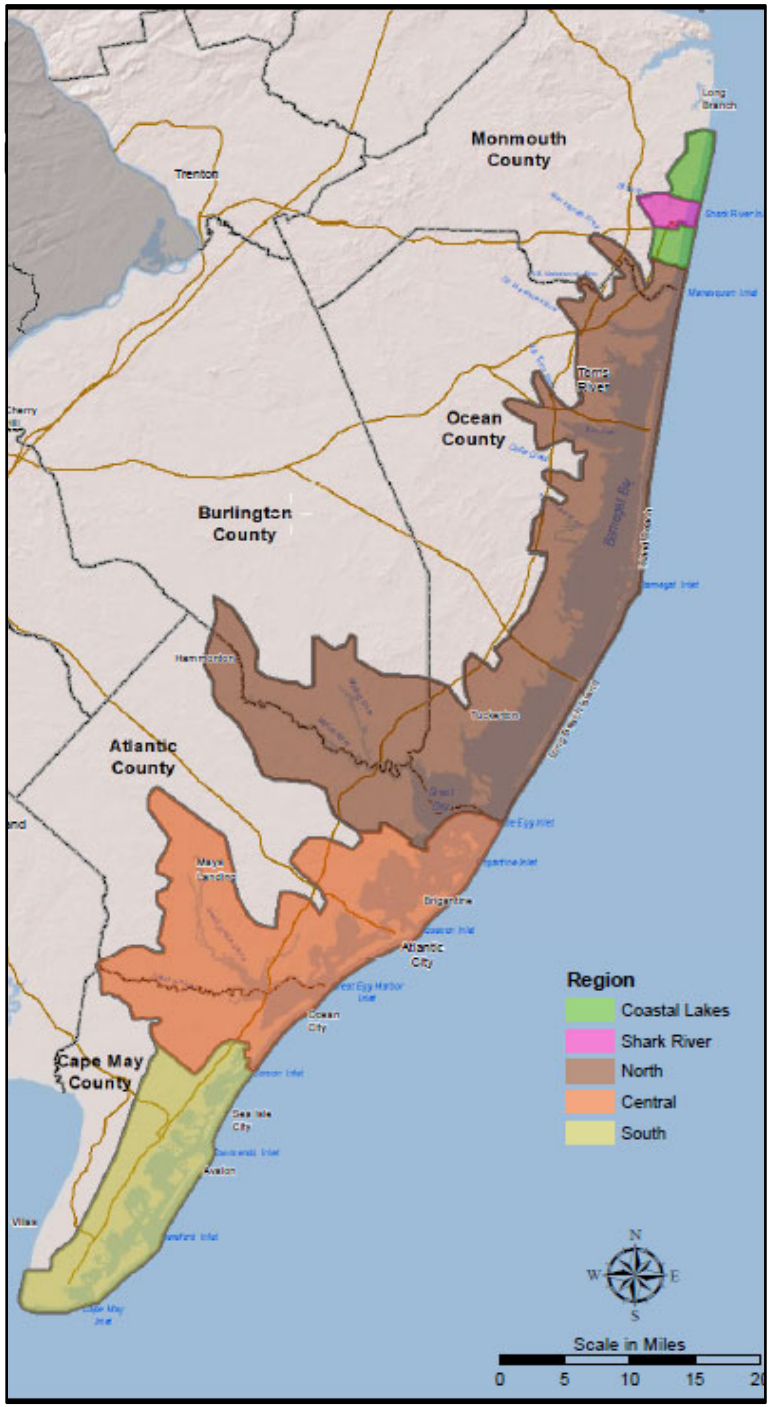
Links

Study Area Map
Public Mtg Presentation (Sept 13, 2018)
Public Mtg Presentation (Sept 12, 2018)
Public Comment Form (Sept. 2018)
Meeting Welcome Form (Sept. 2018)
Public Outreach Summary
Study Fact Card
Study Overview Factsheet

Study Documents

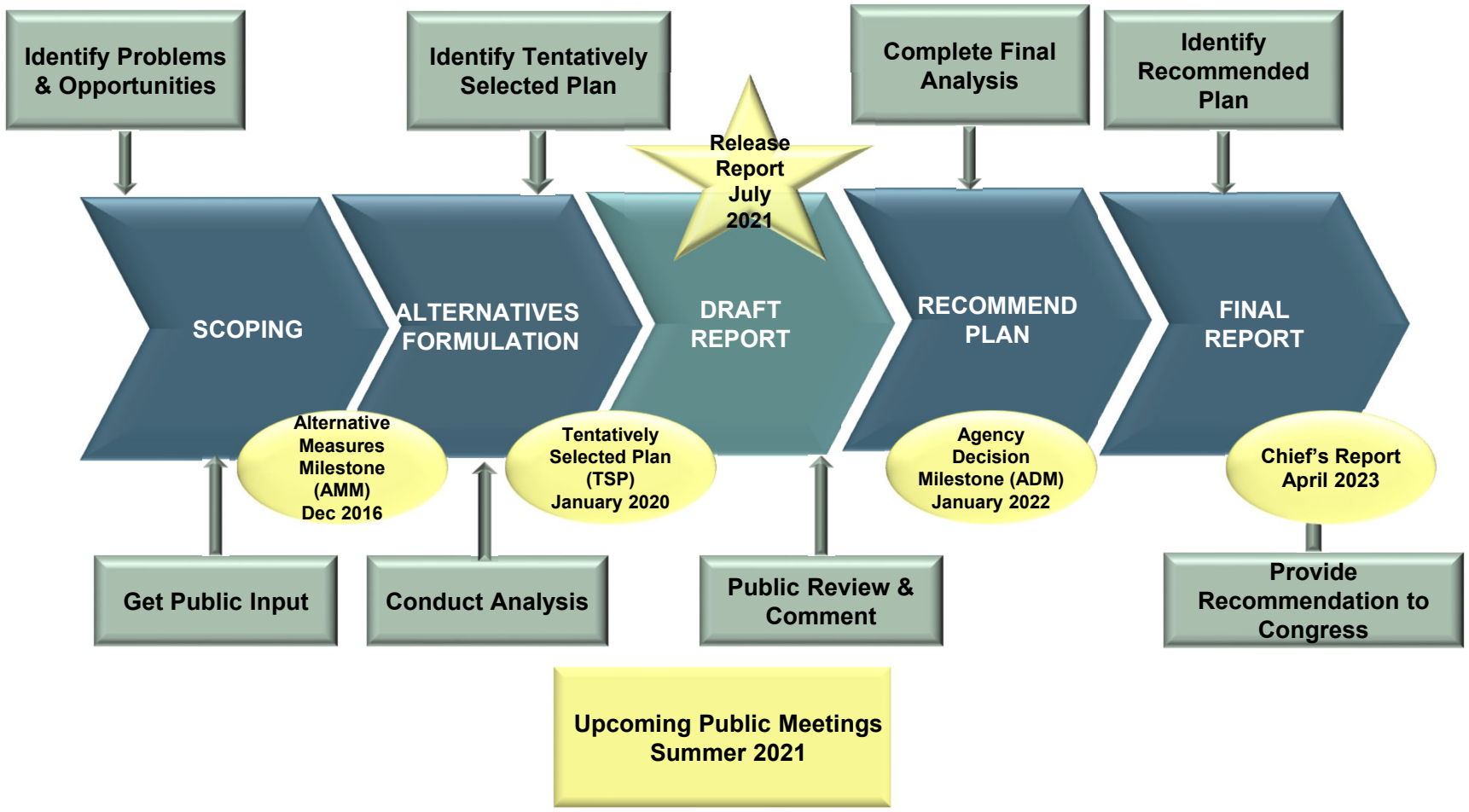
⊞ Presentations
⊞ Sept 2018 Public Meeting Posters
⊞ Study Documents

NJBB STUDY STATUS

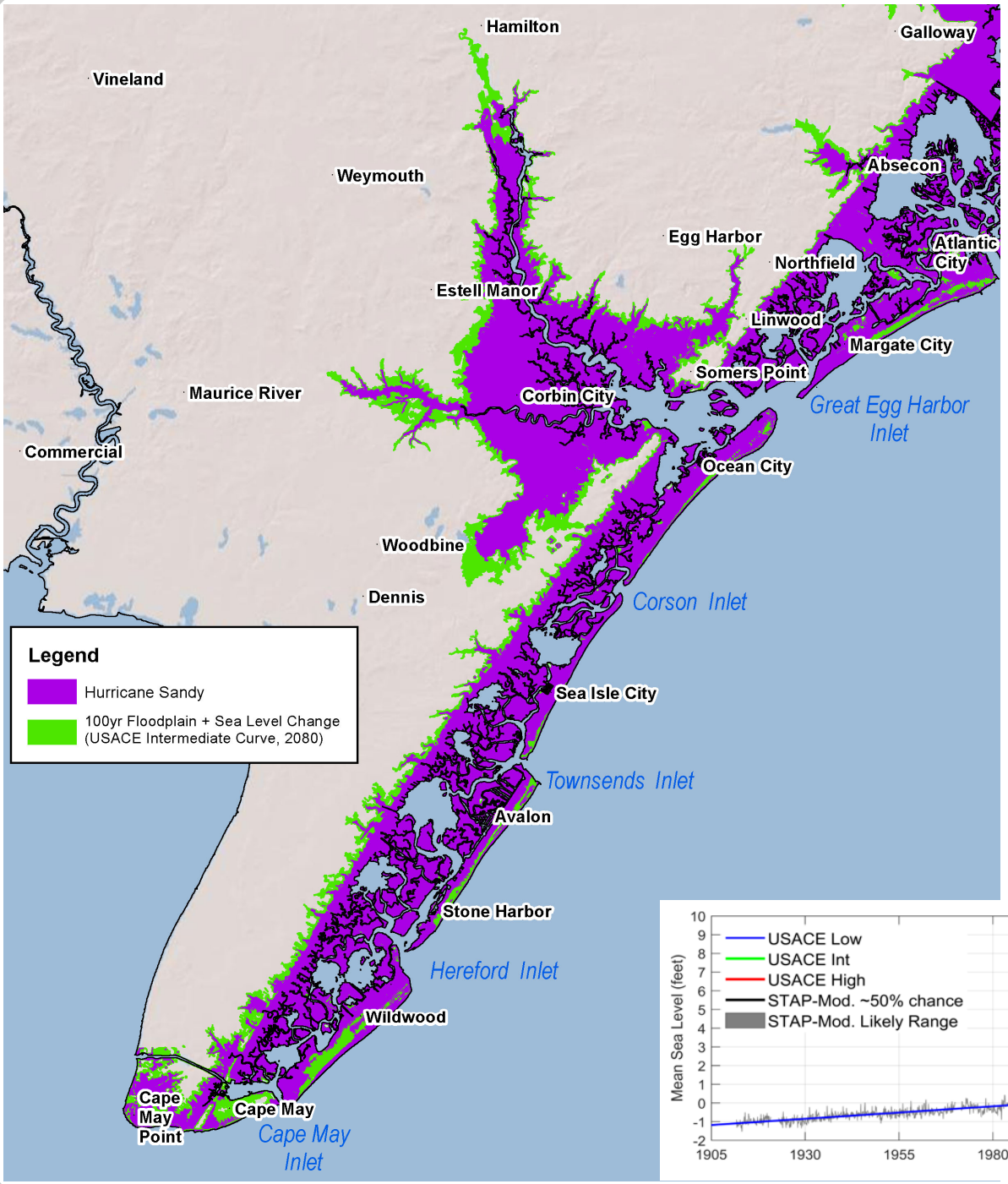


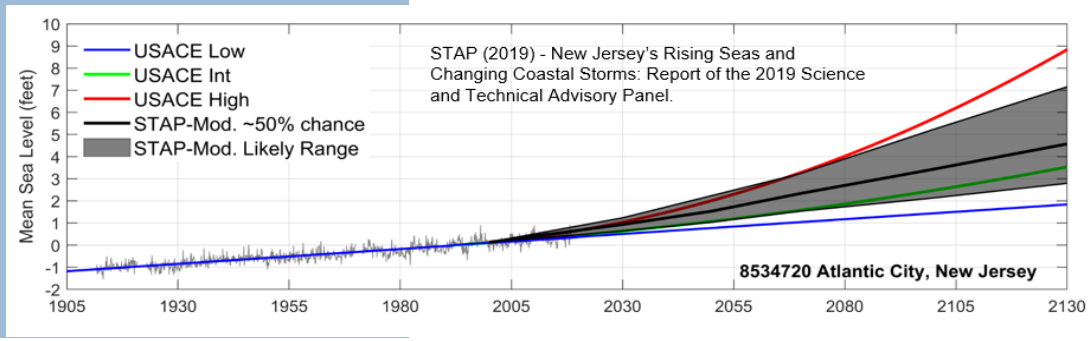
- Extensive area
- Coastal flooding and sea level rise risk management
- Reduce damages that affect population, critical infrastructure and facilities, property and ecosystems
- Reduce risk to human life from coastal flooding and storms
- Funding uncertainty and study extension approval since January 2020 Tentatively Selected Plan

STUDY MILESTONES



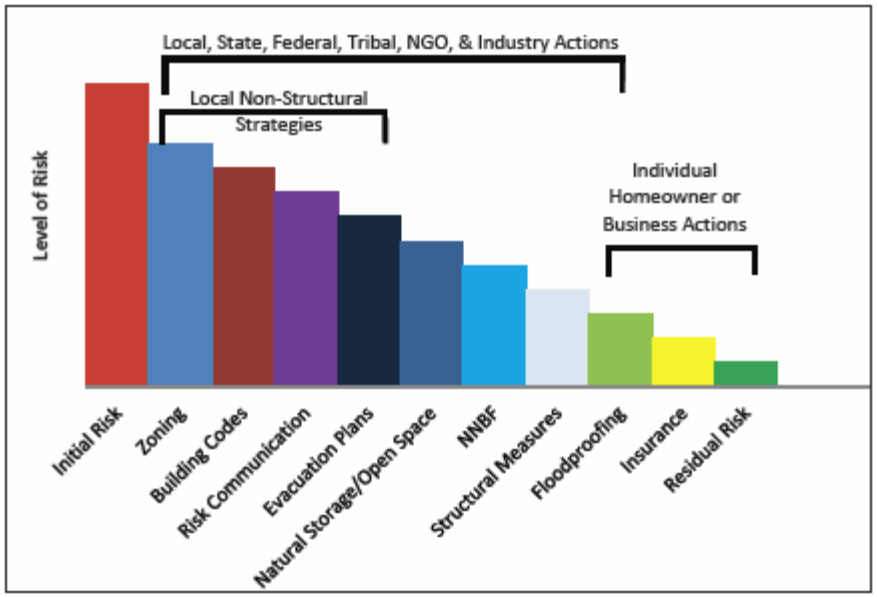
Southern Study Area Inundation Map with Sea Level Rise

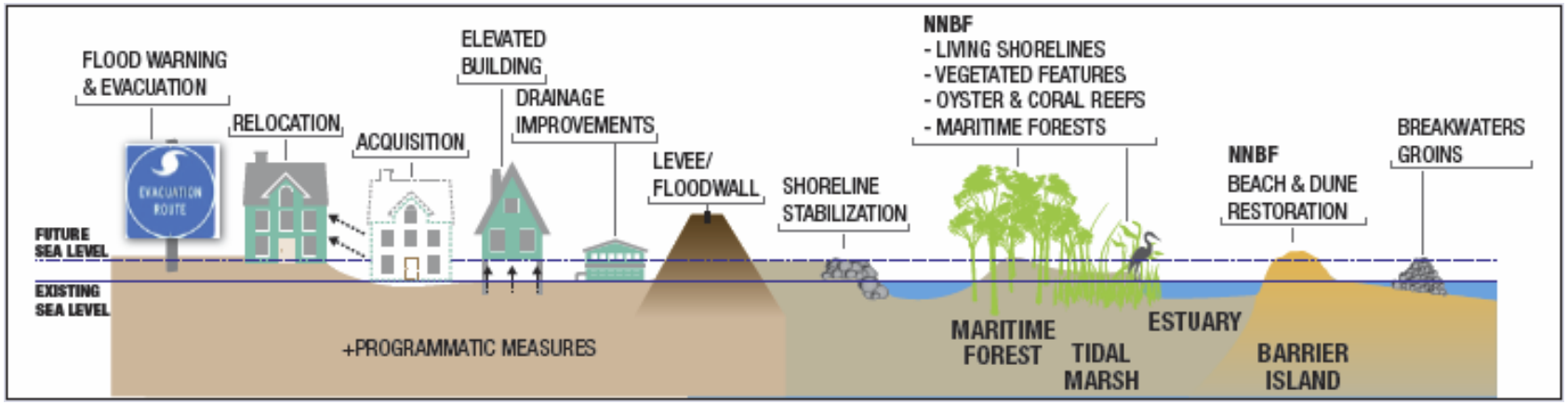




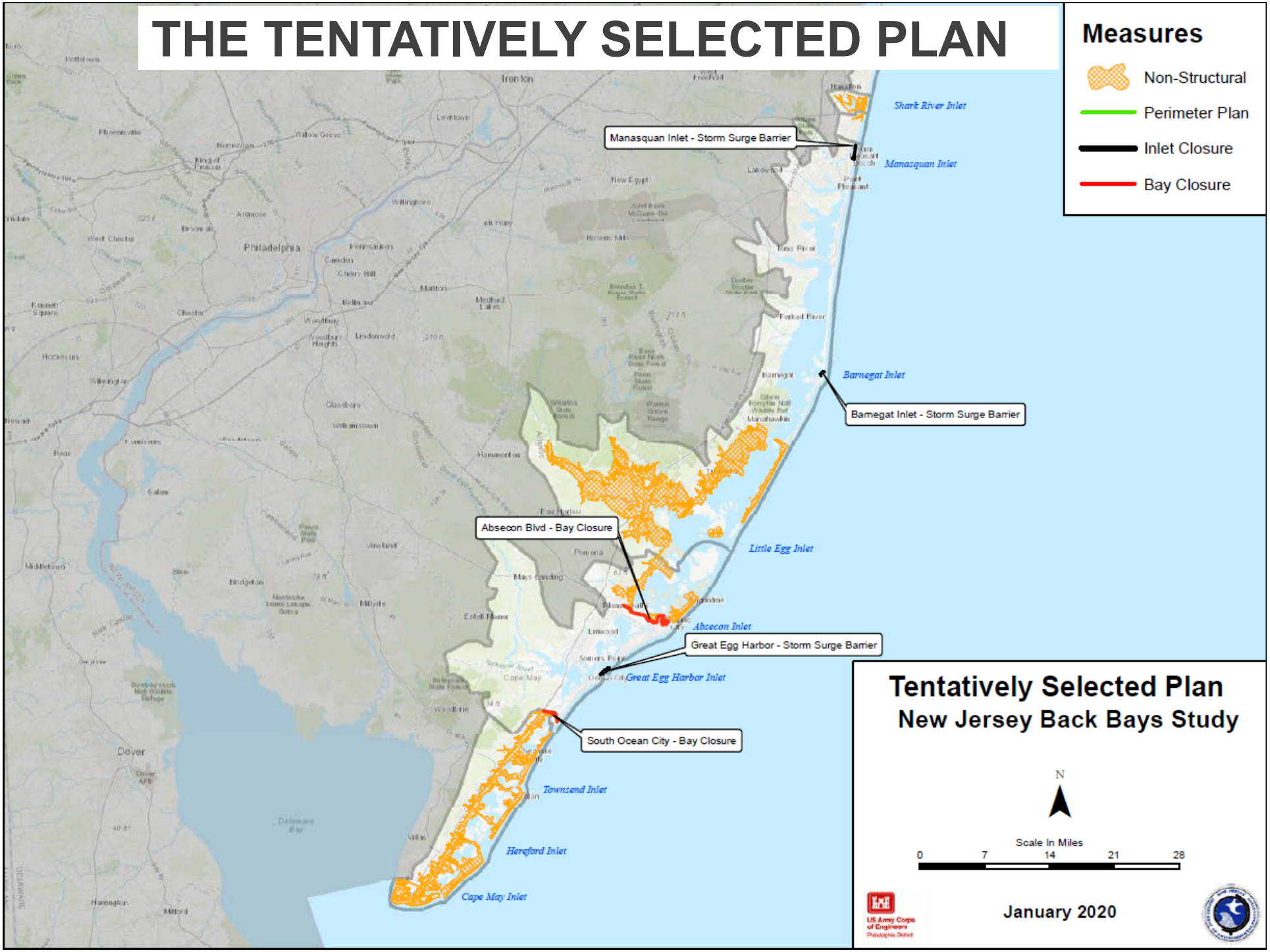
SETTING REALISTIC EXPECTATIONS:
ADAPTATION PLANNING CATEGORIES

- **Preserve**
  - Includes low regret measures to address current and future vulnerability
- **Accommodate**
  - Adaptive capacity of the system
- **Avoid**
  - Strategic retreat





THE TENTATIVELY SELECTED PLAN



SYSTEM OF ECONOMIC ACCOUNTS

National Economic Development (NED)	• The National Economic Development criteria examines the return per dollar spent and optimizes the balance between construction and implementation cost and coastal storm damages reduced.
Regional Economic Development (RED)	• Regional Economic Development considers the changes in regional economic activity that result from each alternative plan. • Regional income and regional employment are two factors that are included in regional economic development
Environmental Quality (EQ)	• Environmental Quality criteria includes both beneficial and adverse changes in the ecological, aesthetic, and cultural attributes of natural and cultural resources
Other Social Effects	• Other social effects include urban and community impacts; life, heath, and safety factors; displacement; long-term productivity; and energy requirements and energy conservation. • Other criteria can be added to this category based on feedback from stakeholders.

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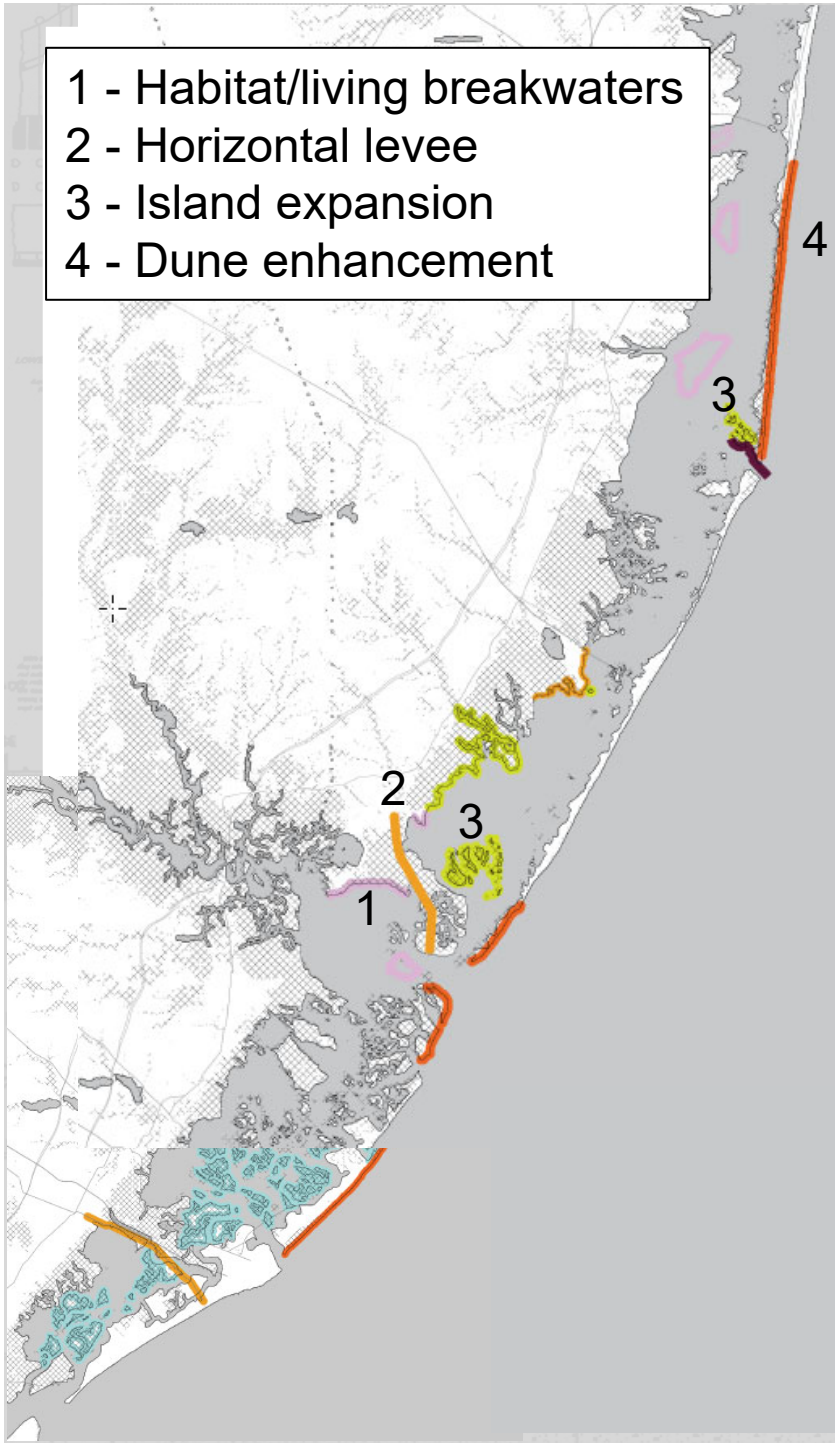
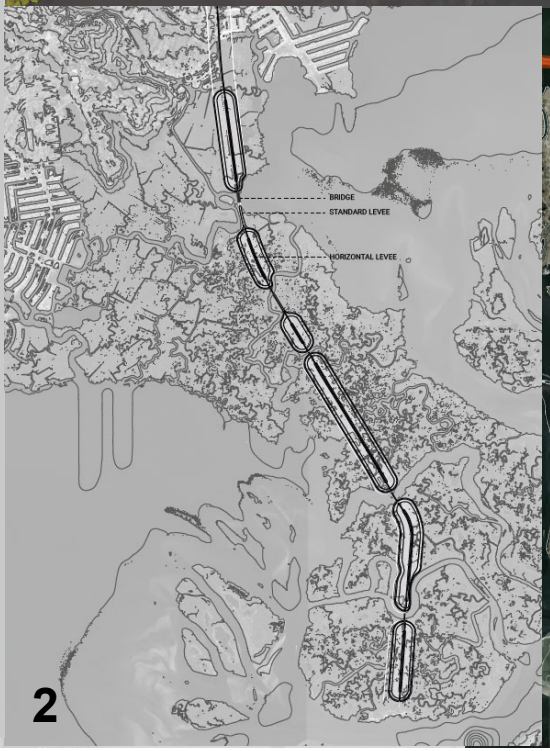
NATURAL & NATURE-BASED FEATURES
NORTH & CENTRAL REGIONS

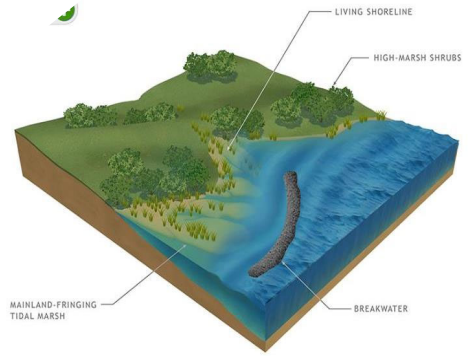
1 - Habitat/living breakwaters
2 - Horizontal levee
3 - Island expansion
4 - Dune enhancement



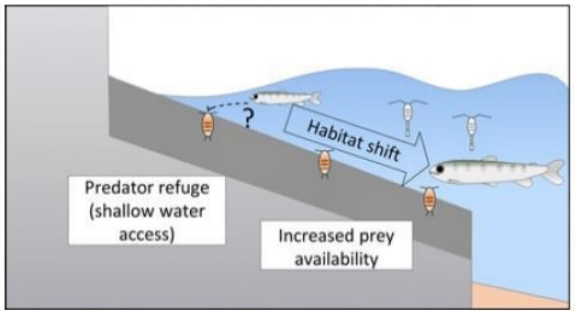


COMPLEMENTARY/HYBRID NNBFS

- **Primary NNBF measure under consideration is living shorelines. Current criteria for this measure include:**
  - **Unarmored shorelines adjacent to infrastructure**
  - **Complementary to structural measures such as floodwalls and levees**
- **NJBB study is also considering modifications that can be made to structural measures that can increase their habitat value:**
  - **Habitat benches to restore more natural slope along shorelines**
  - **Textured concrete to support colonization of algae and invertebrates**



Construction of living shoreline in Camp Pecometh, MD



Conceptual diagram of habitat bench

Textured concrete

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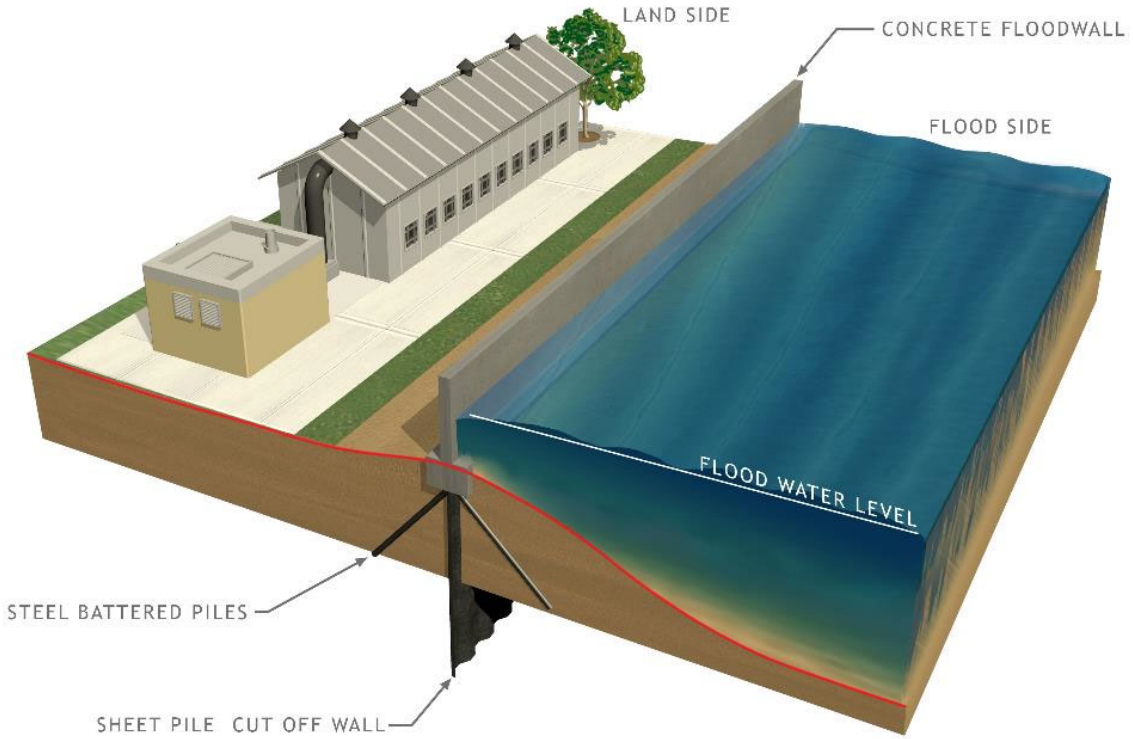
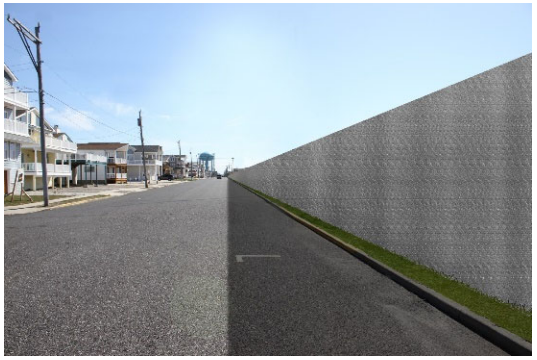
STRUCTURAL MEASURE – FLOODWALLS & LEVEES



Visual Impacts

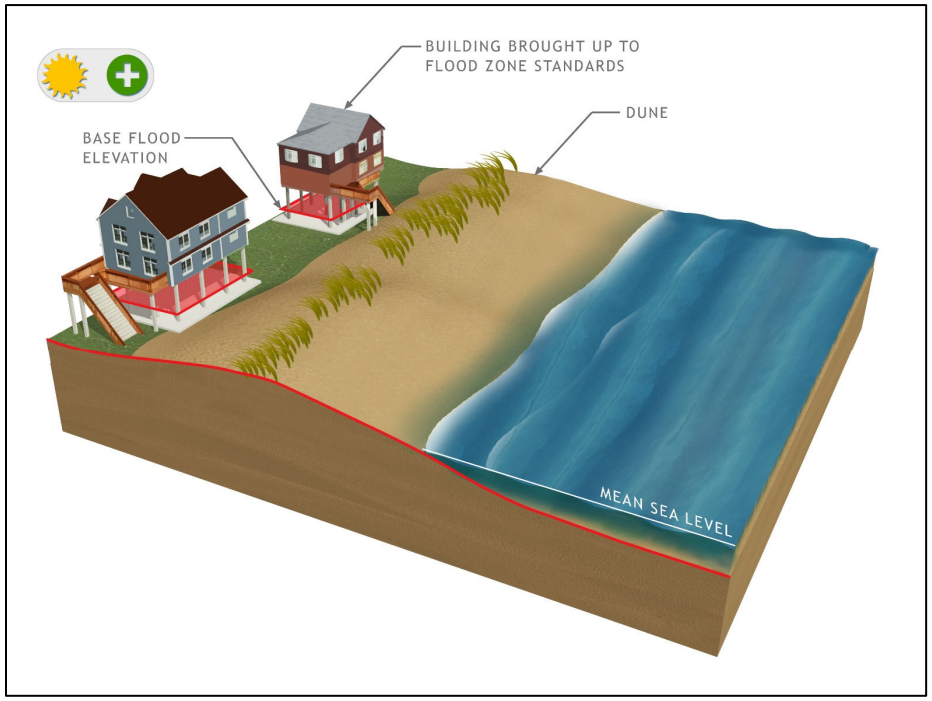
Existing

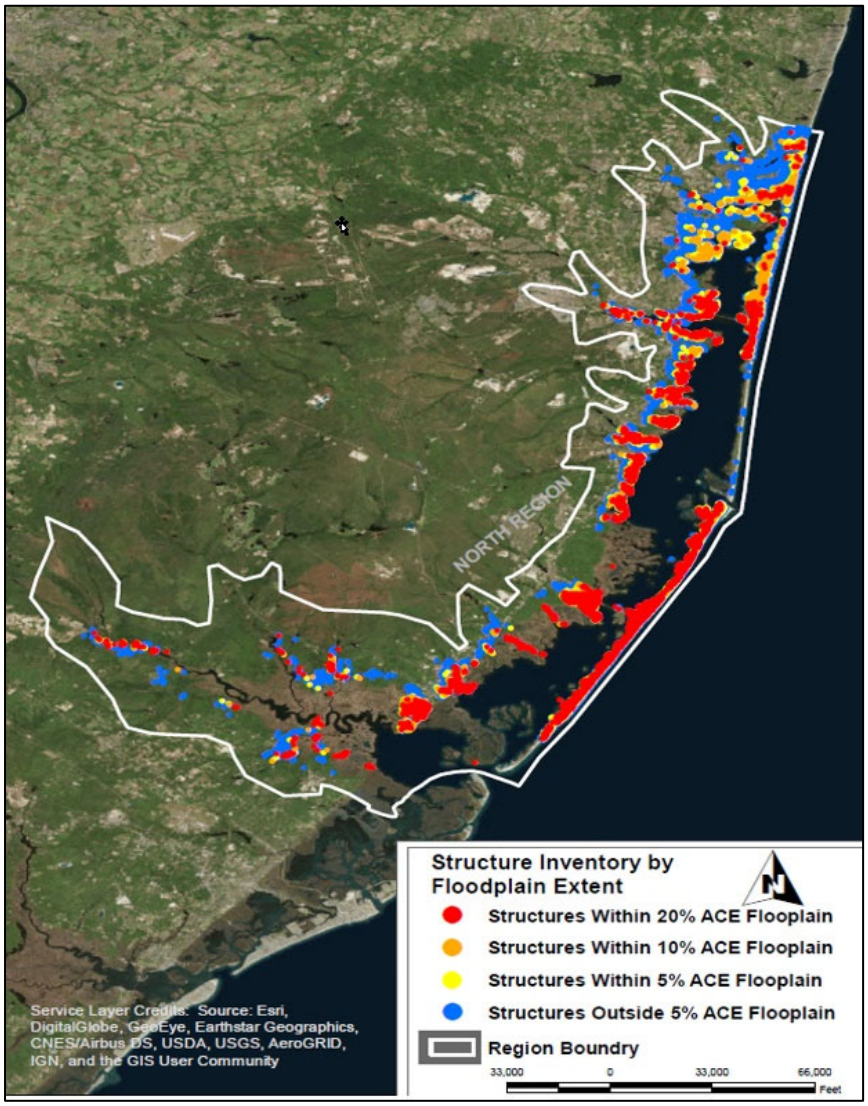
With Floodwall

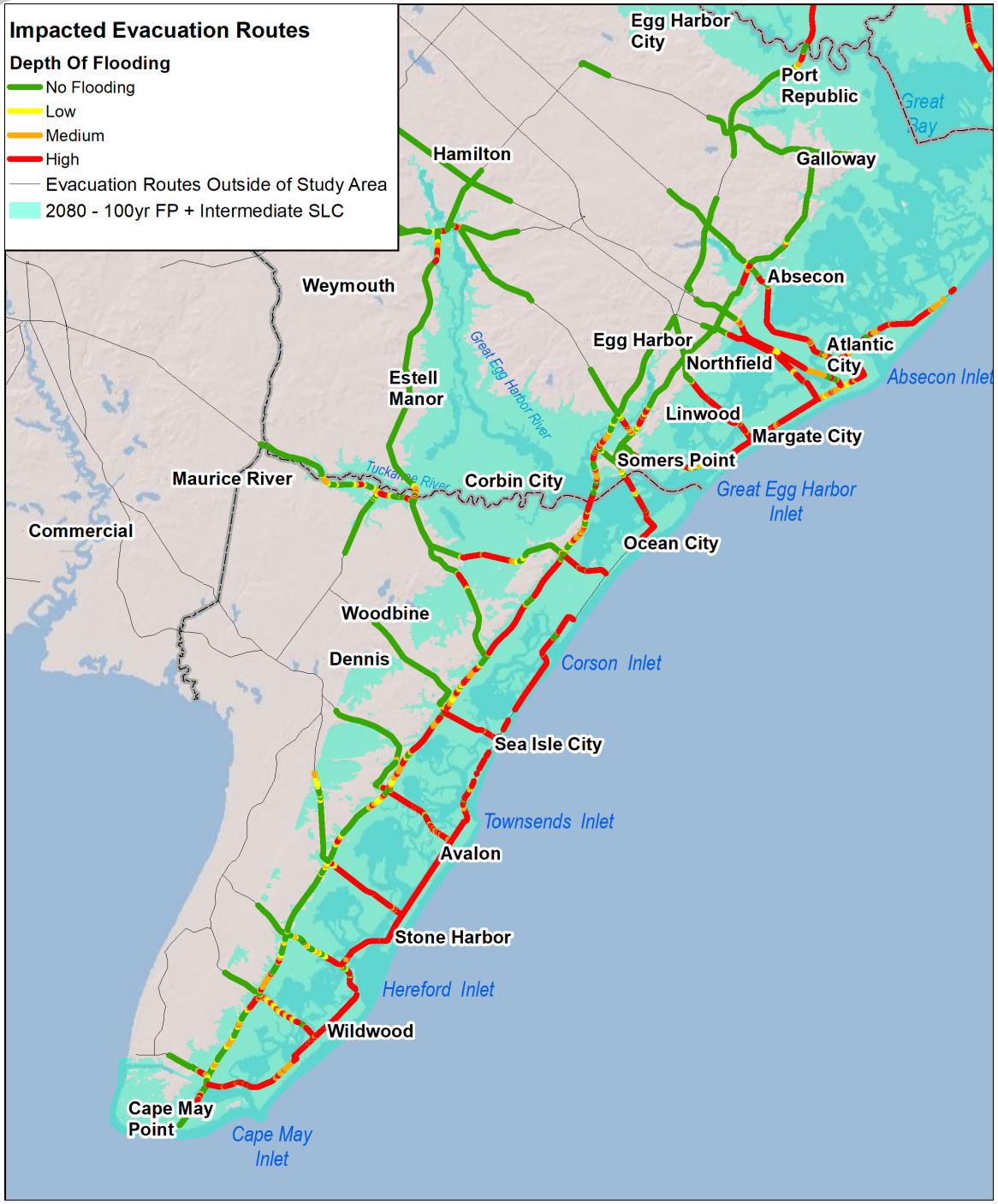


NONSTRUCTURAL MEASURES – BUILDING ELEVATION

- **Primary Nonstructural measures**
  - **Building elevation**
  - **Acquisition and relocation later**
- **Recommended in combination with structural measures to formulate economically justified hybrid plans**





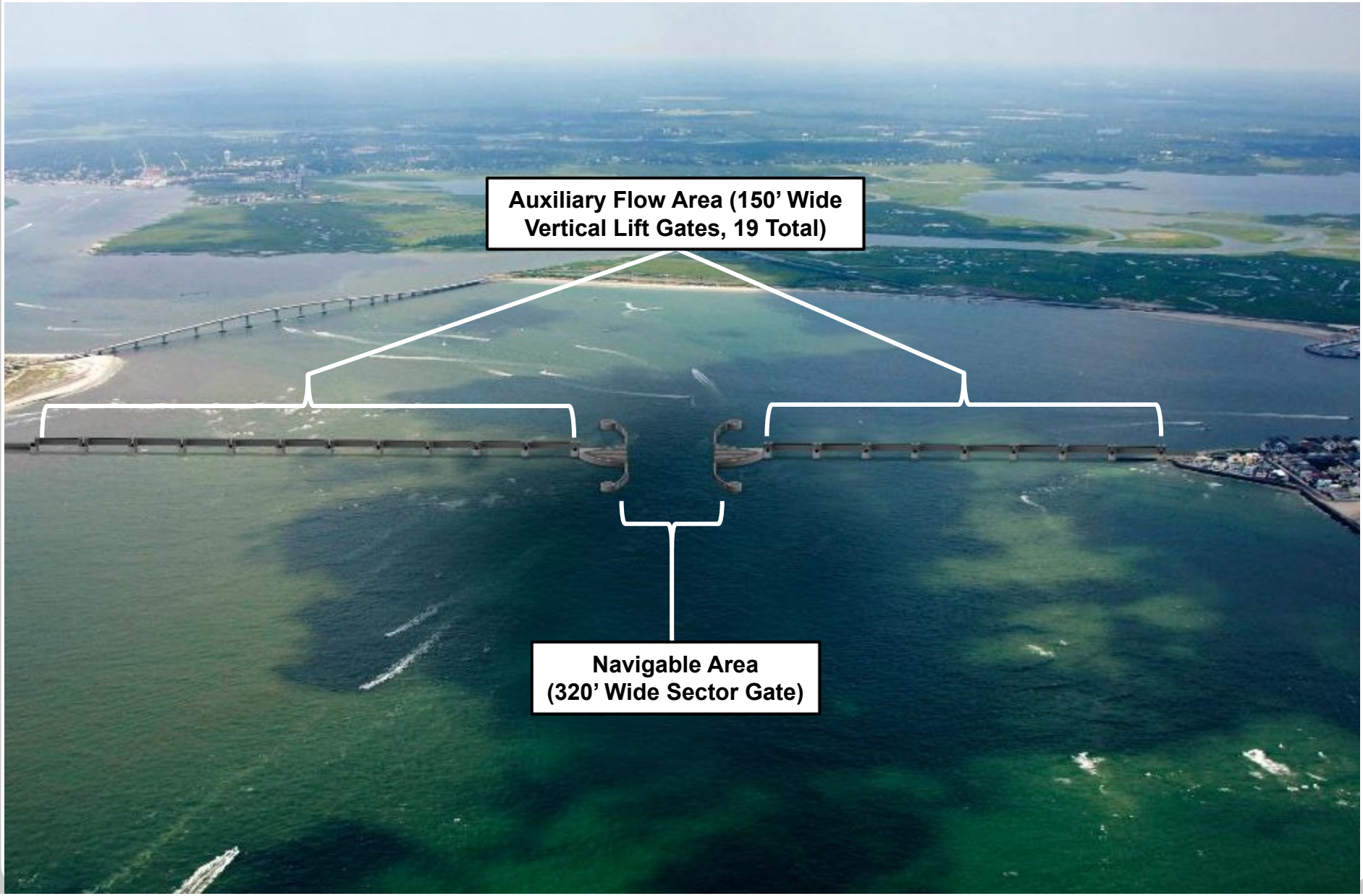


SOUTHERN STUDY AREA

NONSTRUCTURAL MEASURES – EVACUATION ROUTES

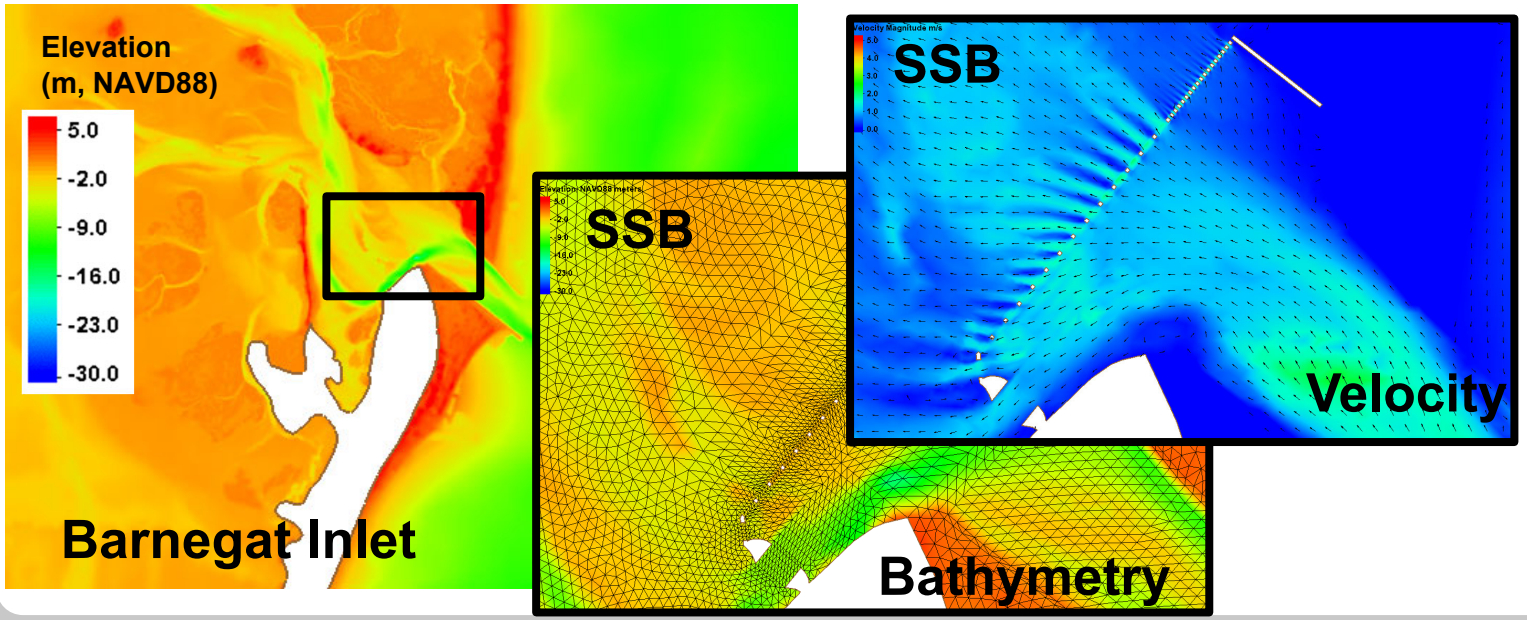
2080 – 100-YEAR FLOODPLAIN + INTERMEDIATE SLR

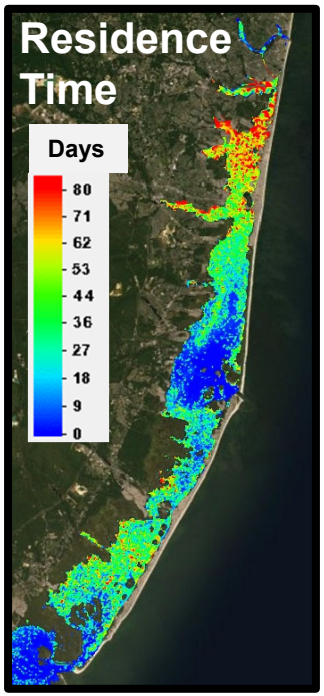
GREAT EGG HARBOR INLET – PRELIMINARY STORM SURGE BARRIER DESIGN



ADH MODELING – STORM SURGE BARRIER INDIRECT IMPACTS

- USACE Engineering Research & Development Center Coastal Hydraulics Lab developed AdH model to evaluate indirect impacts of storm surge barriers:
  - TSP - tides, velocities, salinity, and residence time
  - Final Report – navigation, sediment transport, water quality.
- Calibrated to 2019 ADCP field data collected at 3 inlets and long-term tide/salinity stations.
- Investigate sensitivity to storm surge barrier design: alignment, sill elevation, sector gate size, number of vertical lift gates.
- **Preliminary Model Results:**
  - Tidal Prism - decreases 2% to 6% in Barnegat Bay, 3% to 9% in Great Egg Harbor
  - Velocities – far-field changes < 0.02 ft/s, larger changes at inlets
  - Salinity - reductions in mean salinity < 0.5 ppt
  - Residence Time - increases 2% to 10% in Barnegat Bay and Great Egg Harbor





Environmental Considerations of the Focused Array of Alternatives

STRUCTURAL MEASURES

Perimeter Plans: Floodwalls/Levees

Temporary Impacts:
- Water Quality/Turbidity
- Habitat disturbance
- Air Quality/Noise
- Community

Permanent/Cumulative Impacts:
- High Direct Habitat Losses
- High Mitigation Costs
- Community/Visual Aesthetics

Storm Surge Barriers: Inlet/Bay Closures

Temporary Impacts:
- Water Quality/Turbidity
- Habitat disturbance
- Air Quality/Noise
- Community

Permanent/Cumulative Impacts:
- Lower Direct Habitat Losses
- Potential High Indirect Impacts
- Potential High Mitigation Costs
- Potential T & E species impacts at some locations
- Localized Community/Visual Aesthetics

NON-STRUCTURAL MEASURES

Building Raising

Temporary Impacts:
- Water Quality/Turbidity
- Low or no Habitat disturbance
- Minor Air Quality/Noise
- Community

Permanent/Cumulative Impacts:
- Low or no Direct Habitat Losses
- Potential High Cultural Resources Impacts
- Community

Acquisition

Temporary Impacts:
- Community
- Water Quality/Turbidity if earth disturbance from building razing

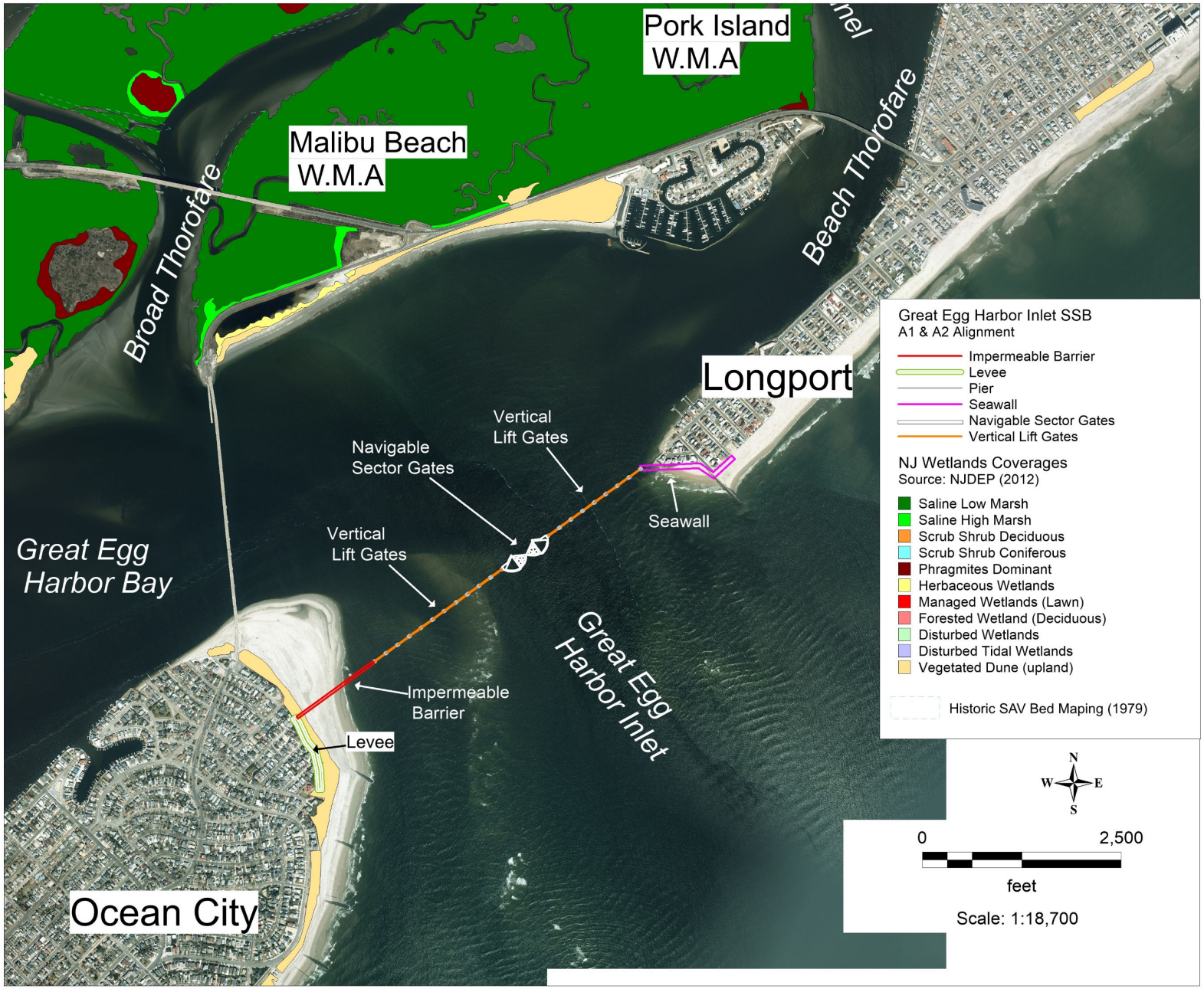
Permanent/Cumulative Impacts:
- Community
- Potential High Cultural Resources Impacts
- Potential Beneficial Environmental Effect If Building Razing Removes Impervious Surface

Natural and Nature Based Features (NNBF)

Wetlands/SAVs/ Living Shorelines

Temporary Impacts:
- Water Quality/Turbidity
- Habitat disturbance
- Air Quality/Noise
- Community

Permanent/Cumulative Impacts:
- Beneficial Ecological Uplift
- Increase in Environmental Services


Pork Island
W.M.A
Malibu Beach
W.M.A
Broad Thorofare
Beach Thorofare
Longport
Vertical
Lift Gates
Navigable
Sector Gates
Seawall
Vertical
Lift Gates
Great Egg
Harbor Bay
Great Egg
Harbor Inlet
Impermeable
Barrier
Levee
Ocean City
Great Egg Harbor Inlet SSB
A1 & A2 Alignment
Impermeable Barrier
Levee
Pier
Seawall
Navigable Sector Gates
Vertical Lift Gates
NJ Wetlands Coverages
Source: NJDEP (2012)
Saline Low Marsh
Saline High Marsh
Scrub Shrub Deciduous
Scrub Shrub Coniferous
Phragmites Dominant
Herbaceous Wetlands
Managed Wetlands (Lawn)
Forested Wetland (Deciduous)
Disturbed Wetlands
Disturbed Tidal Wetlands
Vegetated Dune (upland)
Historic SAV Bed Maping (1979)
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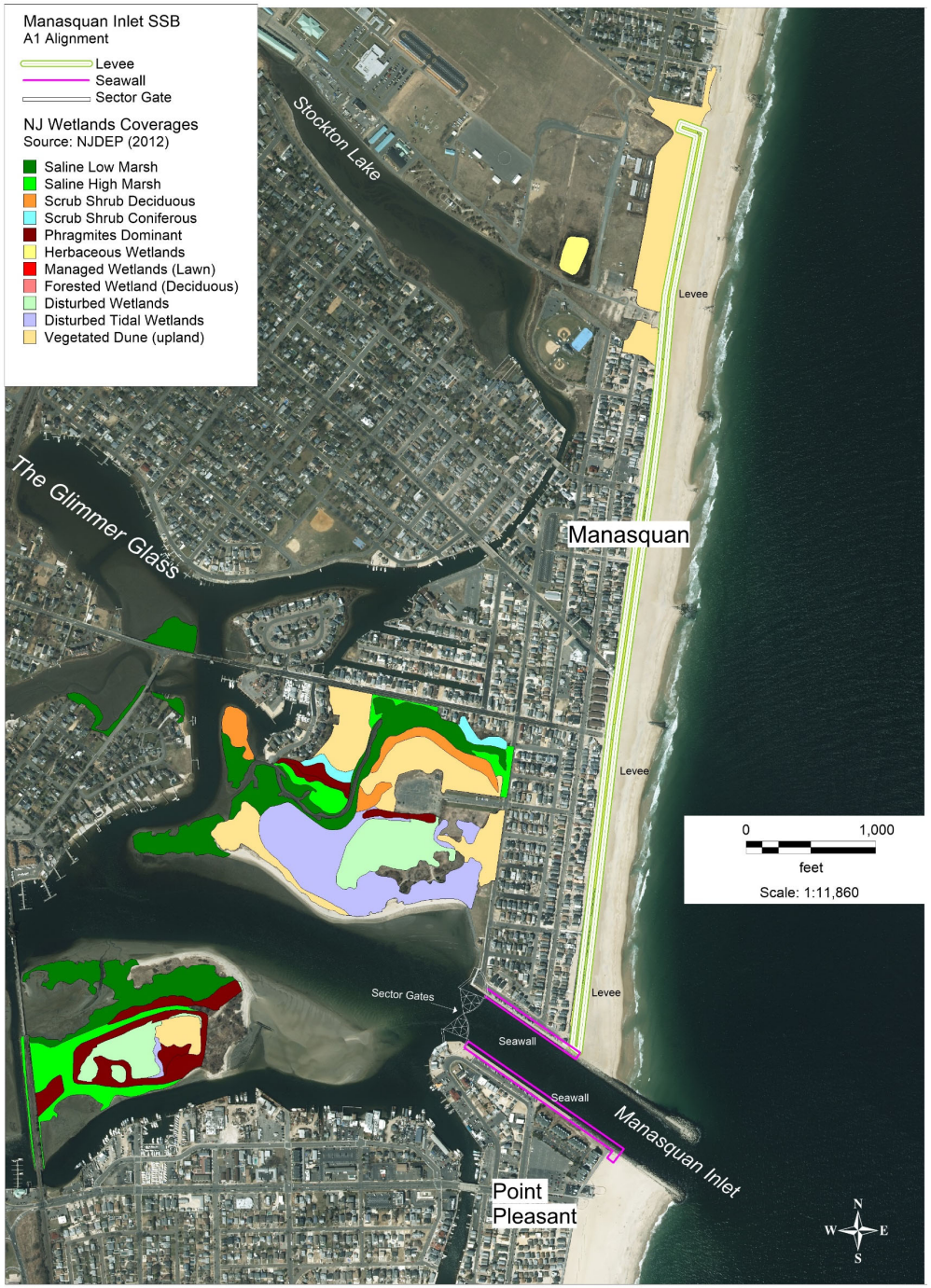
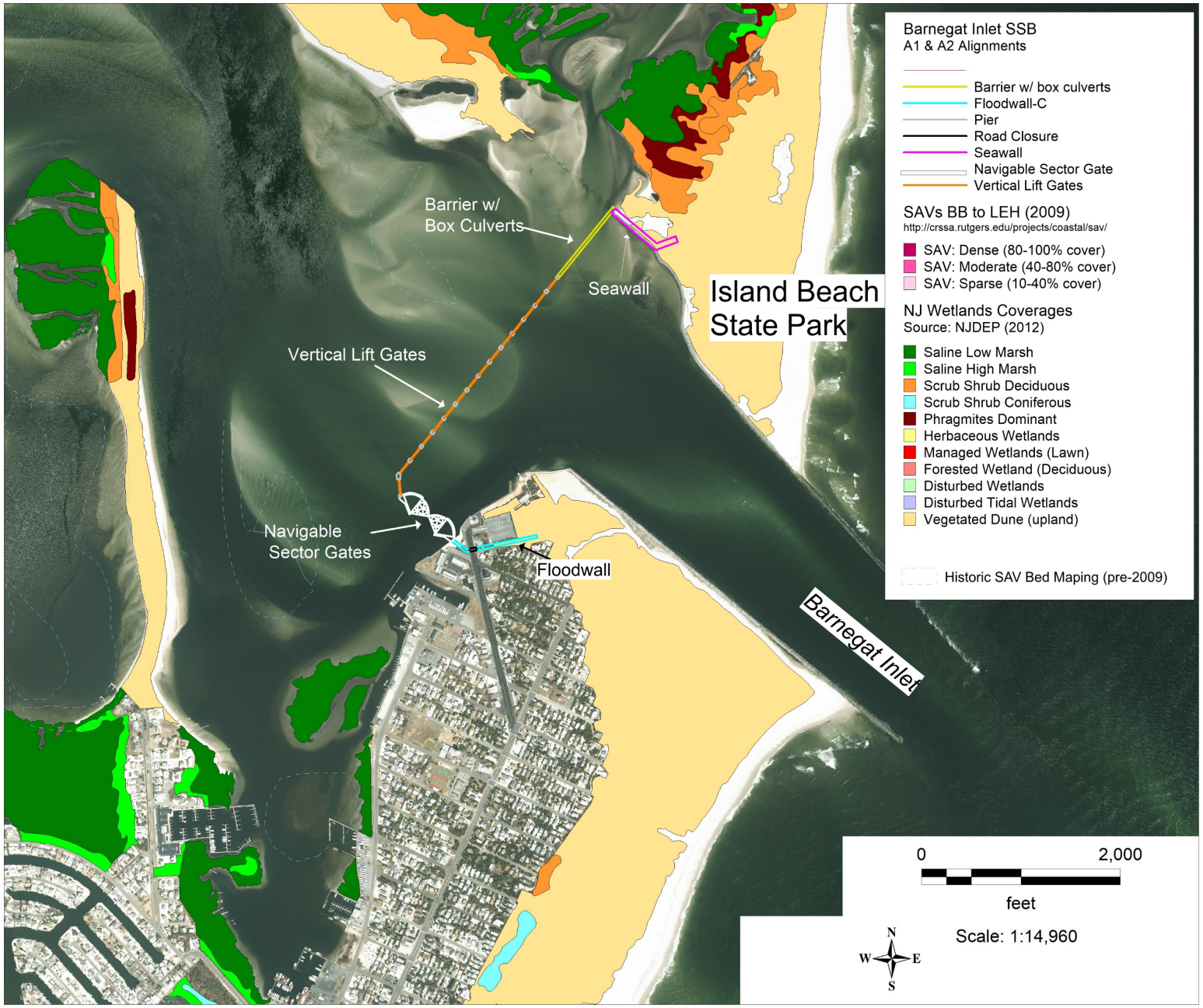
feet
Scale: 1:18,700



Manasquan Inlet Storm Surge Barrier and Wetland Habitats


Barnegat Inlet SSB
A1 & A2 Alignments
Barrier w/ box culverts
Floodwall-C
Pier
Road Closure
Seawall
Navigable Sector Gate
Vertical Lift Gates
SAVs BB to LEH (2009)
http://crssa.rutgers.edu/projects/coastal/sav/
SAV: Dense (80-100% cover)
SAV: Moderate (40-80% cover)
SAV: Sparse (10-40% cover)
NJ Wetlands Coverages
Source: NJDEP (2012)
Saline Low Marsh
Saline High Marsh
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Scrub Shrub Coniferous
Phragmites Dominant
Herbaceous Wetlands
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Disturbed Wetlands
Disturbed Tidal Wetlands
Vegetated Dune (upland)
Historic SAV Bed Maping (pre-2009)
Barrier w/
Box Culverts
Seawall
Island Beach
State Park
Vertical Lift Gates
Navigable
Sector Gates
Floodwall
Barnegat Inlet
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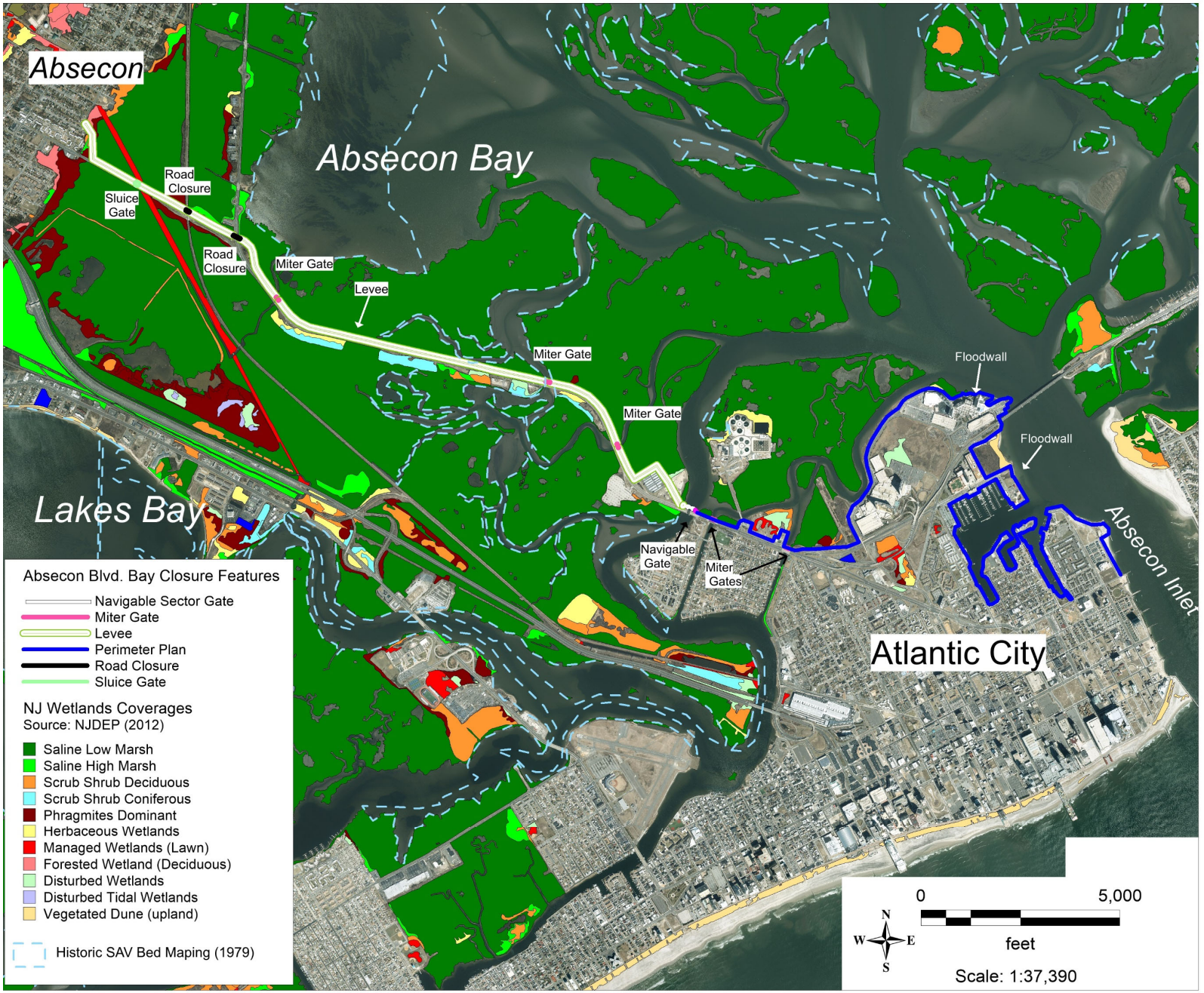
Absecon
Absecon Bay
Lakes Bay
Atlantic City
Absecon Inlet
Road Closure
Sluice Gate
Road Closure
Miter Gate
Levee
Miter Gate
Miter Gate
Floodwall
Floodwall
Navigable Gate
Miter Gates
Absecon Blvd. Bay Closure Features
Navigable Sector Gate
Miter Gate
Levee
Perimeter Plan
Road Closure
Sluice Gate
NJ Wetlands Coverages
Source: NJDEP (2012)
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Disturbed Wetlands
Disturbed Tidal Wetlands
Vegetated Dune (upland)
Historic SAV Bed Maping (1979)
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Scale: 1:37,390


Sluice Gate
Levee
Edward Creek
Crook
Miter Gate
Levee
Navigable Sector Gate
52nd St.
Beach Creek
Horn Creek
Beach Ck.
Southern Ocean City
Corson Sound
Devils Island
Devils Thoro
Weakfish Ck.
Middle Thoro
Atlantic Ocean
Corson's Inlet S.P.
Southern Ocean City (52nd St.)
Bay Closure Features
Navigable Sector Gate
Miter Gate
Levee
Perimeter Plan(Floodwall/Levee)
Road Closure
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Managed Wetlands (Lawn)
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Mixed Wooded Wetlands
Disturbed Wetlands
Disturbed Tidal Wetlands
Vegetated Dune (upland)
Historic SAV/Macroalgae Bed Maping (1979)
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feet
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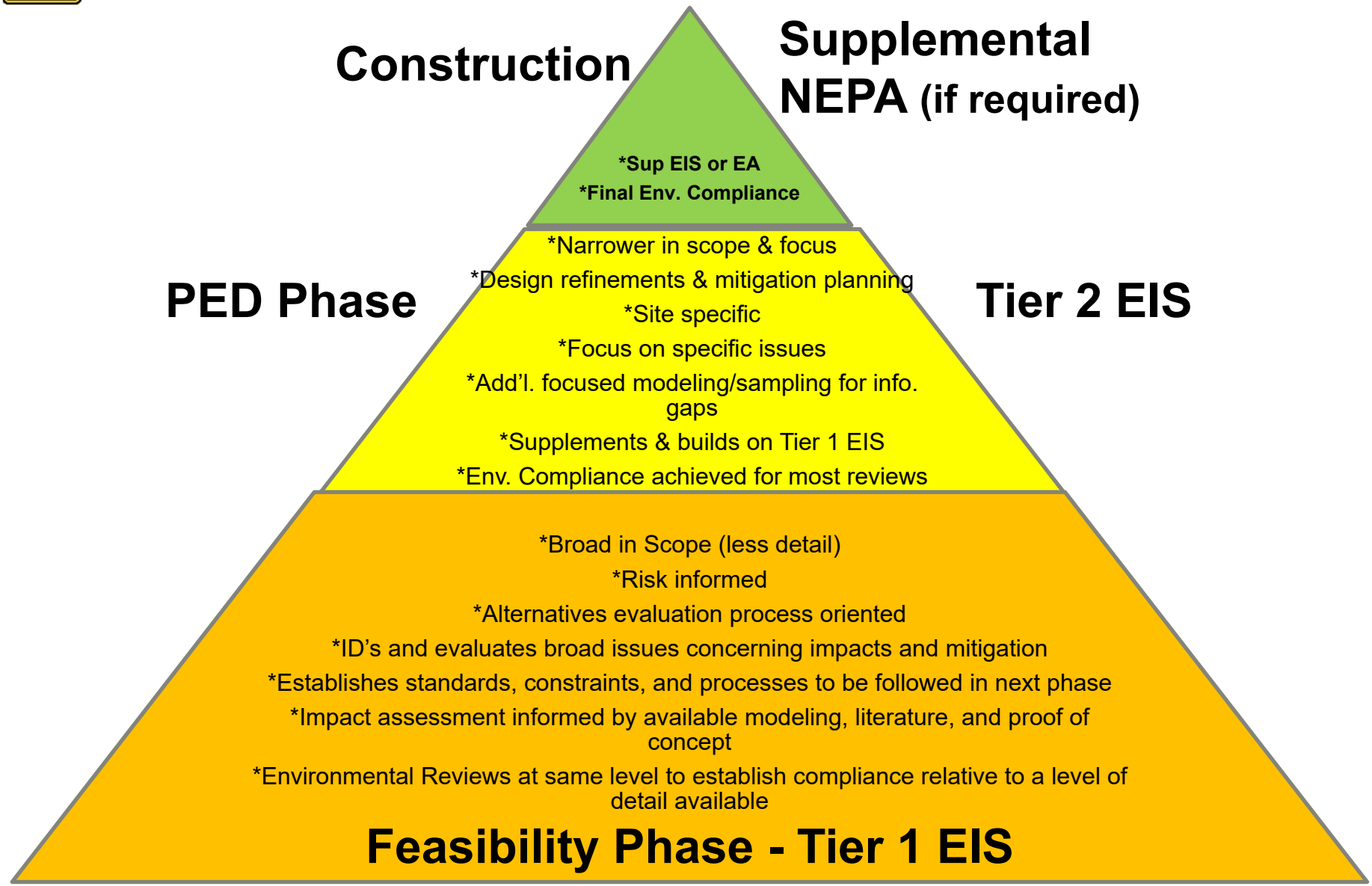
Scale: 1:14,960

NJBB TIERED NEPA APPROACH



ENVIRONMENTAL REVIEW SCHEDULE

DRAFT NEW JERSEY BACK BAYS TIER 1 DEIS REVIEW SCHEDULE

2021

AGENCY	REVIEW	ACTION	June	July	August	September	October	November	December	January
General Review	Tier 1 Level NEPA (DEIS)	Agency and Public NEPA Review of DEIS		1-Jul	15-Aug	(45 days duration)				
NOAA/NMFS	Tier 1 ESA	Initiate Consultation to designate complete BA		1-Jul	31-Aug	(60 days duration)				
		Conclusion of ESA Consultation				1-Sep			15-Jan	(135 days duration)
	Tier 1 MSA	Initiate Consultation - designate complete EFH Assessment		1-Jul	31-Aug	(60 days duration)				
		NOAA Response - EFH Conservation Recommendations				1-Sep	31-Oct	(60 days duration)		
DOI/USFWS	Tier 1 ESA	Initiate Consultation to designate complete BA		1-Jul	31-Aug	(60 days duration)				
		Conclusion of ESA Consultation				1-Sep			15-Jan	(135 days duration)
	Tier 1 FWCA	Provide Draft FWCA 2(b) Report	15-Jun	15-Jul	30 days (duration)					
		Provide FWCA 2(b) Report		15-Jul		15-Sep	60 days duration			
NJDEP	Tier 1 Federal Consistency Review	Submit and designate complete FEDCON package		1-Jul	31-Jul	(30 days duration)				
		Conditional Federal Consistency			1-Aug		30-Sep	(60 days duration)		
	Section 106 NHPA Review	Execute Prog. Agreement (PA)								(Duration in accorda

Questions & Answers