COASTAL SHORE PROTECTION WITH "LIVING SHORELINES"

Role of the Army Corps Regulatory Program

UCONN, Clear
Living Shorelines II Workshop
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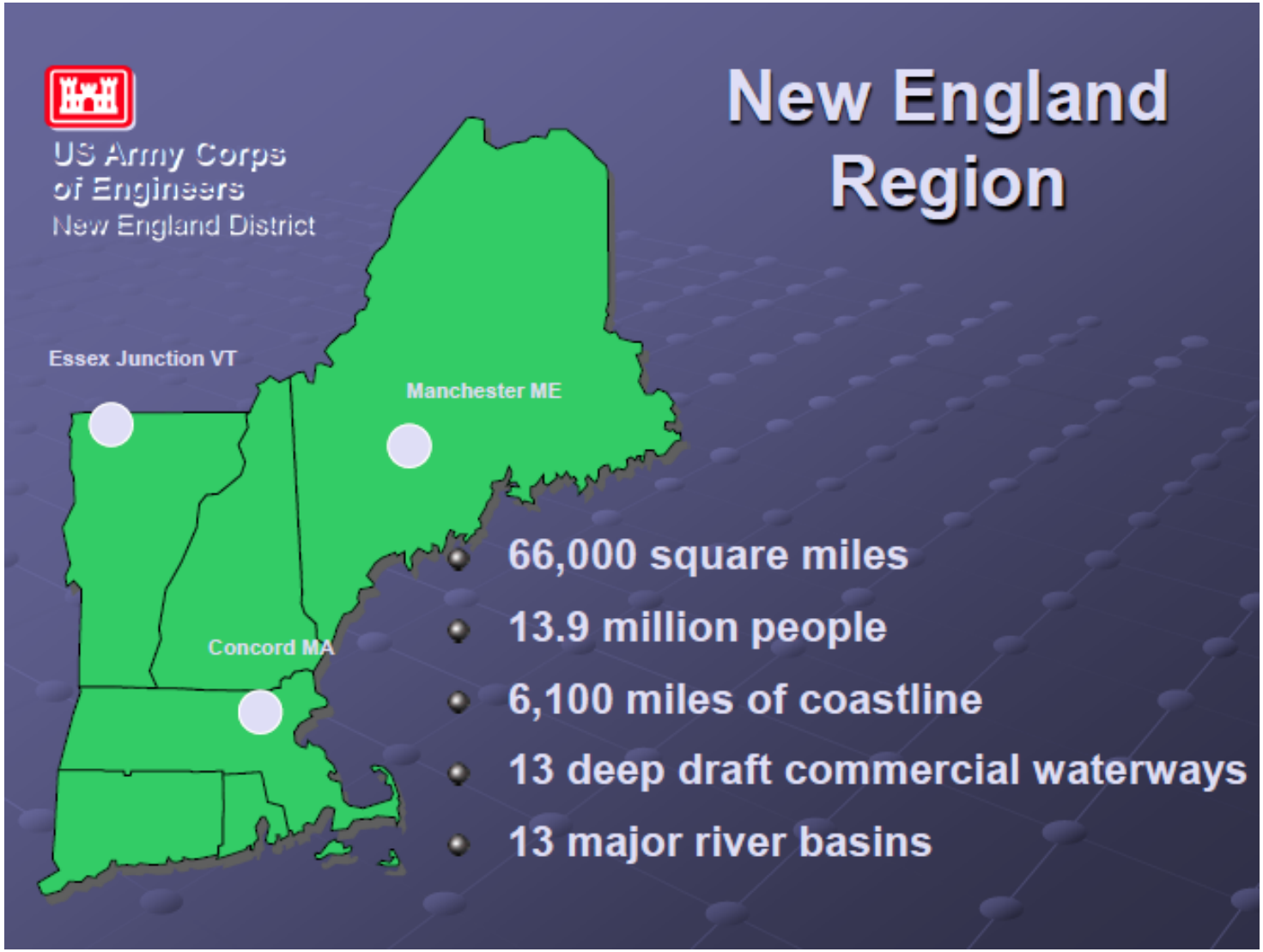
SCOPE OF PRESENTATION

- Statutory Authority of the Corps
- Geographic Jurisdictional Limits
- Definitions
- Types of Authorizations
- Alternatives Analysis & Public Interest Review
- Regulatory Review Process
- Living Shoreline Features & Evaluation


US Army Corps
of Engineers
New England District
New England
Region
Essex Junction VT
Manchester ME
Concord MA
66,000 square miles
13.9 million people
6,100 miles of coastline
13 deep draft commercial waterways
13 major river basins

STATUTORY AUTHORITY

Section 103 Marine Protection Research and Sanctuaries Act

… Allows for Transportation of Dredged Material for Purpose of Ocean Disposal - 33 USC 1413

Section 9 Rivers and Harbors Act

…Construction of a dike or dam in navigable waters

Section 10 Rivers and Harbors Act 1899

…Protect Navigation - 33 USC 403

Section 404 Clean Water Act

…Protect Aquatic Environment, Foster Balanced Development - 33 USC 1344

SECTION 10 **RIVERS & HARBORS ACT**

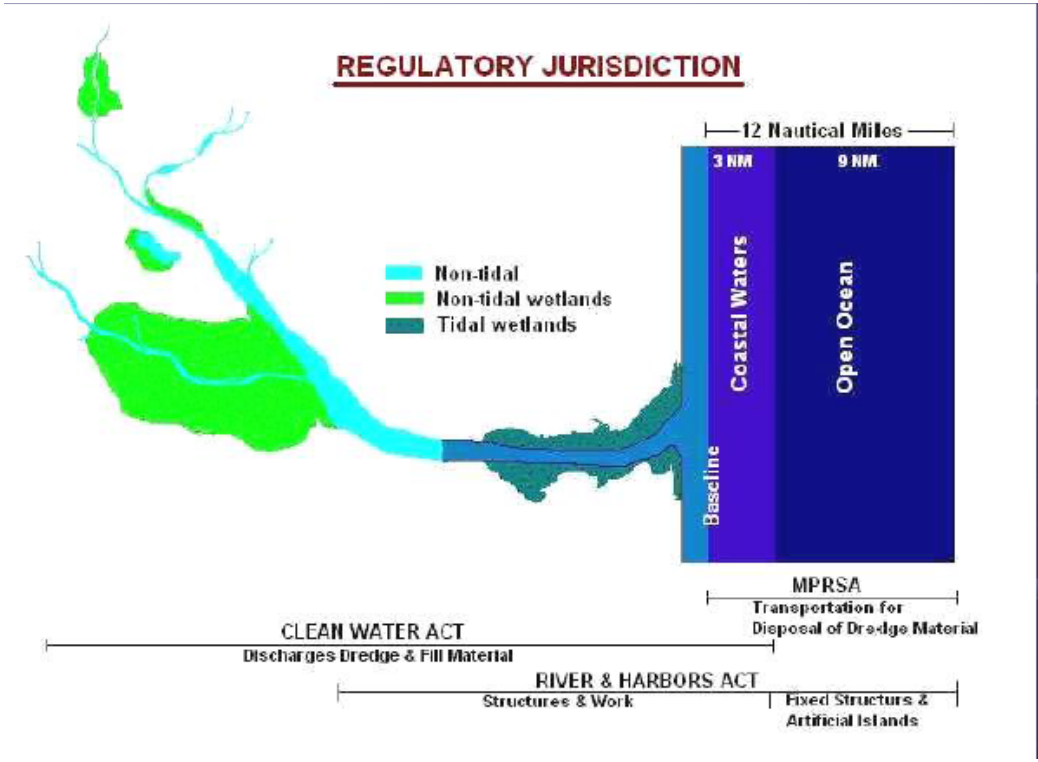
- Regulates any “work” in, over or under navigable waters of the U.S. that may affect their course, condition, location of capacity of the waters.
- Prohibits the unauthorized obstruction or alteration of a navigable water.





SECTION 10 **RIVERS & HARBORS ACT**

- "Navigable Waters" are those waters subject to the ebb and flow of the tide, waterward of MHW and/or those waters that are presently used, have been used in the past, or may be susceptible for use in the future for the transport of interstate commerce.



SECTION 404 **CLEAN WATER ACT**

- Goal is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters"
- Requires a Dept. of Army authorization for discharge of dredge or fill material into Waters of the U.S. and adjacent wetlands.
- All discharges of dredged or fill material in Waters of the U.S. requires a Dept. of Army Permit.
- Applies to both permanent and temporary discharges
- "Waters of the U.S. includes navigable waters, inland rivers, lakes, streams and adjacent, contiguous and bordering wetlands including mudflats and wet meadows – 33 CFR §328.3

SECTION 404 **CLEAN WATER ACT**

Wetland boundary determined by the presence of vegetation, hydrology and soils.

CWA **404(b)(1) GUIDELINES**

- Rebuttable presumption that upland alternatives are not available.
- Avoid & minimize discharge to greatest extent practicable
- Review impact for location, type discharge, site stabilization, construction BMPs to ensure discharge is minimized.
- Factual determination & technical evaluation of impact on substrate, water circulation/quality, aquatic function, secondary & cumulative impacts
- Unavoidable impacts contributing to wetland loss mitigated
- Corps can only issue an authorization for the least environmentally damaging practicable alternative (LEDPA)

TYPES OF AUTHORIZATIONS

"General Permit"

- Minimal impact activities with specified criteria and terms and conditions
- Expedited review timeframe usually less than 60 days upon receipt of a complete application

"Individual Permit"

- Larger project scope, concern for impacts or conflicts identified, can be more controversial
- Requires analysis of alternatives and evaluation of proposed project on items of concern in the public interest
- Requires WQC and/or CZMC authorization or waiver from CT DEEP

PUBLIC INTEREST REVIEW

- NEPA …bable impacts …ntended use, or…
- Agency …manda…
- Comple… …nformed decisio…

General Public Interest Review Factors

- **Navigation**
- Conservation
- Safety
- Economics
- Water Quality
- Wetlands
- **Food/Fiber Production**
- Historic Properties
- Archeological Issues
- Flood Hazards
- **Fish & Wildlife**

- Land Use
- Energy Needs
- Needs/Welfare People
- Water Supply
- **Recreation**
- Erosion
- Floodplain
- General Environmental Concerns
- **Property Ownership**
- Aesthetics

REGULATORY REVIEW PROCESS

- Corps is impartial – cannot favor one type of project over another.
- Corps must evaluate effect of a project under existing authorities. If a project involves a discharge of fill, the agency must consider practicable alternatives to reduce discharges.
- Ensure that the best practicable environmental alternative is selected to accomplish project purpose.

Graphic courtesy Burke Environmental Associates

Riparian Vegetation Management

Bank Grading

Fiber Logs

Tidal Marsh Enhancement

Tidal Marsh Creation

Beach Nourishment & Dune Restoration

Marsh Toe Revetment

Marsh Sill

Marsh with Groins

Living Breakwater

Offshore Breakwater System

Oyster Reefs

NATURAL & NATURE-BASED FEATURES (NNBF) *

- Corps recognizes the beneficial character of properly-designed NNBF.
- Should be designed to be compatible with existing coastal processes & conditions.
- Use best-available science & engineering evidence and acknowledge risk & uncertainty.

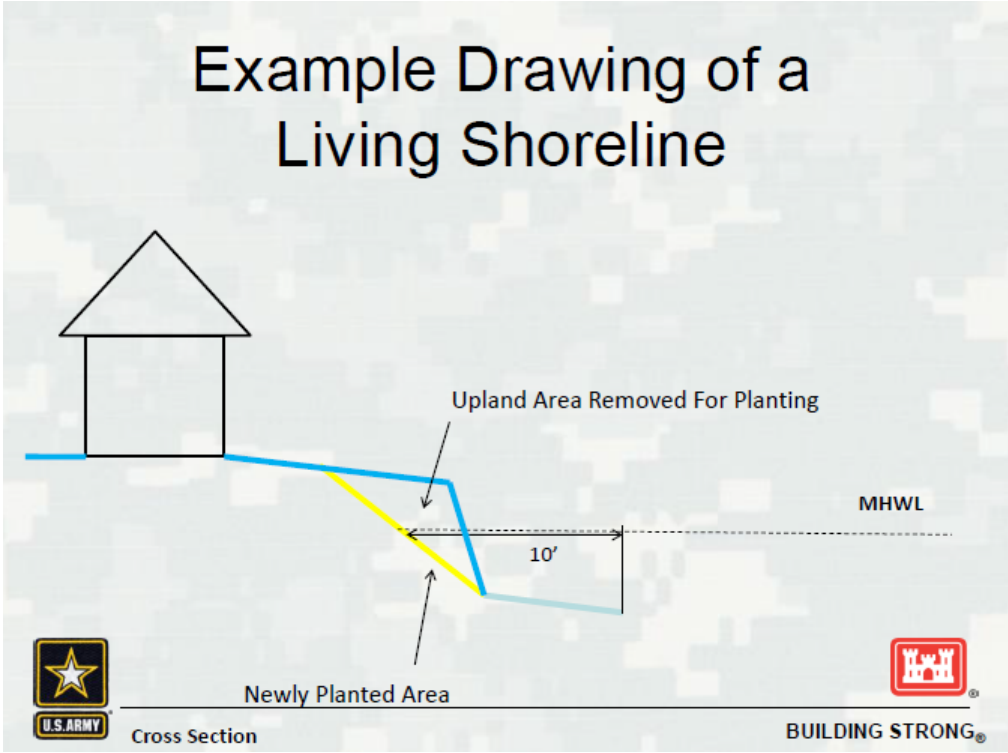
* Engineering With Nature - January 2015, ERDC SR-15-1, *Use of Natural and Nature-Based Features for Coastal Resilience*, US Army Engineer Research & Development Center

NATURAL & NATURE-BASED FEATURES (NNBF)

- Should balance the need to control erosion while maintaining or enhancing coastal transitional shoreline ecological function.
- Implementation process should be flexible and iterative to support sound decision-making.

NATURAL & NATURE-BASED FEATURES (NNBF) *
Assessing Alternatives

- Practicable alternatives that avoid waterway encroachment.
  - Relocation of threatened features
  - Modification @/above MHW
  - --Dunes/vegetated slopes



NATURAL & NATURE-BASED FEATURES (NNBF) *
Assessing Alternatives

- Assess minimally-intrusive techniques 1st (green over gray approach) such as vegetation-only and fiber-toe protection.

NATURAL & NATURE-BASED FEATURES (NNBF) *
Assessing Alternatives

- Low profile natural toe protection.
- Contributes plant & animal community function but does not convert quality functional habitat to another type.

FACILITATING EVALUATION

- Ensure application includes analysis of bank erosion rate, source of sediment, elevation, wave energy, prevailing wind/wave direction, substrate & vegetation type.
- Do not place fill in wetlands, mudflats or SAV.
- Use the least amount of hard material to achieve project goal.
- Ensure design maintains normal hydrologic regime and access for marine & terrestrial organisms

FACILITATING EVALUATION

- Design so that natural erosion and accretion processes are not impeded or accelerated.
- Use natural particle size and natural materials consistent with the proposed site.
- Ensure plans depict both existing MHW and MLW and proposed MHW and MLW elevation after shoreline modification.
- Limit height of structures if they are necessary to ≤ MHW

FACILITATING EVALUATION

- Regardless of energy level design for continuity of the shoreline.
- Limit fill discharge to minimum necessary to achieve adjacent wetland elevation.
- Should not site LSL on barrier land forms.
- Expect compliance monitoring such as erosion rate, substrate elevation, plant survival & invasive control.

LONG ISLAND SOUND

- Not geologically comparable to mid-Atlantic & southeast shoreline conditions
- Topographically distinct and sand-limited
- Variety of habitat and shoreline types
- Unconsolidated glacial till & exposed scarps
- Long and narrow – wind-generated waves move sediment alongshore; storm surge east to west
- Over-wash, if it occurs, has nowhere to go and limited sand to sustain barrier coastal features
- Wider tidal range than areas where LSL normally used – sill function limited in 7’ tidal range

Figure 1. NNBF evaluation implementation framework.

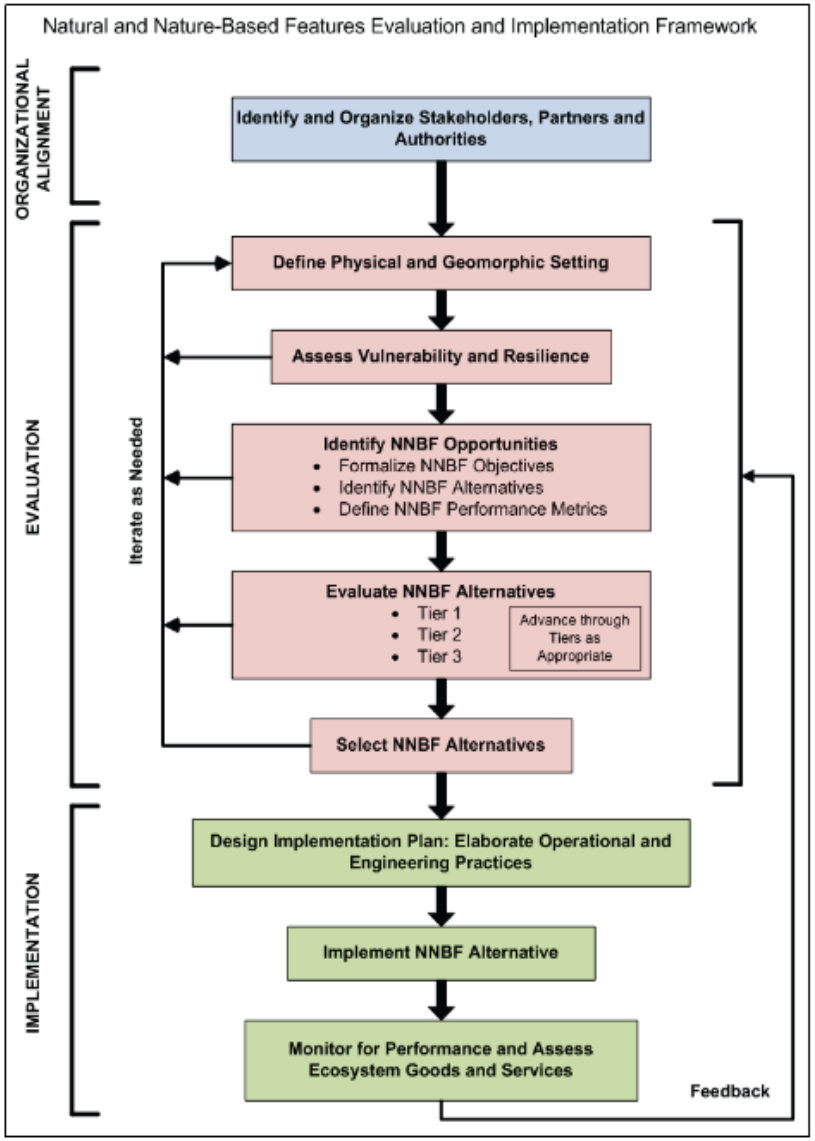


Table 7-1: Possible habitat changes resulting from specific shoreline stabilization methods

Land Planning	Vegetation Control	Beachfill	Sills	Groins	Breakwaters	Sloped Structure	Vertical Structure
Continued erosion with loss of upland	Reduces sediment and nutrient input into estuary	Changes from estuarine/sandy bottom to upland	Reduces sediment and nutrient input into estuary	Reduces sediment and nutrient input into estuary	Reduces sediment and nutrient input into estuary	Reduces sediment and nutrient input into estuary	Reduces sediment and nutrient input into estuary
	Reduces erosion landward	Reduces erosion landward	Reduces erosion landward	Reduces local erosion landward	Reduces erosion landward	Reduces erosion landward	Reduces erosion landward
		Could change sediment size distribution	Creates hard structure for non-mobile marine life	Creates hard structure for non-mobile marine life	Creates hard structure for non-mobile marine life	Creates hard structure for non-mobile marine life	Creates hard structure for non-mobile marine life
		Buries local shoreline type with sand	Fill resulting in wetland or upland	Sand trap or fill results in wetland or upland	Sand trap or fill results in wetland or upland	Could eliminate intertidal habitat or environment	Could eliminate intertidal habitat or environment
			Creates a new, lower energy environment	Increased erosion downdrift	Creates a new, lower energy environment	Reduces sediment to depositional areas downdrift	Reduces sediment to depositional areas downdrift
			Fragments habitat	Starves sediment depositional areas	Fragments habitat	Deepens water	Deepens water
			Increases habitat complexity	Increases habitat complexity	Increases habitat complexity	Increases habitat complexity	Concentrates turbulence
						Concentrates turbulence	

Credit: North Carolina Div. Coastal Management

QUESTIONS?