New Jersey Back Bays Coastal Storm Risk Management Feasibility Study

Ocean and Burlington Counties
Mayor's Meeting
Toms River, NJ
June 19, 2018

NJBB
NEW JERSEY BACK BAYS STUDY

State of New Jersey
Shore Protection Program

State of New Jersey
Philip Murphy, Governor

Department of Environmental Protection
Catherine McCabe, Acting Commissioner

Engineering & Construction
David Rosenblatt, Assistant Commissioner

Division of Coastal Engineering
William Dixon, Director

Division of Coastal Engineering Purpose…

To administer beach nourishment, shore protection and navigational dredging projects throughout the State to:

…Provide for protection of life and property along the coast
…Preserve New Jersey's vital coastal resources
…Maintain safe and navigable waterways

Shore Protection Fund is Dedicated…

"To protect existing development and infrastructure from storm surges, sea-level rise, and shoreline migration, through dune creation and maintenance, beach nourishment projects and construction and repair of shore protection structures."

$25 million dedicated annually
Realty Transfer Tax (N.J.S.A. C. 13:19-16.1)

How the money is divided…

DCE Overhead & Professional and Technical Services

- **Approximately $5 million**

  Steven's Institute of Technology **Richard Stockton College of NJ**

  NJ Division of Fish and Wildlife **NJ Geological Survey**

- **Remaining $20 Million**

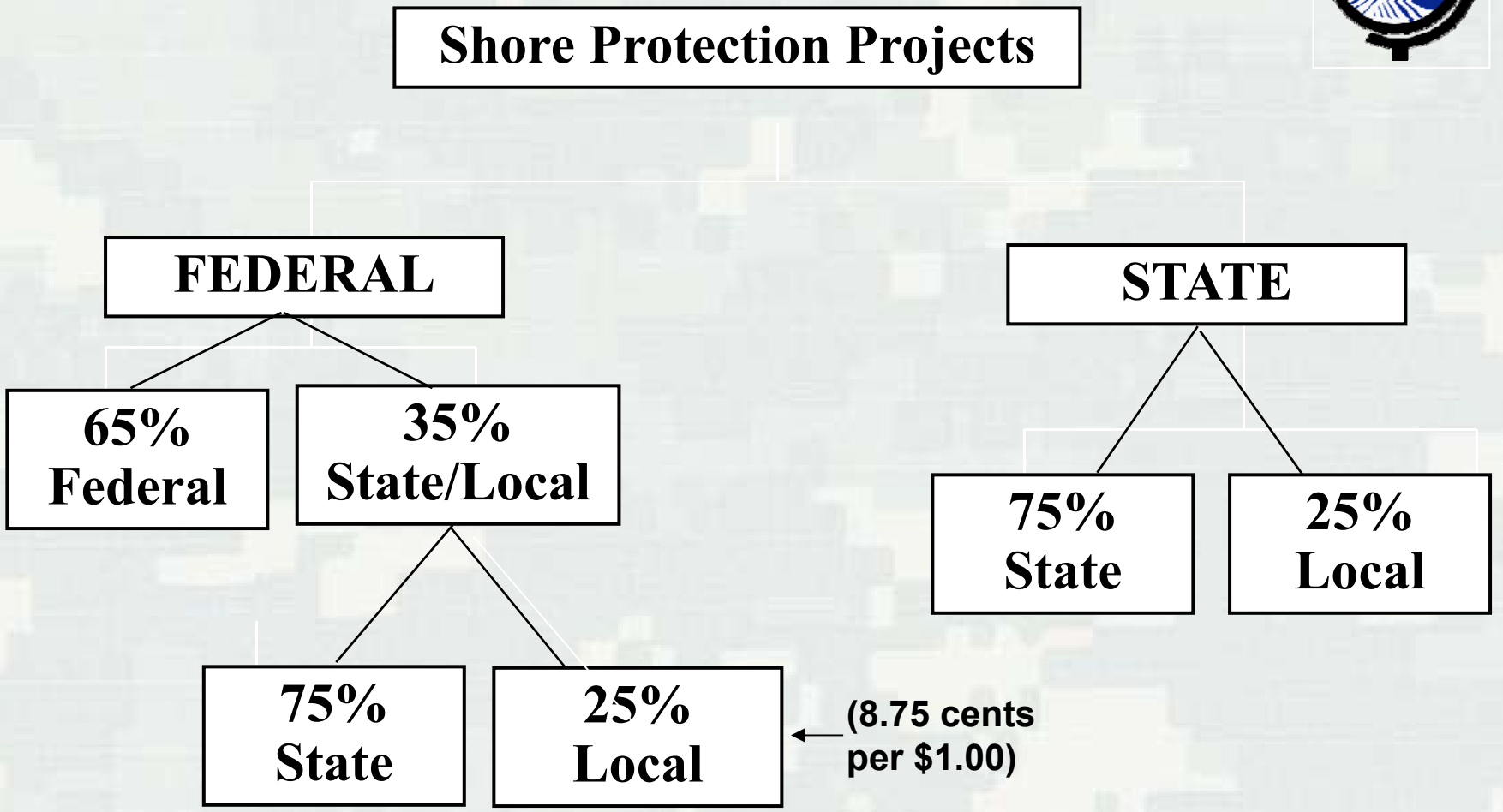
Federal Projects – NJDEP - local sponsor in these projects

- **Studies**
- **Storm Damage Reduction/Shore Protection**
- **Environmental Restoration**

State Projects – Municipalities – local sponsor in these projects

- **Storm Damage Reduction/Shore Protection**

Typical Cost Share Breakdown:



Meeting Purpose

NJBB Study purpose, outcomes and technical products

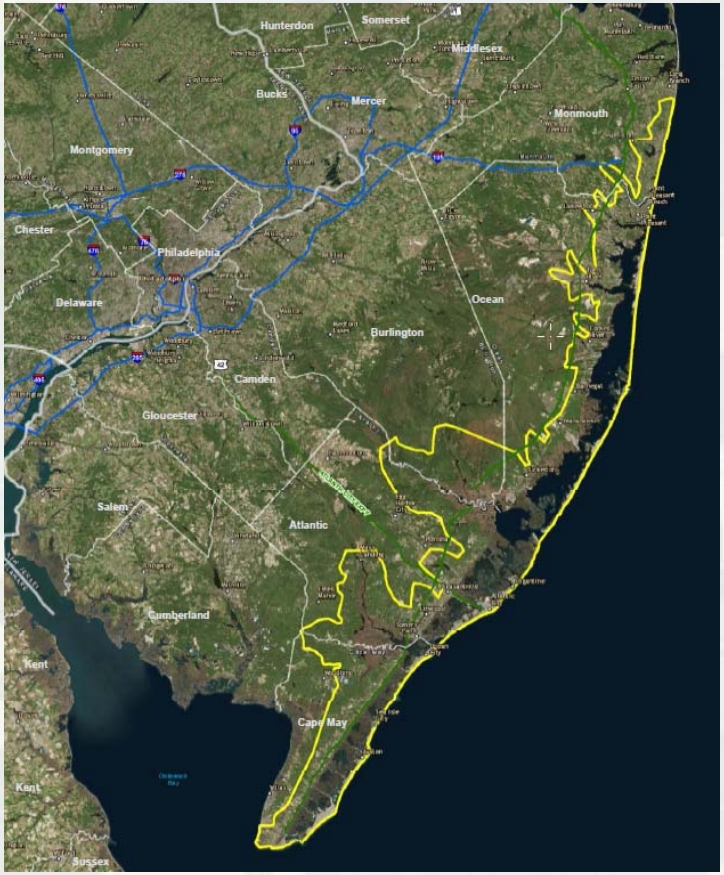
Shared vision for community coastal resilience in a regional, systems context

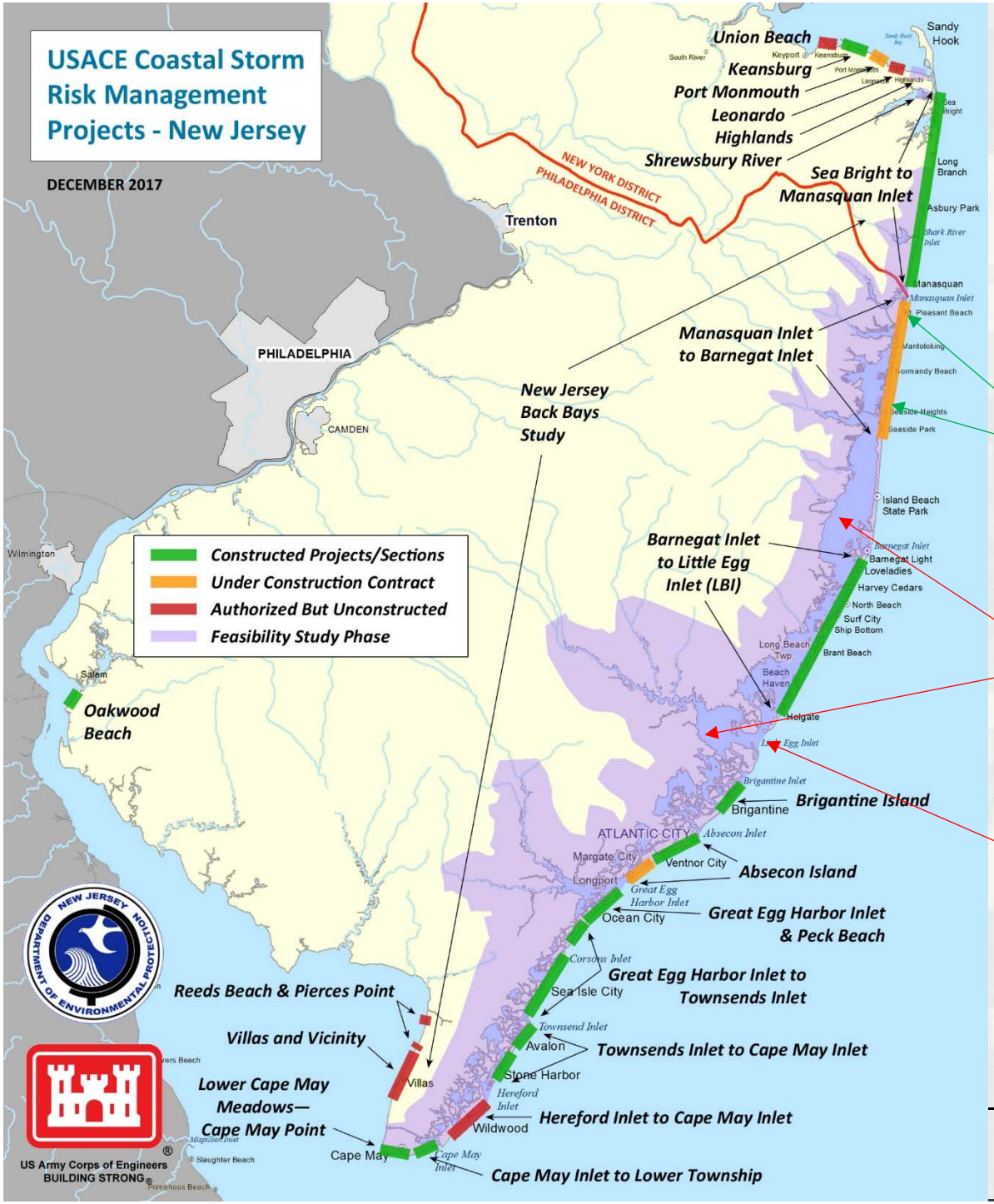
Local official's input

- Study analyses and products
- Study process and schedule
- Management measures
- Other pertinent information relevant to study

New Jersey Back Bays
Coastal Storm Risk Management Feasibility Study

- Extensive area
- Coastal flooding and sea level rise risk management
- Reduce damages that affect population, critical infrastructure, critical facilities, property, and ecosystems.
- Implement system-wide structural, nonstructural, natural and nature-based solutions
- Three-year study to Tentative Plan (April 2019)
- Scaled and incrementally implementable design and construction opportunities





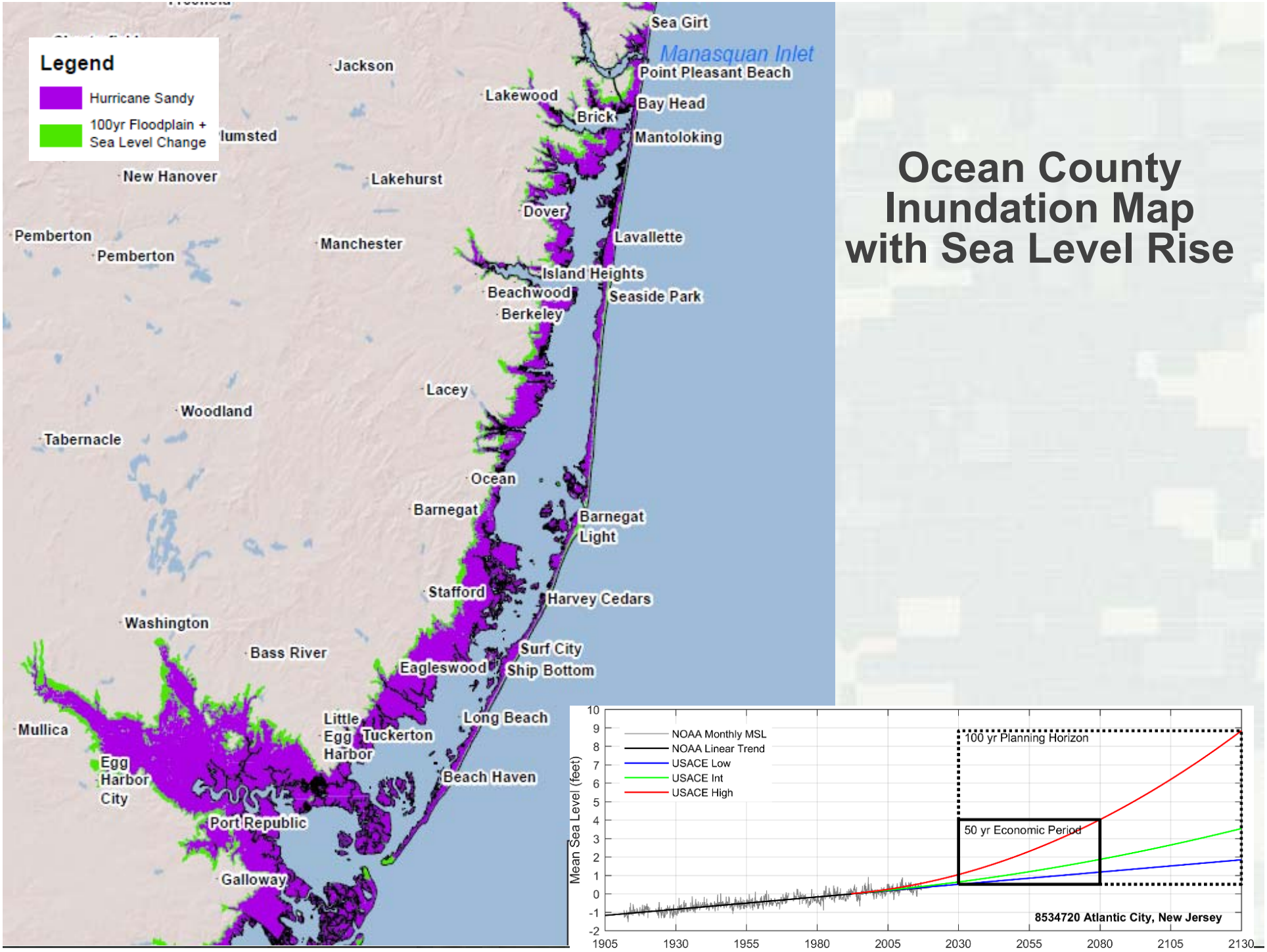
Comprehensive oceanfront projects

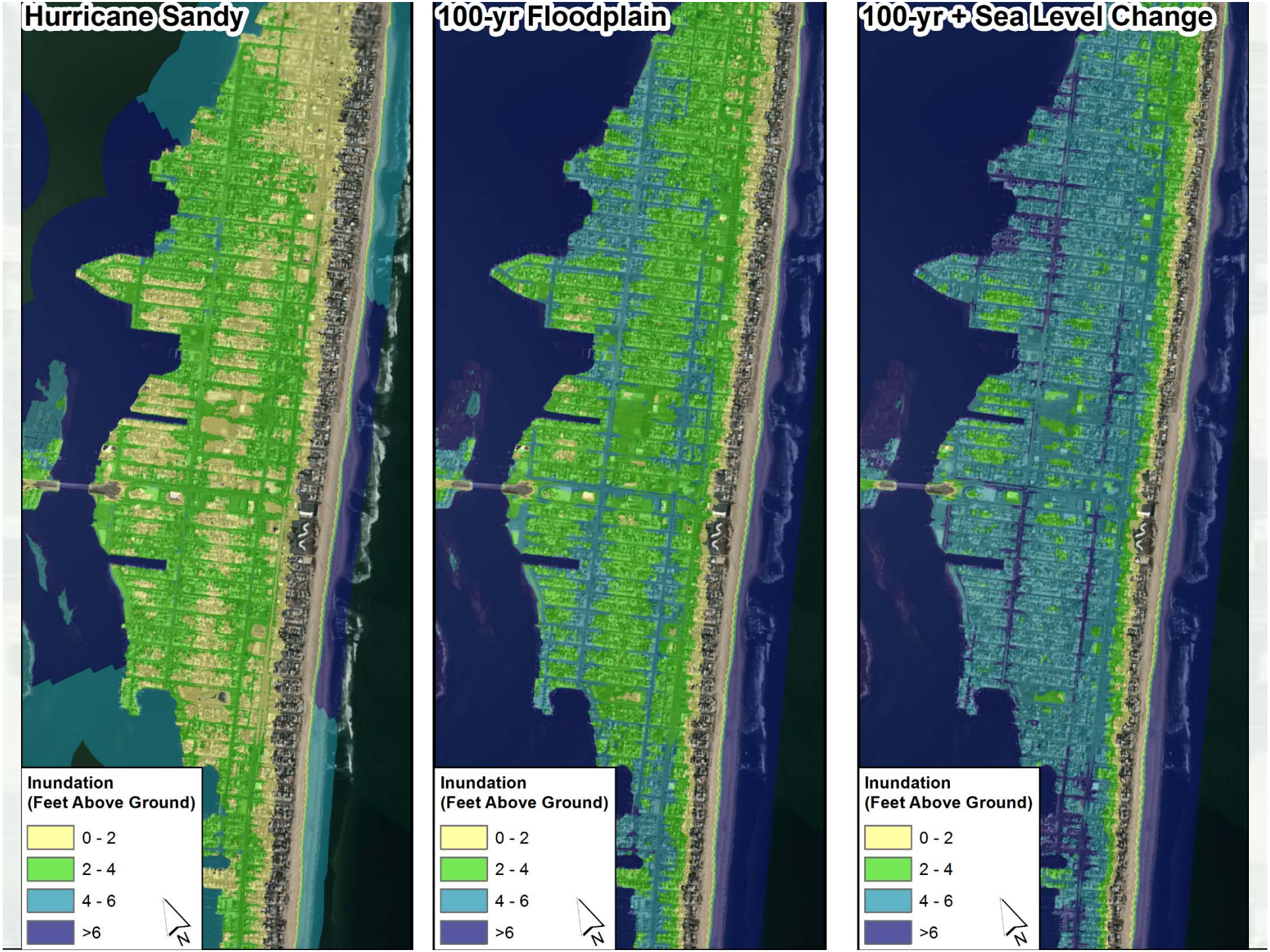
Limited project coverage at Back Bays

Twelve tidal Inlets

- Hurricane Sandy (October 2012) Mantoloking, NJ
- USACE North Atlantic Coast Comprehensive Study
- Focus Area Studies

Ocean County Inundation Map with Sea Level Rise




Hurricane Sandy
Inundation
(Feet Above Ground)
0 - 2
2 - 4
4 - 6
>6
N
100-yr Floodplain
Inundation
(Feet Above Ground)
0 - 2
2 - 4
4 - 6
>6
N
100-yr + Sea Level Change
Inundation
(Feet Above Ground)
0 - 2
2 - 4
4 - 6
>6
N

RESILIENCE means "the ability to **anticipate, prepare for,** and **adapt** to **changing conditions** and **withstand,** respond to, and **recover** rapidly from **disruptions**."

Presidential Executive Order 13653, Preparing the U.S. for Impacts of Climate Change (NOV 2013)

USACE's Principles of Resilience

MANAGEMENT MEASURES

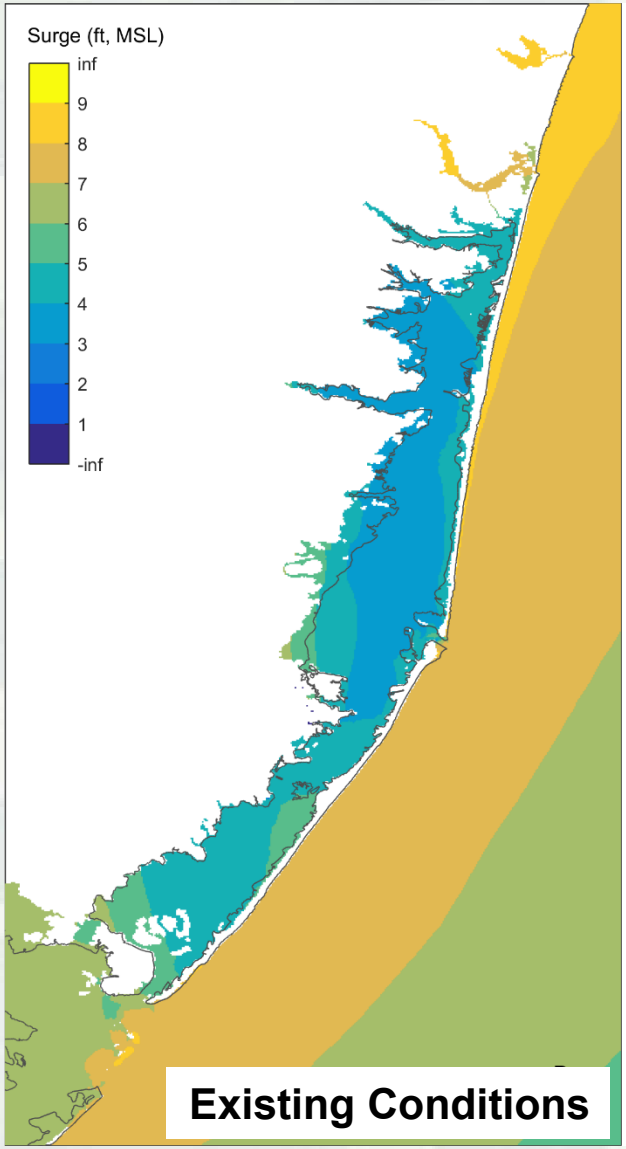
STRUCTURAL – STORM SURGE BARRIERS

New Orleans, LA: Inner Harbor Navigation Canal – Lake Borgne Storm Surge Barrier

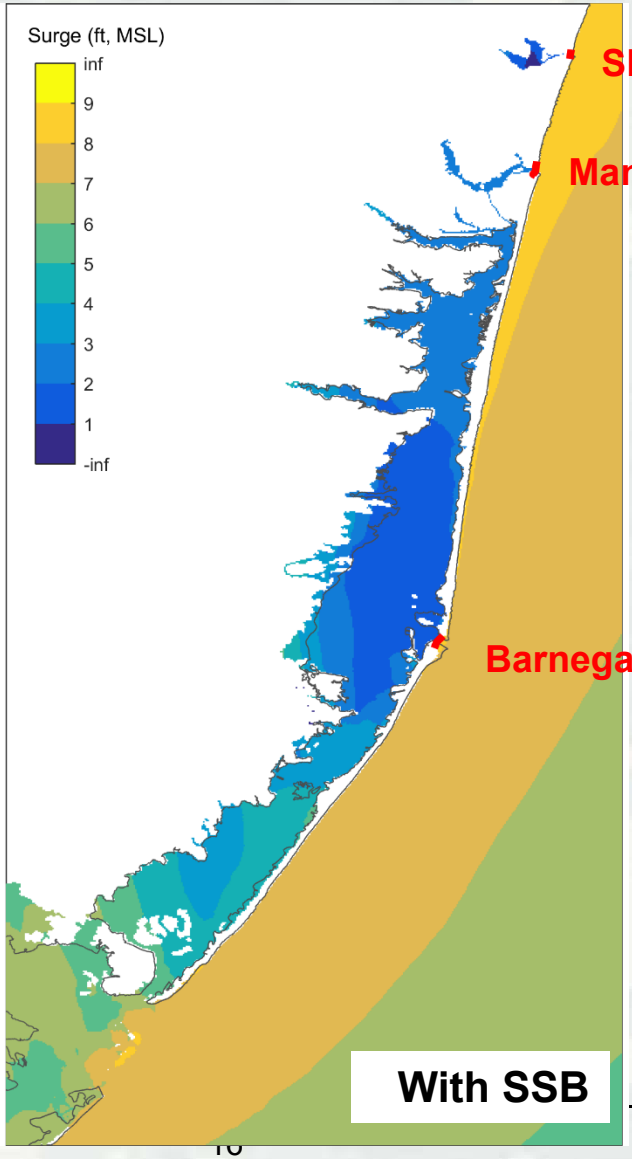
Barge Gate and Sector Gate at the Gulf Intracoastal Waterway

Vertical Lift Gate at Bayou Bienvenue

ERDC – Storm Surge Barriers



Existing Conditions



With SSB

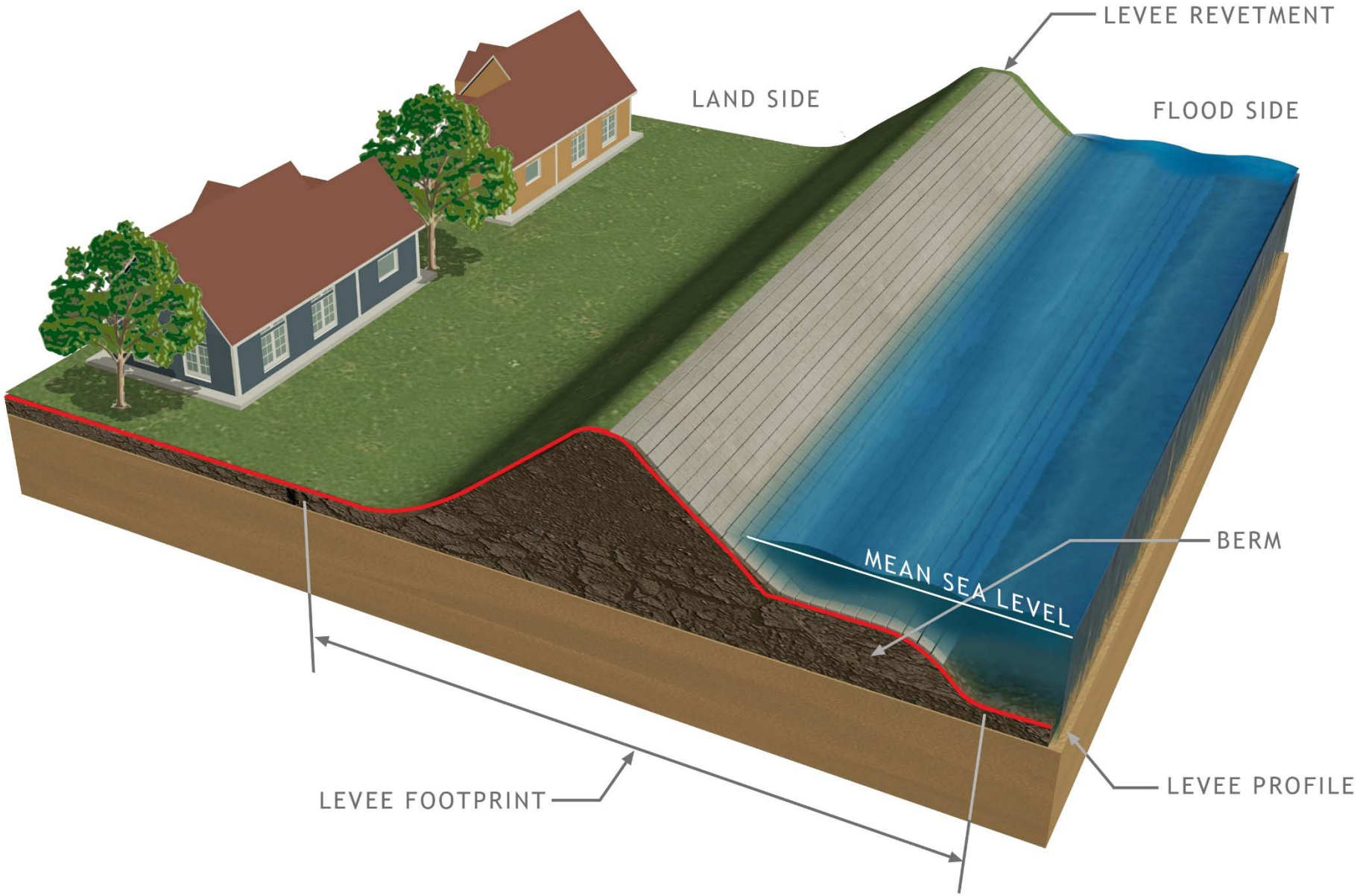
Shark River

Manasquan

Barnegat

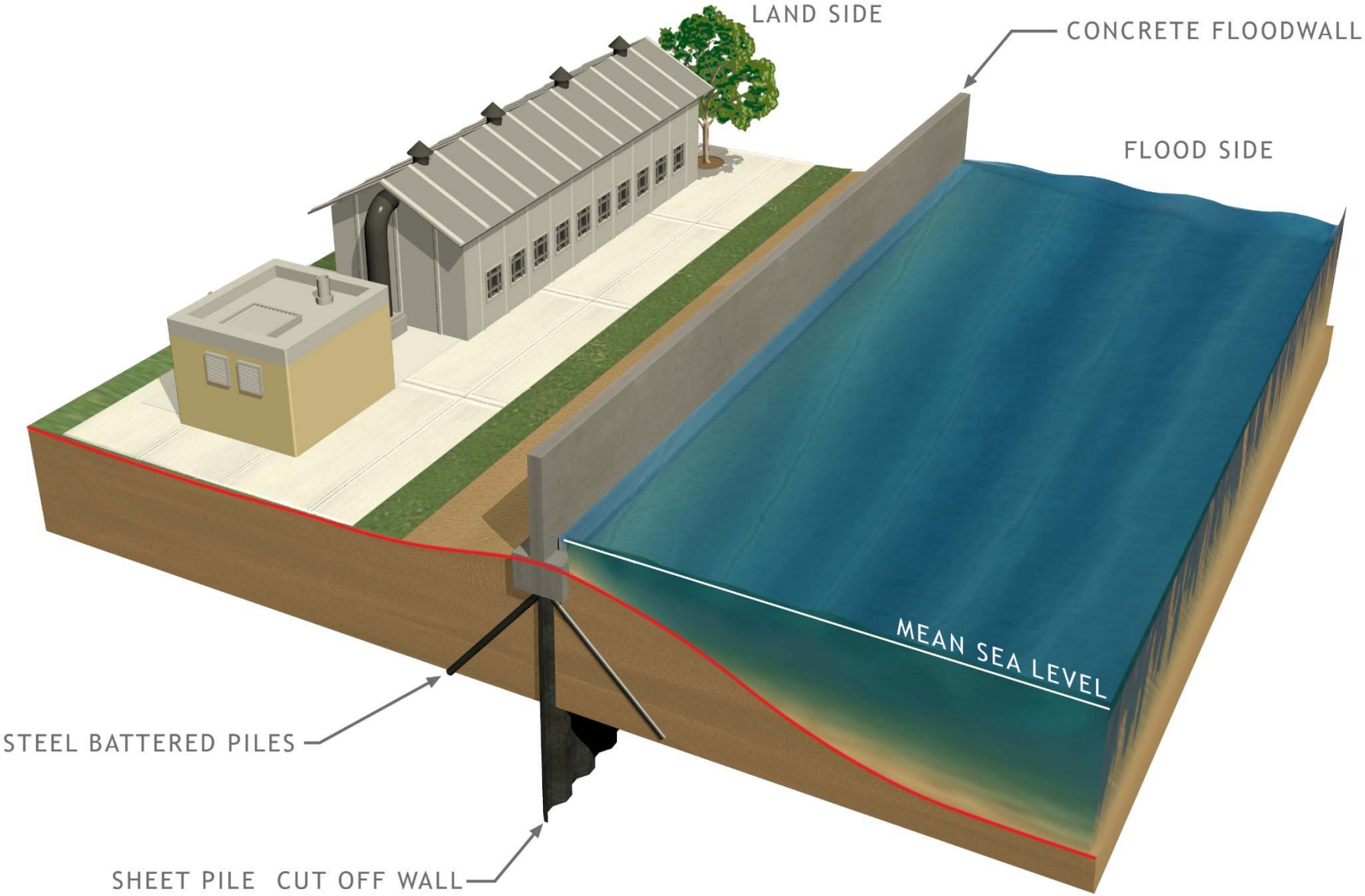
MANAGEMENT MEASURES

STRUCTURAL - LEVEE



MANAGEMENT MEASURES

STRUCTURAL - FLOODWALL



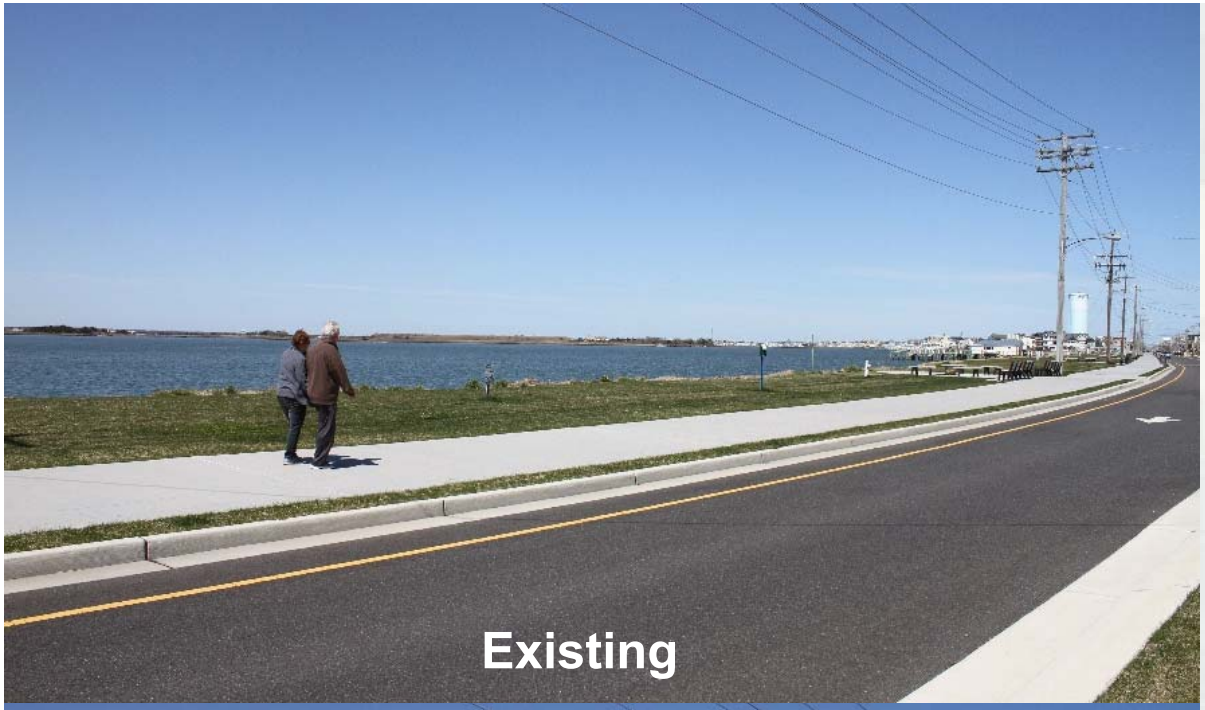
Green Brook Floodwall, NJ

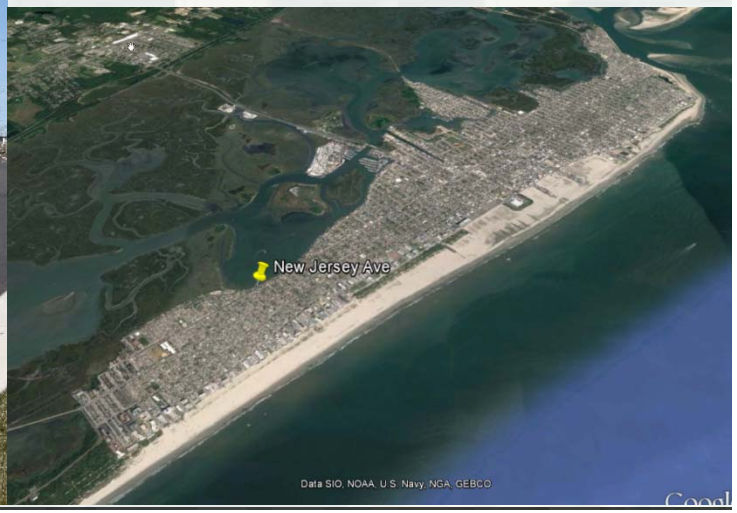

Floodwall

Flood Gate

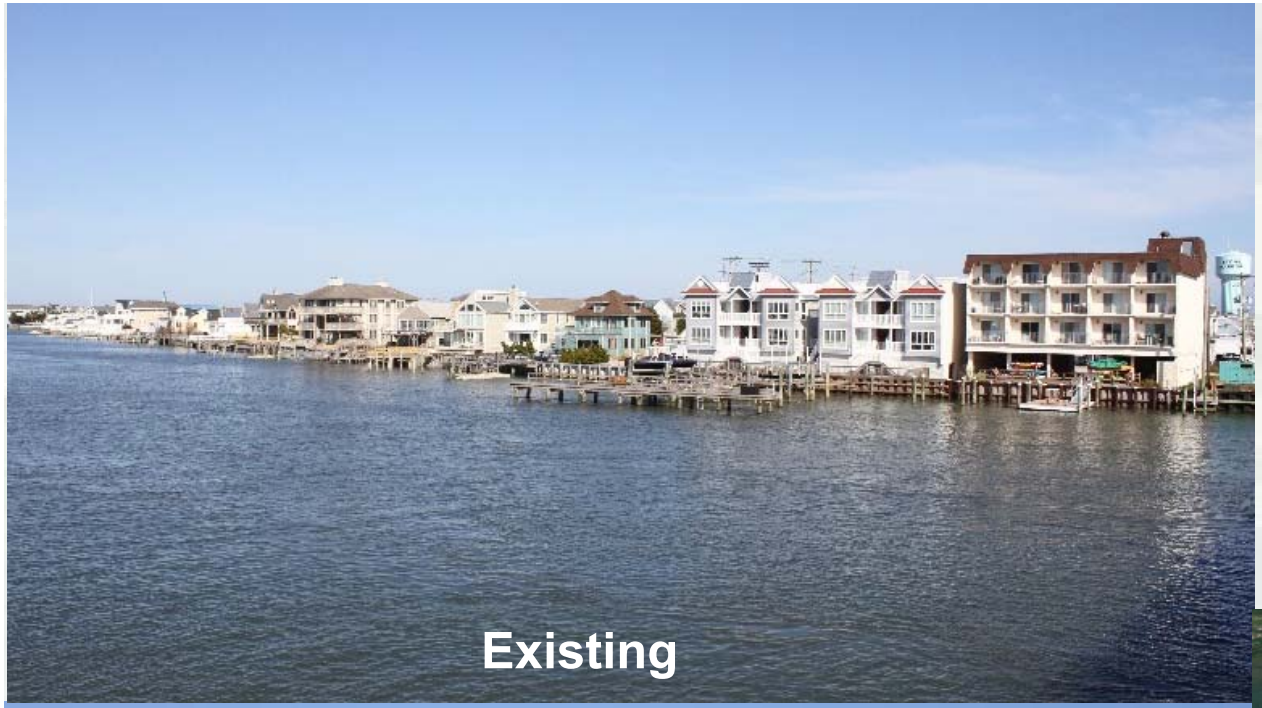

Under Construction

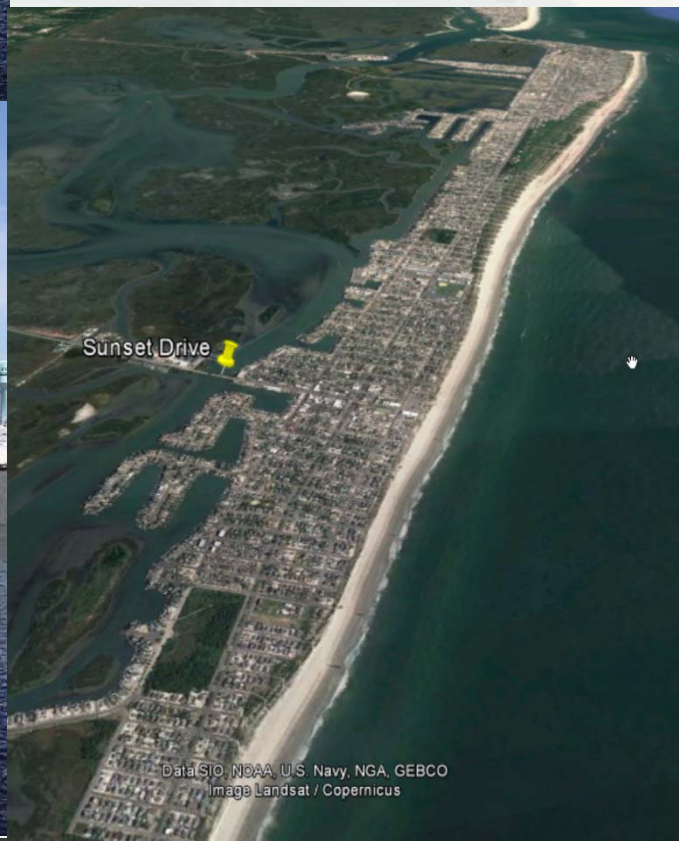
New Jersey Avenue Levee, Wildwood Crest, NJ



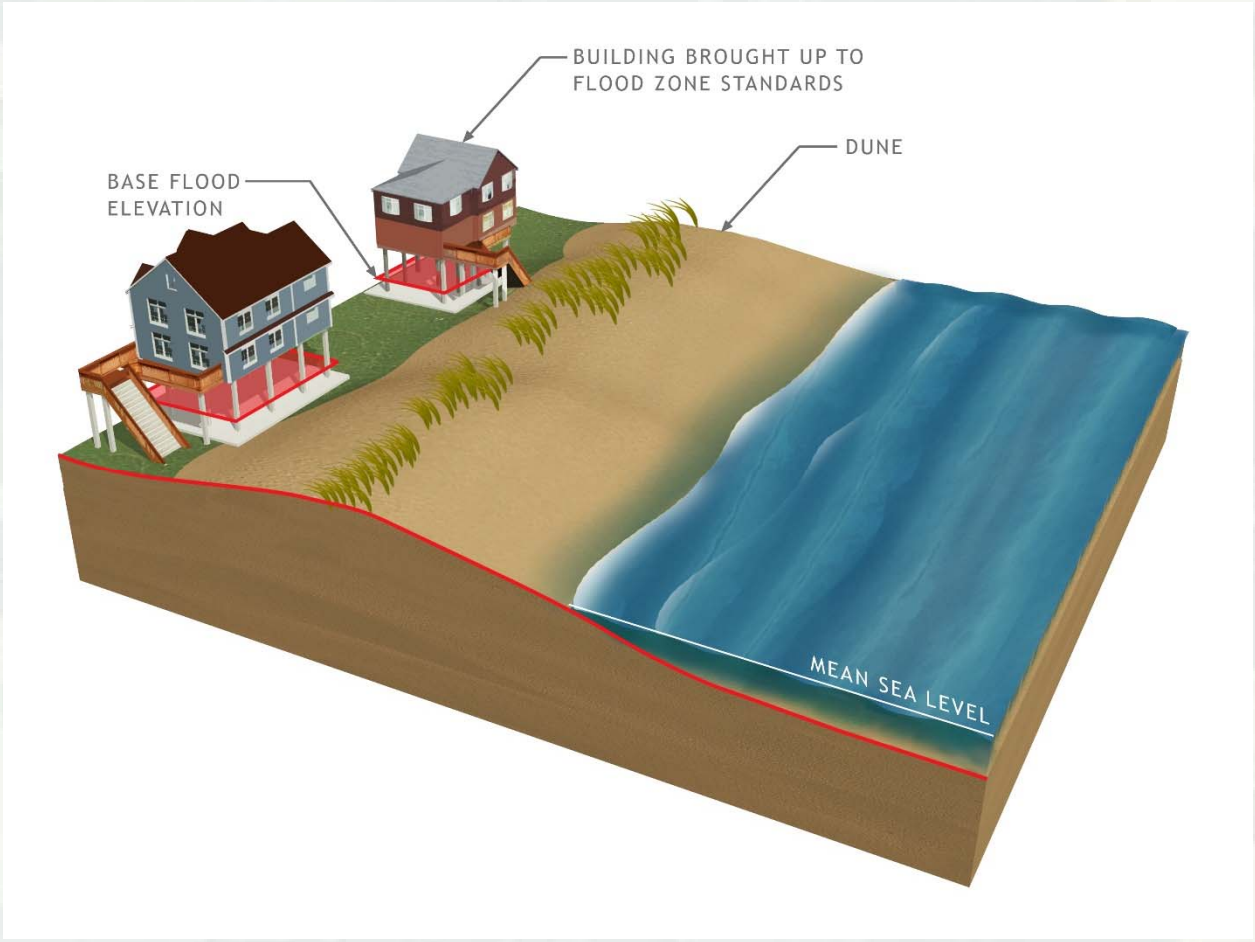


Sunset Drive Floodwall, Stone Harbor, NJ



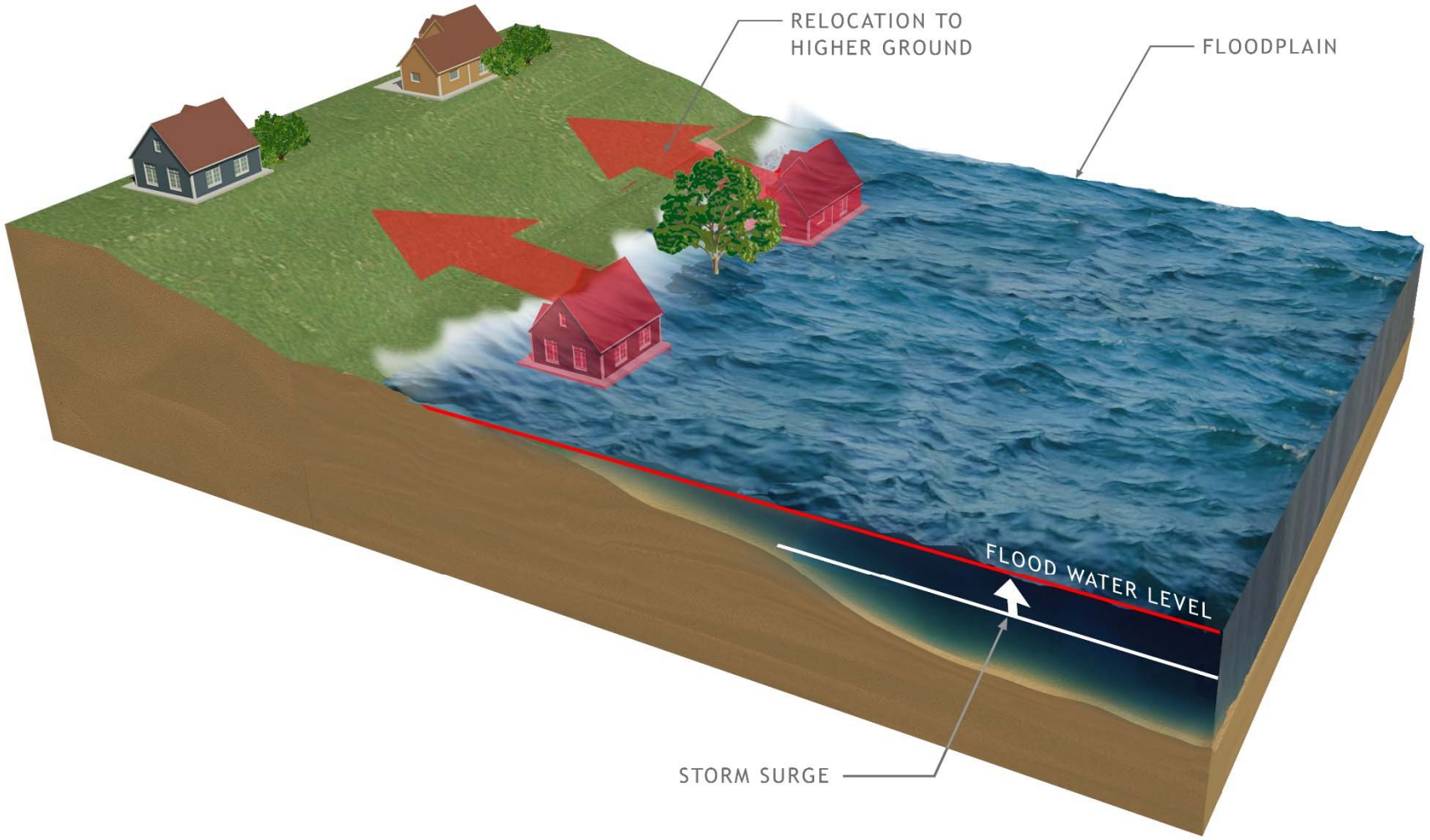


MANAGEMENT MEASURES
NON-STRUCTURAL - ELEVATION



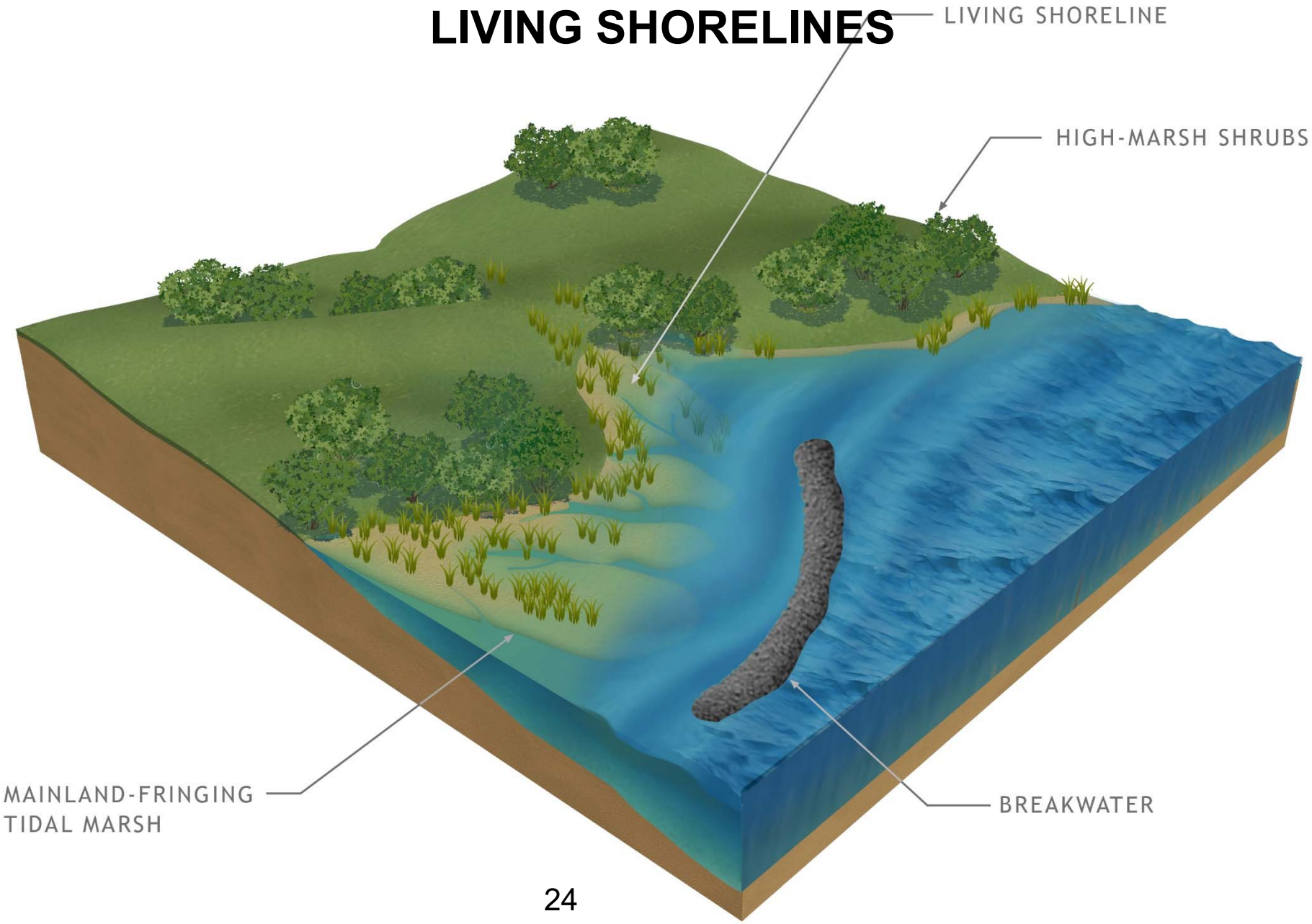
MANAGEMENT MEASURES

NON-STRUCTURAL - ACQUISITION & RELOCATION

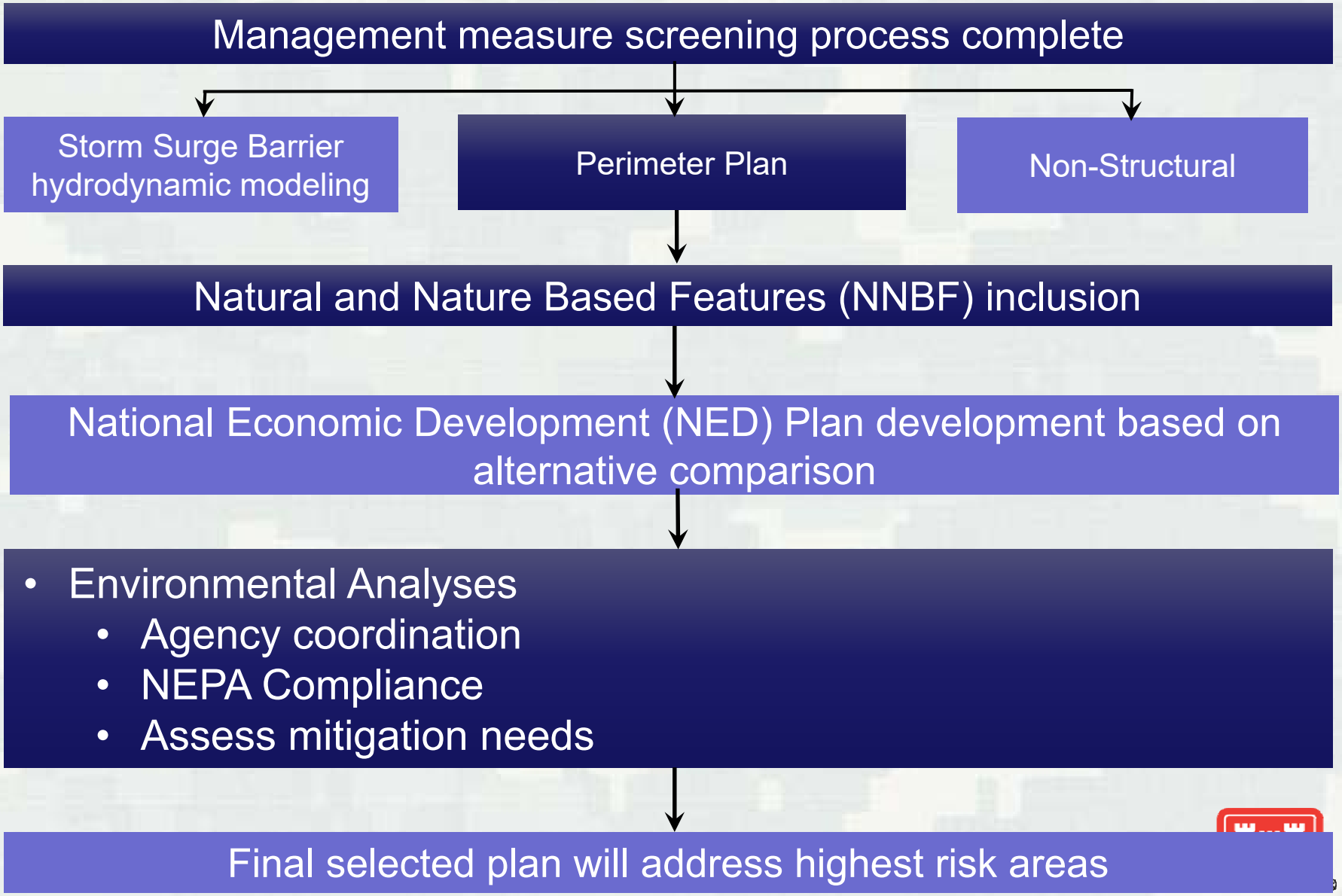


NATURAL AND NATURE-BASED FEATURES

LIVING SHORELINES



Overall Study Strategy



OCEAN COUNTY INVENTORY

MUNICIPALITIES	STRUCTURES	RESIDENTIAL	NON-RES	TOTAL VALUE
Barnegat Light	1,189	1,131	58	$474,850,307
Barnegat	755	732	23	$129,895,811
Bay Head	1,014	952	62	$632,790,146
Beach Haven	2,384	2,241	143	$621,156,548
Beachwood	57	54	3	$13,856,277
Berkeley	4,374	4,289	85	$909,776,438
Brick	9,772	9,516	256	$2,519,164,192
Eagleswood	305	284	21	$50,014,990
Harvey Cedars	1,182	1,143	39	$518,709,319
Island Heights	716	682	34	$160,023,183
Lacey	4,772	4,673	99	$988,717,917
Lakewood	5	2	3	$3,082,282
Lavallette	2,551	2,477	74	$627,787,048
Little Egg harbor	4,964	4,870	94	$766,996,344
Long Beach	8,217	8,031	186	$2,849,755,869

MUNICIPALITIES	STRUCTURES	RESIDENTIAL	NON-RES	TOTAL VALUE
TOTAL	81,262	78,402	2,860	$20,027,094,798

MUNICIPALITIES	STRUCTURES	RESIDENTIAL	NON-RES	TOTAL VALUE
Mantoloking	479	471	8	$574,013,922
Ocean Gate	1,075	1,045	30	$166,711,894
Ocean	1,849	1,807	42	$313,789,211
Pine Beach	99	95	4	$22,548,752
Point Pleasant	4,818	4,583	235	$1,190,957,705
Point Pleasant Beach	2,869	2,622	247	$721,032,608
Seaside Heights	1,958	1,727	231	$393,352,145
Seaside Park	2,020	1,927	93	$412,115,557
Ship Bottom	1,883	1,724	159	$542,612,492
South Toms River	93	56	37	$28,474,832
Stafford	4,864	4,801	63	$773,516,958
Surf City	2,248	2,131	117	$720,895,696
Toms River	13,689	13,327	362	$2,717,757,431
Tuckerton	1,061	1,009	52	$182,738,924

Stakeholder/Public Coordination and Collaboration

2016

June — Stakeholder Workshops

November — NEPA Scoping Letter

December — Public Meeting

2017

December — Federal Register Notice of Intent for EIS

2018

March — Cooperating Agency Letters

May – June — County Elected Official Meetings

May – Sept — Env Agency Coordination Mtgs

September — **Stakeholder/Public Meetings**

October — NNBF NGO Workshop

December — USACE (internal) Tentative Plan Meeting

2019

January — **Draft Feasibility Report/EIS**

SMART Feasibility Study Process: NJBB FRM Study

Release draft report for CONCURRENT REVIEW

DE transmits final report package

SCOPING
3-6 Months

ALTERNATIVE FORMULATION & ANALYSIS

FEASIBILITY-LEVEL ANALYSIS

CHIEF'S REPORT

+ Study Start:
April 2016

1 Alternatives Milestone:
Dec 2016

TSP Milestone: 2
Dec 2018

3x3x3 Exemption Approval: 3
Apr 2019

4 Agency Decision Milestone:
Jan 2020

Final Feasibility Report: 5
Apr 2021

6 Chief's Report:
Late 2021

Questions/ Discussion

William Dixon
New Jersey Department of Environmental Protection
Engineering and Construction
Division of Coastal Engineering, Director
William.Dixon@dep.state.nj.us
732-255-0890

J. Bailey Smith
US Army Corps of Engineers
Philadelphia District
J.B.Smith@usace.army.mil
215 656 6579

Mark Your Calendars for the September Public Meetings!!!

Office of Coastal & Land Use Planning

- Administers NJ's Coastal Management Program
- Development and implementation of planning activities
- Sustainable and resilient coastal community planning
- Ecological project development
- Ocean resource planning
- State Plan support
- Municipal public access planning

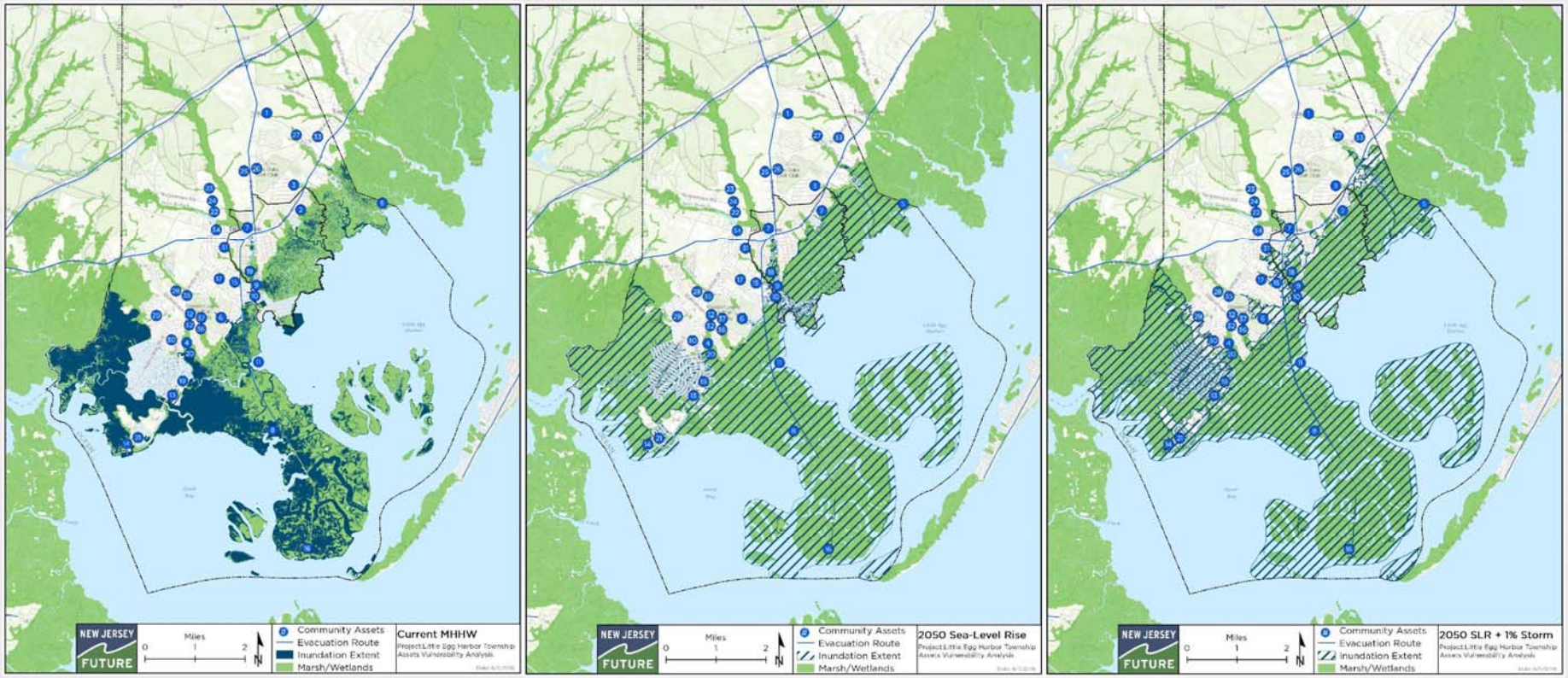
Resilience & Adaptation Planning

- Planning and technical support to 239 communities
- Community planning + ecological projects
- Coordination with coastal partners
- Implementation of award-winning projects

Coastal Partners

Vulnerability Assessment

LITTLE EGG HARBOR TOWNSHIP COMMUNITY ASSETS VULNERABILITY ASSESSMENT May 2016



WHAT THE MAPS SHOW

The Little Egg Harbor Strategic Recovery Planning Report (SRPR), issued in February 2015, evaluated the community's potential flood and inundation risk based on projections of rising sea levels by 2050. This analysis revealed that current nuisance flooding that occurs in township coastal areas during the highest-tide events will become regular occurrences under 2050 sea level rise projections. This flooding would inundate as much as 31percent (9,100 acres) of total area of the Township (29,411 acres), flooding 8 percent (1,032) of the community's 13,234 parcels.

If a 1-percent storm, the rough equivalent of Hurricane Sandy when it made landfall, was added to 2050 sea-level rise, 34 percent (9,100 acres) of the total area of the township would be inundated, flooding 36 percent (4,711) of the total number of parcels in the community.

The maps above show the locations of critical community assets and juxtapose those locations against the three inundation scenarios. The township's wetlands and marshes, which buffer storm and wave action, are likely to be inundated permanently and potentially lost as sea levels rise, exposing critical community facilities to flood damage. Many of the township's commercial marinas and docks (**Assets 5, 8, 9, 10, 11, 20, 21**) will suffer regular inundation. The Rutgers Marine Field Station (**Asset #16**), at the tip of the Tuckerton peninsula, will no longer be accessible; Great Bay Boulevard and Radio Road will be compromised as evacuation routes. The township community center (**Asset #30**) and religious facilities (**Assets #18 and #19**) that might otherwise be used for shelter during storm events will experience regular flood damage. In addition, by 2050 a 1-percent storm event would entirely inundate residential neighborhoods on Osborn Island and Mystic Island.

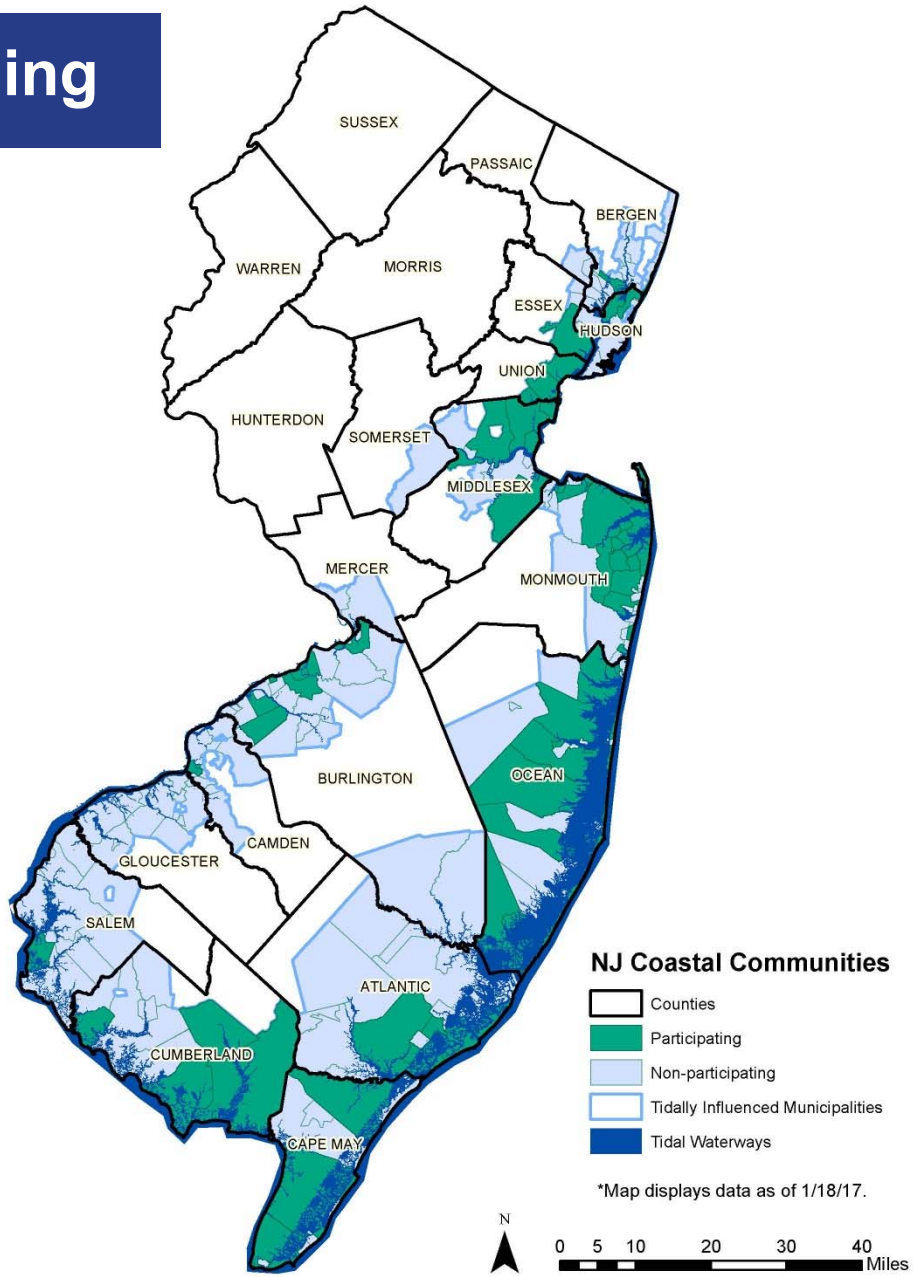
COMMUNITY ASSETS

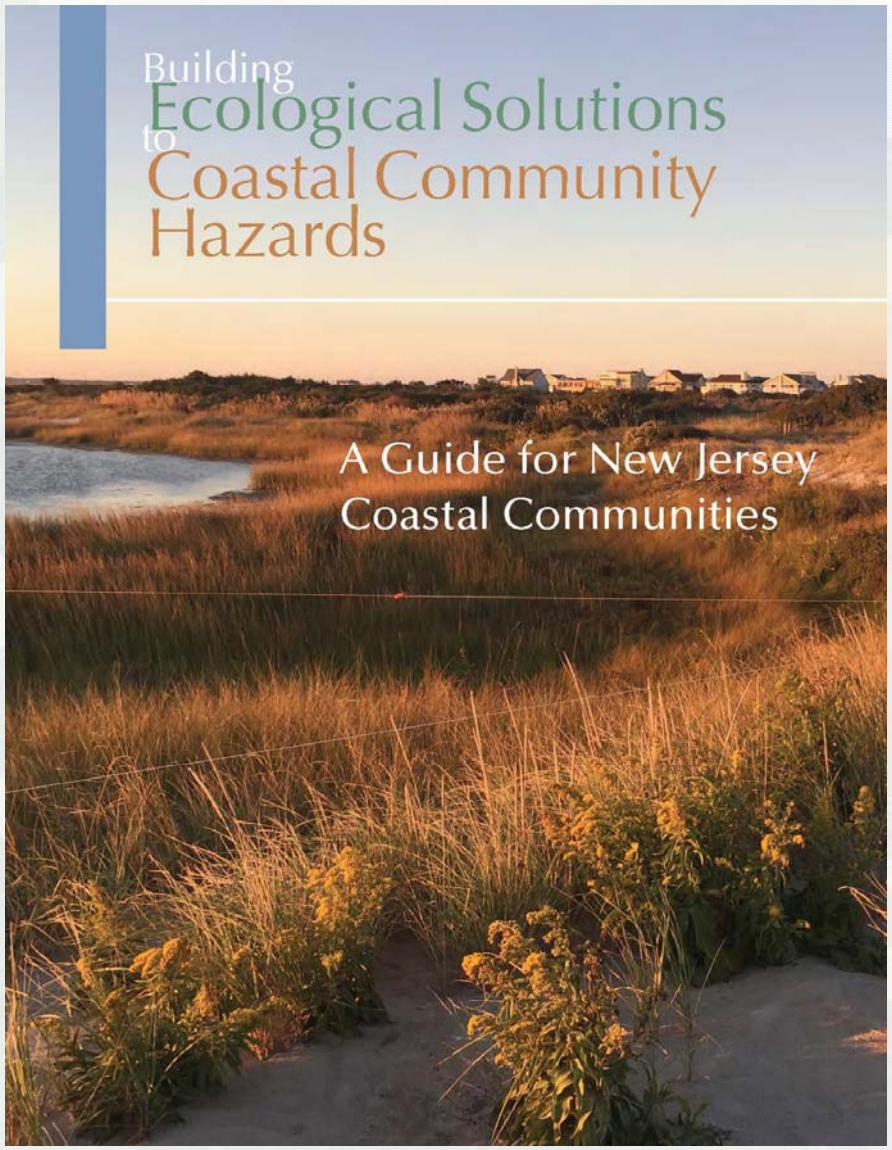
1 Little Egg Harbor Public Works
2 GlobeNet Complex
3 AT&T Complex
4 County MUA Pumping Station
5 Parkertown Dock
6 County Golf Course at Atlantis
7 Seaman County Park
8 Cape Horn Marina
9 Schimpf's Marina
10 Total Marina
11 Captain Mike's Marina
12 Senior Center
13 Osborn Bridge
14 Clam Beds
15 AC Electric-Motts Farm
16 Rutgers Marine Field Station
17 St. Theresa's Church
18 Jersey Shore Baptist Chapel
19 Living Waters Christian Church Center
20 Munro's Marina
21 Great Bay Marina
22 Pinelands Regional School District
23 Pinelands Regional Jr. High School
24 Pinelands Regional High School
25 RCW Early Education Center
26 George Mitchell Elementary School
27 Frog Pond Elementary School
28 County Branch Library
29 Seacrest Village
30 Community Center
31 Great Bay Reg. Volunteer EMS
32 Mystic Island Fire Department
33 Parkertown Fire Department
34 West Tuckerton Fire Department
35 U.S. Post Office
36 Little Egg Harbor Police Department
37 Little Egg Harbor Township Hall

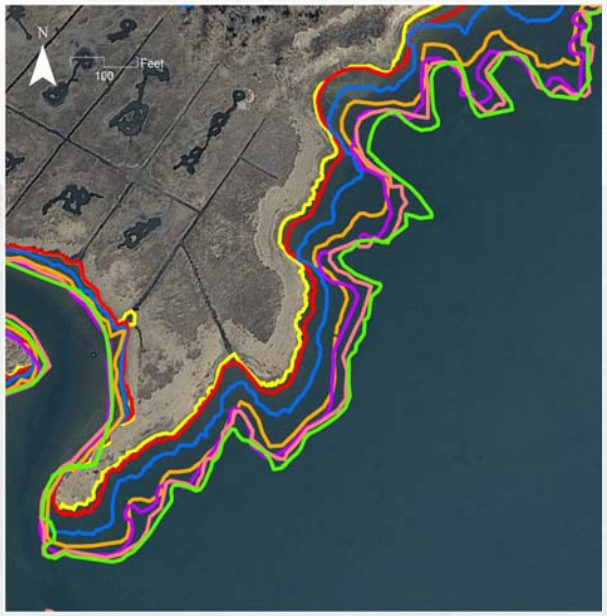
High Potential for Inundation
Low Potential for Inundation

Getting To Resilience

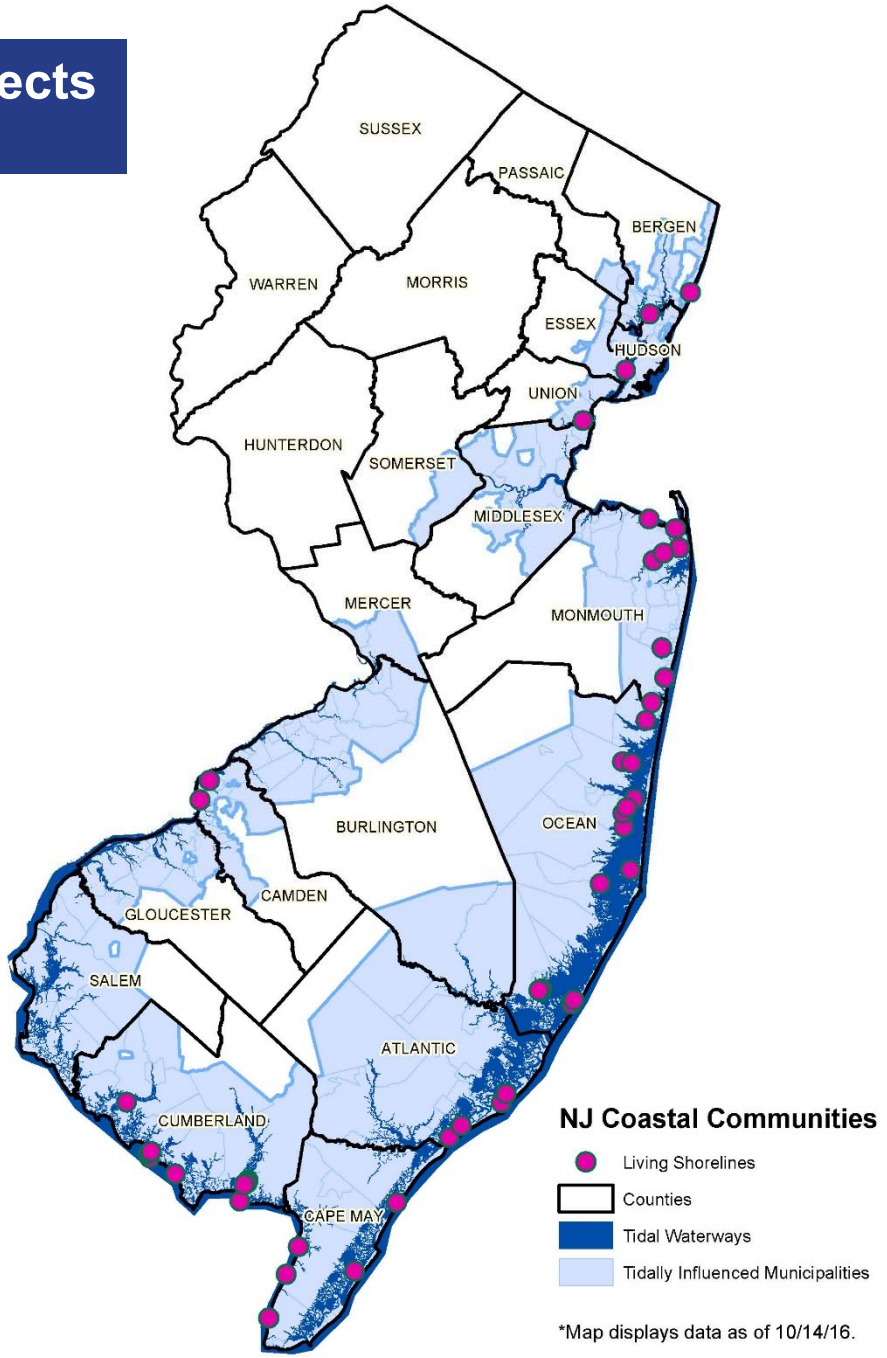
Resilience Planning




Building
Ecological Solutions
to
Coastal Community
Hazards
A Guide for New Jersey
Coastal Communities


N
100
Feet

Living Shorelines Projects



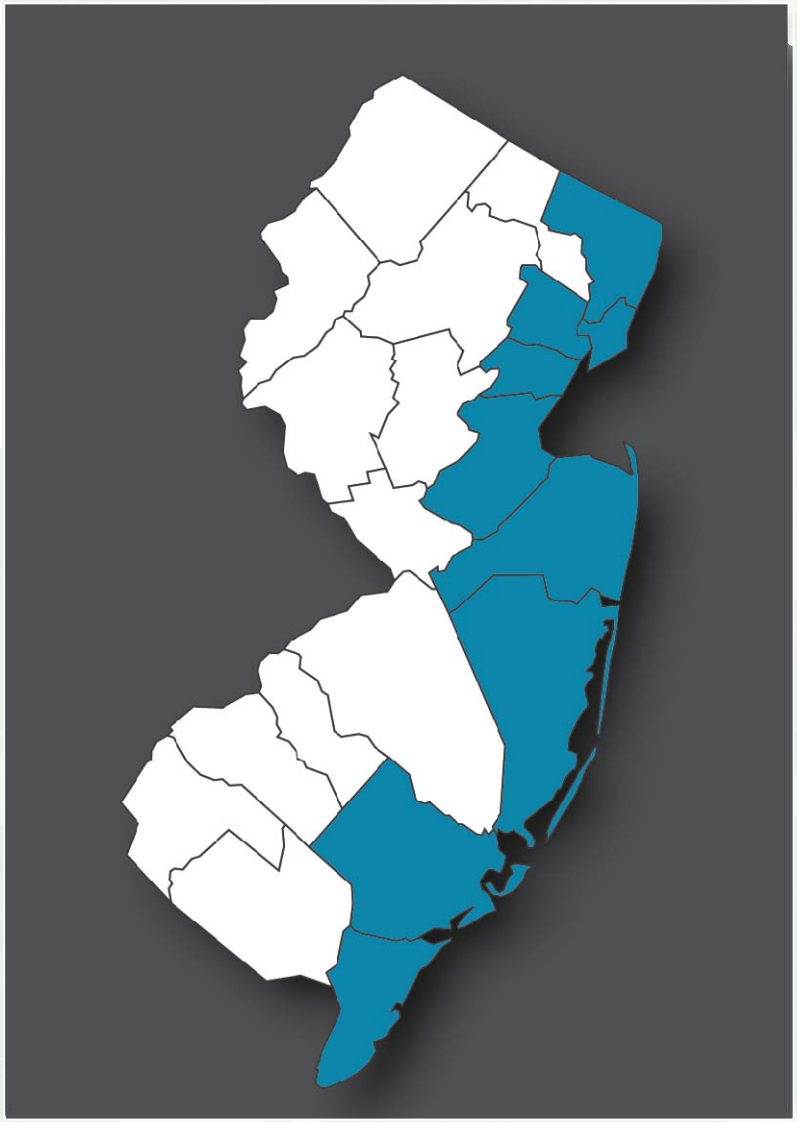
Resilient NJ

Regional Planning
for a Stronger New Jersey

The Program will fund the *development* and *implementation* of up to 5 regional resilience and adaptation action plans

Who Qualifies?

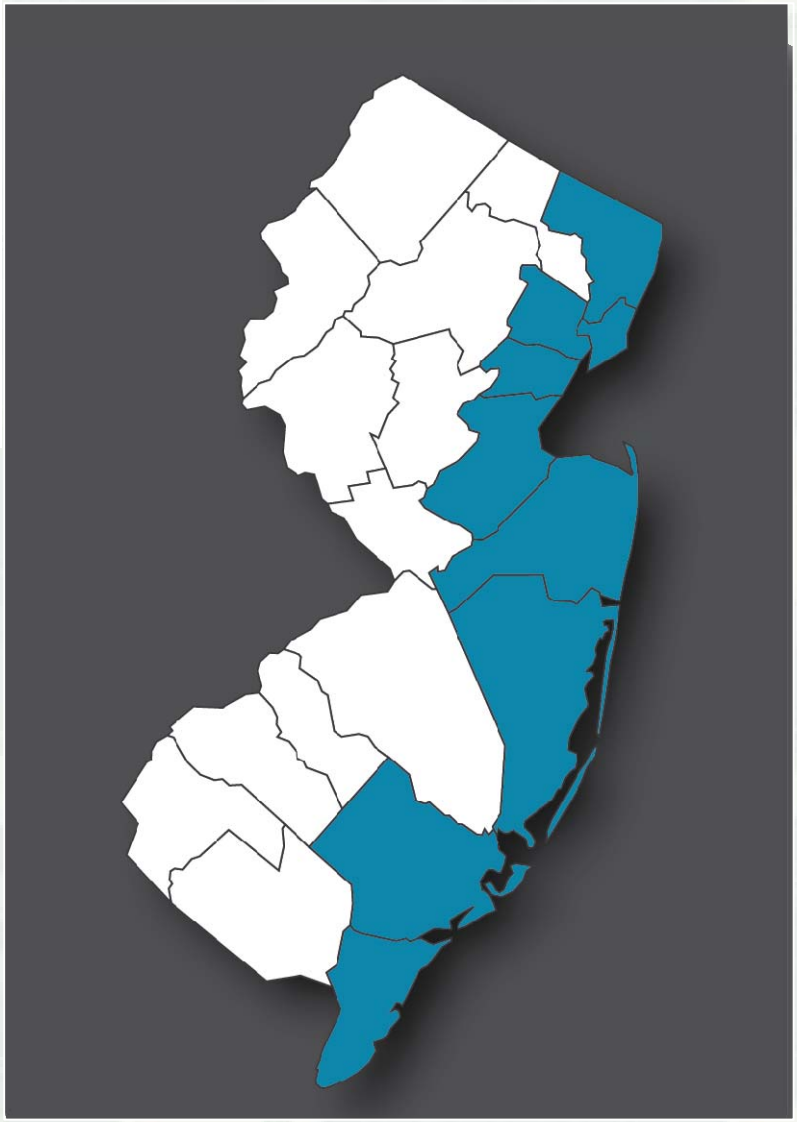
- 9 HUD-identified MID counties
- Groups of 3+ municipalities in those counties with a shared boundary
- Utility authorities



http://www.nj.gov/dep/oclup/resi

Resilient NJ

Regional Planning
for a Stronger New Jersey



Funding awarded on a competitive basis

Notice of Funding Availability

- Regions (counties/municipalities, authorities, community-based organizations)
- NGOs (technical assistance)

Request for Proposals

- Consultant teams (planners, engineers, landscape architects, etc.)

http://www.nj.gov/dep/oclup/resi

Thank you!

Michael Kolber
Office of Coastal and Land Use Planning
Michael.Kolber@dep.nj.gov
(609)-984-0058

http://www.nj.gov/dep/oclup/

@NJCoastalManagement

References

41

Congressional Support

Congress of the United States
Washington, DC 20515

May 15, 2017

The Honorable Douglas W. Lamont
Acting Assistant Secretary of the Army (Civil Works)
108 Army Pentagon
Washington, D.C. 20310-0108

Dear Acting Assistant Secretary Lamont:

We are writing to express our support for the New Jersey Back Bays (NJBB) coastal flood risk management study, being conducted by the Philadelphia District in partnership with the New Jersey Department of Environmental Protection (NJDEP). While Hurricane Sandy in 2012 demonstrated the effectiveness of the Corps' coastal projects, it also showed that the people, property, and infrastructure adjacent to the back bays remain completely vulnerable to storm damage. This study developed out of the larger North Atlantic Coast Comprehensive Study (NACCS) which identified nine high-risk areas on the Atlantic Coast for further in-depth analysis.

Undertaking a comprehensive study of this large and heavily populated area will certainly require a waiver to the standard 3 years, $3 million limit prescribed by the USACE 3x3x3 planning process Therefore, we urge your office, the Corps and NJDEP to quickly complete the waiver package and identify the appropriate schedule, scope and cost estimate needed to deliver specific recommendations that can be implemented at the Federal or non-federal levels to reduce risks associated with coastal storm flooding in the back bay areas.

The study area extends along 110 miles of the New Jersey coast and encompasses 950 square miles of land, wetlands, open water, and coastal lakes across parts of five counties and 90 municipalities. There are approximately 235,000 structures and a permanent population of about 700,000 within the study area. Seasonal tourism and recreation drive the population of the study area significantly above that measured by the US Census statistics. These areas will remain completely vulnerable to storm damage, as all other Corps efforts underway or completed were limited to the ocean side of the coastline.

Twelve inlets provide hydraulic connections between the Atlantic Ocean and the back bays, making all of the back bays susceptible to flooding from the ocean. During coastal storms, elevated ocean water levels propagate through the inlets into the back bays, causing flood damage proportional to the geographic extent, duration, and height of the ocean storm surge. Most of the study area infrastructure at risk from coastal flooding is residential, with important commercial and critical public infrastructure components. This infrastructure exists where it is because of the attraction of living, recreating, or working on or near tidewater with easy access to the ocean and bays, and it provides a significant contribution to the $40 billion New Jersey coastal economy.

Thank you for your past support of efforts to protect New Jersey's coasts. We appreciation your full consideration to waiver request on this important study.

Sincerely,

Robert Menendez
United States Senator

Cory A. Booker
United States Senator

Frank Pallone, Jr.
Member of Congress

Frank A. LoBiondo
Member of Congress

Tom MacArthur
Member of Congress

Christopher H. Smith
Member of Congress

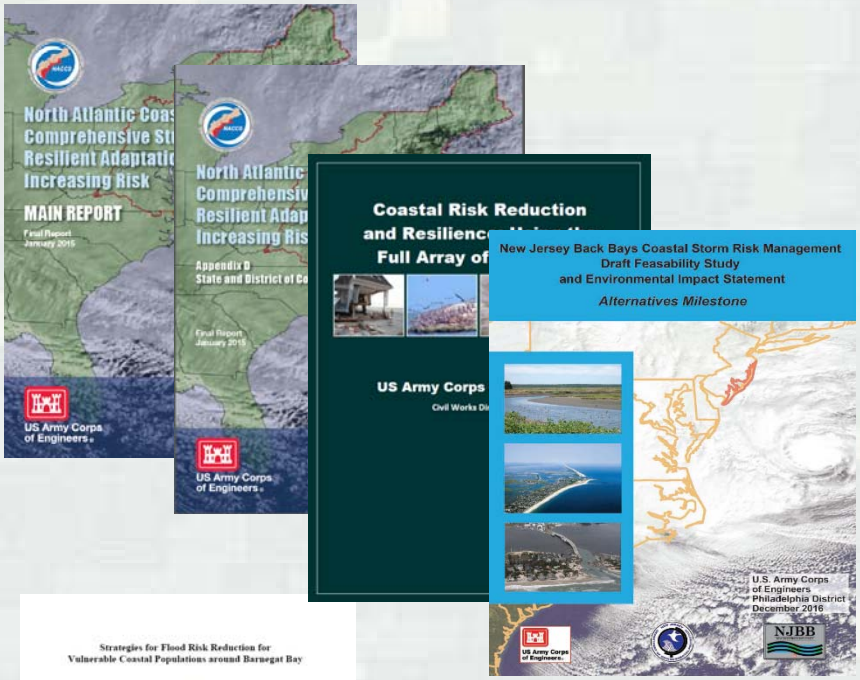
CC: Theodore (Tab) Brown, Chief, Planning and Policy Division
Lieutenant Colonel Michael A. Bliss, Commander, USACE Philadelphia District

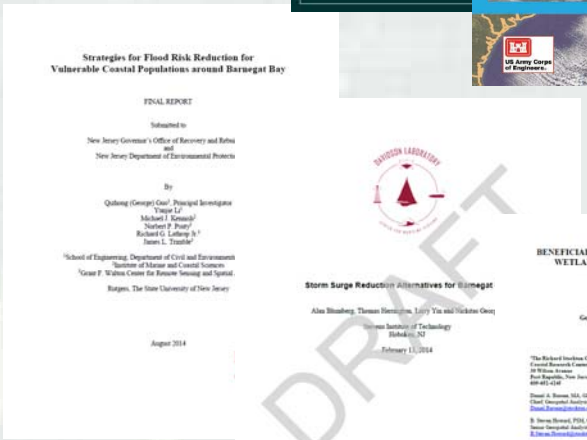
Existing Literature

- **NACCS**
  - Main Report
  - New Jersey State Appendix
  - Full Array of Measures Report
  - New Jersey Focus Area Report

- **State of New Jersey Academic Studies for Barnegat Bay**

- **HUD, FEMA, NOAA, DOI, Rockefeller Foundation etc.**

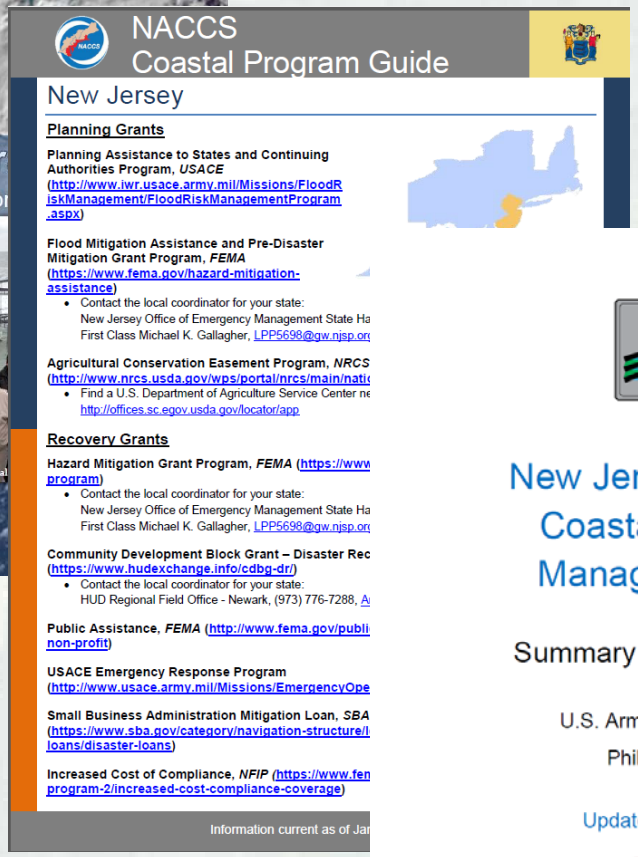




43

Relevant USACE Community Documents

NACCS Coastal Program Guide


NACCS
Coastal Program Guide

New Jersey

Planning Grants

Planning Assistance to States and Continuing Authorities Program, *USACE*
(http://www.iwr.usace.army.mil/Missions/FloodRiskManagement/FloodRiskManagementProgram.aspx)

Flood Mitigation Assistance and Pre-Disaster Mitigation Grant Program, *FEMA*
(https://www.fema.gov/hazard-mitigation-assistance)
- Contact the local coordinator for your state:
  New Jersey Office of Emergency Management State Ha
  First Class Michael K. Gallagher, LPP5698@gw.njsp.or

Agricultural Conservation Easement Program, *NRCS*
(http://www.nrcs.usda.gov/wps/portal/nrcs/main/nati
- Find a U.S. Department of Agriculture Service Center ne
  http://offices.sc.egov.usda.gov/locator/app

Recovery Grants

Hazard Mitigation Grant Program, *FEMA* (https://www
program)
- Contact the local coordinator for your state:
  New Jersey Office of Emergency Management State Ha
  First Class Michael K. Gallagher, LPP5698@gw.njsp.or

Community Development Block Grant – Disaster Rec
(https://www.hudexchange.info/cdbg-dr/)
- Contact the local coordinator for your state:
  HUD Regional Field Office - Newark, (973) 776-7288, A

Public Assistance, *FEMA* (http://www.fema.gov/publi
non-profit)

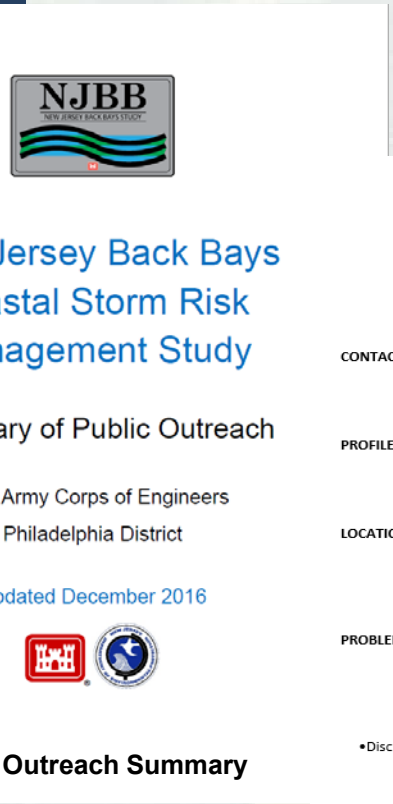
USACE Emergency Response Program
(http://www.usace.army.mil/Missions/EmergencyOpe

Small Business Administration Mitigation Loan, *SBA*
(https://www.sba.gov/category/navigation-structure/l
loans/disaster-loans)

Increased Cost of Compliance, *NFIP* (https://www.fen
program-2/increased-cost-compliance-coverage)

Information current as of Ja

New Jersey Coastal Program Guide


NJBB
NEW JERSEY BACK BAYS STUDY

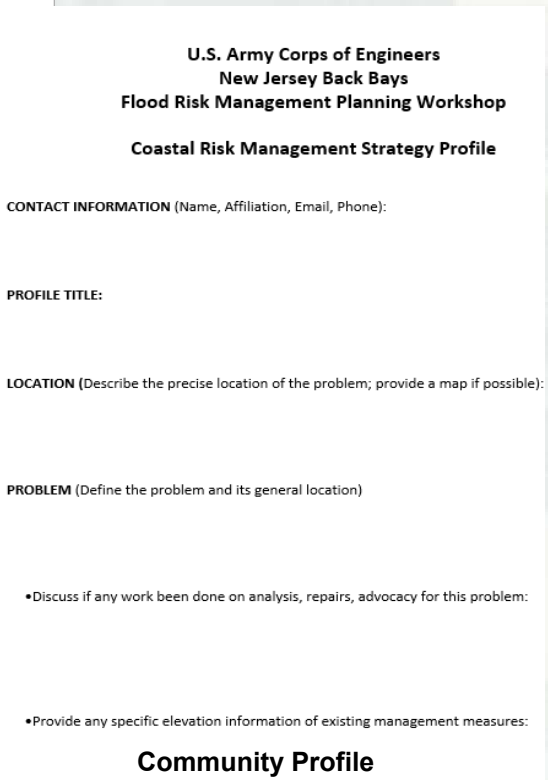
New Jersey Back Bays
Coastal Storm Risk
Management Study

Summary of Public Outreach

U.S. Army Corps of Engineers
Philadelphia District

Updated December 2016

Public Outreach Summary


U.S. Army Corps of Engineers
New Jersey Back Bays
Flood Risk Management Planning Workshop

Coastal Risk Management Strategy Profile

CONTACT INFORMATION (Name, Affiliation, Email, Phone):

PROFILE TITLE:

LOCATION (Describe the precise location of the problem; provide a map if possible):

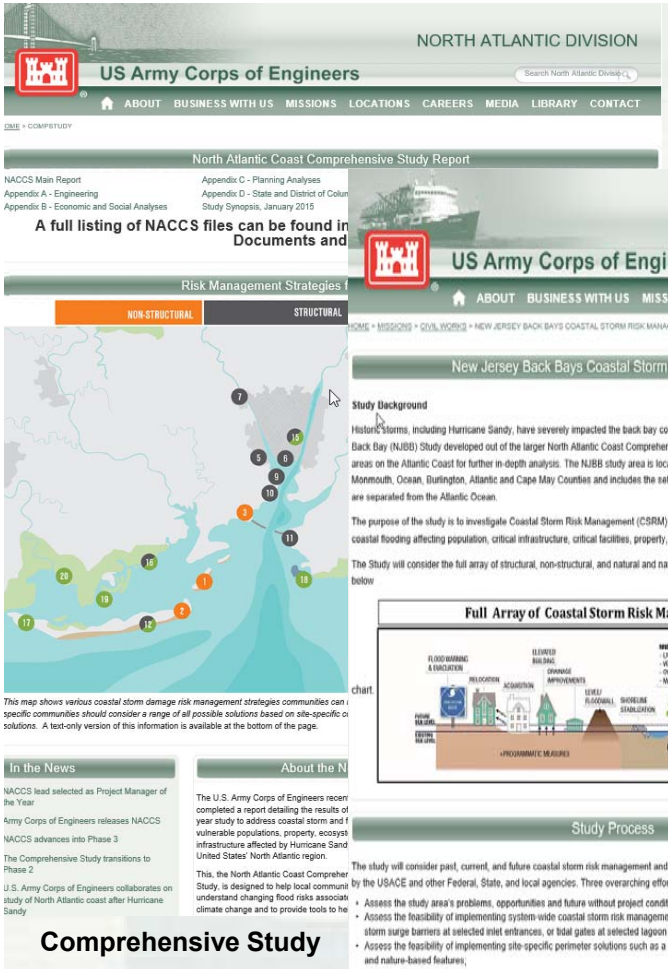
PROBLEM (Define the problem and its general location)

•Discuss if any work been done on analysis, repairs, advocacy for this problem:

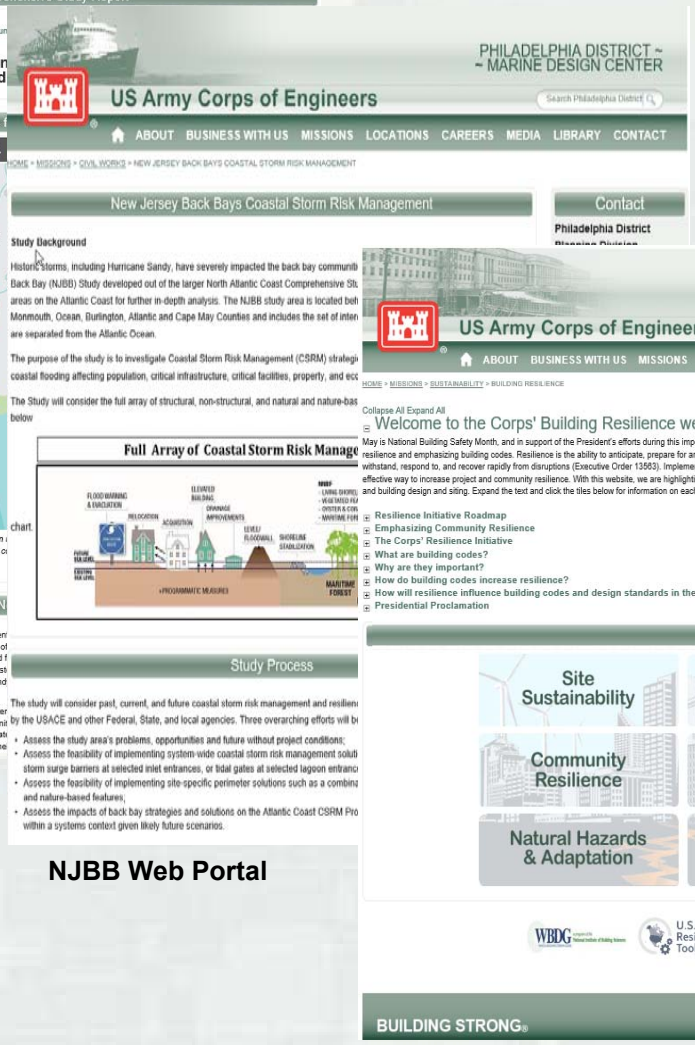
•Provide any specific elevation information of existing management measures:

Community Profile

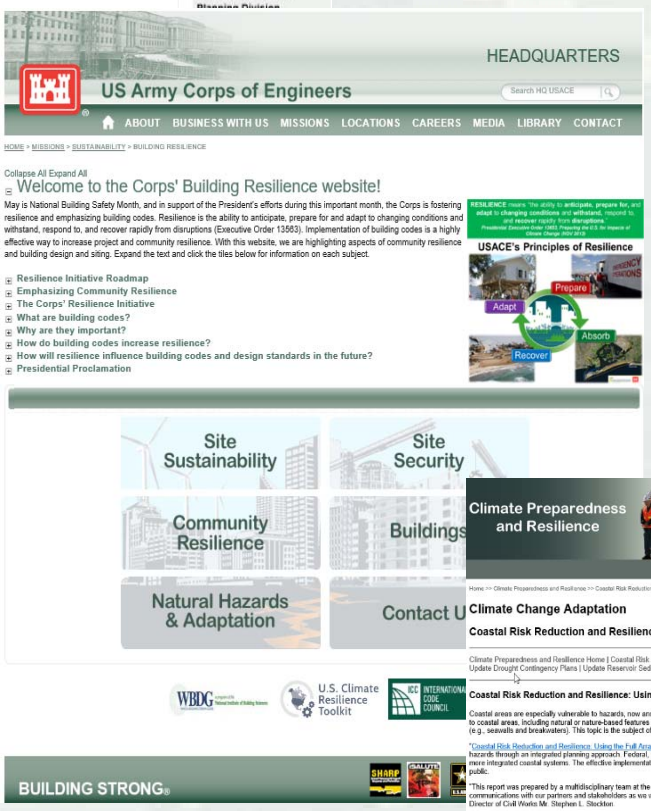
Relevant USACE Web Portals



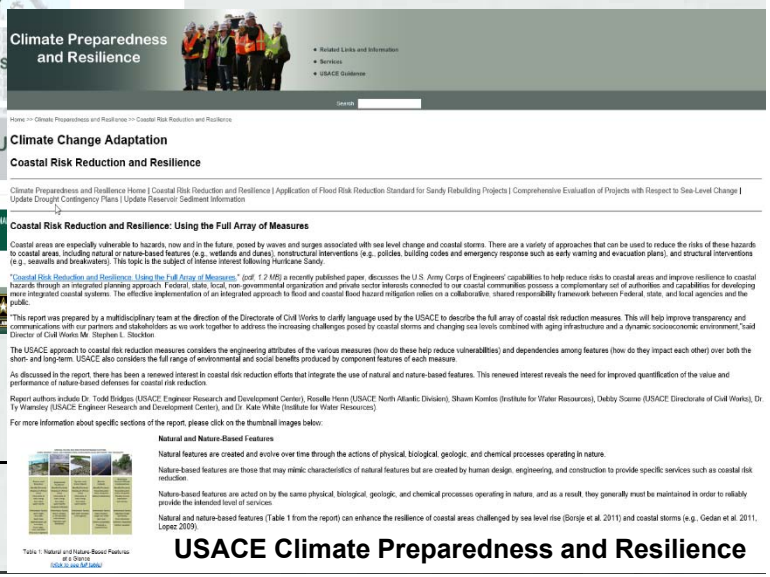
Comprehensive Study



NJBB Web Portal



USACE Building Resilience



USACE Climate Preparedness and Resilience