

Shoreline Stabilization and Utility Assessment

Town of Falmouth

Presented by:



Background

- History of slope failures
- Visible erosion during major storms
- Projections of long-term sea level rise
- Concern expressed by residents
- Impacts on municipal infrastructure

Scope of Engineering Study

- Study area extends along Shoreline Drive and Bayshore Drive, north to Brown Street
- Review for areas of slope erosion, or apparent instability
- Assess condition of interceptor sewer
- Assess condition of storm drain outfalls
- Assess condition of the streets

Scope of Engineering Study (cont'd)

- Identify mitigation strategies
- Gauge likely costs
- Discuss regulatory requirements
- Include public involvement
 - initial public forum in November 2009
 - survey – mailed to key landowners
 - second public forum on July 1, 2010

Assessment Results – Slope Stability

- Several areas of concern
- Sands & clays: highly erodible
- Block failures due to wave action and groundwater seepage
- Stabilize lower portion of slope with riprap
- \$30,000 to \$40,000 per 100 foot section
- Maine DEP / Corps of Engineers permitting required
- Access for construction

Assessment Results – Slope Stability

- Benchmarking the rate of erosion
 - comparison 1969 – 2009 conditions
 - topography from “old” sewer plans
 - surveyed new cross-sections
 - varying rates of soil loss (as much as 10' measured horizontally)
- Consistent with other past studies

Project Area Map (1 of 3)



Project Area Map (2 of 3)



Project Area Map (3 of 3)



Slope Stabilization Design

- Designed to resist toe erosion (waves)
- Limited bearing strength
- Groundwater seepage
- Utilize vegetative measures where feasible (aesthetics and habitat)
- Approvable by regulators

Project Area Photos



Well-sorted and terraced rip rap stabilization at Hammond.

Project Area Photos



Block failure between Avon and McKinley.

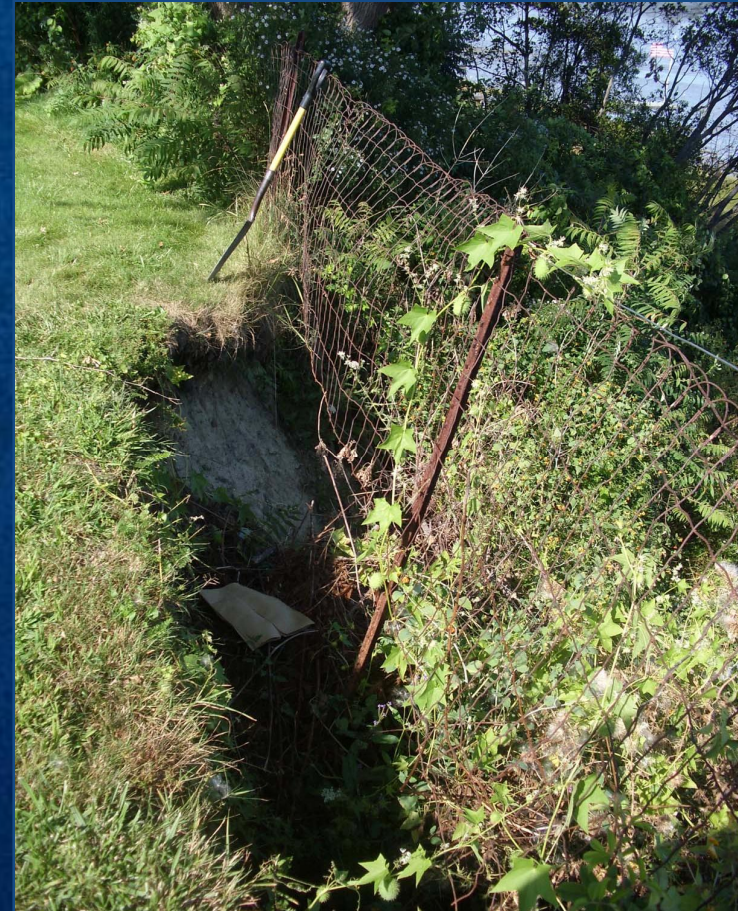


Well-sorted rip-rap stabilization at McKinley.

Project Area Photos



Poorly sorted rip-rap stabilization at McKinley.



Head of block failure at Payson.

Assessment Results –Sewer

- Exposed manholes
- Riprap “armoring” has been dispersed
- Ongoing review of sewer flows in the area
- Install new armoring around the manholes?
- Maine DEP / Corps of Engineers permitting required
- Access for maintenance and repair
- Consider option of relocating interceptor sewer

Assessment Results – Storm Drains

- Generally sound, concerns focus on the outfalls
- Localized surface erosion
- Address with placement of riprap & some pipe repairs
- MEPDES Stormwater Permit compliance
- Need to address dumping of yard waste
- Maine DEP permitting required
- Access for construction

Storm Drain Outfall Map



Storm Drain Outfall Map



Storm Drain Outfall Map



Assessment Results – Streets

- Generally good condition
- One area in particular at risk from slope failure (Avon to McKinley)

Role of the Town

- Funding / program management
 - local funds where municipal infrastructure is threatened
 - maintenance of municipally-owned property
 - coordinate access to FEMA funds (site review with FEMA in May)
- Coordinate property rights / access
- Public Education (handouts)

Role of the Landowners

- Property rights / easements
 - for construction and maintenance
 - covenants/restrictions that will allow the Town to enforce Best Management Practices
 - facilitate access to FEMA funding, etc.
- Best Management Practices (disposal of grass clippings, vegetation cutting, foot traffic erosion, etc.)

Next Steps

- Town Council guidance
- Funding acquisition
- Coordinate property rights / access
- Schedule

Questions & Answers

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