USACE NEW ENGLAND DISTRICT BEACH EROSION PRESENTATION

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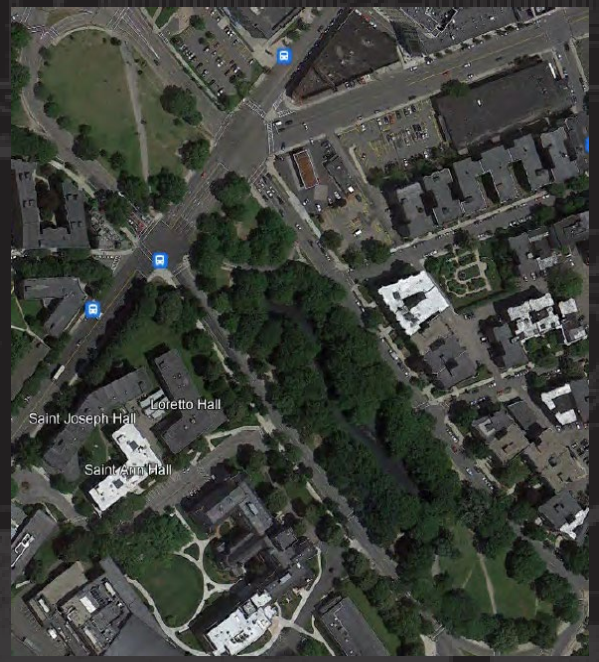

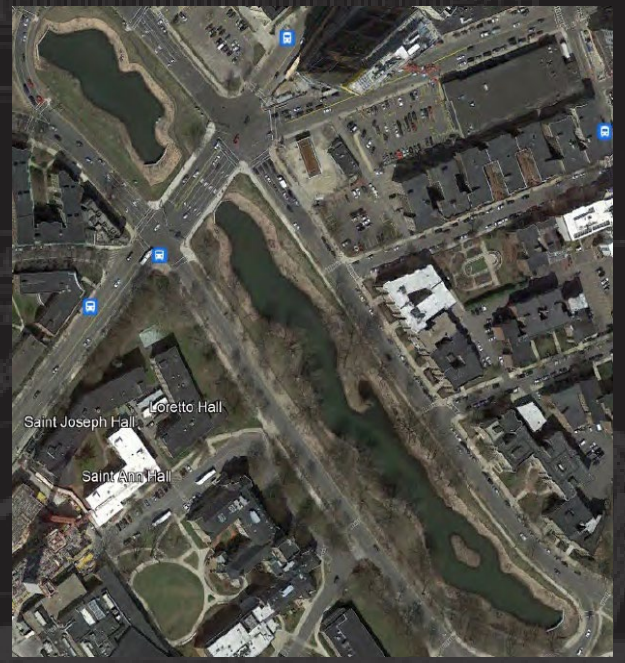

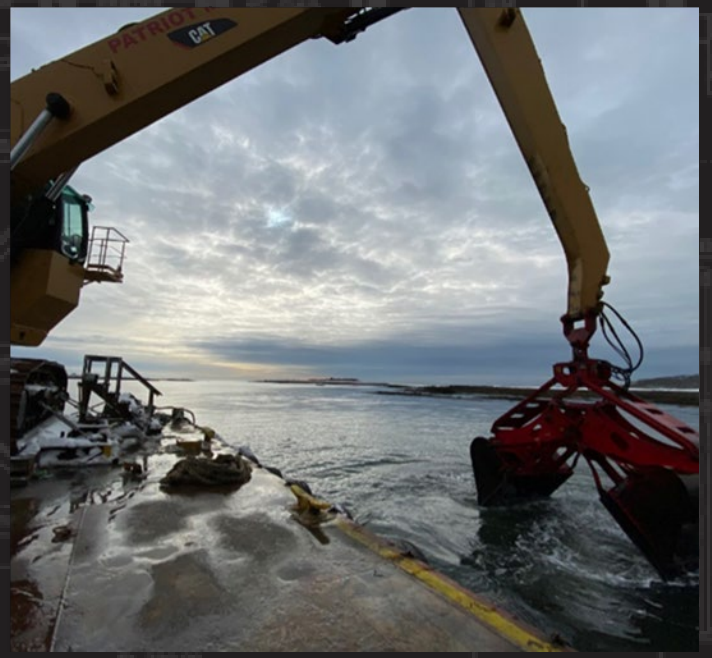

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BEACH EROSION

Understanding the problem
-breaking waves and wave-induced currents
-storm surge
-sea level change
-existing structures and shoreline features
-inlet sand sinks
-little input from riverine sources and offshore deposits

Site characterization
-sediment budget
-site geology
-spatial and temporal variability
-waves, water levels, winds

ALTERNATIVES

Shore stabilization

Beach and dune nourishment

-Offshore and upland sources

Nearshore placement

Cobble Beach (e.g., Camp Cronin)

Structures

-Revetment

-Breakwaters

-Groins

Sand bypassing

Nature-based solutions

Backshore protection

Beach and dune nourishment

Seawall or floodwall

Levee

Dune stabilization

-plantings

-fencing

ALTERNATIVES-BEACH FILL

Beach fill

Enhance beach berm and/or dunes

Requires renourishment to maintain

Longevity driven by beach fill length

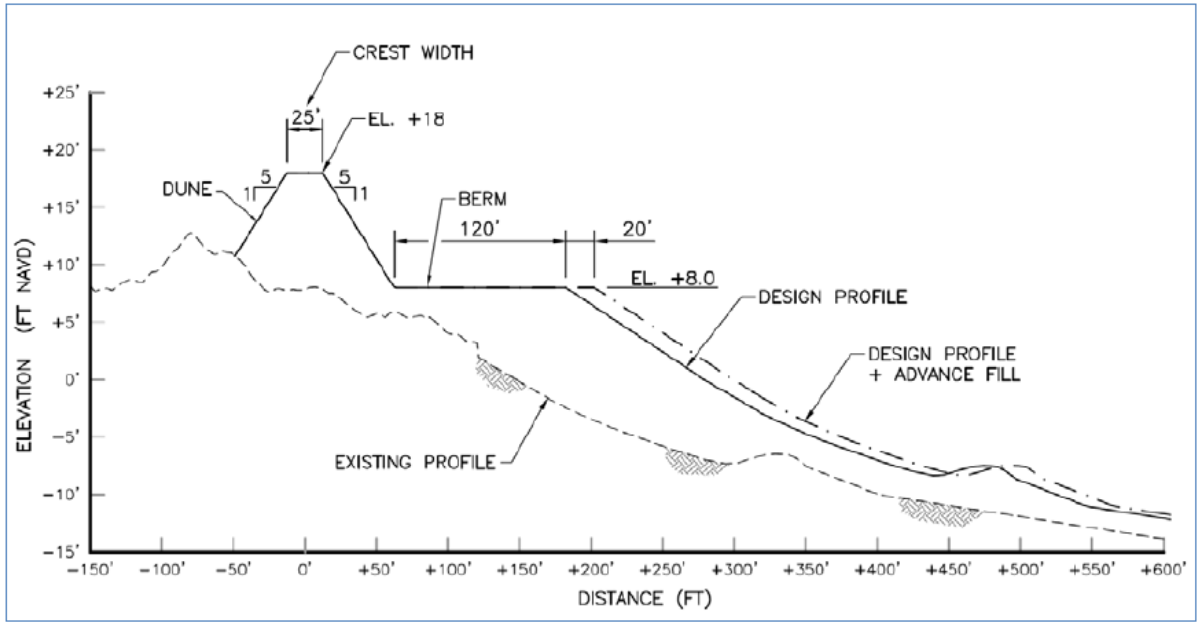
Source of material:

-upland

-offshore deposit

-dredged material

Figure VIII-14. Beach Restoration project under construction in June 2013 at Brant Beach, NJ



ALTERNATIVES-GROINS

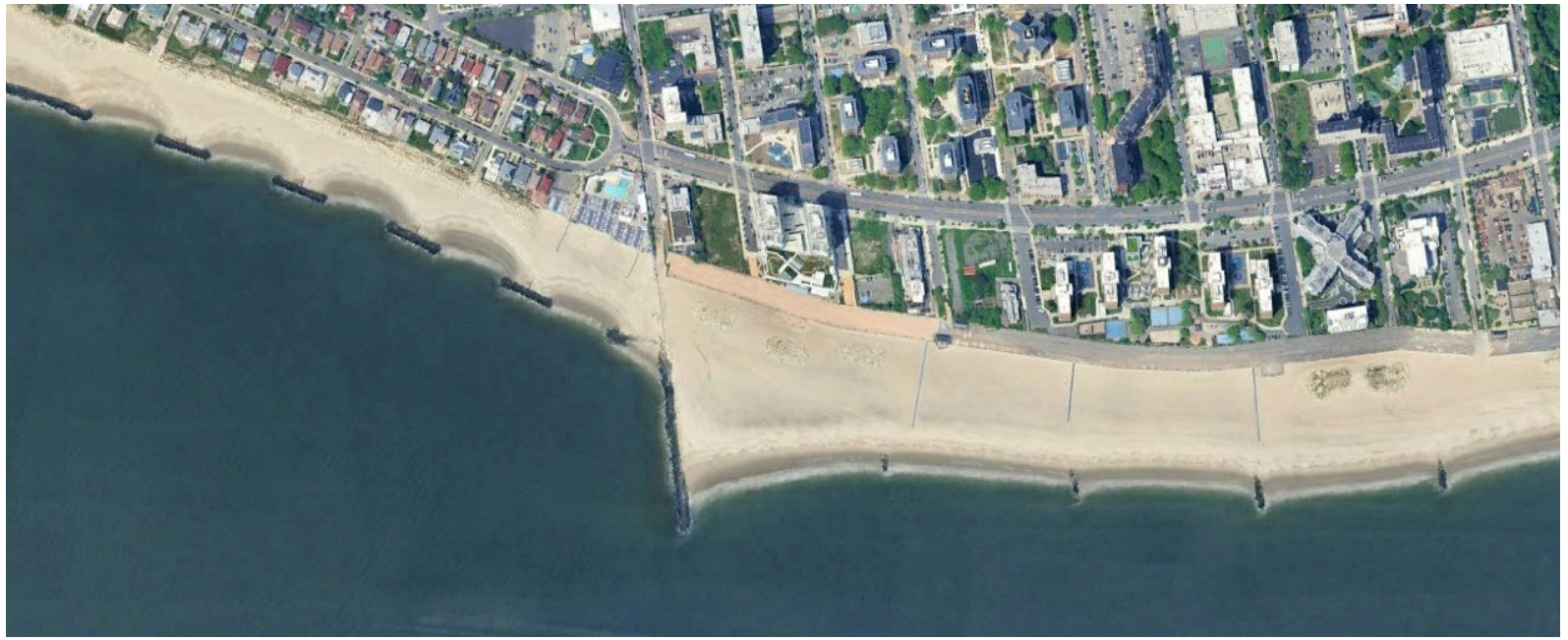
Groins

Shore perpendicular structures which keep sediment in cells

Must be accompanied by beach fill

Typically stone structures

Downdrift impacts



Straight and T-head groins with beach fill, Coney Island, NY

ALTERNATIVES-BREAKWATER

Breakwater

Shore parallel structures that break up incoming wave energy, reducing energy at the shoreline

Typically stone structures

Offshore breakwaters, Winthrop, MA

ALTERNATIVES-NEARSHORE PLACEMENT

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Nearshore Placement

Beneficial reuse of dredged material

Split-hull dredge or scow places sediment in nearshore

Sediment transported onshore via wave action

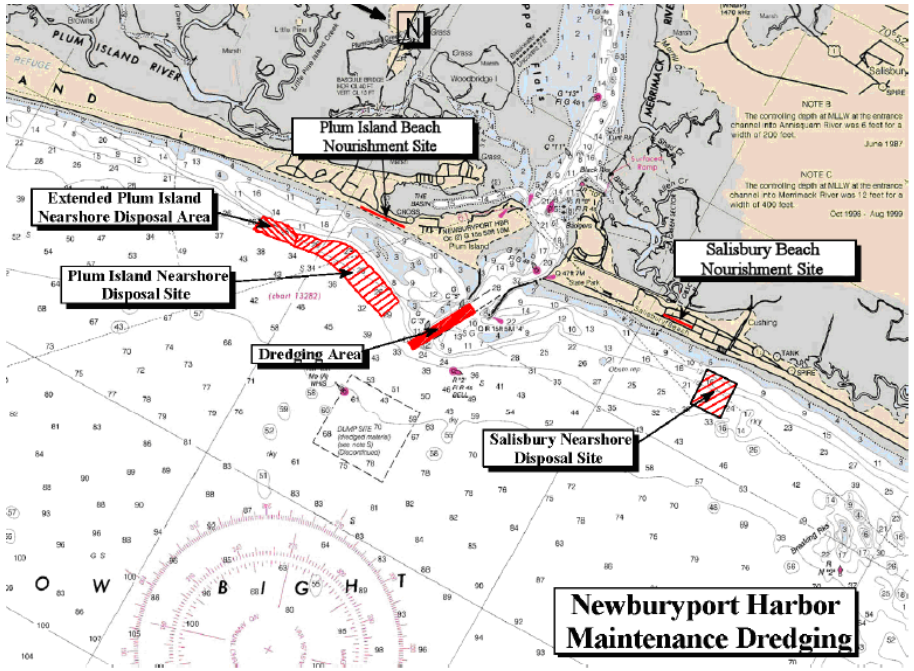
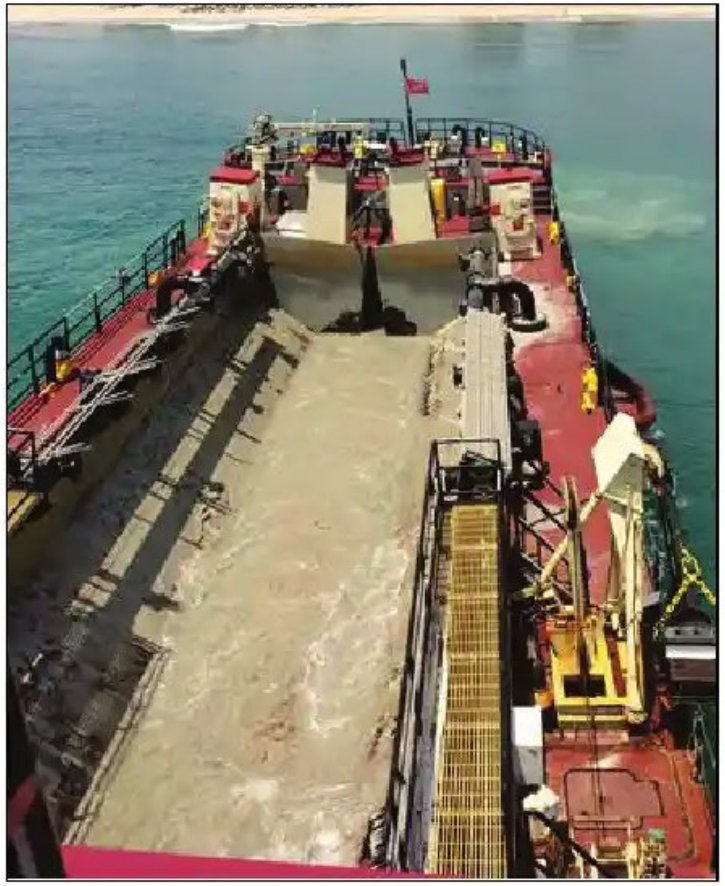


Figure 3. Split-hull hopper dredge *Murden*.



ALTERNATIVES-SAND BYPASSING

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Sand Bypassing

Used when inlet navigation features block the alongshore drift of sand

Capture sand on the updrift side and move to downdrift side

Continuously or episodically move sand

ALTERNATIVES-REVETMENT

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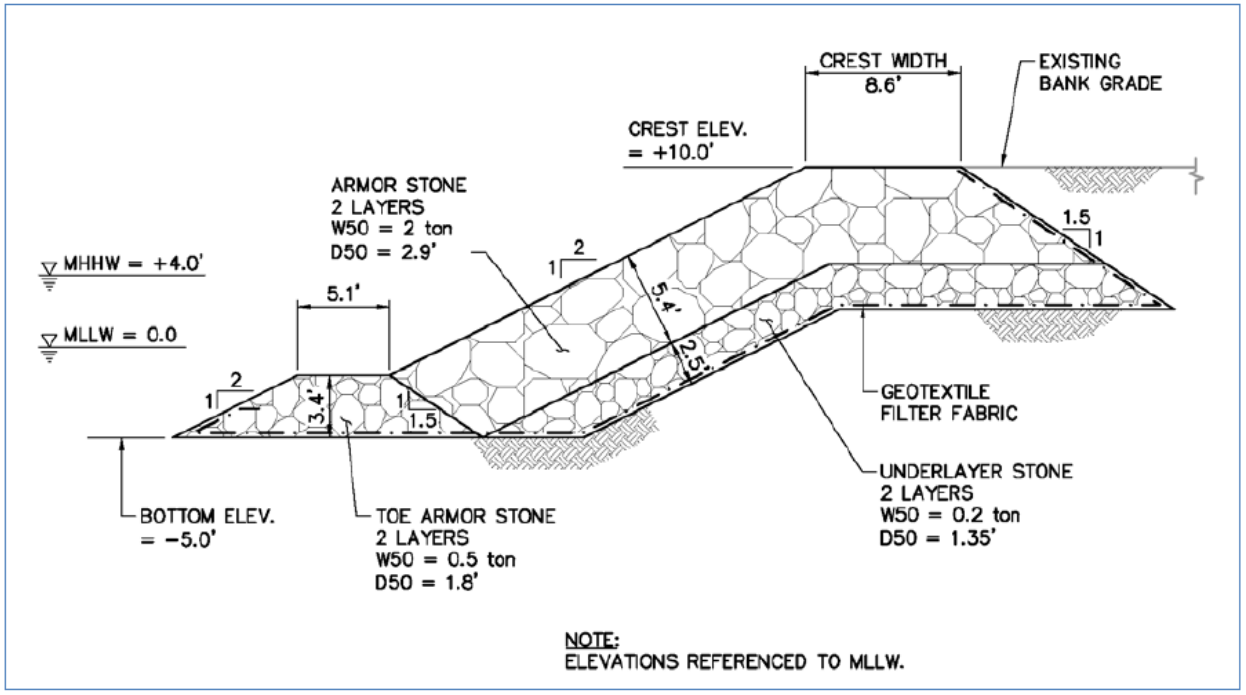
Revetment

Onshore, sloped structure to stabilize shore and protect from erosion

Typically stone



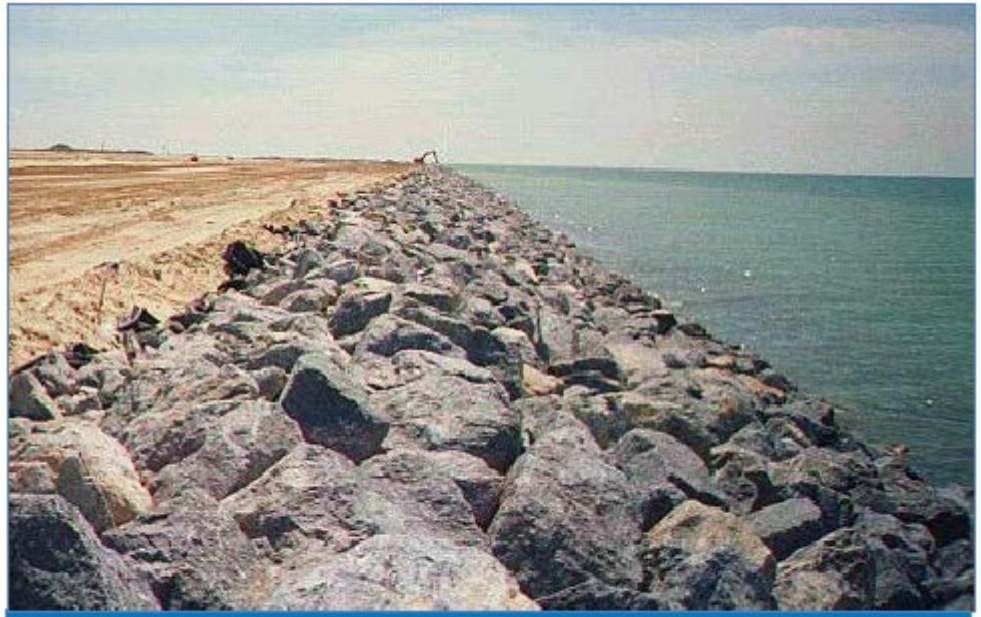


Figure VIII-10. Revetment at Poplar Island, MD

ALTERNATIVES-NATURE-BASED SOLUTIONS

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Nature-based solutions

Best suited for low wave energy sites

Examples include:

-Living shorelines
-Wetland restoration
-Oyster reefs

All designed to attenuate waves

Figure VIII-22. Living Shoreline

Table VIII-4. Criteria for Conceptual Design of NACCS Risk Reduction Measures

Measure Type	Criteria
Structural (not barriers) [1]	1 percent flood elevation + 3-foot sea level change allowance
Storm Surge Barriers	0.2 percent flood elevation + 3-foot sea level change allowance
Natural and Nature-Based Features	10 percent flood elevation
Non-structural (Floodproofing and Buyouts)	1 percent flood elevation + 3-foot sea level change allowance

USACE AUTHORITIES PRIMARY MISSION AREAS

NAVIGATION

- Larger ports (30’ +) such as Boston, New Haven, Portsmouth, Portland & Providence responding to changes in ship sizes
- Modifications to smaller ports (< 30’) in response to increased number of users

FLOOD RISK MANAGEMENT

- Watershed scale solutions
- Large, complex multi-purpose urban flooding problems
- Coastal and storm damage related problems

AQUATIC ECOSYSTEM RESTORATION

- Coastal salt marsh and wetlands restoration
- Dam removal or other means of fish passage
- Watershed studies relating to flows & WQ impacts to aquatic environments

CIVIL WORKS GI VS CAP STUDIES

SPECIFICALLY AUTHORIZED PROJECTS
Referred to as General Investigation Studies

Require greater federal investment (>$23 million to construct); address large scale or complicated flood risk management, navigation, water supply, or water resource issues

Require Congressional Study Authorization (Study Resolution, WRDA, Section 7001 WRRDA)

Single Phase Study Process

Studies require local, eligible non-Federal sponsor (NFS) that can execute a Feasibility Cost Sharing Agreement (FCSA).

Cost shared 50/50 – Generally $5M study ($2.5M Federal; $2.5M non-Federal) & 4 years to complete

CONTINUING AUTHORITIES PROGRAM
Referred to as CAP studies

Projects are smaller, address less complicated or localized water resource problems and opportunities. Generally, <$23M to construct

Do not require specific authorization; Study & construction authority delegated to Corps.

Two Phase Study
- Federal Interest Determination (100% Federal up to $100K); project must have a high probability of justifying federal investment prior to signing FCSA. Decision w/USACE Division Commander
- Feasibility Study (FCSA shared 50/50 with non-Federal sponsor)

SPECIFICALLY AUTHORIZED INVESTIGATIONS - RI

Completed Feasibility Studies

– Pawcatuck Coastal (includes coastal area from Westerly to Narragansett)
- Chief's report signed December 2018; DA signed Oct 2019
- Nonstructural Plan; elevating the first floors of 247 residential structures and flood proofing 21 commercial structures within the communities of Narragansett, South Kingstown, Charlestown and Westerly. The total cost of the project is expected $54.6 million with a benefit to cost ratio of 4.2 to 1.
- Current status – in design

– Rhode Island Coastal Focus Area Study in Narragansett Bay
- Chief's report signed September 2023
- Nonstructural Plan: elevating 290 res structures; FP 171 non-res & 36 critical infrastructure
- WRDA 2024 (Section 1401) authorized the project ($333M)

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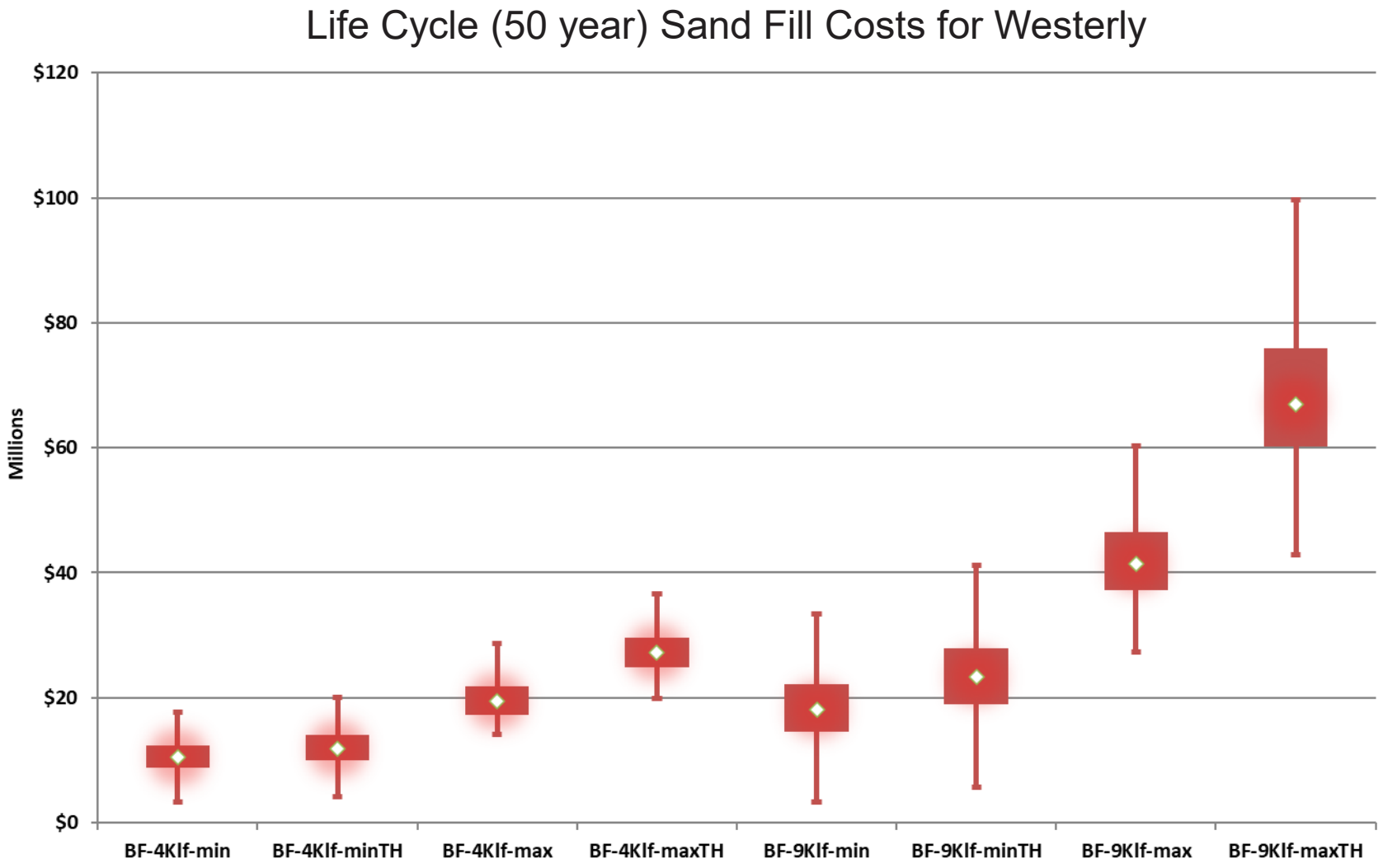
PAWCATUCK COASTAL STUDY



CAP FLOOD RISK MANAGEMENT AUTHORITIES

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Section 205 – Flood Damage Reduction
– $15 Million Federal Per Project Limit
– Projects Must be Economically Justified
– Design & Construction Cost Shared (65% Fed, 35% Non-Fed)
– O&M Non-Federal Responsibility

Blackwater River, MA
Section 205 – Low level flooding

Milford, CT; Section 103 – Non-structural

Section 103 – Hurricane & Storm Damage Reduction
– $15 Million Federal Per Project Limit
– Projects Must be Economically Justified
– Design & Construction Cost Shared (65% Fed, 35% Non-Fed)
– O&M Non-Federal Responsibility

Nashua River, MA
Section 14 – Streambank Protection

Section 14 – Emergency Streambank Protection
– $15 Million Federal Per Project Limit
– Limited Economically Justification
– Public Infrastructure and/or Publicly-owned Structures
– Design & Construction Cost Shared (65% Fed, 35% Non-Fed)
– O&M Non-Federal Responsibility

CAP NAVIGATION AUTHORITIES

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Section 107 – Navigation Improvement
- $15 Million Federal Per Project Limit
- Projects Must be Economically Justified Based on Commercial Benefits
- Design & Construction Cost Shared (Varies by Depth)
- O&M Federal Responsibility

Westport, MA
Section 107 – Improvement Dredging

Newburyport, MA
Section 204 – Beneficial Use of Dredged Material

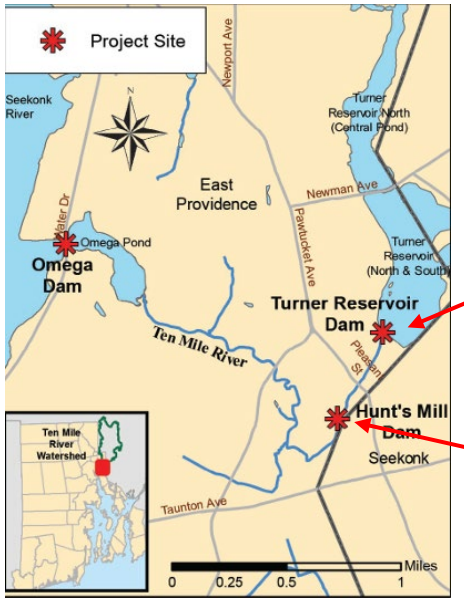
Section 111 – Mitigation of Shoreline Erosion Caused by FNP
- $15 Million Federal Per Project Limit
- Does Not Requires Economic Justification. Must Demonstrate Impact
- Cost Shared in Accordance with the Navigation Project Provisions
- O&M Non-Federal Responsibility

Section 204 – Beneficial Use of Dredged Material
- $15 Million Federal Per Project Limit
- Environmental or Shore Protection Purposes
- Design & Construction Cost Shared Varies by Purpose
- O&M Non-Federal Responsibility

CAP PROJECTS - RI

SECTION 14 - EMERGENCY STREAMBANK & SHORE PROTECTION	
URI Narragansett	Feasibility Study started 2025
Watch Hill Lighthouse	Feasibility Study started 2025
SECTION 17 - SMALL NAVIGATION	
Point Judith	Completed 2023
SECTION 206 - AQUATIC ECOSYSTEM RESTORATION	
Ten Mile	Complete
Winnapaug Pond	Constructed 2022

Watch Hill Wall/Revetment Damage



Source RIDEM

Ten Mile Fish Passage

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CAP FUNDING LIMITS

Types of Projects	Short Name	Cost Sharing[1]	Statutory Federal Cost Limitation per Project
Emergency Stream Bank & Shoreline Protection	Section 14	65/35	15,000,000
Hurricane and Storm damage Reduction, Shore Protection	Section 103	65/35	$15,000,000
Navigation	Section 107	Varies	$15,000,000[2]
Mitigation of Shoreline Erosion Caused by Federal Navigation Projects	Section 111	Varies	$15,000,000 (or specifically authorized)[3]
Flood Damage Reduction	Section 205	65/35	$15,000,000
Snagging and Clearing	Section 208	65/35	$1,000,000
Beneficial Uses of Dredged Material	Section 204	65/35	$15,000,000
Aquatic Ecosystem Restoration	Section 206	65/35[4]	$15,000,000
Project Modifications for Improvement of the Environment	Section 1135	75/25	$15,000,000

(1) Studies are cost shared 50/50 after the first $100,000.
(2) Navigation construction varies by project depth. 90/10 up to 20'; 75/25 20'-50'; 50/50 >50'.
(3) Section 111 based on original cost sharing.
(4) Anadromous fish restoration cost shared 85/15 during construction.
(5) Some programs/NFS are eligible for waivers (Tribes) or reductions in cost sharing requirements (economically disadvantaged communities)