



Chesapeake Bay Foundation

Bay-Friendly Shoreline Solutions

Shoreline erosion is a critical issue for waterfront property owners in the Chesapeake Bay watershed. Often, the shoreline is the single most valuable part of the property and needs to be accessible, attractive, and protected from erosion. The shoreline is also the most important part of a creek or river in terms of water quality and a healthy aquatic environment since it serves as the interface between the land and the water by filtering runoff and provides habitat for fish and wildlife.

Types of Projects

Five types of shoreline enhancement projects are illustrated here:

1. riparian buffer restoration
2. marsh planting
3. coir fiber log (Biolog) installation
4. non-structural stabilization marsh creation
5. segmented breakwater

1. Riparian Buffer Restoration – In upland areas above high tide, native plants can be planted to enhance water quality and wildlife habitat. These kinds of projects may also help reduce surface runoff that may contribute to shoreline erosion.

In photo, shoreline restored with “soft” techniques (vegetation, fiber logs) is shown on the right. On the left, is a typical bulkheaded shoreline. The upland area is planted with native trees and shrubs, the slope (which is fairly steep) is planted with warm season grasses. At the base of the slope and along the shoreline edge, native shrubs will be planted directly in the fiber log.



2. Marsh Planting – In shallow areas below the high tide line with little to no active erosion, marsh plants can be planted to improve wildlife habitat and water quality. Marsh plants will also dissipate wave energy to protect the shoreline. This can even be done in front of bulkheads where sand has accumulated.

Shown at right, marsh grasses (*Spartina alterniflora*) planted in the water and in the area above the high tide mark.



3. Coir Fiber (Biolog) Log Installation – In areas of slight erosion or undercutting of the bank, a coir fiber log can be installed as a natural means to protect the foot of the shoreline. The coir fiber log can be planted with a variety of plants and will biodegrade over time. The project shown was done with volunteers on Spa Creek in Annapolis, MD.



4. Non-structural Stabilization and Marsh Creation – In areas of medium to low wave energy with active erosion or where a bulkhead or rip rap are going to be replaced, a marsh can be created using coir fiber logs with rock feet. Sand can be placed behind the coir fiber logs, and marsh plants established to create a tidal marsh. This project was completed at St. Johns College next to the boat house on College Creek in Annapolis.



5. Segmented Breakwater – In high wave energy areas, segmented breakwaters can effectively protect the shoreline while maintaining the natural shoreline for recreational access and wildlife habitat. This technique has been very effective for the Bay Ridge community in Annapolis, which receives very high wave energy.



Suggested plants by inundation time for fresh-brackish waterways:

<u>Planting Zone A</u> <u>INTERTIDAL</u> <u>ZONE at low</u> <u>elevation</u>	<u>Planting Zone B</u> <u>INTERTIDAL</u> <u>ZONE with slightly</u> <u>higher elevation</u>	<u>Planting Zone C</u> <u>AT MEAN HIGH</u> <u>WATER</u>	<u>Planting Zone D</u> <u>ABOVE MEAN</u> <u>HIGH WATER</u>
Marsh grass <i>(Spartina alterniflora)</i> Common Three-Square <i>(Scirpus pungens)</i>	Stout bulrush <i>(Scirpus robustus)</i> Salt marsh hay <i>(Spartina patens)</i>	High Tide Bush (<i>Iva frutescens</i>) Groundsel Tree <i>(Baccharis halmifolia)</i> Marsh Hibiscus <i>(Hibiscus moscheutos)</i>	Bayberry (<i>Myrica pensylvanica</i>) Wax Myrtle <i>(Myrica cerifera)</i> Switchgrass <i>(Panicum virgatum)</i> Broomsedge <i>(Andropogon virginicus)</i>

Next Steps

If a property owner wants to pursue a shoreline enhancement project, they should consult with a professional contractor to perform a detailed analysis of their shoreline and design and appropriate project. A contractor can also assist in acquiring any necessary permits for the project.