



# Building Ecological Solutions to Community Coastal Hazards “Technical Assistance”

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# Building Ecological Solutions to Community Coastal Hazards

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**Goal was to promote ecological solutions to coastal flood hazards,**

*but towns first needed to understand their vulnerability to flood hazards, and*

*whether their plans and policies reduced the risk of these hazards.*



# Building Ecological Solutions to Community Coastal Hazards

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## Provided technical assistance to 25 coastal and tidal communities

- ✓ Assessed vulnerability to current and future flood hazards (*Coastal Vulnerability Assessment*)
- ✓ Assessed municipal plans, policies and programs to minimize flood risks (*Getting to Resilience*)
- ✓ Identified ecological solutions for protecting key assets (identified by the community)

# Coastal Vulnerability Assessment

# Coastal Vulnerability Assessment



*“Determines the degree to which a community’s assets will be impacted by coastal flooding, and the consequences it poses to the community.”*

# Coastal Vulnerability Assessment





# Coastal Vulnerability Assessment



## City of Cape May (Central) Coastal Vulnerability Assessment 2050 Sea Level Rise

- Municipal Boundary
- Local Roads
- Evacuation Route
- Asset Categories**
  - Community Resources & Amenities
  - Critical Facilities & Infrastructure Systems
  - Districts, Neighborhoods, & Population Clusters
  - Natural Resources & Ecosystems
- Community Assets**
  - 1, ACME Market
  - 2, Benton Avenue Pump Station
  - 3, Cape Bank
  - 4, Cape Island Creek Slouse Gate
  - 5, Cape May City Elementary School

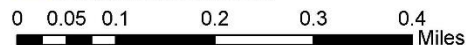
- 6, Cape May City Fire Department & OEM
- 7, Cape May City Hall & Police Department
- 8, Cape May City Housing Authority
- 9, Cape May City Public Works Complex
- 10, Cape May Convention Center
- 11, Cape May County Library
- 12, Cape May United Methodist Church
- 13, City of Cape May Welcome Center
- 14, Elmire Street Bridge
- 15, Franklin Steet Civic Center
- 16, Grant Street & Beach Avenue Pump Station
- 17, Harborview Park
- 18, Kivanis Park
- 19, Lafayette Street Park

- 20, Madison & Beach Avenue Pump Station
- 21, Madison & Michigan Avenue Pump Station
- 22, Madison Avenue Water Tank
- 23, Nature Center of Cape May
- 24, Patterson & Beach Avenue Pump Station
- 25, PNC Bank
- 26, Riggins Service Station
- 27, Rotary Park
- 28, Rutgers University Aquaculture & Fisheries Center
- 29, Schellengers Landing Bridge
- 30, Schellengers Landing Bridge
- 31, Sewell Point Tract
- 32, Sturdy Savings Bank
- 33, Swain's ACE Hardware

- 34, U.S. Coast Guard Training Center
- 35, U.S. Post Office
- 36, Victorian Towers Senior Citizens Apartment Complex
- 37, Wawa Market
- 38, Wilmington Avenue Pump Station
- District Assets**
  - 39, Beachfront District
  - 40, Froggy Hollow
  - 41, Harborview Bulkhead
  - 42, Rock Jetty Seawall
  - 43, Schellengers Landing Business District
  - 44, Washington Street Mall Business District

### 2050 Sea Level Rise

#### Depth





# Coastal Vulnerability Assessment

The coastal vulnerability assessment provides data to begin identifying adaptation strategies.

For each flood scenario:

- Level of inundation
- Impact on function
- Community consequences

**Table 1. Elnsboro Coastal Vulnerability Assessment Matrix Summary**

Asset Name	Asset Category	Asset Function	Vulnerability Rating			
			Sea Level Rise	CAT1 Hurricane	Sea Level Rise	CAT1 Hurricane
Abbott's Farm Dyke	Critical Facilities & Infrastructure Systems	A dyke system used to control water levels and protect properties in the wetlands complex to the North of the dyke.	Moderate	High	High	High
Abel Nicholson House	Community Resources & Amenities	A historic farm house, currently unoccupied, and placed on the National Historic Register.	NA	Low	NA	Moderate
Beaches	Natural Resources & Ecosystems	The beach along the Delaware River extending from the Southern end of South Oakwood Neighborhood and running north to the mouth of the Salem River.	High	High	High	High
Drenk Behavioral Center	Community Resources & Amenities	A treatment center that primarily focuses on mental health and substance abuse services.	High	High	Insignificant	Insignificant
Elnsboro Fire Company	Critical Facilities & Infrastructure Systems	The Fire Company provides emergency services, both firefighting and EMS, for the Township.	NA	High	NA	High
Elnsboro Municipal Building	Critical Facilities & Infrastructure Systems	The Elnsboro Municipal Building operates as the Elnsboro Township administrative building.	NA	Low	NA	Low
Elnsboro Point	Natural Resources & Ecosystems	A small public access area owned and operated by PSE&G.	Insignificant	Insignificant	NA	NA
Elnsboro School	Community Resources & Amenities	A public elementary school that serves students from Kindergarten through the 8th Grade.	NA	NA	NA	NA



# Coastal Vulnerability Assessment

...and to help prioritize adaptation strategies...



# Getting to Resilience Assessment

# Getting to Resilience

[www.PrepareYourCommunityNJ.org](http://www.PrepareYourCommunityNJ.org)

How do the community's **land use policies, ordinances and plans** protect people and property from the impacts of flood hazards?



How do the community's ***land use policies, ordinances and plans*** protect people and property from the impacts of flood hazards?

*And are these plans and policies integrated?*

- Master Plan
- All-Hazards Mitigation Plan
- Floodplain Management Plan
- Evacuation Plan
- Emergency Response Plan
- Continuity of Operations Plan
- Open Space Plan
- Stormwater Management Plan



## Engaging Municipal Staff & Professionals

Land use Planners  
Hazard Mitigation Planners  
Floodplain Managers  
Emergency Managers  
Natural Resource Managers  
Municipal Engineers  
Town Administrators  
Environmental Commissioners

# Getting to Resilience

[www.PrepareYourCommunityNJ.org](http://www.PrepareYourCommunityNJ.org)

“Getting to Resilience” self-assessment produces a report that offers recommended resiliency strategies and actions that are recognized under these programs:



Community Rating System



Hazard Mitigation Planning Actions



Municipal Certification

# Technical Assistance



# Building Ecological Solutions to Community Coastal Hazards

## Our Technical Assistance Team

- Coastal Engineers
- Wildlife Ecologists
- Planners
- Landscape Architect
- Marine Ecologists





# Technical Assistance to Communities

**Brief engagement** – one meeting and a site visit.

Recommendations need to be followed up by additional studies to confirm feasibility.



**Examples of issues the team addressed:**

Marsh erosion  
Breach of dunes  
Siltation of channel  
Beach erosion

**Examples of team recommendations:**

Re-vegetate dunes and marsh edges  
Create new living shorelines  
Reduce wave action through breakwaters, oyster reefs, marsh sills  
Enhance habitat value, e.g. minimize raking, restore vegetation

# Technical Assistance to Communities



Fig 4. Vertical hanging panels to enhance habitat



Sea Bright Borough: How to install environmentally sensitive bulkheads, and encourage residents' buy-in?



# Technical Assistance to Communities



Cape May City: The seawall and dunes at this intersection are periodically breached and the ocean waters flow downhill into nearby neighborhoods.

# Technical Assistance to Communities



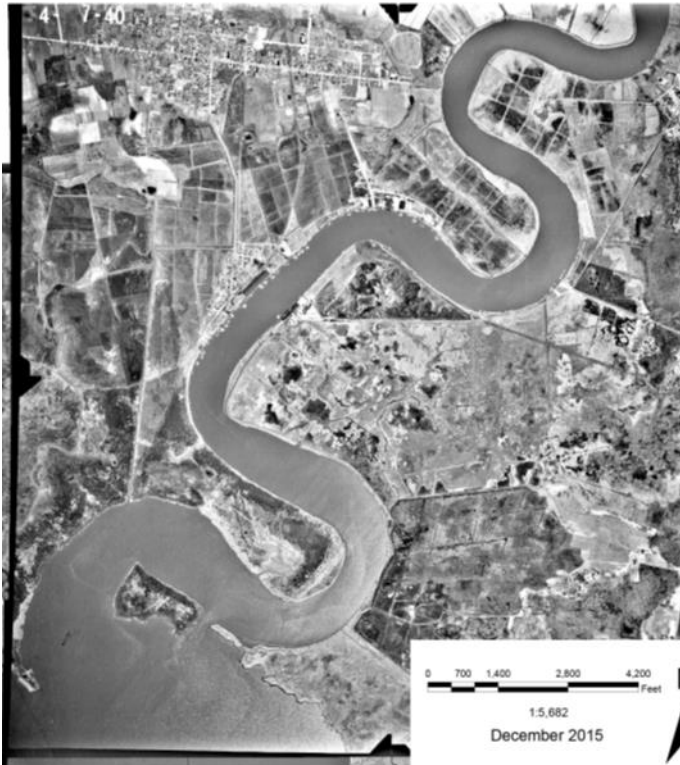
Cape May Point: A breach in the dune system is causing flooding into the borough, through public park lands.



# Technical Assistance to Communities



Maurice River 1940 Aerials



Maurice River 2012 Infrared Aerials

