

Living Shoreline Site Design Options

Kati Grigsby | Urban Restoration Coordinator

CBLP CHESAPEAKE BAY Landscape Professional

Living Shoreline Collaborative

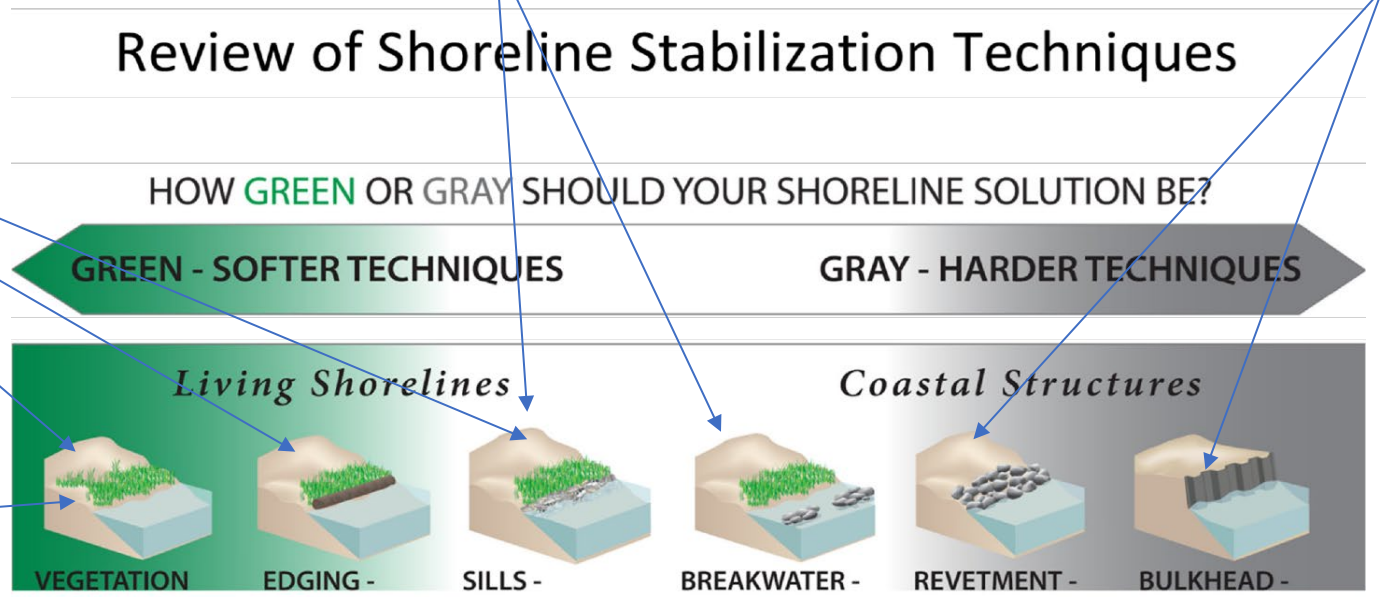
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Living Shoreline Design Options

Living Shoreline Group 1

Living Shoreline Group 2

Standard JPA – Could potentially have green infrastructure components incorporated.



No permit necessary

From the "Systems Approach to Geomorphic Engineering (SAGE)" website

Native Wetland Planting – No Fill



May 2024 – Before Planting



May 2024 – After Planting



June 2025

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Sue Mangan Photography

Coir Log + Sand Fill + Native Wetland Planting



September 2023 – Before Install



September 2024 – Sand Backfill



December 2025

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Coir Log + Sand Fill + Loose Oyster Shell + Native Wetland Plants



Spring 2022 – Before Install



August 2022 – Post Construction



November 2024

Living Shoreline + Native Buffer



Spring 2022 – Before Install



May 2024 – Post Construction

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Coir Log + Sand Fill + Oyster Shell Bags + Native Wetland Plants



March 2026– Before Install



June 2026 – During Install



June 2026 - Post Install

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Sue Mangan Photography

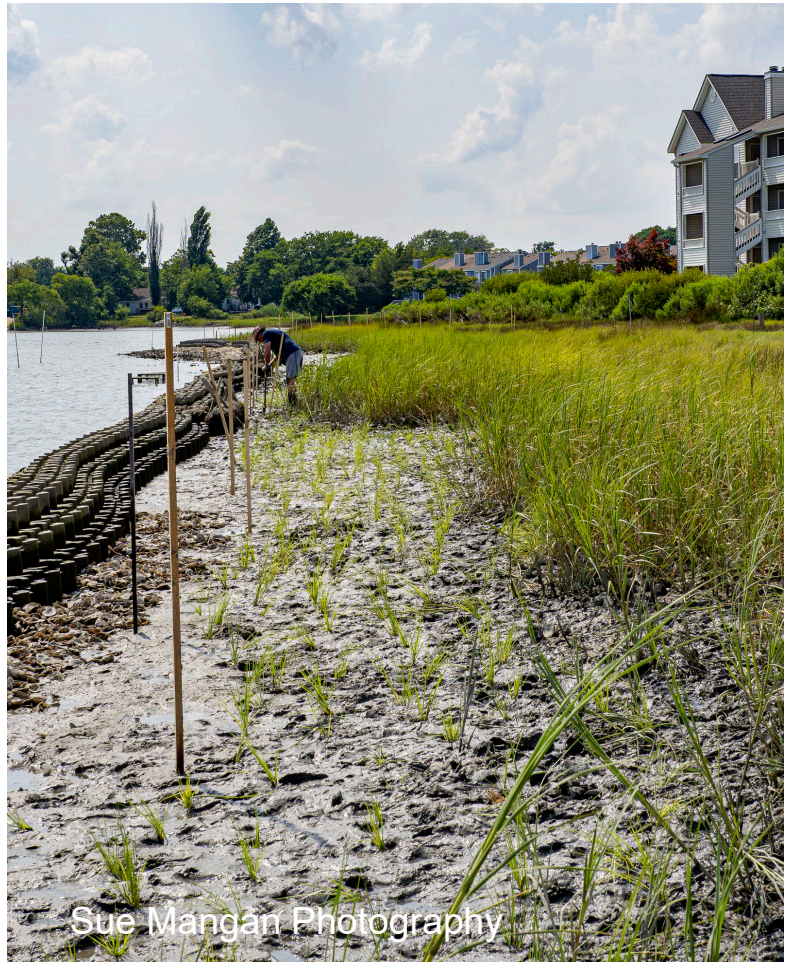
Oyster Castles + Loose Oyster Shell + Native Wetland Plants



March 2025– Before Install



June 2025 – During Install



July 2025 - Post Install

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Living Shoreline + Managed Meadow Buffer



March 2026– Before Install



March 2026 - Post Install

Come Volunteer!

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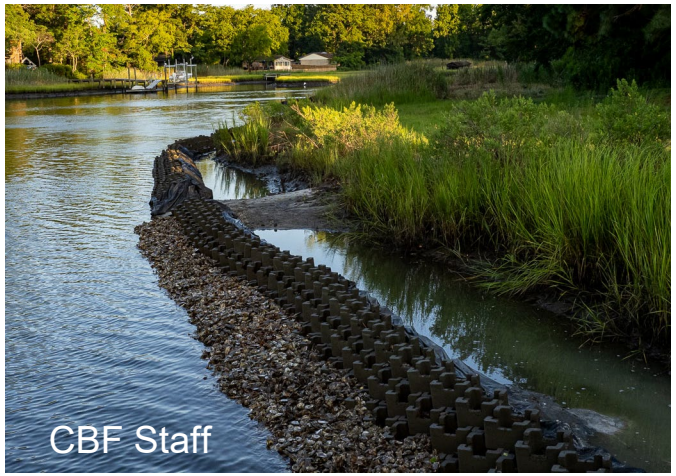
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Oyster Castles + Sand Fill + Loose Oyster Shell + Native Wetland Plants



June 2023– Before Install



August 2023 – During Install





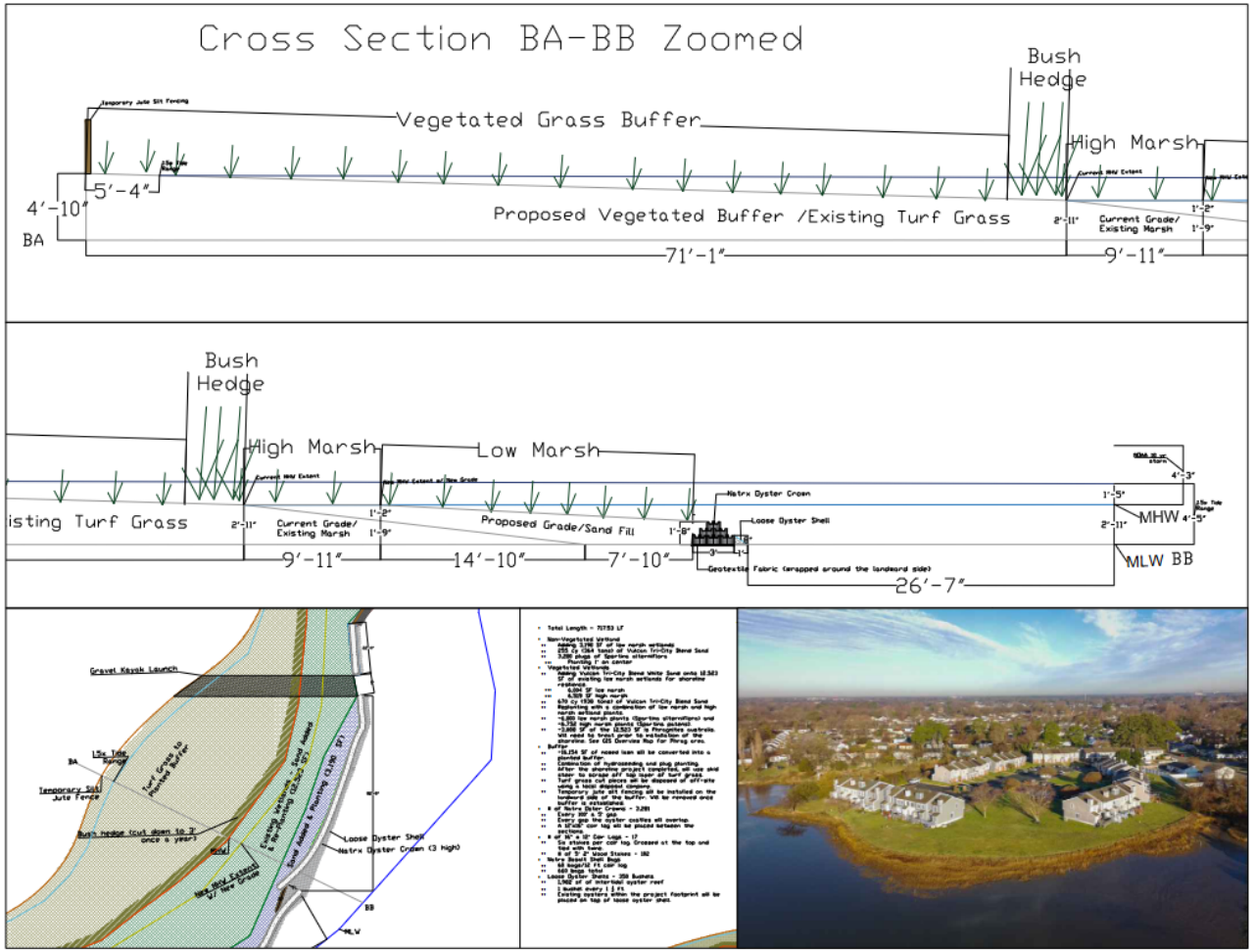
August 2026

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Oyster CROWNS + Sand Fill + Loose Oyster Shell + Native Wetland Plants





Come Volunteer!

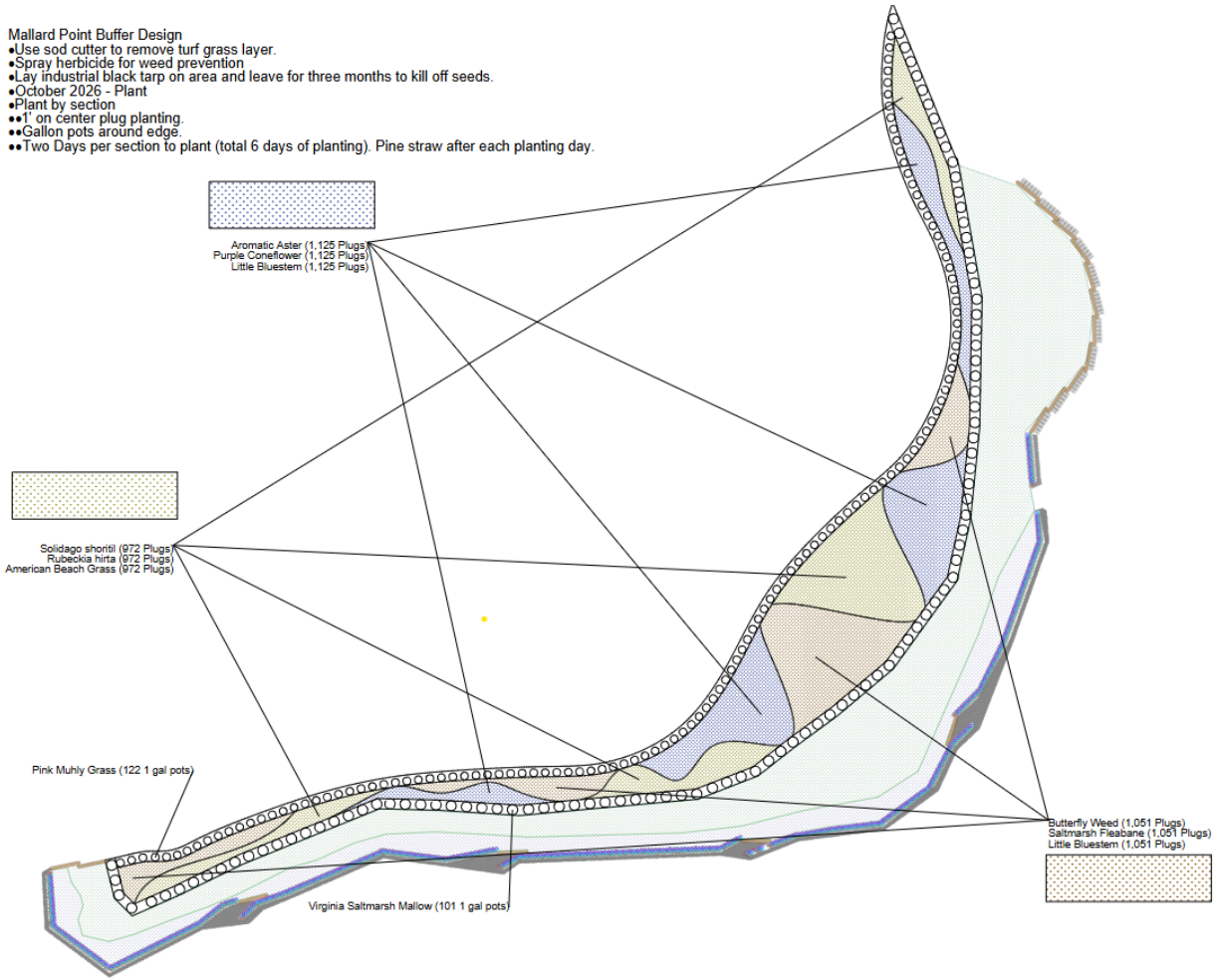
CHESAPEAKE BAY Landscape Professional

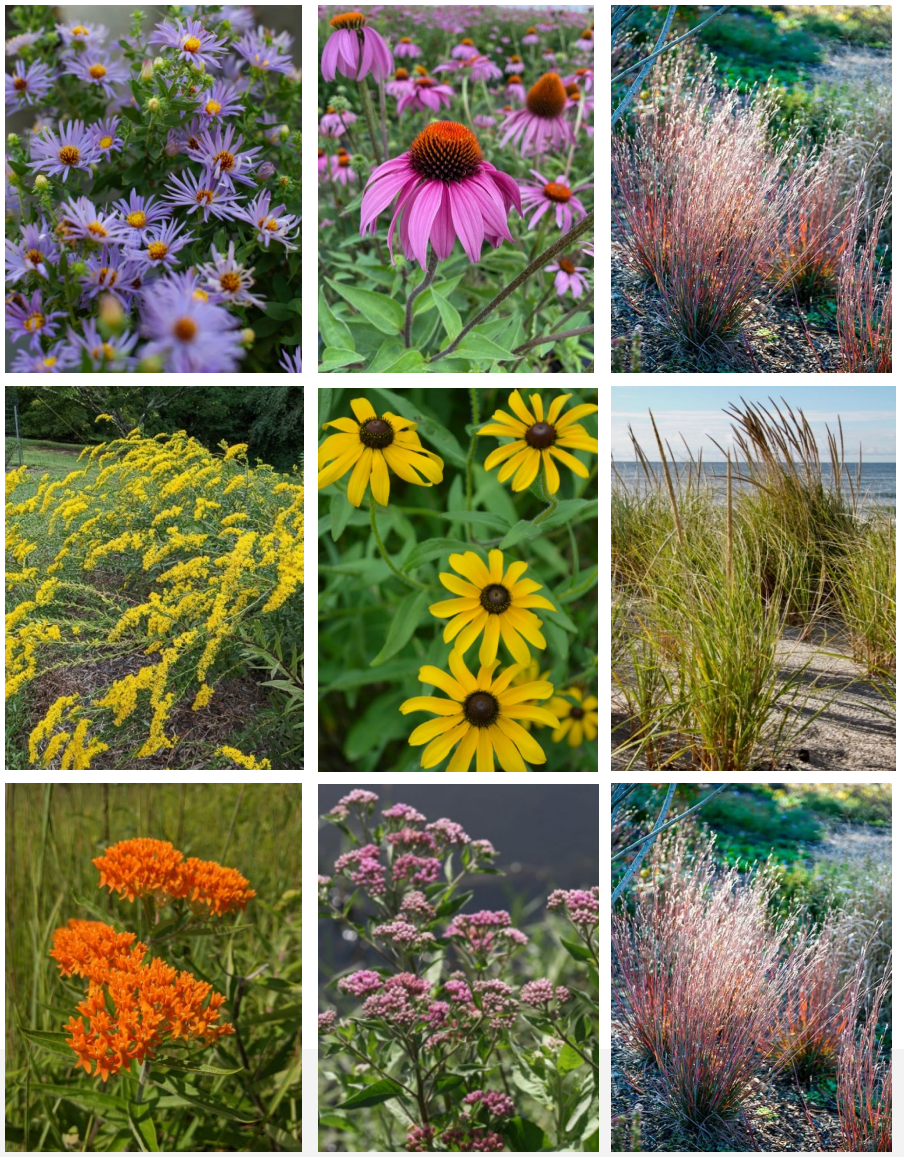
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Living Shoreline + Managed Meadow Buffer

Mallard Point Buffer Design
•Use sod cutter to remove turf grass layer.
•Spray herbicide for weed prevention
•Lay industrial black tarp on area and leave for three months to kill off seeds.
•October 2026 - Plant
•Plant by section
••1' on center plug planting.
••Gallon pots around edge.
••Two Days per section to plant (total 6 days of planting). Pine straw after each planting day.







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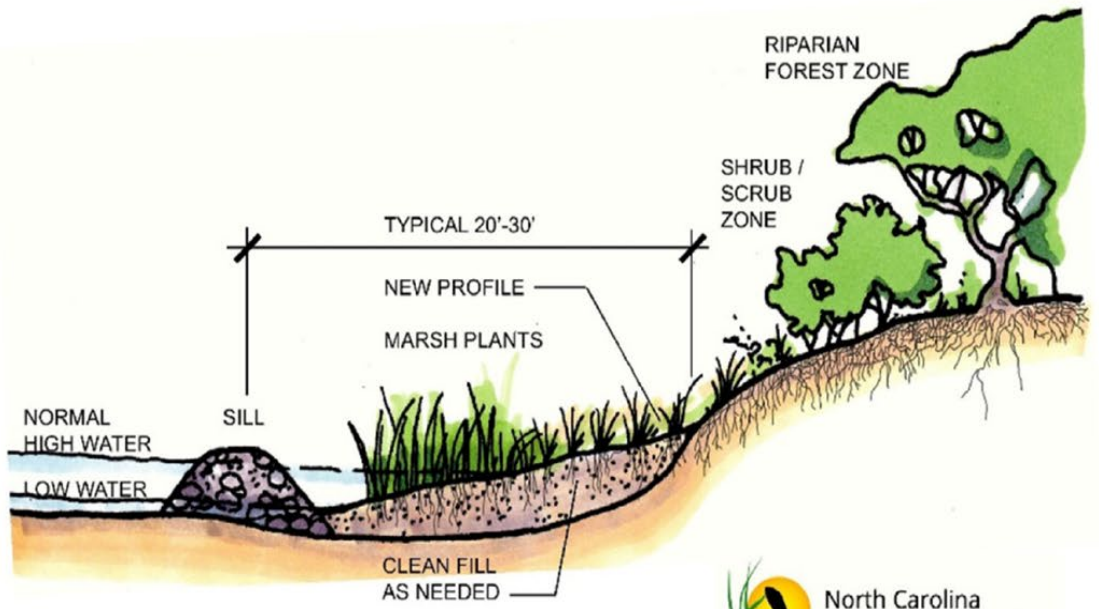
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Sills With Plantings

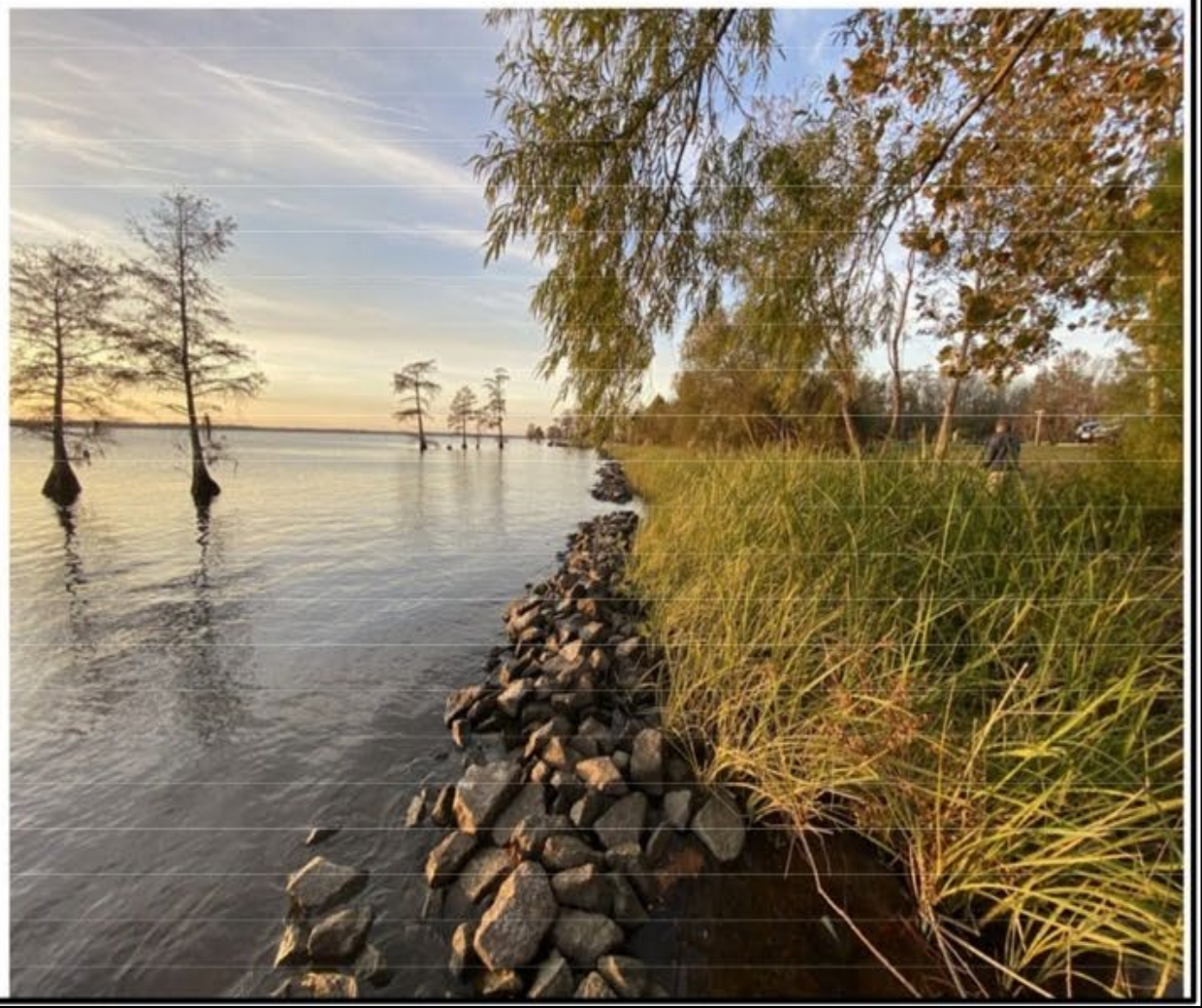




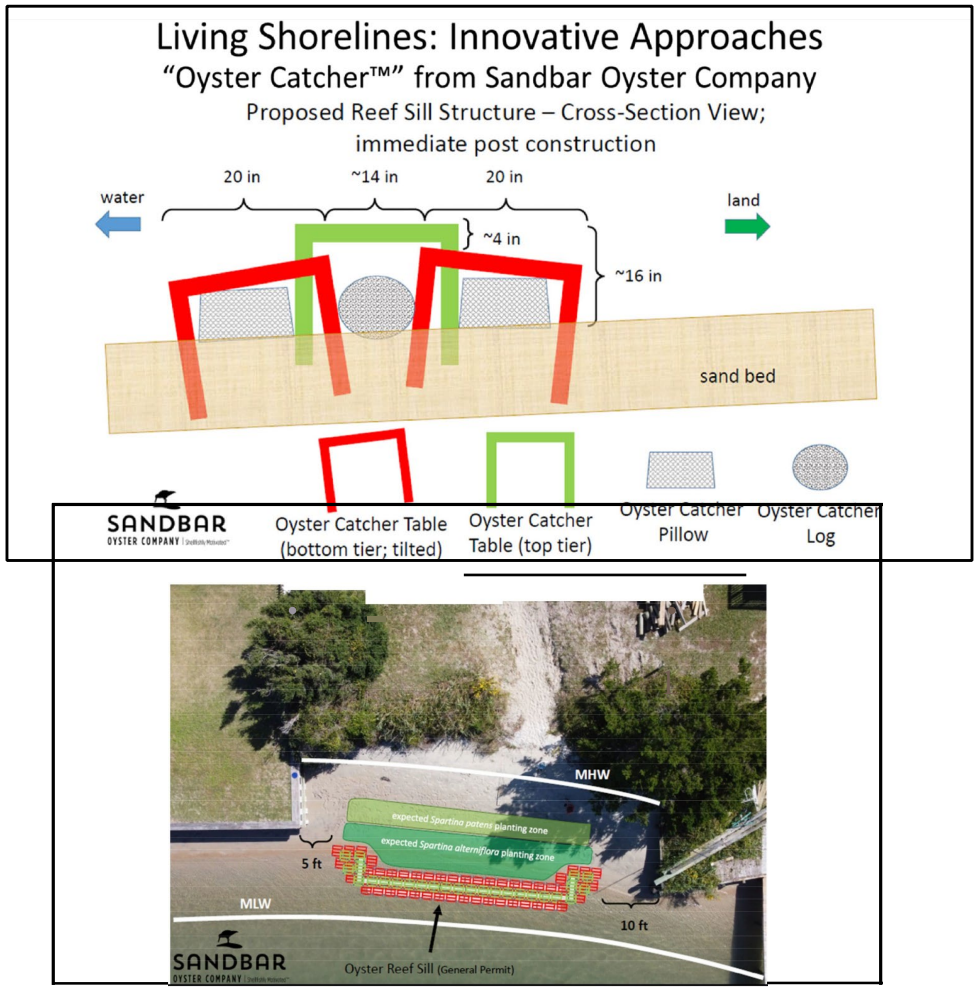





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Innovative Living Shoreline Design



Living Shorelines: Innovative Approaches
"Oyster Catcher™" from Sandbar Oyster Company
Pine Knoll Shores Aquarium April 2019 - October 2020





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Innovative Living Shoreline Design









Sandbar Oyster Co. Oystercatcher™ Tables and Pillow Living Shoreline 08/12/22 Photos NC Coastal Federation

January 8, 2023 Photo from Kyle Breuer

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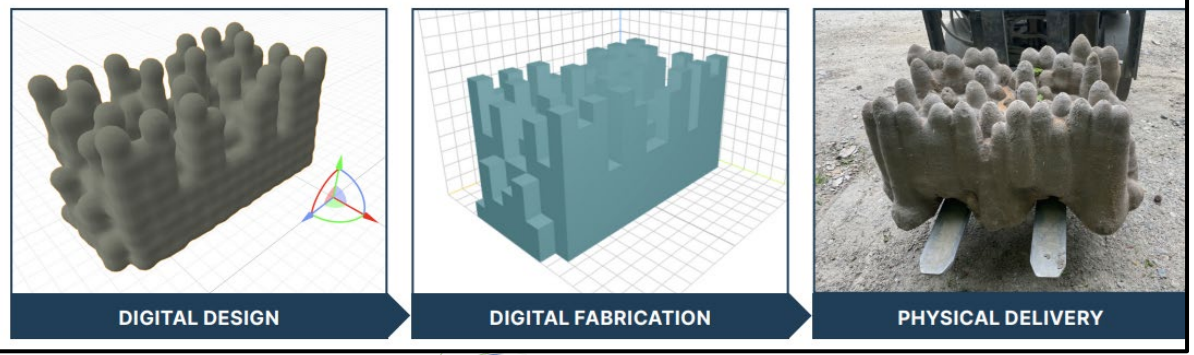
Innovative Living Shoreline Design

Natrx ExoForms™

A highly flexible, coastal resilience solution that's safer and faster to install than traditional methods, promotes habitat-growth and ecological benefits, and gets stronger over time.



Natrx Dry Forming™ Advanced Manufacturing



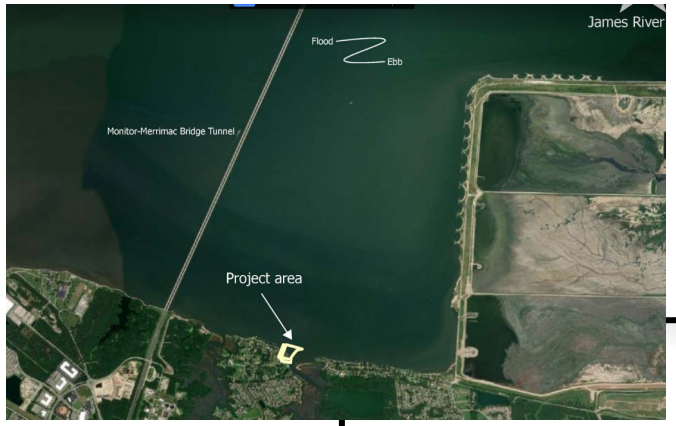


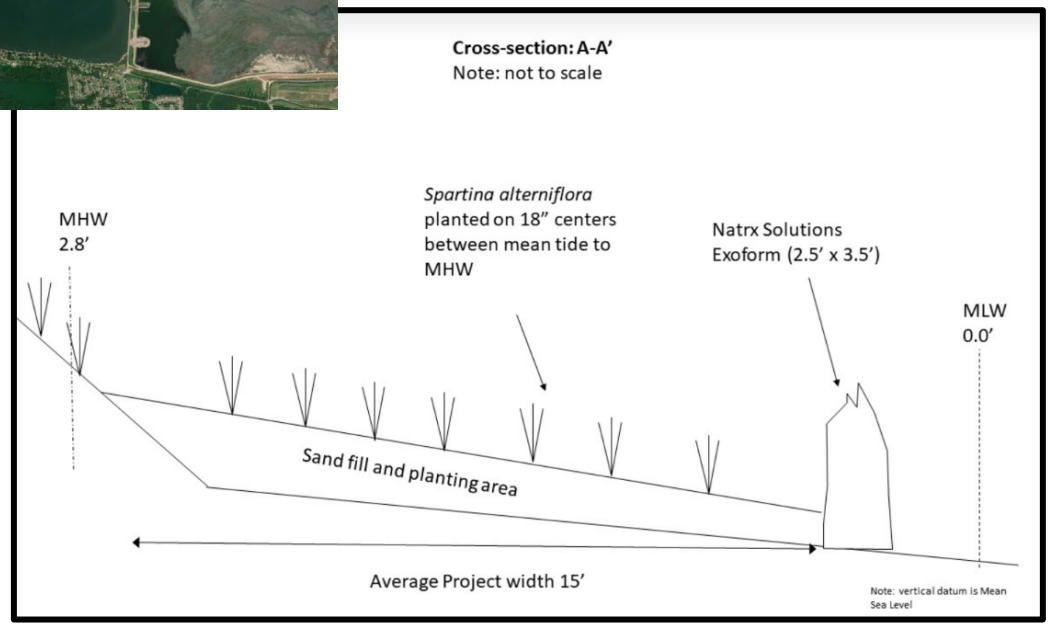
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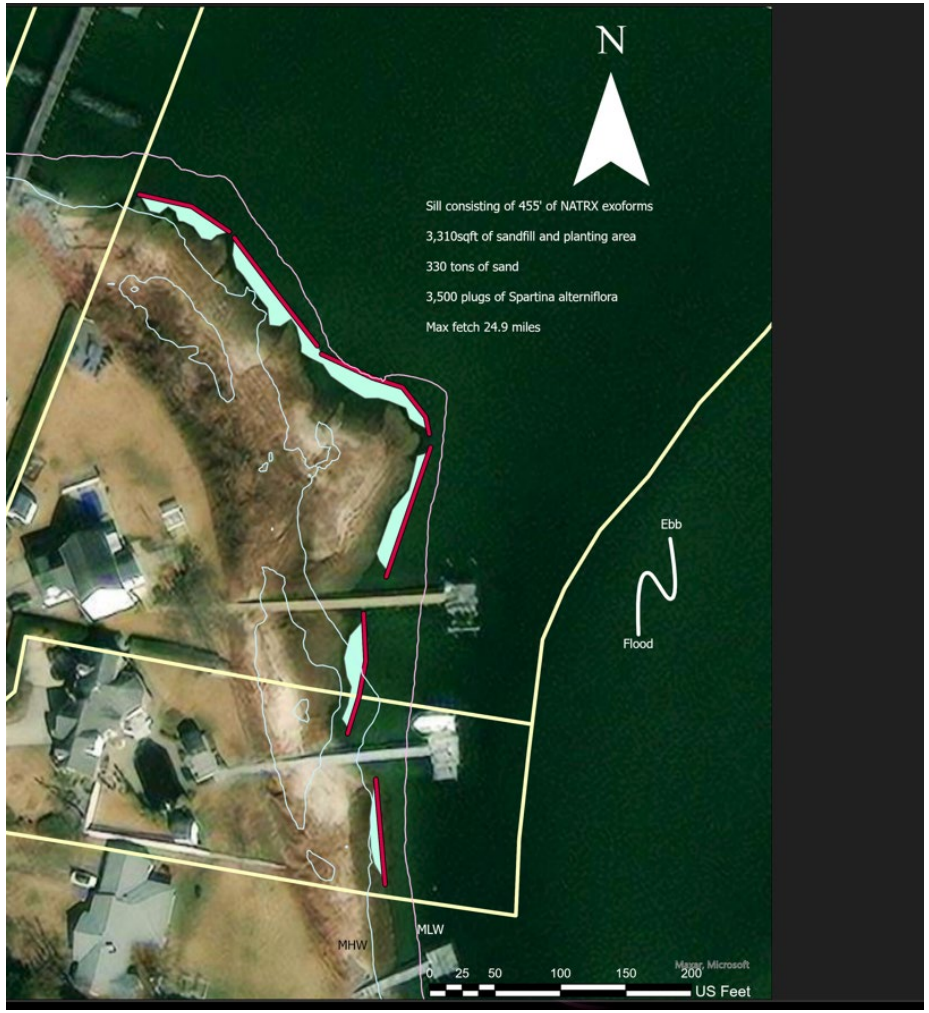
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Photos and Text courtesy of Natrx™ (https://natrx.io/living-shorelines-by-natrx)

Innovative Living Shoreline Design







Natrx™ Living Shoreline Design Project, Norfolk, Va. From Ryan Walsh

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Natrx Solutions™ Project design plans provided by Ryan Walsh

Innovative Living Shoreline Design







Quickreef (Patent Pending) Photos from Restoration Systems/ Native Shorelines https://nativeshorelines.com/

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Questions?

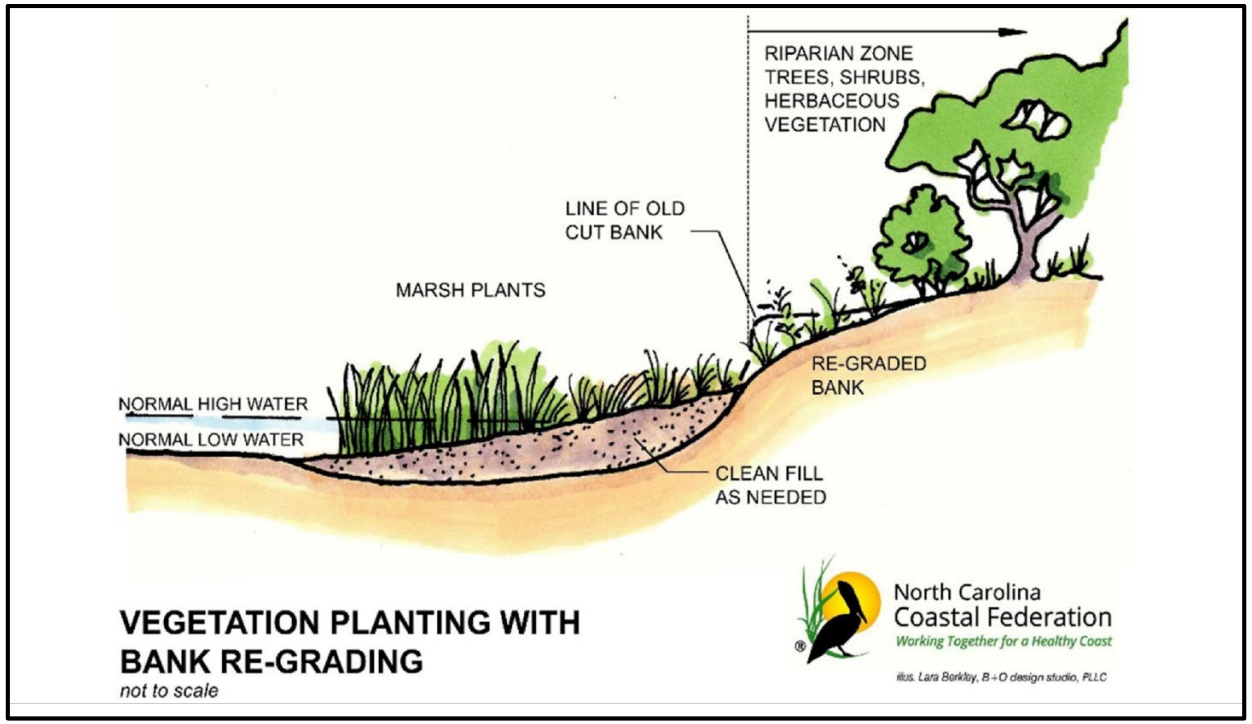


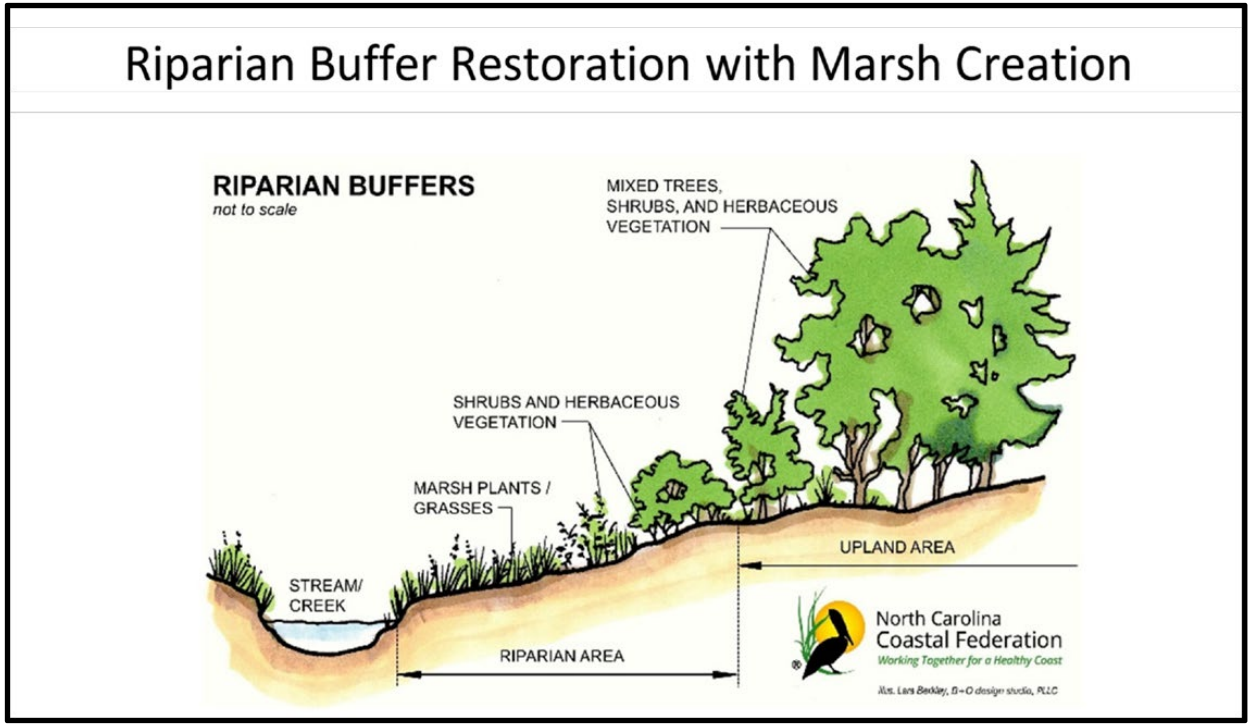
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Bank Grading and Plantings





Hybrid Living Shoreline Measures

Plants with Biologs





Photo: North Carolina Coastal Federation

Combination or Hybrid Projects



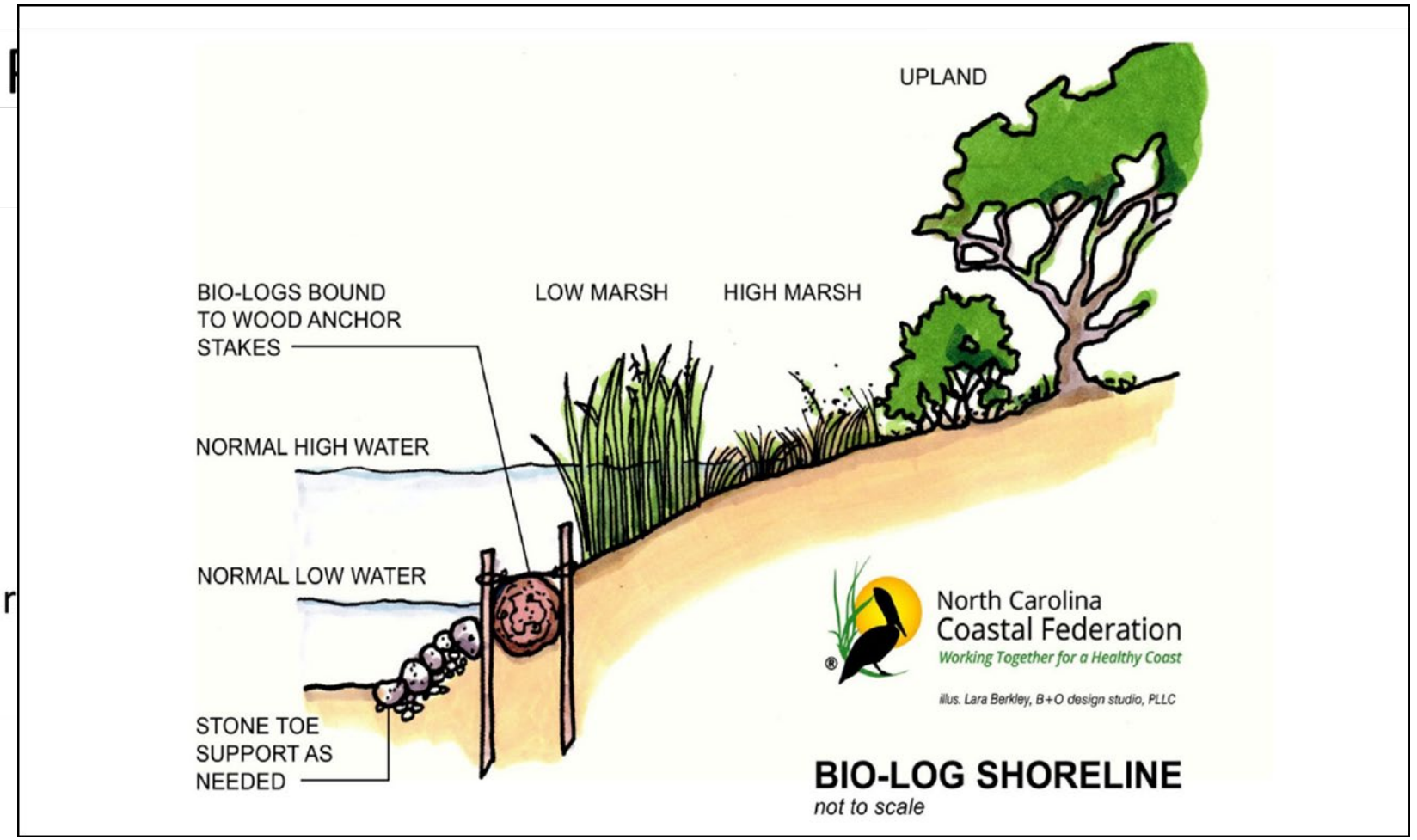




Photo: North Carolina Coastal Federation

Coir Log Methods

- Works in areas with minimal wave energy
- Can be combined with other measures
- Biologs provide temporary protection for juvenile plants
- Need initial monitoring and minimal maintenance to ensur plants are growing



Coir Log Methods





Photo: North Carolina Coastal Federation

Plants with Biologs





Photo: North Carolina Coastal Federation

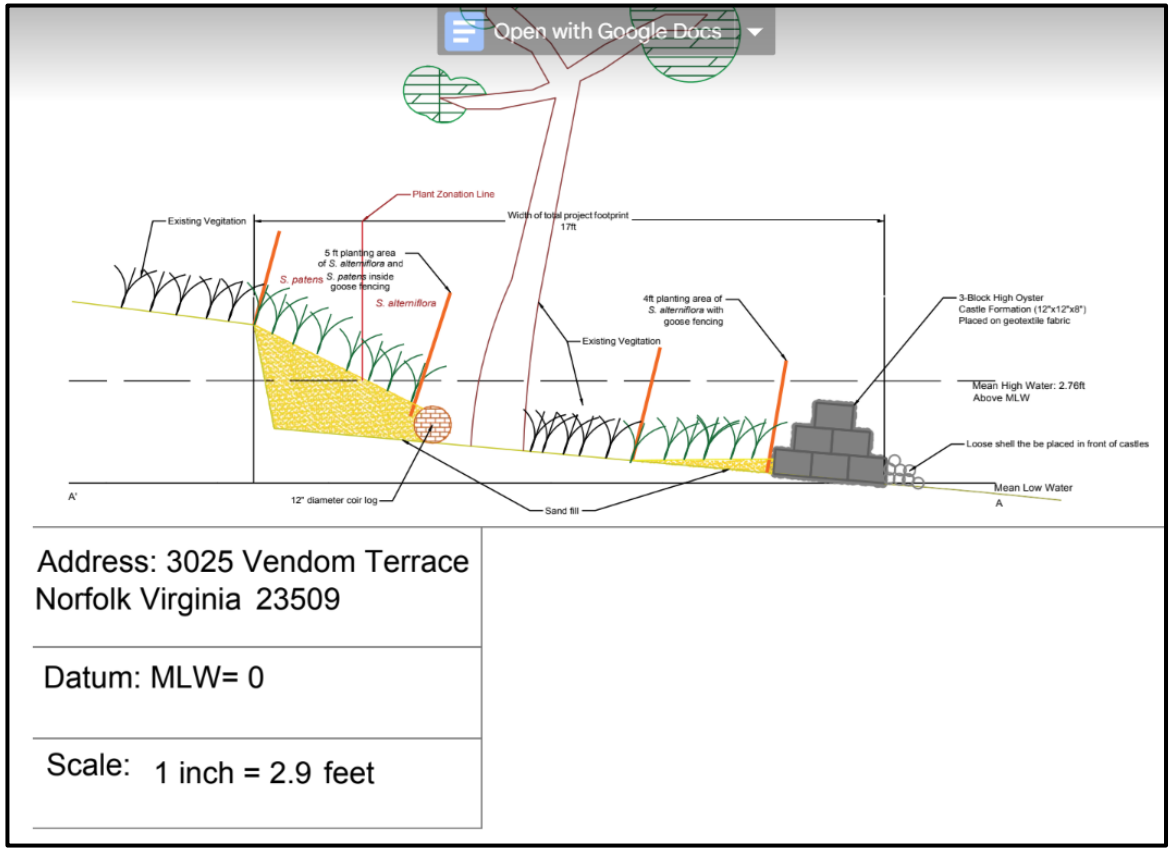
18 months post-installation

Bank Grading and Plantings



Coir Log Methods



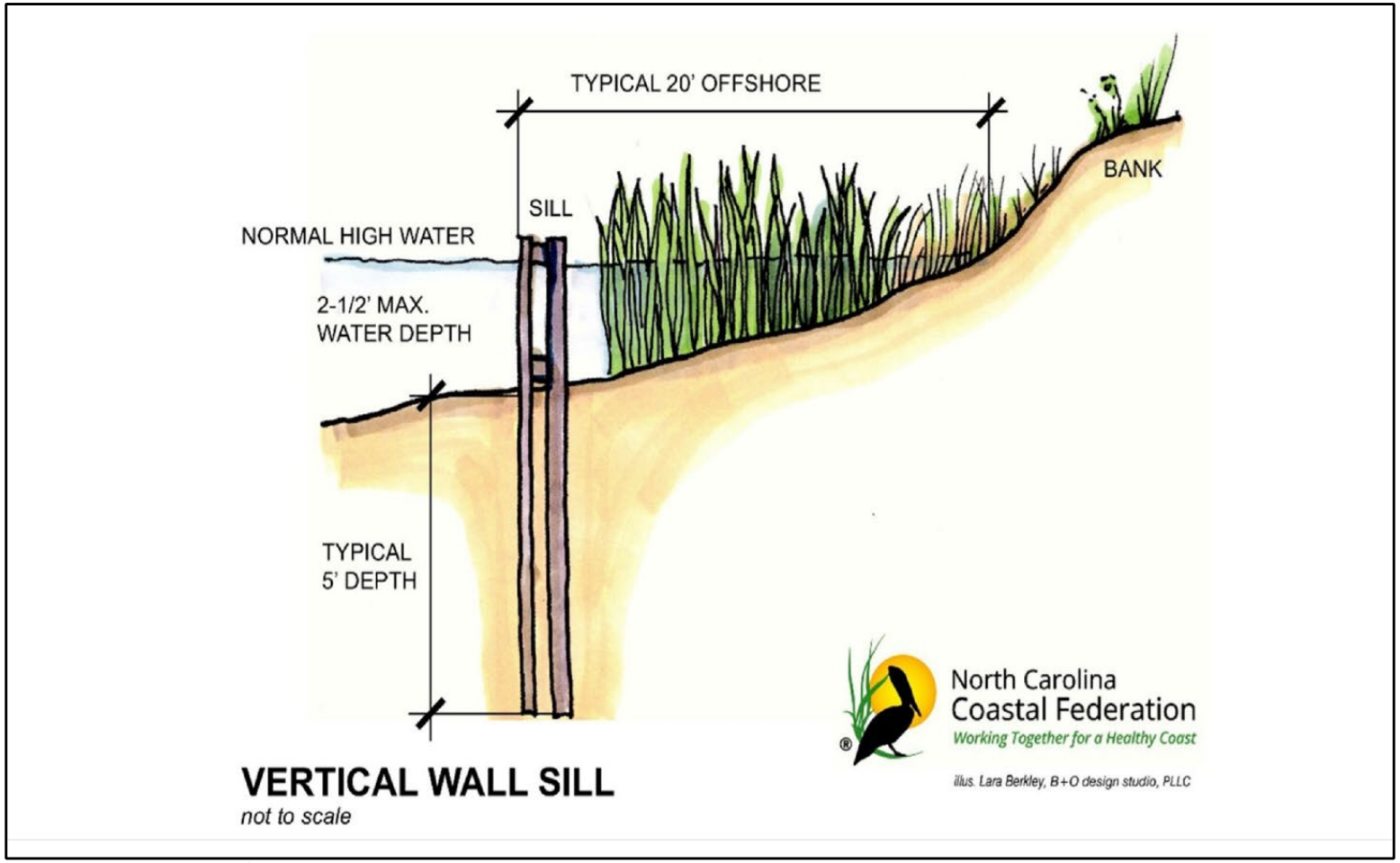


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Krause Site, Norfolk, VA, photos/plans from Barbara Gavin

Vertical Wall Sills



Vertical Wall Sills







Photo: North Carolina Coastal Federation



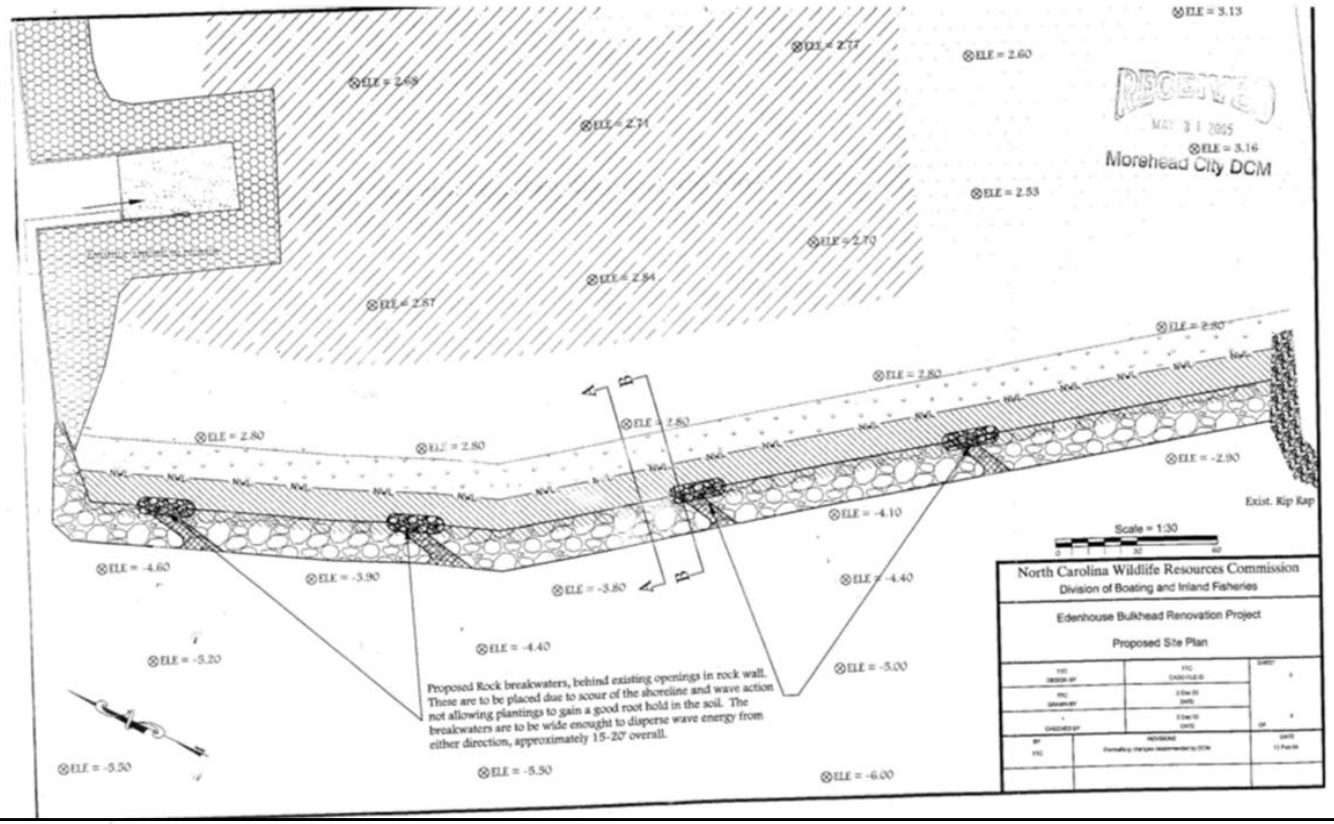
Photos from North Carolina Coastal Federation

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Stone Sills With Freshwater Plants

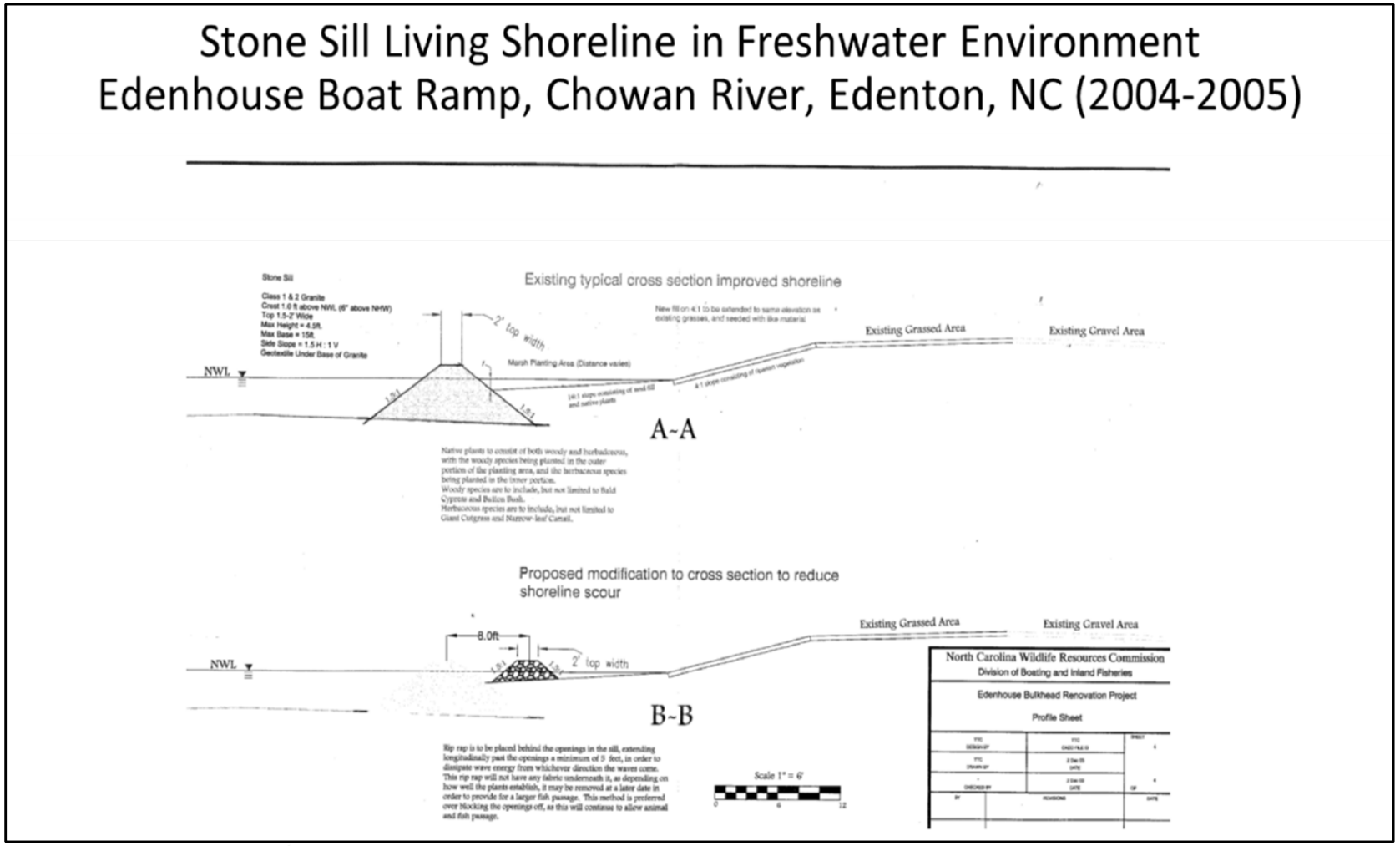
Stone Sill Living Shoreline in Freshwater Environment
Edenhouse Boat Ramp, Chowan River, Edenton, NC (2004-2005)



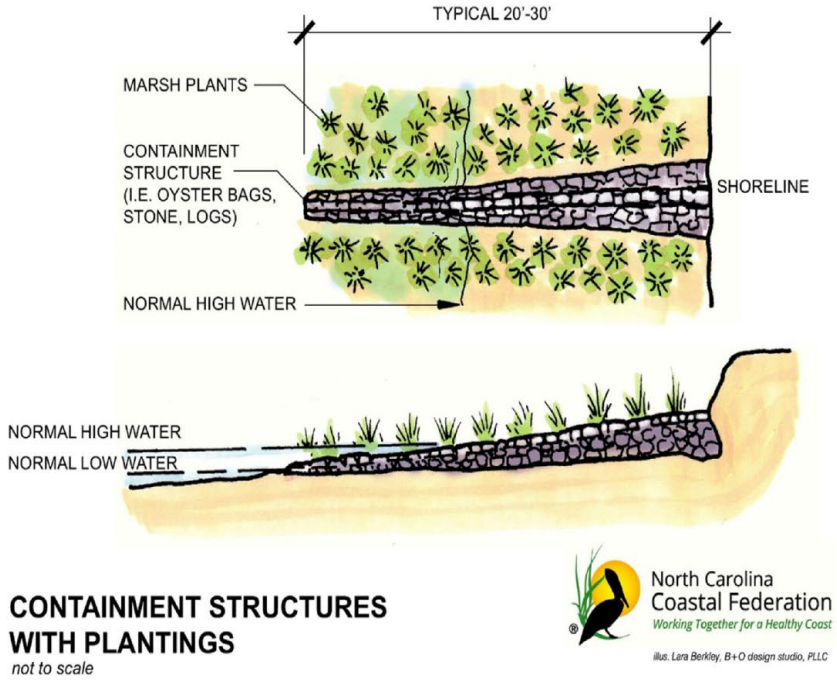
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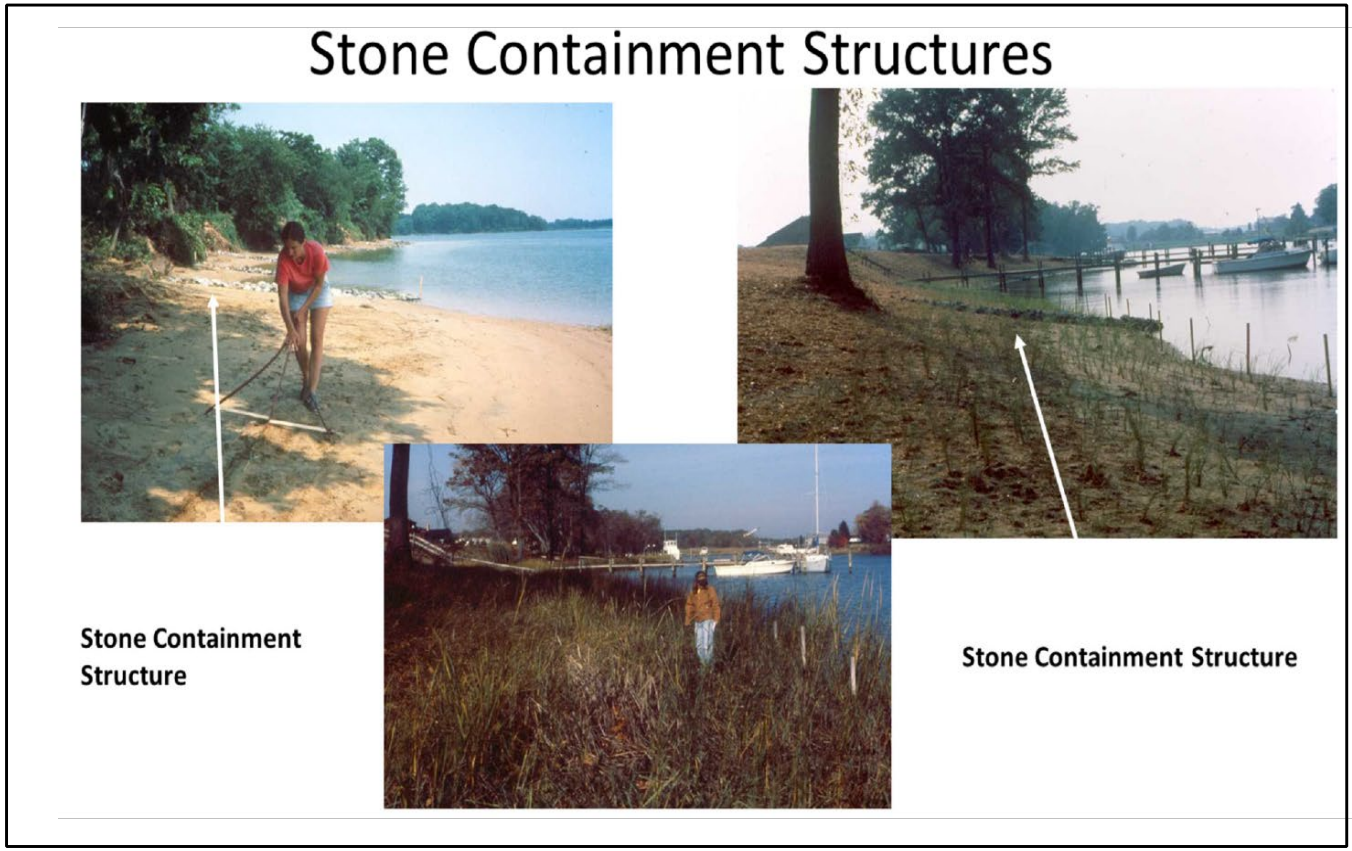
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Stone Sills With Freshwater Plants

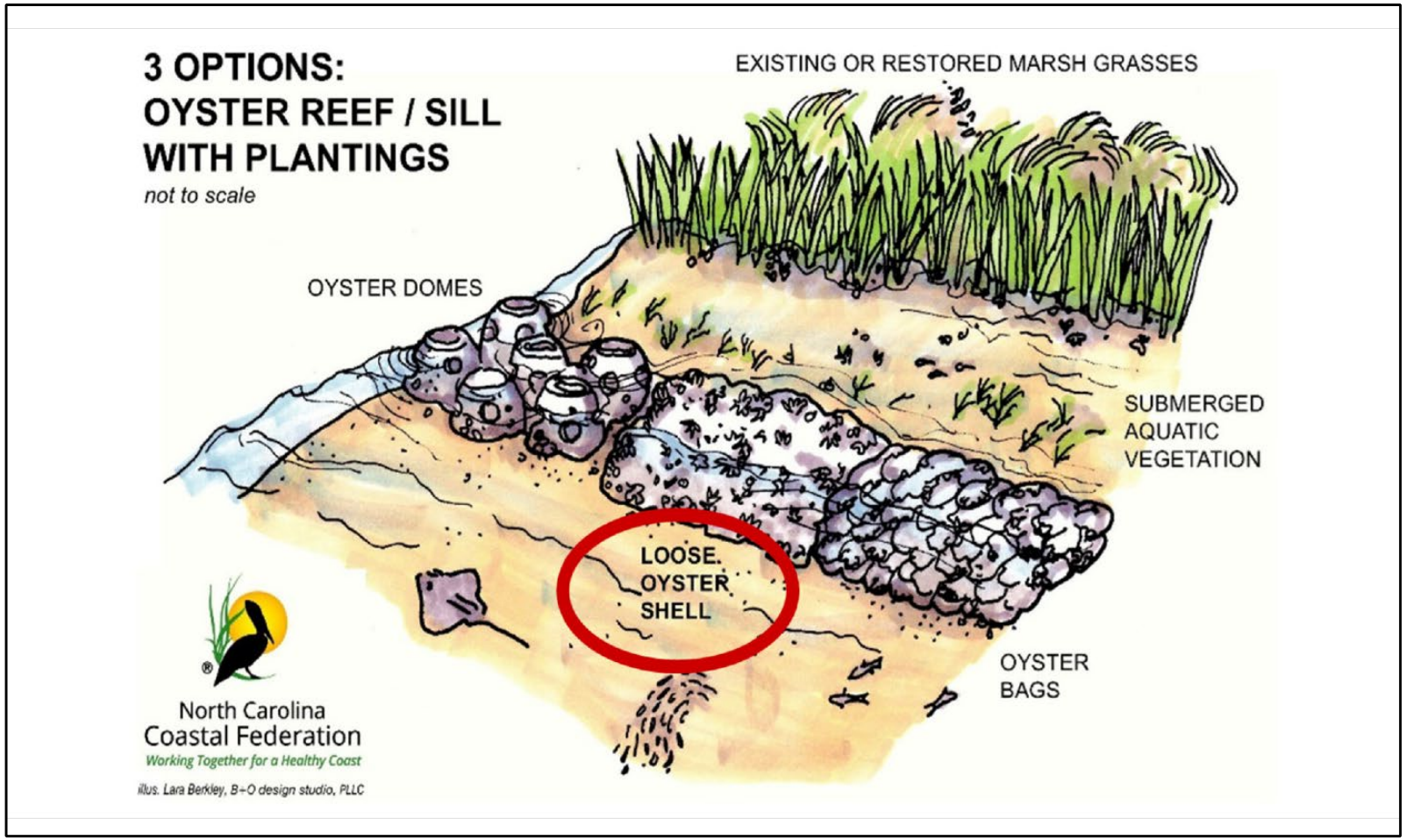


Containment Structures with Plantings





Oyster Shell Living Shoreline Methods



Loose Oyster Shell Sills/Patch Reefs

Loose Oyster Shell Methods- Morris Landing, NC



Loose oyster shell sills during construction

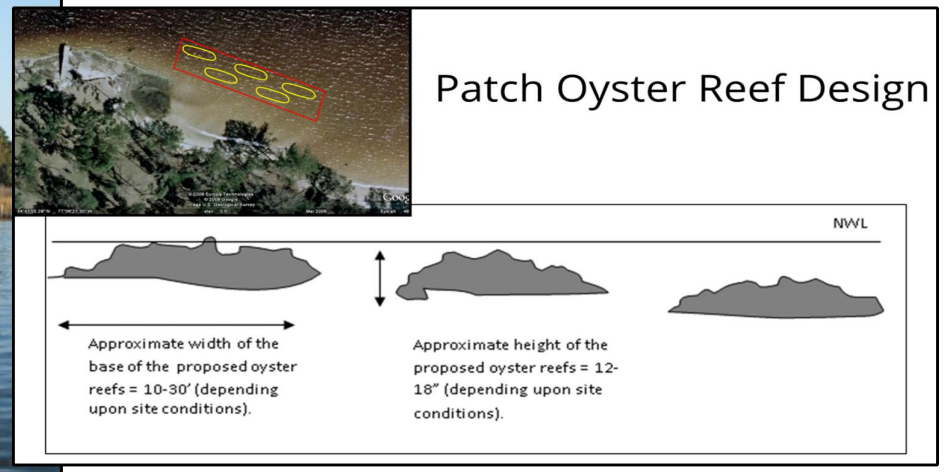


Photo: North Carolina Coastal Federation



Loose oyster shell sill after Hurricane Matthew

Photo: L. A. Jansen



Marsh Toe Revetments





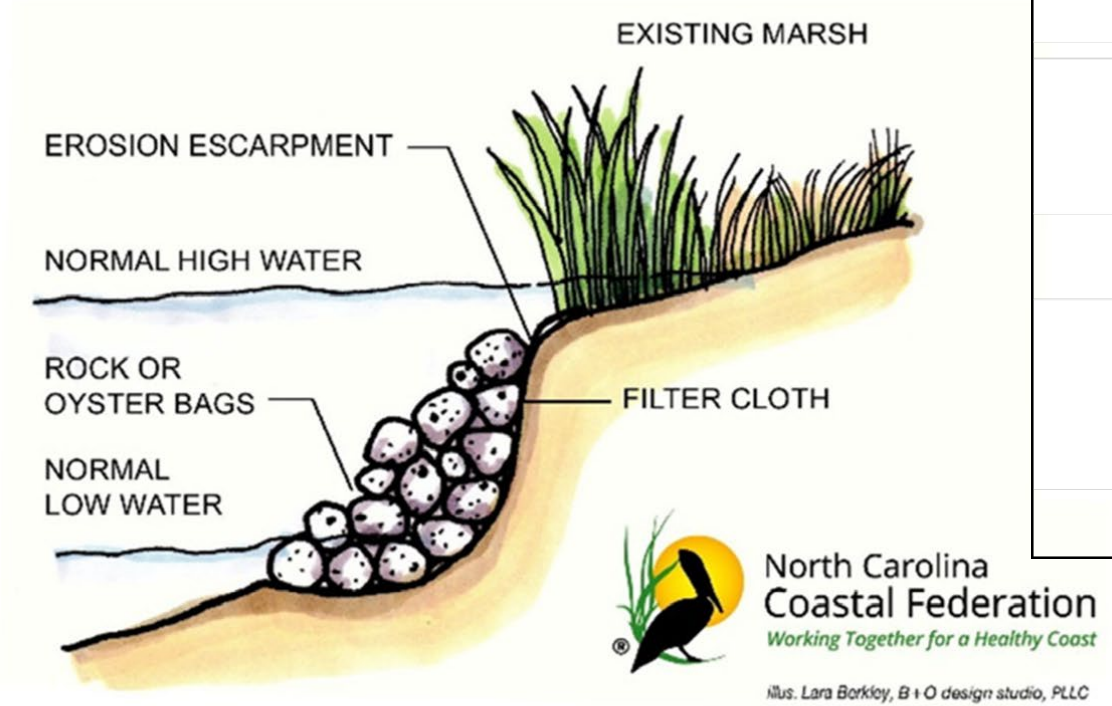


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Photos from North Carolina Coastal Federation

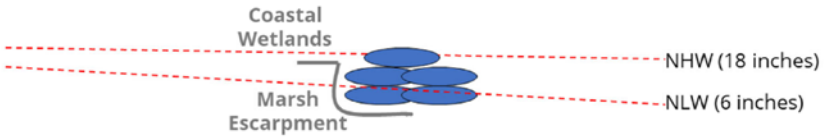
Marsh Toe Revetments

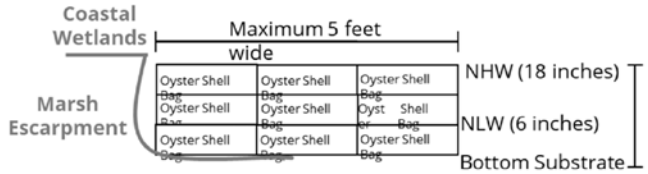


MARSH TOE REVETMENT
not to scale

Deer Creek Living Shoreline Project

Oyster Shell Bag Marsh Toe Revetment





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Oyster Domes Living Shorelines



Oyster Shell Bag Sill



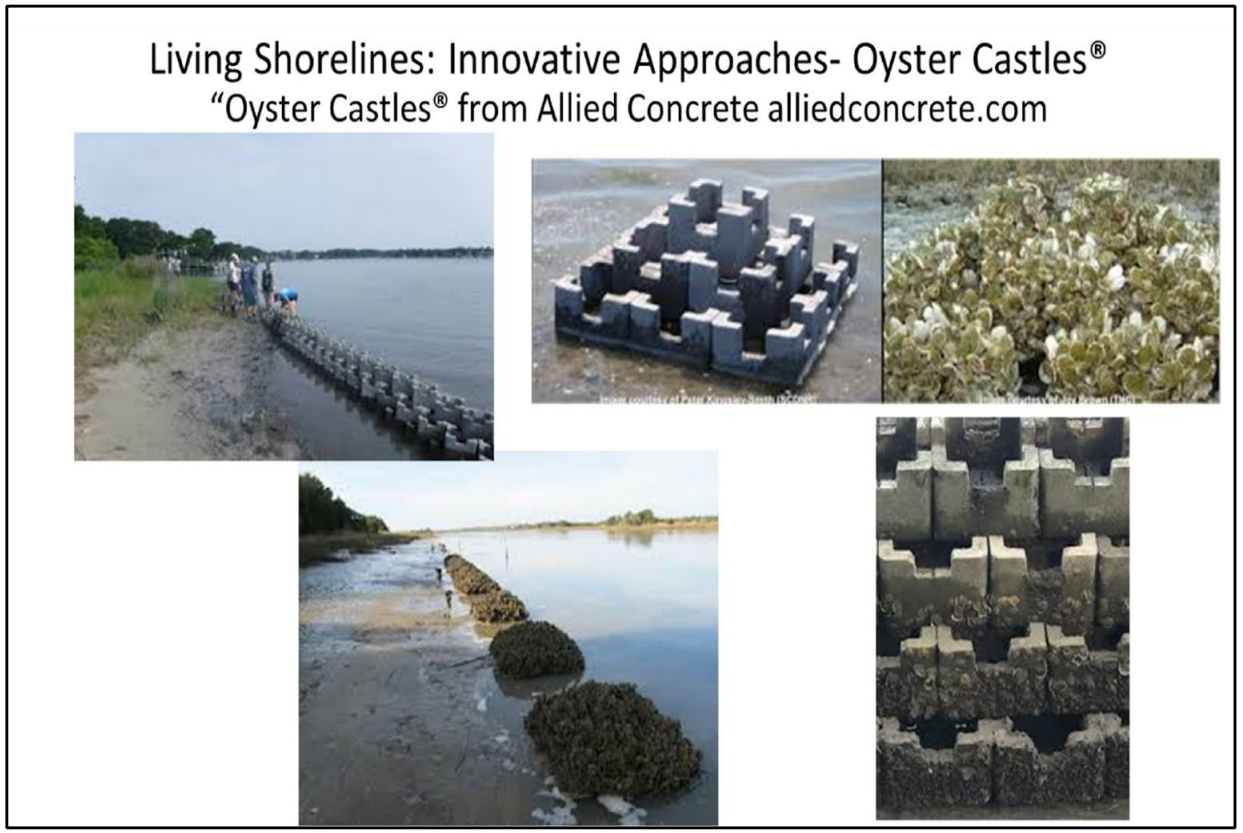




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Innovative Living Shoreline Design





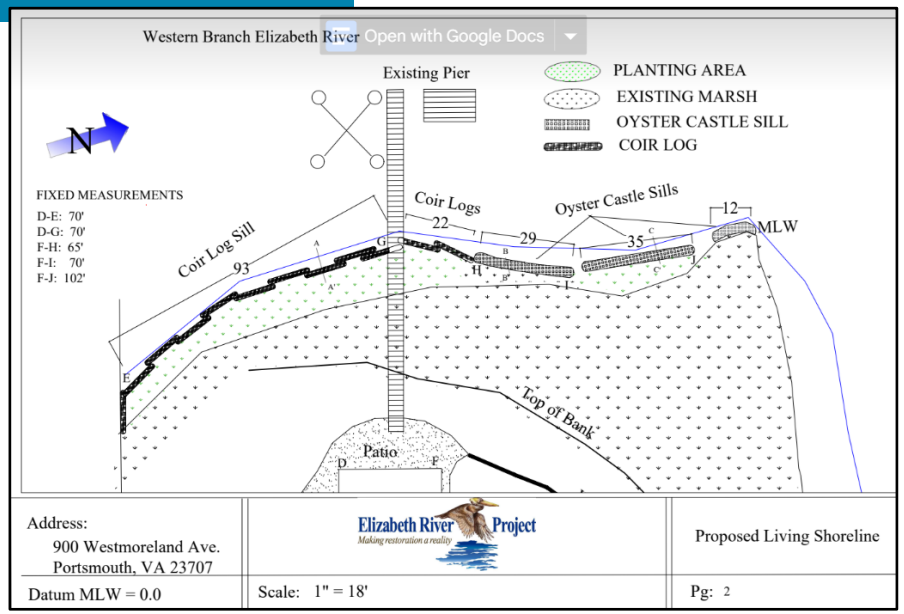
Oyster Castles™- Photo by Barbara Gavin

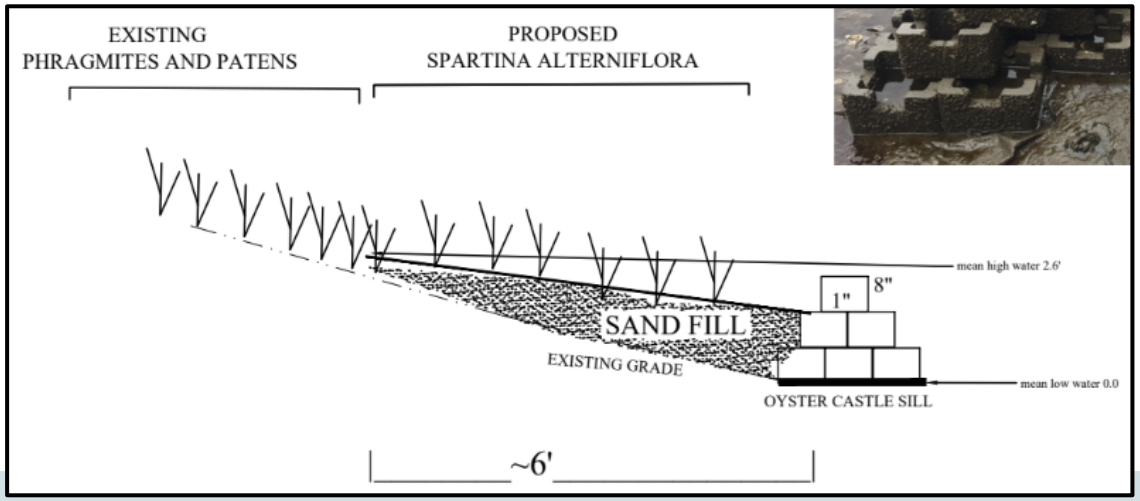
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Rollings Oyster Castles- Photos and Plans Provided by Barbara Gavin

Coir Log Methods







Krause Site, Norfolk, VA, photos/plans from Barbara Gavin