Chapoquoit Beach Restoration -Feasibility Study







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

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



Meeting Agenda

Describe Feasibility Study

- purpose
- scope
- preliminary findings

Address Key Questions

- nourishment design
- sand quality
- sediment transport/impacts
- project lifetime
- access easements
- cost





Scope of Study

Purpose

 evaluate feasibility of restoring Chapoquoit Beach through beneficial reuse of sand dredged from the Cape Cod Canal

Scope & Project Tasks

- coordinate with USACE
- beach investigations
- engineering design
- nearshore investigations
- public education



Beach Investigations

Existing Conditions

- rates of shoreline change
- topographic survey
- resource area mapping
- sediment sampling
- shellfish survey
- wave modeling
- sediment transport modeling





Engineering Design

Beach Nourishment

- footprint ~13 acres
- ~3,000 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

- **Cross Section**
- increase beach elevation by ~ 7 ft
- move MHW seaward 75 to 120 ft



Nearshore Investigations

Existing Conditions

- bathymetric survey
- benthic/seafloor habitat
- sediment sampling
- avoid hard bottom

Constraints

- 30 to 40 ft depth
- 4,000 ft from shore
- designate area



Key Questions

Nourishment Design Sand Quality Sediment Transport/Impacts to W Falmouth Harbor Project Lifetime

- cross shore and longshore spreading
- updates to previous models
- ~16 to 30% fill remaining after 10 years

Public Access Easements

- required if public funds spent to nourish private beaches
- private interests must pay for their share of sand
- USACE direct pump to beach would trigger need for easements

Construction Costs

Canal to Nearshore Rehandling Site – Phase 1

- USACE split hull hopper dredge
- 100% of cost above and beyond disposal at Cleveland Ledge

Nearshore Rehandling Site to Beach – Phase 2

- Barnstable County dredge
- \$9/cy without booster; \$13/cy with booster pump

Construction Cost Estimate

- \$1.7 to \$2.0 million
- ~ \$.8 to 1.1 mil for Phase I plus \$900,000 for Phase 2
- \$560 to \$660/linear ft of beach
- Environmental permitting costs

Next Steps

Ongoing Studies

- shellfish survey along beach
- nearshore benthic habitat and sediment sampling
- wave and sediment transport modeling
- impact assessment on W. Falmouth Harbor
- fine tune costs (construction and permitting)
- MOU with USACE
- Public meeting (end of June)

Questions



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