

The Beaches Conference – 2017
July 14, 2017

Session 3 – Shoreline Change and Living Shorelines

A Vision for Smart Shorelines in the NH Seacoast – Kirsten Howard

NH has 18 coastal miles – 326 shoreline tidal miles within 17 coastal communities. About 400,000 people. 88% of tidal shorelines are in a natural state and 12% are armored (protected by seawall). 70% of the total Atlantic is armored. The Great Bay is 5% armored.

We have experienced an increase in wetland permits. By 2100, the sea-level should rise by about 6.6% with 95% of our marsh lands being lost. The mudflats will be drowned. Our winters prevent NH to work with living shorelines.

A survey was conducted in Connecticut and about 50% of property owners stated that they would build a wall to protect their properties.

Strategies to Assist: Wetland Plants, Aquatic Vegetation, Oyster Reefs, Core fiber logs, Sand filled and Stone Rip Rap in front of shoreline.

In Durham, the Wagon Hill Farm, which is a town owned/public property – Oyster River Shoreline has eroded significantly. The town purchased the property in 1989. The marsh is on the move. Two years ago, Ellen Snyder budgeted funds for the shoreline stabilization. They developed a monitoring plan – collaboration and improvising to solve and promote a model. They tried 4 sills, 1 core log, 2 root wads, anchored logs and 3 crib walls, along with 4 rock/stone areas. Also deposited rock within property to break up the winter ice.

Things to do:

- Identify Living Shores
- Create Pilot Projects
- Monitor and Adapt

Risks:

- Flooding. Flooding occurs on the lunar high-tides

Questions:

- Concerning individuals doing armory projects. Should there be City-wide urban discussions? If the City armored the channels, would they get different results? *Armored channels could cause more erosion on adjoining properties. Wetland rules do not allow walls. The ecological impacts should be promoted first.*
- If 70% of the Atlantic Coast is armored, leaving 30% unarmored. What do we permit? *New walls are no longer being permitted now, but Rip Rap is allowed.*

Advancing Coastal Resilience: An Intuitional Analysis of Living Shorelines in NH – Trevor Mattera

Planning and Stability with barriers and implementation.

Living Shoreline is a continuum between water and land. Used for a purpose to solve an issue.

Problem:

- Use green and natural infrastructure
- Explore options to minimize natural status

Implementation Lacking:

- How do institutions (pattern of behavior) implementation of living shorelines in NH?

Frameworks:

- Breakdown into bite size pieces (Adaptive Management Cycle)
 - Assess
 - Design
 - Implement
 - Adjust/Learn
 - Resilience
 - Systems intertwined
 - Diversity – Resilience
 - Redundancy
 - Flexibility
 - Integration
 - Acceptance of Uncertainty
 - Scale
 - Research Methods
 - Interviews – structured with State & municipal folks
 - Case Studies – two in NH: Wagon Hill, Durham and Cutts Cove, Portsmouth
 - Document Analysis; Rules and regulations already in place
 - Qualitative Data: take all and code them

Case Studies:

- Interview Data Query Matrix – Take interviews and put in code to see about trends. Is there a pattern? Opportunities/Cost/Benefits
- Trends – Funding resources. Available information, aesthetic benefits
- Integration of Actors – perception, regulations, municipal stormwater management, uncertainties.

Focus Groups

- Project Teams – barriers/opportunities

Preliminary Regulations

- Encourage demo projects
- Utilize facilitated workgroups with participation

- Prioritize municipal sites on physical and aesthetic characters
- Secure funding and technical capacity

Questions:

- What size workgroup are best? *About 12 including DPW and Fish & Game folks*
- Will the drive help rewrite the regulations? *Yes*
- What are living rocks? *Rocks with algae alive on them. Could use muscles instead of oysters.*
- Could rocks start reimplementation? *Yes, they could.*

Dealing with Coastal Erosion through a Spectrum of Control Methods – Greg Berman

The Spectrum of Coastal Erosion Control Methods – To upgrade the upper level without destroying the lower ground.

Gray to Green we are dealing with coastal erosion thru spectrum of control methods. The risk is increasing – our land is sinking and the water is rising.

Cape Cod & Virginia Beach are trying to stop erosion – accretion, static equilibrium, erosion

Parallel Transport – Block LST (sediments)

Perpendicular Transport – Shoreline Stabilization – Protection

1. Do Nothing
 - Will system recover by itself?
 - How far is the structure from the water?
2. Vegetation
 - Plant beach grasses
 - Remove invasive plants
 - Regrade vegetation – Why?
 - Tow not stable
 - Upland runoffs
3. Management Retreat
 - Flooding problem – lift buildings
 - Retreat – move buildings
4. Beach Nourishment
 - Upland pits – drive down
 - Navigational dredging – sacrificial or cobble (mixed) (piles of sand)
5. Sand Fencing – to slow down the wind. Sand does not blow.
6. Fiber Rolls
 - Wired screening rolls on the ground
 - Core Envelopes – burlap tubes filled with sand
7. CES – Coastal Engineering Structures
CES or Green – you can use more than one CES
 - Groin
 - Jetty
 - Sandbags
 - Gabion
 - Breakwater/Sills
 - Revetment – Larger Rocks
 - Seawall
 - Bulkhead – living shorelines want to replace

Questions:

- How long has the Spectrum Approach been around? *Since 2015. Has been very well received. Designed for regulatory powers to give to property owners.*
- If they do nothing, do they need a revetment? *No, they need to do more.*

- Are there any regulatory movements towards Hydro Designs? *Many regulatory agencies; CMM is integrated by living shoreland processes and DMF by inner tidal zones.*
- When beach washes away, it leaves behind pebbles. Could we allow larger pebbles instead? *Yes. Some have allowed this - Cobble Berm. When the berm is too big, it makes us nervous.*