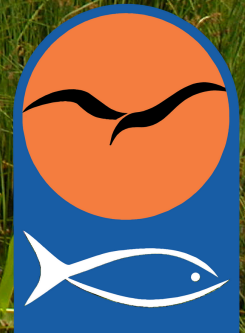


2022-2026

Estuarine Shoreline Strategy

N.C. Division of Coastal Management



VISION

Sustainable and effective estuarine shoreline management promotes resilient coastal communities and healthy ecosystems.

MISSION

The Division of Coastal Management (DCM) works to better understand and manage estuarine shorelines through an integrated approach of planning, permitting, education, and research. This includes promoting the use of living shorelines for shoreline stabilization, understanding shoreline change through mapping, and exploring implementation of resilience strategies including thin-layer placement and protection of marsh migration pathways.

REPORTS

[2014 Living Shorelines Strategy](#)

[2016 Living Shorelines Strategy Accomplishments Report](#)

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DEFINITIONS

Living Shorelines

Living shorelines include a suite of options for shoreline erosion control that maintain existing connections between upland, intertidal, and aquatic areas which are necessary for maintaining water quality, ecosystem services, and habitat function. Unlike vertical stabilization measures such as bulkheads, living shorelines use native materials such as marsh plants, oyster shells, and occasionally minimal amounts of structural material (e.g., stone) to stabilize estuarine shorelines, minimize erosion, and enhance habitats. Marsh sills are a type of living shoreline, shore-parallel structures built in conjunction with existing, created, or restored wetlands and allowed under a general permit. Living shorelines are also different from breakwaters – large structures usually made of stone with the purpose of breaking waves before they reach a shoreline or harbor – as breakwaters are not designed to protect or enhance wetland habitat like living shorelines.

Thin-Layer Placement

Beneficial use of dredged material is defined as the placement of dredged material with the explicit intent to enhance, create, or restore habitats. Thin-layer placement (TLP), for the purposes of this document, is a wetland restoration or enhancement strategy, whereby dredged material (i.e., sediment) is intentionally placed on a wetland to increase its elevation while maintaining the hydrology and inundation necessary for native wetland vegetation to persist.

Protection of Marsh Migration Pathways

The act of protecting and conserving land where coastal wetlands are projected to migrate in future years due to sea-level rise.

Objectives

Training & Outreach

1. Yearly, host workshops for target audiences on living shorelines for estuarine erosion control and provide continuing education credits as appropriate. Target audiences include marine contractors, engineers, real estate agents, and homeowner associations. Workshops will include field trips to living shoreline sites, incorporate the latest research and monitoring findings, and highlight cost-share opportunities and incentives for living shoreline implementation.
2. In 2023 and 2026, host DCM field representative trainings to highlight the latest living shoreline research and monitoring findings, and to help field representatives promote living shorelines to permit applicants.
3. Continue to promote living shorelines through the creation of a story map, videos, and social media. One story map will be created to highlight living shoreline installations in NC. Three short videos will be created by 2026 to showcase living shoreline benefits to property owners. These products will be distributed through the Coastal Reserve's social media.
4. By 2023, develop a list of messages regarding living shorelines – cost, maintenance, performance, resilience, property owner testimonials, etc. – for communication products and field representatives. Incorporate messages into 2023 DCM field representative training.
5. In 2022, 2024, and 2026 evaluate and update DCM's estuarine shoreline web pages; and in 2023 and 2025 evaluate and update the Weighing your Options brochure and determine if it should be reprinted. Consider developing a web-based decision tree based on Weighing your Options brochure.
6. By 2026, identify at least one publicly visible living shoreline site to create demonstration signage for, to promote living shorelines for estuarine erosion control.



Research and monitoring

1. Continue partnership between research and regulatory staff to conduct annual monitoring of the 'performance' of five or more marsh sill living shorelines by 2026. This will be accomplished by visiting one coastal region per year and working with associated field representatives to conduct monitoring. Metrics will focus on structural integrity, lateral and vertical erosion, and protection of marsh vegetation. Monitoring data will be incorporated in training events to highlight effectiveness of marsh sill living shorelines to target audiences.
2. Continue development of the state-wide marsh sill geodatabase containing multiple attributes for each sill including permit information, material type, length, sill age. Update the database annually with new sills.
3. Annually, review priority research questions and management needs, revising as needed, for inclusion on the DCM website and distribution for request for proposals including NERRS Science Collaborative and various fellowships. Priorities will be addressed by external partners and, where appropriate, in partnership with DCM.
4. Annually, translate new research findings for training, social media, and other outreach efforts, as needed.
5. By 2026, use existing methodology to complete the third iteration of estuarine shoreline mapping to update shoreline types and shoreline structure types. The original mapping efforts were based on 2003-2009 and 2012 imagery. Coordinate with other state agencies and organizations to determine additional shoreline mapping needs and explore partnerships with NOAA technical experts to address these mapping needs.

Regulatory

1. In 2022, update the Coastal Resources Commission on living shoreline research, monitoring, and outreach and review shoreline stabilization laws from Virginia and Maryland.
2. Through 2026, field representatives will promote living shorelines with shoreline stabilization permit applicants and share available cost-share opportunities and incentives.
3. By 2023, finalize system for tracking living shoreline permits. This includes data mining for permits in CDAITS and laserfiche via temporary staff and ensuring the new E-Permitting system includes all living shoreline permits.





Coordination/Implementation

1. Through 2026, DCM staff will continue to participate in the NC Living Shoreline Steering Committee's quarterly meetings, organized by the Albemarle-Pamlico Natural Estuary Partnership and the North Carolina Coastal Federation. Participation also includes leading the education and outreach subcommittee and membership on the research subcommittee.
2. Through 2026, DCM staff will support implementation, where appropriate, of recommendations outlined in the [2021 Coastal Habitat Protection Plan](#) and the [2021 Oyster Blueprint](#) related to living shorelines.
3. Through 2026, DCM staff will continue to support regional collaboration on living shorelines, including sharing best practices and lessons learned with coastal programs and NERRs related to research and monitoring, communications, and training.
4. By 2023, DCM staff will review successes and shortcomings of Virginia and Maryland laws that require property owners to demonstrate why living shorelines are not suitable before issuing bulkhead/revetment permits. Staff will determine if a similar regulatory approach is feasible in N.C.
5. By 2026, in concert with state and federal partners, DCM will develop guidelines for permitting thin-layer projects including requirements for site assessments – to demonstrate need and benefit – and monitoring.
6. Through 2026, DCM's Comprehensive Land Use Planning in Coastal North Carolina guide will continue to encourage local governments to incorporate "soft" approaches, i.e., living shorelines, for shoreline stabilization in their land use plans.
7. Through 2026, DCM's Beach & Waterfront Access Grants program will encourage communities incorporate nature-based features such as living shorelines into the design of their beach or water access site if flooding or erosion is a concern. Through 2026, DCM will encourage state landowners, such as state parks and Wildlife Resource Commission public boat ramps, to use living shorelines through existing training and regulatory outreach.
8. Through 2026, living shorelines will be considered as a resilience strategy on reserve sites for shoreline stabilization and educational demonstration.



9. Through 2026, DCM will prioritize funding projects that adhere to DEQ's Principles and Guidelines for Financial Support of Coastal Resiliency Projects. This includes:
- a. Shoreline stabilization proposals should document erosion trends and threatened infrastructure or habitats. "Living shorelines" using biodegradable, natural, and inert materials and vegetation should be prioritized over gray (hard) approaches (bulkheads, revetments, breakwaters) where they can be successfully used given site conditions.
 - b. Coastal wetland and oyster reef restoration projects should analyze habitat trade-offs that may result (e.g., conversion of existing shallow-bottom habitat), and document historical deterioration or loss of wetland or oyster habitats. Proposed oyster reef restoration projects should document early coordination with the NC Division of Marine Fisheries with respect to site selection and materials.
 - c. Beneficial use of dredged materials proposals should include early coordination with federal and state regulatory agencies, including any seasonal restrictions that may be required to limit impacts to sensitive coastal and marine resources, and an evaluation of the compatibility and suitability of the dredged materials for the proposed use. The disposal of dredged materials on coastal wetlands will require more intensive regulatory reviews, and likely would require a Variance from the NC Coastal Resources Commission.
 - d. Land acquisition proposals should reference and align with existing coastal land conservation, local or regional resilience, and/or watershed management plans. Priority should be given to proposals that provide tangible long-term resilience benefits; for example, those that allow for upland migration of coastal wetlands over time, provide infiltration areas for stormwater or floodwaters, or provide natural protection of public or private infrastructure.