



# NJ Department of Environmental Protection



## COASTAL AND LAND USE PLANNING





# Survey of Stakeholders on Coastal Issues



## Coastal Wetlands

### **Greatest Issues Past 5 years**

Coastal storms  
Development  
Lack of funding  
Permitting issues

### **Greatest Issues Next 5 years**

Collaborative Planning  
Data collection, assessment and monitoring  
Regulatory changes

## Coastal Hazards

### **Greatest Issues Past 5 years**

Development in hazard areas (69%)  
Lack of regional planning and mapping (38%)  
Lack of funding (31%)  
Lack of implementation of alternative shorelines

### **Greatest Issues Next 5 years**

Management of re/development in hazard areas (85%)  
Regional resilience/hazard mitigation planning (69%)  
Alternative shoreline stabilization methodologies (58%)

Received a range of 70-90 responses on survey areas

# Coastal Hazards Assessment



- Close to 900,000 people in coastal floodplain, up 13.6% in 2000-2010
- 60% of coast is high & highly vulnerable to shoreline erosion
- 98% of coast is moderate & highly vulnerable to sea level rise
- 550,000 acres highly vulnerable to coastal hazards
- Land Cover Changes 2007 -2012
  - 2.58 sqm wetlands converted to development
  - 2.89 sqm wetlands converted to water
  - 2.17 sqm wetlands converted to barren land



# Coastal Hazards Assessment



- Top Three Stressors

Erosion and deposition of tidal marsh edge

Impacts of rising tides, sea level change and storm surge

Lack of adequate buffer protection for coastal wetlands

- June 2013 – Emergency adoption of CZM/CMP Rules to promote habitat creation, restoration, enhancement & living shorelines

- DEP Internal Living Shorelines Workgroup created to support natural responses to coastal hazards.



# Coastal Strategy



Support expanded and effective use of ecologically-based mitigation strategies:

- Facilitate ecologically-based hazard mitigation strategies
- Monitor and assess the efficacy of those strategies

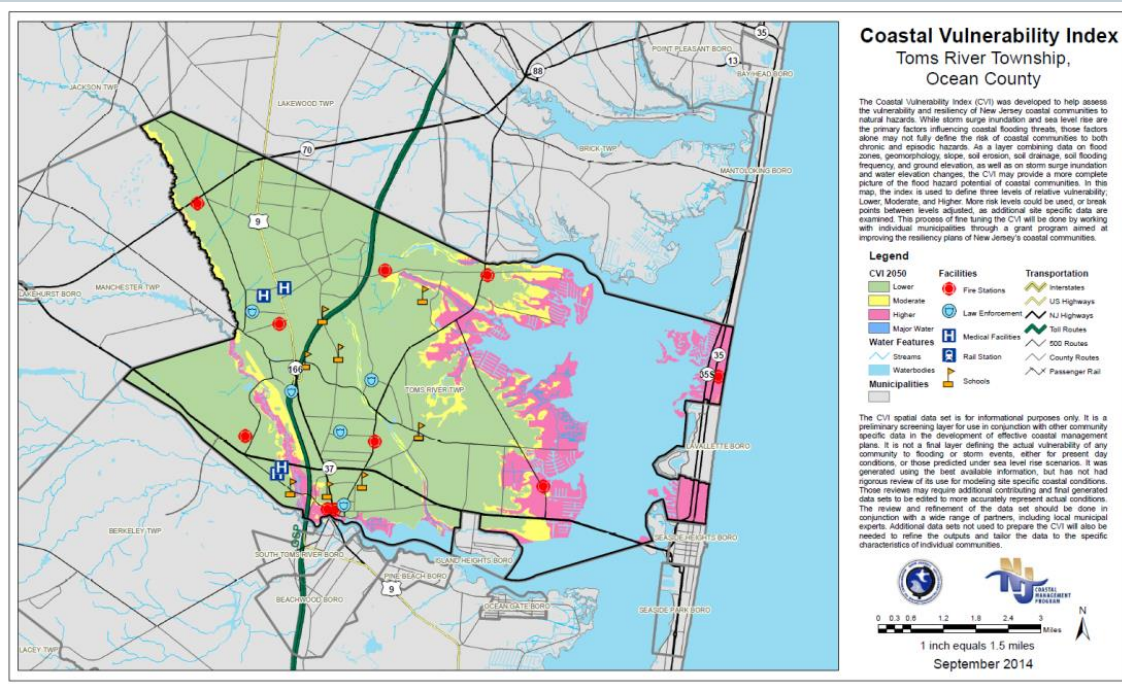
Recommend changes to DEP programs:

- targeted land acquisition
- restoration incentives
- mitigation prioritization
- consider modifications to regional vs site-specific policies



# Municipal Outreach and Assistance

Invitation to participate in Resilient Coastal Communities  
 Access to online survey on issues: 93 (30%) responses from 73 municipalities  
 Coastal Vulnerabilities Index Map  
 Getting to Resilience (GTR) assistance  
 Coastal Vulnerabilities Assessment (CVA) assistance



# Municipal Resilience Planning

- Multiple initiatives, grants and partners
- Multi-year efforts on local, regional and state levels
- Assistance to municipalities and professionals for coastal hazards assessment, planning and responses
- Literature and Best Management Practices appropriate to NJ collected and evaluated
- Examples/templates of municipal actions focused on land use, communication tools and ecological solutions
- Online guide and resources



Engineering Guidelines for Living Shorelines Projects

**What is a Living Shoreline?**  
A living shoreline is a shoreline stabilization or habitat restoration approach which involves the use of both natural and man-made materials to achieve the objectives. While originally applied only to marsh projects, the term "living shoreline" has evolved to take on a broader meaning which encompasses a wide variety of projects that incorporate ecological principles into engineering design.

**Why Develop Guidance?**  
This guidance was developed to provide engineering consultants, regulators, and private property owners with a consistent framework to ensure that living shoreline projects built within the State of New Jersey are designed, permitted, and constructed in a consistent manner using the best available information. The guidance is being developed at a critical time when living shoreline projects are becoming an increasingly popular alternative for stabilizing shorelines and restoring natural habitat. In July 2016, the State of New Jersey officially adopted Coastal General Permit 19 (N.J.A.C. 17:27-6) which was written to encourage the use of innovative living shoreline techniques and to remove some of the regulatory impediments to their adoption.

**Approach**  
The approach taken in developing the engineering guidelines was to identify the set of factors which most frequently play a critical role in the success or failure of a living shoreline project, and then to outline a methodology for addressing these factors.

**Relevant Parameters**

- System Parameters
  - Erosion History
  - Sea Level Rise
  - Tidal Range
- Hydrodynamic Parameters
  - Wind Waves
  - Waves
  - Currents
  - Tide
  - Storm Surge
- Terrestrial Parameters
  - Tributary Slope
  - Shoreline Slope
  - Nearshore Slope
  - Offshore Depth
  - Soil Bearing Capacity
- Ecological Criteria
  - Water Quality
  - Soil Type
  - Sunlight Exposure



# Municipal Resilience Guide Content



- **Introduction**

Need for resiliency and explanation of guide

- **Hazards**

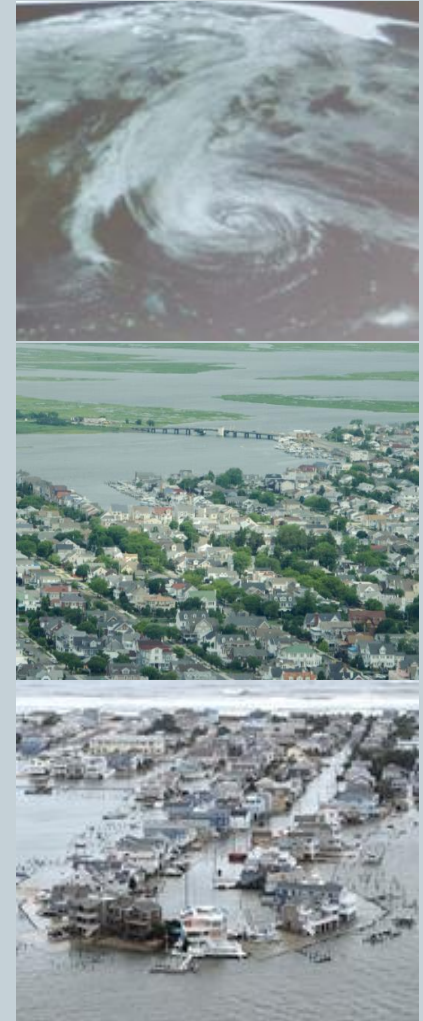
Coastal Storm Flooding, Surge, High Velocity Winds, Tidal Flooding, Sea Level Rise, Shoreline Erosion, Saltwater Intrusion

- **Assets**

Transportation Infrastructure, Utilities, Green Infrastructure, Developed and Developable Land, Preserved and Ecologically Sensitive Land, Community Assets, Economic Viability

- **Impacts**

Frequent Inundation, Loss of Improvements, Developed and Developable Land, Preserved and Ecologically Sensitive Land, Community Assets, Economic Viability and specific hazard/asset impacts



# Municipal Resilience Guide Content

- **Responses**

Land Use and Ecological Responses  
Protect, Accommodate, Avoid

- **Timeframes**

Short Term 2020  
Middle Term 2050  
Long Term 2100

- **Case Studies**

Comprehensive, by hazard,  
by scale: local, county, state,  
region & pilots for new methodologies



**Frequent Inundation:**  
Flooding from high tides or storms



**Loss of Improvements:**  
Damage impacting use and value



**Loss of Developed and Developable Land:**  
Value and revenue



**Loss of Preserved and Ecologically Sensitive Land:** Ecological value and social value



**Loss of Community Assets:**  
Social capital, Civic infrastructure-education, government, community assistance, sense of community



**Loss of Economic Viability, Competitiveness and Benefits:**  
Revenue, employment,



**Specific Hazard/asset/location impacts:**  
Unique conditions requiring specially crafted responses

# Grant funding



Coastal Management Program



Office of Coastal and Land Use Planning

Grants/Programs

S+RCC

Living Shorelines

Citizen Science

Public Access

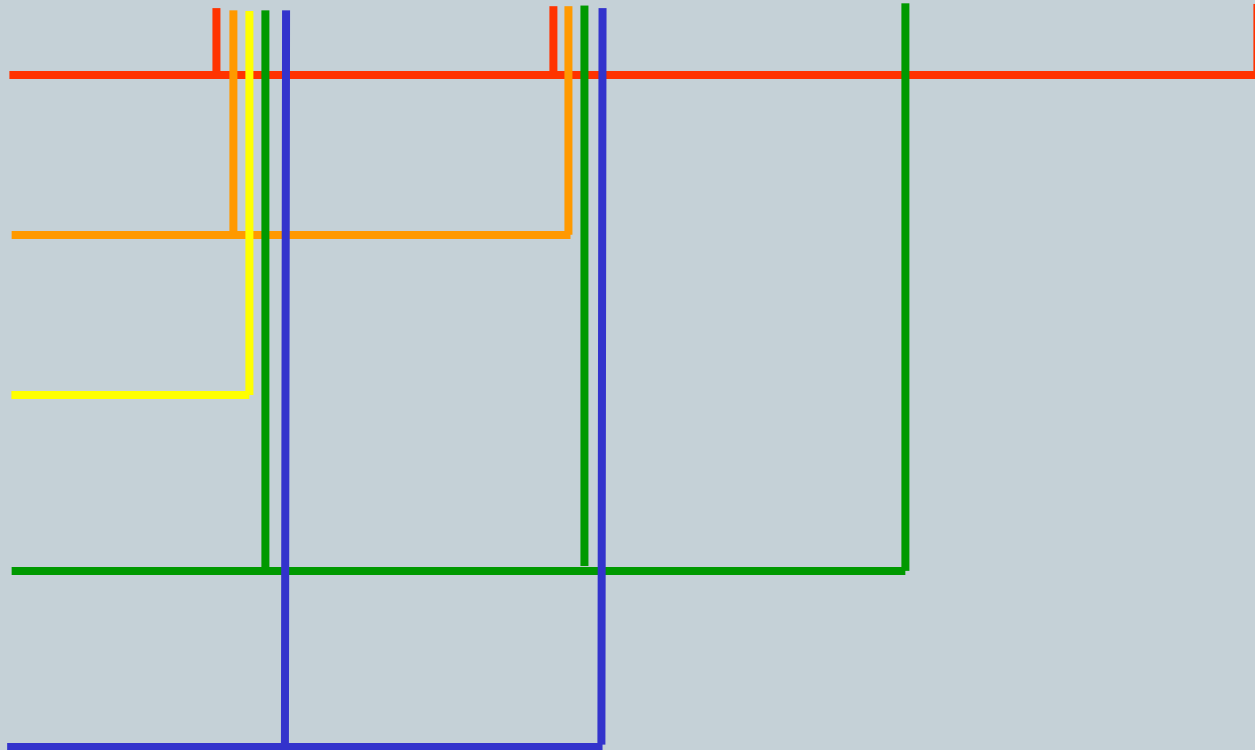
Coastal Zone Management

EPA

Resilient Coastal Communities

DOI-NFWF

Sustainable + Resilient Coastal Communities



# DOI/NFWF Building Ecological Solutions to Coastal Community Hazards



- \$3.4 million grant award
- Funded by the Hurricane Sandy Coastal Resiliency Competitive Grant Program
- **Develop ecological solutions guidance material**
- **Provide outreach and assistance to municipalities**
- **10 projects that address coastal risks using ecological solutions**
- Monitoring for projects to evaluate ecological solutions
- Develop citizens monitoring program
- Partner with schools to create curriculum for education on ecological solutions and monitoring

# Building Ecological Solutions to Coastal Community Hazards

## *Technical Partners*

- **National Wildlife Federation**
- **Sustainable Jersey**
- **Steven Institute of Technology**
- Partnership for the Delaware Estuary
- Barnegat Bay Partnership
- NJ Audubon
- NJ School Boards Association

## *Local Partners*

- Atlantic City
- Brigantine City
- Downe Township
- Margate City
- Somers Point City
- Secaucus Township
- Spring Lake Borough
- Lower Township
- Upper Township
- Cape May County