

# ENGINEERING LIVING SHORELINES IN NEW HAMPSHIRE

## 5 tips for a successful project

1. **Use an ecologist-engineer team.** An engineering firm should work with an ecologist to develop a survey and site plan and collaborate on design details and the review process. The collaboration benefits projects confronting extreme New England conditions such as large tidal ranges, winter ice, fierce nor'easters, and wakes from seasonal boating, which all contribute to erosion.
2. **Start with a rigorous site analysis.** The analysis should include assessing physical forces, slope, fetch, water levels, wave heights, and other site characteristics, such as stormwater runoff characteristics, groundwater influence, shading from tree branches, ice conditions, public access, and more.
3. **Seek out anecdotes to augment scientific information and data.** Don't just rely on historical storm elevations and "one percent" storm elevation from the Federal Emergency Management Agency. People who have watched the local shoreline for years or decades know its condition and challenges in a way that must be captured in the design.
4. **Figure in higher Mean High Water and an increased tidal range.** Accounting for these elements can increase the project's design life—particularly when working with salt marsh. The [www.nhchrhc.org](http://www.nhchrhc.org) guidance on sea-level rise and storm surge can be a useful resource.
5. **Before starting the permitting process, assess regulator knowledge of living shorelines and engage them early in discussions about preliminary design concepts.** Some local boards have little to no experience in this area. Educate them on living shoreline benefits, success stories, techniques, and materials. Board and Commission members often show special interest in the wildlife habitat benefits—communicate those benefits, too. Don't wait until designs are drawn to approach state permitters. They can assist you with your design concepts early in the process and help you avoid costly revisions down the road.

Adapted from *Designing Living Shorelines for New England Coasts*, a case study about a private property living shoreline stabilization project in Orleans, Massachusetts completed by Wilkinson Ecological Design. More information available at: <https://www.coast.noaa.gov/digitalcoast/training/orleans.html>

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## Additional resources

### **LIVING SHORELINES IN NEW ENGLAND: STATE OF THE PRACTICE**

by The Nature Conservancy | 2017

link | <https://www.conservationgateway.org/ConservationPractices/Marine/Pages/new-england-living-shorelines.aspx>

### **MASSACHUSETTS STORMSMART PROPERTIES RESOURCES**

by Massachusetts Coastal Zone Management

link | <http://www.mass.gov/eea/agencies/czm/program-areas/stormsmart-coasts/stormsmart-properties/>

### **DESIGNING LIVING SHORELINES 4 NEW ENGLAND COASTS: A CASE STUDY IN ORLEANS, MASSACHUSETTS**

by Wilkinson Ecological Design and NOAA Digital Coast

link | <https://coast.noaa.gov/digitalcoast/training/orleans.html>

### **LIVING SHORELINES ENGINEERING GUIDELINES**

by Jon Miller et al. for New Jersey Department of Environmental Protection | 2016

link | <http://www.nj.gov/dep/cmp/docs/living-shorelines-engineering-guidelines-final.pdf>

### **MAINE PROPERTY OWNERS' GUIDE TO EROSION, FLOODING & OTHER COASTAL HAZARDS**

by Maine Sea Grant

link | <http://www.seagrant.umaine.edu/coastal-hazards-guide>

### **MARYLAND LIVING SHORELINES PROGRAM**

by Maryland Department of Natural Resources

link | <http://dnr.maryland.gov/ccs/Pages/livingshorelines.aspx>

### **HUDSON RIVER SUSTAINABLE SHORELINES PROGRAM**

by Hudson River National Estuarine Research Reserve

link | <https://www.hrnerr.org/udson-river-sustainable-shorelines/>

### **GLOUCESTER VIRGINIA MASTER GARDENERS LIVING SHORELINES PAGE**

link | <http://www.gloucesterva.info/MasterGardeners/Environment/LivingShorelines/tabid/783/Default.aspx>

### **TRAINING: LIVING SHORELINES FOR DESIGN AND CONSTRUCTION PROFESSIONALS**

by North Carolina Coastal Federation

link | <https://livingshorelinesacademy.org/index.php/learn/for-design-and-construction-professionals>

### **LIVING SHORELINES ACADEMY**

link | <https://livingshorelinesacademy.org/>

### **SYSTEMS APPROACH TO GEOMORPHIC ENGINEERING (SAGE)**

link | <http://sagecoast.org/>

### **GUIDANCE FOR CONSIDERING THE USE OF LIVING SHORELINES**

by NOAA | 2015

link | [http://www.habitat.noaa.gov/pdf/noaa\\_guidance\\_for\\_considering\\_the\\_use\\_of\\_living\\_shorelines\\_2015.pdf](http://www.habitat.noaa.gov/pdf/noaa_guidance_for_considering_the_use_of_living_shorelines_2015.pdf)