Chapoquoit Beach Project

Key Project Components
- beach nourishment
- Cape Cod Canal sand source
- nearshore rehandling site
- cooperation with USACE
- public and private interests

Feasibility Assessment
- engineering
- environmental
- financial
- public/private partnership

Funded By CZM Coastal Resilience Grant
Updates Since Last Meeting

Offshore Investigations
• benthic habitat and sediment sampling
• ID site for nearshore rehandling

Nearshore Investigations
• shellfish survey
• wave modeling
• sediment transport modeling
• impacts on W. Falmouth Harbor

Refined Design and Cost
• minimize impacts to resources
• refined cost sharing model
• ID costs for permitting

Formalized Next Steps
Project History

Permitted Nourishment Project in 2002

- CA, Town of Falmouth, Bowerman’s
- Cape Cod Canal sand source
- Direct pump to the beach
- ~100,000 cy over 3,200 ft
- Project not constructed

Current Beach Conditions

- still eroding (1.5 to 2.0 ft/yr)
- loss of recreational resource
- loss of storm damage protection
- damage to seawall/causeway
Future Change at Chapoquoit

If No Action

- current erosion 1.5 to 2.0 ft/yr
- sea level rise will increase shoreline retreat
- loss of beach/dune resource
- loss of recreational resource
- loss of storm damage protection
- damage to seawall/causeway
- damage to infrastructure
Nearshore Investigations

Wetland Resources

- coastal beach
- coastal dune
- rocky intertidal shore
- land under the ocean - eelgrass
- land containing shellfish
**Nearshore Investigations**

**Waves**
- locally generated in Bay
- swell from Atlantic Ocean
- 10 & 50 yr storms
- waves drive sediment transport

**KEY**

4.6% - Annual percent of occurrence for waves from each directional bin

(0.53,1.50) – Average wave height (ft) and wave period (sec) for locally generated waves

WW – locally generated waves

SW – swell waves

10-YR & 50-YR – Storm wave conditions for 10-yr and 50-yr events
Nearshore Investigations

Sediment Transport
• modeled avg. annual + 10-yr storm event
• direction & rate varies along beach
• zones of convergence & divergence
• net southerly transport in area of nourishment
• potential rates that assume infinite supply of sediment
Nearshore Investigations

Sediment Transport at West Falmouth Harbor

- shoal areas have increased
- ~40,000 to 50,000 cy in shoals
- main source from north
- ~8,900 cy to harbor entrance in first 2 yrs
- ~5,000 cy in following 5-10 yrs
- conservative estimates
- don’t account for offshore losses, shoreline trapping, etc.
Offshore Investigations

Benthic Habitat & Sediments

- sediment samples
- video trawls

Hard Bottom

Soft Bottom
Engineering Design

Beach Nourishment

- footprint ~11.5 acres
- ~2,960 linear ft
- ~100,000 cy
- 9 parcels (public & private)
  2 Chapoquoit Assoc.
  2 Town of Falmouth
  1 Bowerman’s Beach Club
  4 private
Engineering Design

Transect 2
- Buzzards Bay
- Proposed Fill
- Existing Profile
- Existing Revetment

Transect 3
- Buzzards Bay
- Proposed Fill
- Existing Profile
- Existing Revetment

Chapoquoit Beach, West Falmouth, MA
Engineering Design

Chapoquoit Beach, West Falmouth, MA
Engineering Design

Chapoquoit Beach, West Falmouth, MA
Design Visualization

Existing Conditions

Post Restoration
Design Visualization

Existing Conditions

Post Restoration
Construction Costs

Construction Cost Estimate

• $1.7 to $2.0 million
• ~$.8 to 1.1 mil for Phase I plus $900,000 for Phase 2
• $574 to $676/linear ft of beach
• Environmental permitting costs ~ $100,000
• Easements not required if private owners pay for their share of sand
Next Steps

July public meeting
• investigate feasibility of dredging W. Falmouth Harbor

Local stakeholder meetings (Summer 2016)
• fact sheet to be provided with key discussion points
• determine/vote support for project by stakeholder groups
• report decision back to Town

If full support
• execute MOU between Town and stakeholder groups
• Town seeks funds for permitting at 2016 Fall Town Mtg.
• stakeholder groups begin fund raising
• permitting ~1.5 yrs (complete by summer 2018)
• execute MOU between Town and USACE

USACE announces availability of sand
• Town seeks funds for construction at Town Mtg.
Questions

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