Increasing Coastal Resiliency Through Intermunicipal Shoreline Management

A multi-phase project funded through the MA Office of Coastal Zone Management’s Coastal Resilience Grant Program

**Project Team**
Town of Wellfleet
Town of Truro
Town of Eastham
Town of Provincetown
Center for Coastal Studies
Sustainable Coastal Solutions, Inc.

**MA Office of Coastal Zone Management**
Steve McKenna, Cape & Islands Regional Coordinator
Project Goal

- Maximize resiliency of Cape Cod Bay shores of Provincetown, Truro, Wellfleet, and Eastham with a Regional Management Approach.
- ~128 square miles.
- ~46 miles of shoreline.
Inter-Municipal Shoreline Management Plan
Phase 1 (2019-2020)

• **Compiled database of shoreline resources and management approaches**
  o Compared and contrasted four Towns’ myriad approaches.

• **Developed comprehensive management framework**
  o Based on shoreline resources & processes, rather than municipal boundaries.

• **Memorandum of Agreement (MOA)**
  o Common goal of improving long-term coastal resiliency of Cape Cod Bay shore.
  o Work as one coordinated planning area by developing one Intermunicipal Shoreline Management Plan.
Phase 2 (2020-2022)

Comprehensive Management Framework

17 Management Principles & Policies:
• Application & Plan Requirements & Guidelines
• Standard Project Conditions
• General Design Criteria

Regional Sand Management
• Present Annual Nourishment Programs:
  • Parcel-by-parcel approach
  • ~30,000 cubic yards required annually
• Potential regional sand banking program to extend life of upland sand supplies.

Low Lying Roads Inventory
• 214 low lying road segments identified in Phase 1 based on storm surge and number of properties.
• Improvement alternatives and general costs developed for 15 roads identified by project team.
EVERSOURCE
Energy Storage Project

- Provincetown Transfer Station, 90 Race Point Rd.
- 25 MW Community Battery
- Backup power for Provincetown, Truro, Wellfleet
Opportunity for Regional “Sand Banking”

- Collaborative effort:
  - Outer Cape town staff
  - Eversource
  - Lawrence Lynch Corp.
  - CCS, Mass. CZM
- 4500 cu. yds. of clean, native sand conserved (220 truckloads)
- Stored at Town of Eastham facility (Nauset Road)
- Uses: Dune Enhancement and Beach Nourishment projects
- Estimated cost savings: $120,000-$135,000
Salt Marsh Datasets

- Migration Parcels
- Potential Migration Space
- Change (1933-2018)
- Contemporary

Acquisition Desirability Score
- Restoration Parcel

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Migration Parcels
Coastal Structure Inventory
Beach Nourishment Inventory

<table>
<thead>
<tr>
<th>Type</th>
<th>Volume (CY)</th>
<th>Sites (Count)</th>
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<tbody>
<tr>
<td>Annual</td>
<td>25,414</td>
<td>122</td>
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<tr>
<td>As Needed</td>
<td>9,125</td>
<td>97</td>
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<tr>
<td>Right to Impose</td>
<td>40</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>34,580</strong></td>
<td><strong>228</strong></td>
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Sediment and Long-term Shoreline Resiliency

A sand shortage? The world is running out of a crucial but under appreciated commodity.

CNBC online, Sam Meredith, Mar 5, 2021

Erosion-control efforts raise concerns over Nantucket sand supply.

Cape Cod Times, Brian Bushard, Dec 22, 2019

A never-ending Commitment: The high cost of preserving vulnerable beaches.

ProPublica. Song, L. & A. Shaw, Sep 27, 2018

A looming tragedy of the sand commons.

Science, Torres, A., et al. Sep 8, 2017

The mining of sand, a non-renewable resource.

United Nations Environment Programme (UNEP), October 30, 2015

Sand is Gold.

Town-by-town, parcel-by-parcel

CES impacts offset w/ OOC reqs. for nourishment

Material typically from upland sources of beach compatible sand

Vols. = CES Length x Height x Erosion Rate
Regional Sand Management Program

- Goal: to extend the life of regional upland sand supplies
- Sand banking/ recycling program
- Cost-effective, science-based nourishment approach that promotes optimum placement of sand within a littoral cell
Long-Term (2050) Coastal Flood Mitigation Strategies

• Based on storm surge potential and # of properties served, SCS developed improvement alternatives and general costs for 15 roads identified

• Working with each town, SCS will be developing detailed preliminary designs for priority low-lying roadways

• Roadway Elevation
  ▪ Eastham  South Sunken Meadow Road
  ▪ Wellfleet  King Philip Road

• Beach Nourishment
  ▪ Truro  Shore Road (Town Line east)
  ▪ Provincetown  Commercial Street (Town Line west)
Benefitting from a Regional Approach

- Nourishment is a feasible design solution
- 🆆️ Project efficiencies & cost savings
- 🆆️ Leveraging of Grant Opportunities w/ multiple applicants
Public Data Portal

Online resource for
• Sharing data
• Interactive maps
• Applications that aid in the visualization/interpretation of spatial relationships found within coastal zone data

Designed to
• support collaboration between the town partnership and other organizations
• share data with non-GIS users
• maximum use of data by town staff and the public without the need for specialized software
Questions?