Incorporating Resiliency Into JLUS: The Monmouth County- NWS Earle Partnership Experience

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Incorporating Resiliency Into JLUS: The Monmouth County – NWS Earle Partnership Experience

Linda J. Brennen, PP/AICP
Supervising Planner
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Monmouth County Division of Planning
A little background information

Monmouth County, NJ

NWS Earle & the MIA
A little background information

2.9 mile Earle pier in Raritan Bay

Bay beach view of the Navy pier

Earle Security Zone & Channel
The JLUS Partners:
- Monmouth County (lead)
- NWS Earle
- 13 municipalities (5+8)

Consultants:
- Maser Consulting (lead)
- AECOM
- Rutgers University

Technical Working Groups
1. Resilience (NJ Sea Grant, Baykeeper, Marinas, etc.)
2. Economic Development
3. Watershed Municipalities
4. Environmental
Resilience Focus:
- Modeling for SLR
- Climate adaptation Planning (improve storm resiliency/flood protection) and improved energy/utility resiliency
Sea Level Rise Modeling

8534720 Atlantic City, New Jersey

4.07 +/- 0.16 mm/yr

Monthly mean sea level with the average seasonal cycle removed

<table>
<thead>
<tr>
<th>Water Level</th>
<th>What High Water Level Condition Does This Height Represent?</th>
<th>How does this water level relate to recent events at Sandy Hook?</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft.</td>
<td>• An Annual (99% AEP) Flood in 2050</td>
<td>• In January 2017, a water level associated with a Nor'easter reached approximately 2.8 feet above MHHW.</td>
</tr>
<tr>
<td></td>
<td>• Permanent Inundation (MHHW) under a High Emission Scenario in 2100</td>
<td></td>
</tr>
<tr>
<td>7 ft.</td>
<td>• A 10-Year (10% AEP) Flood under a High Emission Scenario in 2100</td>
<td>• Hurricane Sandy reached a water level of 8.3 feet above MHHW, slightly above this assessment.</td>
</tr>
<tr>
<td></td>
<td>• An Annual (99% AEP) Flood under a low probability, high consequence High Emission Scenario in 2100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• A 100-Year (1% AEP) Flood under a low probability, high consequence High Emission Scenario in 2100</td>
<td></td>
</tr>
<tr>
<td>12 ft.</td>
<td>• Hurricane Sandy under a High Emission Scenario in 2100</td>
<td>• The historical record for this tide gauge (i.e. since 1910) has never recorded a water level this high.</td>
</tr>
</tbody>
</table>
Sea Level Rise Modeling

CLIMATE RESILIENCE
Mean Higher High Water (MHHW)

Sandy Hook Bay

CLIMATE RESILIENCE
12 Feet Above MHHW

NWS EARLE JI.US
MONMOUTH COUNTY, NEW JERSEY
AUGUST 2017
Study Recommendations

37 Recommendations in 7 Categories

- Communication/Outreach
- Land Use
- Economic Development
- Transportation
- Utilities
- Security
- Climate Resilience
9 Recommendations for Resilience

1. Coordinate efforts for naturalized beach erosion/shoreline protection projects protecting both Navy and community waterfronts.
2. Develop Marsh & Dune Restoration Plan, coordinating with partners to determine partner facilities that could be suitable locations.
3. Investigate potential joint stormwater management improvement projects.
4. Continue to work with NJ FRAMES on resiliency recommendations.
5. Conduct site specific vulnerability assessments of critical assets.
6. Identify water-dependent uses and working waterfront uses and determine future adaptive capacity for storm resiliency & economic sustainability.
7. Continue assisting municipalities with Community Rating System (CRS) leveraging of additional and regional resilience efforts.
8. Identify critical evacuation/transportation routes vulnerable to storm and nuisance flooding.
9. Revise planning documents to reflect SLR and exposure assessment.
Resilience Planning – Where we are Today

Working to Implement all 9 recommendations for resilience:

- County CRS Group assists municipalities improve rating
- County OEM All-Hazards Plan expanded
- Bayshore Resilience Plan
  - 18-month OEA grant
  - Continuing Partnerships
  - Coordinating with current projects
  - Selecting sites for resilience projects
Bayshore Resilience Planning Study

TAC Composition:
- 30 governmental agencies, municipalities, universities & environmental groups/NGOs

TAC Meetings:
- January kick-off
- April priorities & site suitability
- June site selection
- October concept plan review
- November full study review
## Site Prioritization & Suitability Analysis

### Selective Criteria

#### 1. Property to Federal Channel

<table>
<thead>
<tr>
<th>Category</th>
<th>Weight</th>
<th>Sub-Category</th>
<th>Description</th>
<th>Application Rule</th>
<th>Notes</th>
<th>Selection Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>30%</td>
<td></td>
<td>L.1. Property to Federal Channel</td>
<td>Specify, necessity to create benefits/costs of dredge materials based on distance to seaward/near channel. Area of analysis include nearshore and 200 ft setback from the shoreline.</td>
<td>1.000%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25%</td>
<td></td>
<td>L.2. Competitive Land Adjacent to W. Island</td>
<td>Develop a spatial database of land parcels within the W. Island that meet the following criteria (i.e., size, shape, location, and access to infrastructure).</td>
<td>0.75%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 2. Water Levels above Current Mean High Water (MHW) (100 yr)

<table>
<thead>
<tr>
<th>Category</th>
<th>Weight</th>
<th>Sub-Category</th>
<th>Description</th>
<th>Application Rule</th>
<th>Notes</th>
<th>Selection Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td></td>
<td>L.4. Waterline (100 yr)</td>
<td>Specify, necessity to create benefits/costs of dredge materials based on distance to seaward/near channel. Area of analysis include nearshore and 200 ft setback from the shoreline.</td>
<td>1.000%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20%</td>
<td></td>
<td>L.5. Waterline (100 yr)</td>
<td>Specify, necessity to create benefits/costs of dredge materials based on distance to seaward/near channel. Area of analysis include nearshore and 200 ft setback from the shoreline.</td>
<td>0.90%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 3. Impact to future wetland development

<table>
<thead>
<tr>
<th>Category</th>
<th>Weight</th>
<th>Sub-Category</th>
<th>Description</th>
<th>Application Rule</th>
<th>Notes</th>
<th>Selection Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td></td>
<td>L.6. Impact to future wetland development</td>
<td>Specify, necessity to create benefits/costs of dredge materials based on distance to seaward/near channel. Area of analysis include nearshore and 200 ft setback from the shoreline.</td>
<td>1.000%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Area of Analysis

![Area of Analysis](image_url)
Resilience Project Sites

TAC Selected Sites:
1. Belford Beach Stabilization
2. Compton Creek Wetland Restoration
3. Flat Creek Restoration
4. Henry Hudson Trail Shoreline Protection
5. Highlands Flood Mitigation
6. Keansburg Beach Replenishment
7. Leonardo Resiliency Project
8. Many Mind Creek Stormwater Improvement and Restoration
9. Matawan Creek – Happy Meadows Wetland Restoration
10. Ware Creek Resiliency Project
11. Whale Creek Restoration & Cliffwood Beach Stabilization
The bayshore neighborhood of Bel­ford is at risk to coastal flooding due to its low-lying location adjacent to Ware Creek. Ware Creek is a tidal waterway that empties to the Raritan Bay. The site contains a sandy beach, low and high marsh area grading up into upland wooded habitat and borders county property to the west. The mouth of Ware Creek is protected by a conservation easement held by Monmouth County. The area experiences flooding during coastal storm surge events as well as nuisance flooding during high tides. These flood events will be exacerbated in the future due to increasing total water levels.
Preliminary Review

Draft Concept Plan Review

- Held meetings with property owners-managers
  - Municipalities
  - County Parks, DPW & Engineering
  - NWS Earle
- Assessing additional information received
- Refining Plans
Partner Review

TAC review is scheduled for October 28
County Planning Board Full document review December 16
Next Steps

• Implementation funding
  – Identified potential funding sources including Federal & State grants, NGOs and Foundations
  – Local match & volunteer network for labor
  – REPI
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