# Shellfish Restoration and Alternative Shoreline Protection Policies of the Southeastern United States: Florida, Georgia, North Carolina and South Carolina

Prepared for The Nature Conservancy

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# Introduction

The regulatory framework imposed upon large-scale shellfish restoration or alternative shoreline stabilization projects (like living shorelines) can prove quite daunting to those tasked with implementing the projects. Organizations often encounter confusing and unwieldy regulatory schemes not designed with restoration projects in mind. In addition, restoration projects may face unintended hurdles as a result of regulations intended to evaluate commercial activities rather than restoration efforts.

This report reviews the current regulatory framework in Florida, Georgia, North Carolina, and South Carolina related to shellfish conservation, restoration, and resource management, as well as the use of shellfish for shoreline protection. Each state-by-state chapter highlights applicable state laws, policies, and programs impacting the restoration process, along with an overview of the relevant permitting process. State-specific limitations and challenges to shellfish restoration and alternative shoreline restoration projects are also discussed. A short review of crosscutting federal regulation follows the state-specific analysis. For quick reference, a state-by-state comparison chart concludes the report.

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# Florida

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## KEY POLICIES AND REGULATIONS

### A. Major Laws & Policies

The Florida Department of Environmental Protection (FLDEP) coordinates Florida's state-wide coastal program. The coastal program consists of a variety of laws and policies. The primary law impacting restoration projects is the Beach and Shore Preservation Act. Other components of the coastal program include the Environmental Resource Permit program as well as the Construction Control Line requirements, as discussed below.

- Beach and Shore Preservation Act

The Beach and Shore Preservation Act (BSPA) was passed in order to better protect Florida's beach and dune systems from unwise, imprudent construction. The beach and dune systems are an invaluable resource for the State due to their ability to provide natural wildlife habitats and protection for upland property. Thus, the BSPA attempts to protect these systems from construction that could accelerate erosion, increase the vulnerability of upland properties, or interfere with public access to the beach.[1] This includes regulating activities seaward of the mean high tide line on the Atlantic, Gulf of Mexico, Straits of Florida or associated inlets on state-owned submerged lands. Regulated activities are those that are likely to affect the distribution of sand along the beach and may include groins, jetties, beach nourishment, and offshore sand harvesting. These activities require a Joint Coastal Permit from the FLDEP.

In order to engage in a coastal construction or reconstruction project below the mean high water line, including efforts to protect the shoreline, a permit must be obtained from the FLDEP. Along sandy shores, the law prohibits construction of seawalls within 50 feet of the mean high water line.[2] Any coastal construction below the mean high water line that endangers human life, health, or welfare; proves to be undesirable; or is determined to be unnecessary is to be removed or altered by either FLDEP or the abutting landowner.[3] The BPSA also regulates construction occurring on the state's beaches.

- The Environmental Resource Permit Program

The Environmental Resource Permit (ERP) program regulates activities in wetlands and state sovereign submerged lands, such as living shorelines and oyster restoration projects. Regulatory authority for the ERP program is found in the state's water resource laws. Florida wetlands generally include "swamps, marshes, bayheads, bogs, cypress domes and strands, sloughs, wet prairies, riverine swamps and marshes, hydric seepage slopes, tidal marshes, mangrove swamps and other similar areas."[4] This program applies to all dredge and fill activities in wetlands and other surface waters, as well as upland construction that generate stormwater runoff.

[1] FLA. STAT. § 161.011-161.045.
[2] FLA. STAT. § 161.052.
[3] FLA. STAT. § 161.061.
[4] FLA. STAT. § 373.019.

- Everglades

Florida has several provisions that are Everglades specific. This includes the Everglades Forever Act,[5] the Comprehensive Everglades Restoration Plan Regulation Act,[6] and the Northern Everglades and Estuaries Protection Program.[7] More information is available here: http://www.dep.state.fl.us/water/wqssp/everglades/permit.htm.

B. Estuarine Setbacks & Buffers

Florida implements a 50-foot construction setback along Atlantic and Gulf of Mexico coastlines. The setback applies to seawalls as well as dwellings, hotels, apartment buildings, or similar structures (including patios, garages, or swimming pools).[8] This provision does not apply to bays, inlets, rivers, bayous, creeks, passes, and the like. Non-sandy vegetated shores are also expressly exempt from this provision. As such, it provides little to no protection to estuarine marshlands. Furthermore, the state offers a waiver or variance of this requirement that may be authorized for various reasons.

The Beach and Shore Protection Act also regulates any construction occurring landward of the Coastal Construction Control Line (CCCL) by establishing a Coastal Building Zone in which construction shall be managed with stricter standards to minimize damage to the natural environment and private property. The Coastal Building Zone consists of land from the seasonal high-water line to a line 1,500 feet landward from the CCCL.[9] For the construction of minor structures, such as stairways, driveways, parking areas, and sidewalks, care must be taken to ensure minimum adverse impact on the beach and dune systems.[10] Non-habitable major structures, such as swimming pools and parking garages, must also be designed to ensure minimum adverse impact on the beach and dune system. Construction must be located sufficiently landward of the beach to permit natural shoreline fluctuations and preserve dune stability.

C. Shellfish Harvest & Protections from Resource Extraction

It is unlawful to use a dredge or any means or implement other than hand tongs in removing oysters from the natural or artificial state reefs. Oysters may be harvested from natural or public grounds by common hand tongs or by hand, by scuba diving, free diving,

[5] FLA. STAT. § 373.4592.
[6] FLA. STAT. § 373.1502.
[7] FLA. STAT. § 373.4595.
[8] FLA. STAT. § 161.052.
[9] FLA. STAT. § 161.54.
[10] FLA. STAT. § 161.55.

leaning from vessels, or wading.[11] The state also prohibits the dredging of dead shell deposits.

D. Sanctuaries & Other Protections

Florida has a large aquatic preserve system managed by the Office of Coastal and Aquatic Managed Areas. Aquatic preserves refer to state-owned submerged lands in areas which have exceptional biological, aesthetic, and scientific value that have been set aside as aquatic preserves or sanctuaries for the benefit of future generations.[12] Generally speaking, privately owned lands are excluded from designation as aquatic preserves except by specific agreement with the landowner.[13] Bulkhead lines waterward of the mean high water mark within the preserve cannot be approved unless it would better serve the public interest to do otherwise – for example, if public bridge or road construction projects have no alternative other than the bulkhead line. Structures generally may not be erected within aquatic preserves unless they comply with specified conditions.[14] Shore protection structures are allowed.

In state aquatic preserves, dredging or filling of submerged lands is prohibited unless the Board of Trustees grants a permit for specified activities, including:

- Minimum dredging for public navigation projects;
- Minimum dredging as required for creating and maintaining marinas, piers, or docks;
- Maintaining existing navigation channels;
- Improving or expanding public utility installations; and
- Installing and maintaining oil and gas transportation facilities.

Creation of new aquatic preserves requires public notice and comment as well as legislative confirmation.[15]

[11] FLA. STAT. § 379.2525.
[12] FLA. STAT. § 258.36.
[13] FLA. STAT. § 258.40.
[14] FLA. STAT. § 258.42.
[15] FLA. STAT. § 258.41; FLA. ADMIN. CODE r. 18-20.001 et seq.

## PERMITTING SHELLFISH & SHORELINE RESTORATION

A. Regulating Agencies

- Florida Department of Environmental Protection
    - Bureau of Beaches and Coastal Systems
- Florida Fish and Wildlife Conservation Commission
- U.S. Army Corps of Engineers

B. Permitting Requirements

Restoration projects will generally require permitting for use of environmental resources, sovereign submerged lands, and dredge and fill of wetlands. To simplify permitting, the state has combined these needs into one joint permit application under the Environmental Resource Permitting (ERP) program.[16]

The Environmental Resource Permit (ERP):

The district offices of FLDEP oversee the ERP permitting process. Through operating agreements with FLDEP, six water management districts also oversee certain aspects of ERP permitting: St. Johns River, Suwannee River, Northwest Florida, South Florida, and Southwest Florida Water Management Districts.

With limited exception, an ERP is required anytime materials are deposited in surface waters or wetlands. Materials refer to "matter of any kind, such as sand, clay, silt, rock, dredged material, construction debris, solid waste, pilings or other structures, ash, and residue from industrial and domestic processes."[17] The placement of oyster cultch is exempt from this definition.

The regulations adopt the permitting forms as part of the state rules. FLDEP has created a helpful overview of the ERP and state-owned submerged lands (SSL) permitting programs. Numerous evaluation criteria are considered when evaluating permit applications, including:

- Activities cannot cause adverse impacts to waters, flooding, or wetland functions for fish and wildlife;
- Consideration of direct, secondary, and cumulative impacts; and

[16] Available at: http://www.dep.state.fl.us/water/wetlands/erp/forms.htm.
[17] FLA. ADMIN. CODE r. 62-341.021(14).

- Consideration of upland buffers.

In addition, activities must not be contrary to the public interest, and if the activity is located in an Outstanding Florida Water (a water designated as worthy of special protection because of its natural attributes), it must be clearly in the public interest.[18] FLDEP may impose conditions on development to ensure that state waters are protected.[19] Special provisions protect waters used for shellfish harvesting. Issuance of an ERP serves as a waiver of a separate stormwater permit (Clean Water Act § 401).

There are three types of individual permits under the ERP program: general permits, individual permits, and conceptual approval permits (for large projects in which the final product is uncertain or subject to change).[20]

Activities that may qualify for general permits include:

- Minor activities (impacting less than 100 square feet of wetlands or surface waters);
- Installation of riprap;
- Construction of artificial reefs; and
- Clam and oyster culture on sovereignty submerged lands aquaculture leases.[21]

There are also general permits available to the U.S. Army Corps of Engineers (USACE) and the Water Management Districts to conduct restoration and enhancement activities. Unless classified as a minor project, shoreline and shellfish restoration activities do not fall clearly within the available general permits while riprap and aquaculture do. Adding corresponding general permits for restoration activities would reduce the permitting burden for these beneficial projects.

Restoration projects may also qualify for a de minimus exception for activities that have only a minimal or insignificant individual or cumulative impact on water resources.[22] This exemption applies to projects that would otherwise require an ERP. The provision allows any district to exempt qualifying projects on a case-by-case basis. To qualify, applicants must request the exemption in writing and no activity may begin until the District issues a written decision. This exemption has been used in the FLDEP Central District for restoration activities.

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[18] FLA. ADMIN. CODE r. 62-302.700.
[19] FLA. STAT. § 373.4143.
[20] FLA. ADMIN. CODE r. 62-343.060.
[21] FLA. ADMIN. CODE r. 62-341.475, 62-341.431, 62-341.600, 62-341.601.
[22] FLA. STAT. § 373.406(6).

The FLDEP Northwest District approved an exception for living shorelines made of native vegetation that are less than 150 feet long.[23] An oyster breakwater can be installed if permanent wave attenuation is needed to maintain the health of planted native vegetation. The outer edge of the oyster breakwater shall not extend more than 10 feet waterward of the approximate MHWL. The project must include 3-foot gaps for every 20 feet of oyster reef. In addition, the reefs must be constructed of predominantly natural oyster shell or fossilized oyster shell, although unconsolidated boulder, rocks, and clean concrete rubble can be associated with the oyster shell. Upon approval, property owners or applicants would receive a regulatory exemption from FLDEP Northwest District and waived application fee. The applicant would still have to submit an application to the USACE.

Unless the project qualifies for an exemption, the restoration project will require an individual ERP.[24]

USACE Permitting:

In addition to the ERP permit, activities taking place in wetlands require a federal permit from the USACE. The ERP application process combines the federal wetlands permitting needs into a joint application. The FLDEP district office will review the permit application first and then forward the application on to the applicable USACE office. There are two relevant nationwide permits in Florida: NWP 13 (bank stabilization) and NWP 27 (aquatic habitat restoration). Florida has imposed regional conditions on the use of these permits. NWP 13 only applies to projects 500 feet in length, cannot be used in the Florida Keys, and requires pre-construction notification in many circumstances.[25] Likewise, any restoration work done under NWP 27 requires pre-construction notification in most circumstances.

The Joint Coastal Permit:

If restoration projects are located along Florida's sandy beaches, then a Joint Coastal Permit will be required. The Joint Coastal Permit (JCP) combines permitting for coastal construction permits, environmental resource permits, wetland resource (dredge and fill) permits, and sovereign submerged lands authorizations; the JCP is issued by FLDEP's Bureau of Beaches and Coastal Systems.[26]

[23] FLA. ADMIN. CODE r. 62-346.051(14)(e).
[24] FLA. STAT. § 373.406.
[25] Florida conditions are available here: http://www.dep.state.fl.us/water/wetlands/erp/nwp.htm.
[26] Available at: http://www.dep.state.fl.us/beaches/programs/envpermt.htm.

A JCP is required for activities that meet the following four criteria:

- Located along Florida's natural sandy beaches facing the Atlantic, Gulf of Mexico, Straits of Florida, or associated inlets;
- Extends seaward of the mean high water line;
- Extends into sovereign submerged lands; and
- Is likely to affect the distribution of sand along the beach.

Activities that require a JCP include beach restoration or nourishment; construction of erosion control structures such as groins and breakwaters; public fishing piers; maintenance of inlets and inlet-related structures; and dredging of navigation channels that include disposal of dredged material onto the beach or in the nearshore area.

C. Shoreline Restoration Permitting

- Environmental Resource Permit: An alternative shoreline stabilization project will require an ERP.
    - De Minimus Exemption: Available for activities that have only a minimal or insignificant individual or cumulative impact on water resources.
        - Determined on case-by-case basis.
        - Must be requested in writing.
    - Living Shoreline Exemption: Currently only available in the FLDEP Northwest District.
        - Applies to living shorelines made of native vegetation that are less than 150 feet long.
        - May still require a USACE permit.
    - ERP Joint Application:
        - Submit to regional office.
        - Includes:
            - Sovereign submerged lands authorization request.
            - USACE permit for minor activities through the State Programmatic General Permit.
            - CZMA Consistency Review.
            - Water Quality Certification.

- USACE Individual Permit: only needed if project does not fall within the NWP 13 for bank stabilization.

D. Oyster Restoration Permitting

- Environmental Resource Permit: Oyster restoration projects will require an ERP.
    - De Minimus Exemption: Available for activities that have only a minimal or insignificant individual or cumulative impact on water resources.
        - Determined on case-by-case basis.
        - Must be requested in writing.
    - ERP Joint Application:
        - Submit to regional office.
        - Includes:
            - Sovereign submerged lands authorization request.
            - USACE permit for minor activities through the State Programmatic General Permit.
            - CZMA Consistency Review.
            - Water Quality Certification.
- USACE Individual Permit: only needed if project does not fall within the NWP 27 for aquatic habitat restoration.

E. Design & Construction

Oyster mats containing plastic mesh material for oyster shell to attach, reef balls, wave attenuation devices, cultch, oyster bag, loose cultch, calcareous stone, fossilized shell, and oyster cages have been used. In the FLDEP Central District typically oyster bags, oyster mats, and shell have been approved for oyster restoration. The Florida Department of Agriculture and Consumer Services Division of Aquaculture predominantly uses processed oyster shell or fossilized oyster shell to restore or refurbish their oyster reefs.

F. Research & Conservation Permits

Florida regulations do not provide for research or conservation permitting. However, restoration projects may qualify for a de minimus exemption for activities that have only a minimal or insignificant individual or cumulative impact on water resources.[27]

[27] FLA. STAT. § 373.406(6).

In addition, the FLDEP Central District is working with The Nature Conservancy to develop a noticed general permit for restoration projects. The proposed permit would include conditions and apply to projects using relatively the same methodology.

G. Conservation Leasing

Florida has established a Water Protection and Sustainability Program that includes the establishment of conservation leases as a method for achieving water quality improvement.[28]

## LIMITATIONS AND CHALLENGES

Certain challenges exist for permitting shellfish and shoreline restoration projects. These issues include coastal property rights, public health concerns, and other key issues arising during permitting. This section is concluded with an overall discussion of whether existing laws encourage or discourage restoration efforts.

A. State Owned Submerged Lands

- State Owned Submerged Lands: all lands below the mean high-water line, with the area below the mark being held by the state in trust for the benefit of the public and the area above being subject to private ownership.[29]
    - Florida defines sovereignty submerged lands as lands including but not limited to, tidal lands, islands, sand bars, shallow banks, and lands waterward of the ordinary or mean high water line, beneath navigable fresh water, or beneath tidally-influenced waters, to which the State of Florida acquired title on March 3, 1845, by virtue of statehood. [30]
- Public Trust Rights: recreation, navigation, commerce, fishing, bathing, and other easements allowed by law.[31]
    - Goals for public trust lands include the maintenance of essentially natural conditions, the propagation of fish and wildlife, and public recreation.[32]

[28] FLA. STAT. § 403.890.
[29] FLA. STAT. § 177.28(1); FL. Const. Art. 10 § 11.
[30] FLA. ADMIN. CODE r. 18-21.003(61).
[31] Broward v. Mabry, 58 Fla. 398, 50 So. 826, 829 (1909).

- Activities taking place on sovereign submerged lands must not interfere with the public interest.

- Leasing of Submerged Lands: the Board of Trustees of the Internal Improvement Trust can lease submerged land for certain activities so long as the activities do not interfere with the public interest.[33]

    - The FLDEP acts as staff to the Board of Trustees and assists in review.

B. King's Grants

- Private individuals may own submerged lands in limited circumstances through a grant from the Spanish crown (also referred to as a King's grant or a Spanish land grant).[34]

- Activities taking place on those privately owned submerged lands do not require authorization to use submerged lands but must comply with all regulatory requirements.

C. Riparian Rights

- Waterfront property owners hold riparian or littoral rights.

- These rights include the rights of ingress, egress, boating, bathing, and fishing.[35]

    - Florida courts have recognized a riparian right to an unobstructed view, as well as means of ingress and egress over the foreshore and tidal waters, to the channel.[36]

- Florida law protects riparian rights by limiting activities that may interfere with those rights. Shoreline and nearshore restoration projects may require permission from the affected riparian owners before permits are issued.

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[32] FLA. STAT. § 253.034(2)(b).
[33] FLA. STAT. § 253.71.
[34] Spanish Land Grants were first issued in the late 1700's by the Spanish government, which at the time owned the colony of Florida, as a way to encourage settlement. When Spain transferred the territory to the Unites States in 1821, it was agreed that any valid land grants were to be honored.
[35] FLA. STAT. § 253.141(1).
[36] Hayes v. Bowman, 91 So.2d 795, 801 (Fla. 1957).

D. Shifting Property Lines – Accretion & Erosion

- Shorelines migrate as the result of accretion and erosion.

- Traditionally, riparian and littoral owners acquire title to any land naturally accreted just as the state gains title to eroded lands (as submerged lands).

- Living shoreline installations and shellfish restoration efforts, by their very nature, are designed to reduce erosion. Under some conditions, the restoration may result in the growth of dry land along the water's edge, known as accretion.

- The state may establish an erosion control line prior to undertaking restoration projects (under the Beach and Shore Preservation Act).

    - The erosion control line establishes that all lands seaward of the line will be vested in the state, and all land landward of the line will be vested in the riparian upland owner.[37]

- Once the erosion control line is established, the property line will no longer move with the water line, either by accretion or erosion or by any other natural or artificial process.[38]

E. Public Health Regulations – Closed Waters

- Oyster shells in bags can be installed in closed waters. However, the Florida Department of Agriculture and Consumer Services Division of Aquaculture is somewhat cautious with this type of project, due to the potential public health risks associated with harvesting oyster in unapproved waters.

F. Key Issues in Permitting

- Living shorelines have been suggested as the erosion control strategy of choice by the FLDEP Northwest District and by the Florida Aquatic Preserves. In addition, the FLDEP Northwest District's ERP permitting exemption for living shorelines helps facilitate approval of alternative shoreline stabilization projects for private property owners, non-government agencies, and state restoration programs. The living shoreline exemption should facilitate the permitting process through the FLDEP

[37] FLA. STAT. § 161.191(1).
[38] FLA. STAT. § 161.191(2).

through its regulatory exemption, but the USACE application must be approved before construction can begin. This exemption is under review to be adopted statewide by FLDEP.

- Although living shorelines are the suggested alternative to more traditional forms of erosion control (such as rip-rap and bulkheads), living shorelines must still provide evidence in the permit application that the project will maintain the ecological condition of the pre-existing shoreline. The living shoreline design could contain an oyster reef breakwater that protects the existing marsh and the installed native vegetation. To receive an approved permit, applicants must make sure that they take into account changing shorelines, currents, sand flows coming from the water column, potential to create shoaling within localized areas, and, if the projects intent is to trap sand the project must ensure that it will not restrict essential water circulation within the area in the future. The applicant may need to address these parameters by monitoring the project site over time.

- In addition, if the project lead or property owner wants to re-nourish the living shoreline at a later date this should be addressed in the application in order to facilitate future permit approval. Finally, if the project site accretes marsh or another habitat type that begins to encroach on submerged aquatic vegetation or other critical habitat, the applicant will need to modify the project site so as to ensure it is not impacting this critical existing habitat. The applicant must also provide evidence that critical habitat for threatened and endangered species such as the gulf sturgeon and the smalltooth sawfish will not be impacted. In addition, the applicant must ensure that a navigational hazard will not be created by the oyster reef.

- In general, it appears that the federal perspective is to create habitat and enhance water quality. Therefore, the restoration of oyster reefs or the creation of living shoreline type projects should be acceptable in closed waters. On the other hand, the state might be hesitant to approve oyster restoration or some living shoreline projects involving a large quantity of oyster shell due to the need of increased enforcement of Marine Police to prevent harvesting in closed waters.

G. Overall Analysis

Florida law establishes a foundation for coastal restoration work but regulatory provisions are focused on construction activities. The Northwest District is the only area with living shoreline permitting guidance. Extending these provisions statewide would be a simple

way to improve permitting of alternative shoreline restoration projects. Further, general permits are available for installation of riprap and oyster aquaculture, while no corresponding provisions exist for restoration activities. Current efforts are underway to adopt an ERP general permit for restoration activities. If successful, this will reduce the permitting burden for restoration projects.

In addition, there are several positive aspects of the permitting process. The joint ERP consolidates the request for an ERP, sovereign submerged lands authorization, and USACE permit into one application. Likewise, the numerous evaluation criteria used in reviewing applications favor restoration projects.

The state's construction control line program provides a strong regulatory tool for limiting construction activities along the ocean-facing sandy beaches. A similar setback or buffer requirement for marshlands could be used to protect the natural processes of wetlands, such as flood protection and water quality enhancement.

## EXISTING SHELLFISH RESTORATION EFFORTS

A. State

- Project GreenShores was constructed using limestone, recycled concrete, wave attenuation devises, and marsh planting to restore greater than 15 acres of estuarine habitat composed of seven acres of oyster reef and eight acres of salt marsh/seagrass habitat. This multi-million dollar habitat restoration and creation project is located in Downtown Pensacola along the urban shoreline of Pensacola Bay and was constructed by FLDEP's Ecosystem Restoration Section with the City of Pensacola, Escambia County, the Ecosystem Restoration Support Organization, the EPA Gulf of Mexico Program, the National Fish and Wildlife Foundation, the US Fish and Wildlife Service, NOAA, Gulf Power, local agencies, businesses, and volunteers.

- Since 1994, the Ecosystem Restoration Section (ERS) of the FLDEP Northwest District has been working to restore coastal habitats throughout the Florida panhandle by creating, restoring, and enhancing coastal dune systems, oyster reefs, salt marsh, and submerged aquatic vegetation. Funding for these activities is provided almost entirely through competitive grants. The ERS Oyster Restoration program (Offer Your Shell To Enhance Restoration; OYSTER) utilizes recycled oyster shell, donated by partner restaurants/seafood suppliers, to restore/create oyster reefs in the Pensacola Bay System. Recycling oyster shell reduces the input of valuable shell into local landfills and

utilizes the resource to restore critical oyster habitat. To date the OYSTER program has recycled 173 tons/6,275 bushels from 28 partner restaurants which have built 11 reefs throughout the Florida panhandle.

B. Non-governmental & Community

- The Oyster Reef Restoration project in Martin and Palm Beach Counties, Florida planted 30 million pounds of culch material. The culch material was composed of fossilized oyster shell, coral, and other similar material. The project was located in the St. Lucie Estuary and the Northwest Fork of the Loxahatchee River. The project was funded by NOAA through the American Recovery and Reinvestment Act of 2009. The main goal of the project was to improve water quality in the St. Lucie Estuary.

- The Nature Conservancy has restored 42 oyster reefs since 2005 from grants funded by TNC, NOAA Community Based Restoration Program, NERRs, State of Florida, and private individuals.

- The Tampa Bay Watch Community Oyster Reef Enhancement Program (CORE) creates oyster bars on spoil banks and on natural shorelines located within Tampa Bay. They typically create the oyster reefs from fossilized oyster shell.

- The University of South Florida created a 600-foot oyster reef in 2005 using fossilized shell, oyster shell, and limestone boulders.

- The MacDill Airforce Base has installed a half-mile oyster reef using oyster domes and oyster shell bags.

- Other oyster restoration projects and programs include the Sarasota Bay Estuary Program, U.S. Coast Guard, Florida Oceanographic Society, New Smyrna Beach Marine Discovery Center, St. Johns River Water Management District, Edgewater Landing Homeowners Association on Indian River, and many others.

# Georgia

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## KEY POLICIES & REGULATIONS

A. Major Laws & Policies

- Georgia Coastal Management Act

Georgia has a state Coastal Management Act that authorizes the Department of Natural Resources (GADNR) to implement the state coastal management program through a variety of policies to guide the public and private uses of land and waters within the coastal area.[39] Coastal area or coastal zone refers to all tidally influenced waters and submerged land seaward to the state's jurisdictional limits and all lands, submerged lands, waters, and

[39] GA. CODE ANN. § 12-5-320 to 12-5-329.

other resources within the eleven coastal counties: Brantley, Bryan, Camden, Charlton, Chatham, Effingham, Glynn, Long, Liberty, McIntosh, and Wayne. As discussed below, the Coastal Marshlands Protection Act and the Shore Protection Act are two important components of the coastal program that relate to oyster and shoreline restoration efforts.

- Coastal Marshlands Protection Act

The Coastal Marshlands Protection Act (CMPA) recognizes the importance of the coastal marshlands and dune systems, including their importance as a buffer against flooding and erosion.[40] Marshlands include any marshland intertidal area, mud flat, tidal water bottom, or salt marsh within the estuarine area of the state, whether or not the tidewaters reach the littoral areas through natural or artificial watercourses. Estuarine area refers to all tidally influenced waters, marshes, and marshlands lying within a tide-elevation range from 5.6 feet above mean tide level and below. Vegetated salt marsh is determined based on the presence of one or more of the fourteen marsh plants included in the law.[41] Because of the importance of coastal marshlands and the difficulty of reconstructing or rehabilitating them once they are damaged by human activity, any activities and structures in the coastal marshlands are regulated to ensure that the values and functions of the area are not impaired.

The Coastal Marshlands Protection Act regulates activities and water dependent structures in jurisdictional marshlands and prohibits any dredge and fill, marsh alteration, or construction without a permit.[42] Projects that require a CMPA permit may include bank stabilizations longer than 500 feet, marinas, community docks, bridges, dredging, and modifications to any such structure. Georgia DNR Coastal Resources Division (GADNR-CRD) oversees marshlands permitting. When considering permit applications, GADNR-CRD must consider the public interest, including preventing harm from increased erosion. Restoration projects will generally require a CMPA permit.

- Shore Protection Act

The Shore Protection Act (SPA) regulates activities in the coastal sand dune system.[43] Protections extend to the dune fields on Georgia's barrier islands, as well as submerged shoreline lands seaward of the dune fields. Because of beach system's importance and the

[40] GA. CODE ANN. § 12-5-280 to 12-5-297.
[41] GA. CODE ANN. § 12-5-282. (salt marsh grass, black needlerush, saltmeadow cordgrass, big cordgrass, saltgrass, coast dropseed, bigelow glasswort, woody glasswort, saltwort, sea lavender, sea oxeye, silverling, false willow, and high-tide bush).
[42] GA. CODE ANN. § 12-5-286.
[43] GA. CODE ANN. § 12-5-230 to 12-5-248.

ease with which it can be irreparably damaged by human activity, only activities in the best interest of the State that do not substantially impair the sand-sharing system may be permitted.

GADNR-CRD oversees permitting under the Shore Protection Act. The Act regulates activities that alter natural topography or vegetation within the jurisdictional beach and shore areas. Jurisdiction extends from the Dynamic Dune Field on land seaward to three miles offshore (the boundary of state jurisdiction). The Dynamic Dune Field is the area between the ordinary high water mark and the first native tree 20 feet tall (or a structure existing before 1979). Where an area is both marshland and dynamic dune field, it is subject to both the Shore Protection Act and the Coastal Marshlands Protection Act.[44]

Projects that require permits include beach renourishment, rock revetments, landscaping, dune crossovers, any new structure or structure modification in the jurisdictional area. Permits are divided into three types based on location and activity. The first category is most relevant to restoration; it covers all shoreline engineering projects taking place on submerged lands, as well as beaches and sand dunes.[45] The project must be temporary in nature, have minimal effects on sand-sharing mechanisms and erosion, and must have no reasonable or viable alternative. If those conditions are met, only low-sloping porous rock structures or techniques that maximize the dissipation of wave energy and minimize shoreline erosion may be used. The second category focuses on beaches, eroding sand dune areas, and areas without stable sand dunes. In those areas, structures are prohibited with the exception of piers and boardwalks. The final category deals with construction of residences, hotels, and similar structures and is of lesser relevance to restoration projects.

- <u>The Revocable License Authority</u>

Under Georgia's revocable license authority, the state may grant permission to use state-owned submerged lands.[46] A Revocable License is needed for any activities occurring on publicly owned lands below the ordinary high water mark. As discussed below, the revocable license is issued as a standard component of several Coastal Marshlands permits, including bank stabilization permits. As the name implies, this license can be revoked if project compliance is not met. Revocable Licenses are issued by the GADNR-CRD.

[44] GA. CODE ANN. § 12-5-286(r).
[45] GA. CODE ANN. § 12-5-239(c).
[46] GA. CODE ANN. § 50-16-42.

B. Estuarine Setbacks & Buffers

In marshlands, a 50-foot buffer must be maintained between the marshland and any upland project. The buffer's purpose is to protect the filling or alteration of the marshlands.[47] Marshlands must remain in their natural vegetated state so as to treat stormwater. Within the marshlands buffer, the only permitted activities are those structures related to stormwater management or pedestrian access. Variances to the 50-foot buffer may be granted at agency discretion if three conditions are met: (1) substantial hardship on applicant, (2) the function and purpose of the buffer can be achieved through alternate means that is protective of water quality, and (3) the smallest practicable encroachment into the buffer is used. In other areas, a 25-foot buffer exists along all state waters, and this buffer is raised to 50-feet along classified trout streams.[48] Again, variances may be granted under certain conditions.

C. Shellfish Harvest & Protections from Resource Extraction

Like other states, Georgia regulates shellfish harvest through gear and season restrictions so as to maintain the optimal condition of the fisheries. Georgia distinguishes between approved growing areas and unapproved growing areas.[49] GADNR oversees the leasing of state owned shellfish beds.[50] These leases give the holder the exclusive right to harvest those shellfish beds.

D. Sanctuaries & Other Protections

Georgia does not have a state managed sanctuary program. State law makes one mention of shellfish management areas defining them as: "a wildlife management area where shellfish, including oysters, are managed by the state or lessees for the propagation of shellfish."[51] However, no other state law or regulation mentions shellfish management areas again.

At the national level, Gray's Reef National Marine Sanctuary is located in Georgia waters and is the only protected reef on the continental shelf off the Georgia coast. There is also the Sapelo Island National Estuarine Research Reserve. GADNR is the steward of this reserve.

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[47] GA. COMP. R. & REGS. 391-2-3-.02(4).
[48] GA. CODE ANN. § 12-7-6.
[49] GA. CODE ANN. § 27-4-193.
[50] GA. CODE ANN. § 27-4-198, § 27-1-2(22).
[51] GA. CODE ANN. § 27-1-2.

Georgia regulations do not have a specific designation for no-harvest zones. But as a practical matter, there are shellfish areas that are not harvested due to the state's limited monitoring resources. Shellfish harvesting areas require water quality monitoring to assure seafood safety and comply with public health requirements. Due to limited resources, the monitoring program is not robust enough to utilize all shellfish harvesting grounds. This can be advantageous to restoration projects because the projects do not have to compete with larger harvesting areas for site locations.

## PERMITTING SHELLFISH & SHORELINE RESTORATION

A. Regulating Agencies

- Georgia Department of Natural Resources (GADNR)
    - Coastal Resources Division (GADNR-CRD)
    - Environmental Protection Division (GADNR-EPD)
- U.S. Army Corp of Engineers (USACE)

B. Permitting Requirements

GADNR-CRD has permitting authority over activities in coastal marshlands and beach areas, including barrier islands and submerged lands. Restoration projects, both oyster reef and alternative shoreline, will need permits from GADNR-CRD because of the project locations. Projects located below the high tide line will require a Revocable License granting permission to occupy state-owned waterbottoms.[52]

CMPA Permitting:

Coastal Marshlands Protection Act permits are issued jointly with the USACE. Applications are reviewed by the Coastal Marshlands Protection Committee.[53] Application materials include a detailed checklist of required items including:

- Project plan showing affected coastal marshlands;
- Copy of deed or written permission from land owner;
- List of adjoining landowners and addresses;
- Letter from local government authority confirming compliance with local zoning requirements; and

[52] GA. CODE ANN. § 50-16-42.
[53] GA. COMP. R. & REGS. 391-2-3-.02.

- Description of alternative sites and why the alternatives were not feasible.[54]

The applicant must also provide a Public Interest Statement, which requires the applicant to state why the project is not contrary to the public interest, with specific consideration given to: (1) impacts to the natural flow of navigational water, (2) whether increased erosion or shoaling will occur, and (3) potential interference with the conservation of fish, shrimp, oysters, crabs, clams, or other marine life, wildlife, or other resource, including water and oxygen supply.[55]

Projects may also require a water quality certification and a certification of compliance with soil and erosion controls. The USACE will determine if a water quality certification is needed. Compliance with soil and erosion controls (such as buffers and stormwater management) is determined by GADNR-EPD. The joint application under the Coastal Marshlands Protection Permit includes a revocable license request and a water quality certification request.[56] Applications must be submitted to: (1) GADNR-CRD, Habitat Management Program, (2) USACE, Savannah District, and (3) GADNR-EPD, Water Protection Branch.

Shore Protection Permit:

For beach areas, a Shore Protection Permit may be required. The Shore Protection Permit contains a similar detailed checklist and has many of the same requirements as the Coastal Marshlands Protection Permit.[57] The Shore Protection Permit includes a request for a revocable license, but is not a joint application with the USACE. The USACE should be contacted separately. Again, the state will not issue a permit unless the activity is in the public interest.

USACE Nationwide Permits:

In some cases, a restoration project may qualify for a nationwide permit (NWP) from the USACE.[58] Bank stabilization projects less than 500 linear feet are allowed under the USACE NWP 13. These projects do not require a Coastal Marshlands Protection Permit. Oyster restoration may also be permitted under NWP 27, which allows for construction of oyster habitat in tidal areas. In these instances, a Pre-Construction Notification must be given to

[54] GA. CODE ANN. § 12-5-286.
[55] *See* CMPA Permit Application, page 7.
[56] Available at: http://www.coastalgadnr.org/msp/ap/marsh.
[57] Available at: http://www.coastalgadnr.org/msp/ap/shore.
[58] Available at: http://www.sas.usace.army.mil/regulatory/Nationwide_Permits.html.

the USACE for all uses of NWP 27 and many uses of NWP 13.[59] Additionally, a pre-construction notification may be required for GADNR-CRD and possibly the GADNR-EPD (if the project will impact the buffer).[60] A revocable license for activities on state-owned submerged lands may also be required.

C. Shoreline Restoration Permitting

- CMPA Permit: issued jointly with USACE permits
    - Exceptions: bank stabilization projects less than 500 linear feet are allowed under USACE NWP 13 and do not require a CMPA Permit.
        - Pre-construction notification may still be required.
    - CMPA Permit Application
        - Includes:
            - Revocable License request
            - Water Quality Certification request

D. Oyster Restoration Permitting

- CMPA Permit: issued jointly with USACE permits
    - Exceptions: USACE NWP 27 allows construction of oyster habitat in tidal areas and does not require a CMPA Permit.
        - Pre-construction notification is required.
    - CMPA Permit Application
        - Includes:
            - Revocable License request
            - Water Quality Certification request

E. Design & Construction

GADNR-CRD typically uses oyster cultch material placed in bags to enhance existing reefs due to soft sediment and to prevent siltation of newly formed reef. They also have used

[59] http://www.sas.usace.army.mil/regulatory/documents/2012_Regional_Conditions.pdf.
[60] The notification form is available here: http://www.sas.usace.army.mil/regulatory/documents/AppendixA_Georgia_DNR_Procedures_and_Notification_Form.pdf.

wood or tree trimmings anchored to the water bottom to encourage oyster recruitment and to reduce erosion rates to potentially support marsh creation. The University of Georgia Marine Extension Service Shellfish Research Laboratory predominantly uses oyster shell and oyster shell bags, although they have conducted some research projects using porcelain and tile to recruit oyster spat. The Sapelo Island National Estuarine Research Reserve has used low profile oyster bags, rock filled gabions, and rock filled gabions with loose oyster shell placed on top of the rock to create a laminate.

F. Research & Conservation Permits

Georgia law does not provide for research or conversation permits. However, an expedited scientific research permit can be approved if the project meets the coastal resource needs previously identified by the Georgia Coastal Management Program. In addition, expedited permits could be approved if the applicant is creating a pilot project and working with key coastal natural resource protection partners. Therefore, like other entities, universities must submit a GADNR-CRD CMPA permit and a USACE NWP application – NWP 13 (bank restoration) or NWP 27 (habitat restoration). If the property is adjacent to land owned by the state, a facilitated approval determination will be granted by GADNR-CRD. The project will still need to be approved by the USACE. If the project is adjacent to private property, the application process will typically take longer.

G. Conservation Leasing

Conservation leasing is not currently utilized in Georgia.[61] Georgia allows for the leasing of shellfish beds as well as state-owned marshlands and waterbottoms. Leasing requirements for state-owned marshlands and water-bottoms focus primarily on marinas and docks and may have limited utility to oyster restoration.[62] A shellfish bed lease grants the recipient the exclusive right to harvest, and likewise, has limited application to oyster restoration efforts.[63] Leasing is done through competitive bidding and overseen by the GADNR.

## LIMITATIONS & CHALLENGES

Certain challenges exist for permitting shellfish and shoreline restoration projects. These issues include coastal property rights, public health concerns, and other key issues arising

[61] Based on interviews.
[62] GA. CODE ANN. § 12-5-287.
[63] GA. CODE ANN. § 27-4-198.

during permitting. This section is concluded with an overall discussion of whether existing laws encourage or discourage restoration efforts.

A. State Owned Submerged Lands

- State Owned Submerged Lands: The state owns the submerged lands underlying navigable tidal waters below the ordinary high water mark, meaning the state owns the foreshore (the strip of land between the high and low water marks).[64]

    - For a period of time, dispute existed over ownership of non-navigable tidelands following the Act of 1902, which purported to grant title of all non-navigable tidelands to the adjacent owners.

    - The Georgia Supreme Court clarified in 1976 that all foreshore and submerged lands under tidewaters were held in trust by the state.[65]

- All lands below the high water mark are held in trust and managed for the public good.

- Public trust rights: includes fishing, passage, navigation, commerce, and transportation.[66]

    - Coastal activities must be in the public interest to be permitted. Particular public interest concerns identified in permitting include impacts to erosion as well as conservation of oysters.

- Leasing of Submerged Lands: Georgia grants a revocable license for use of water bottoms.

B. King's Grants

- Georgia presumptively holds title to the beds of all tidelands within its boundaries, but in limited circumstances marshlands may be held through a king's grant.

[64] Dorroh v. McCarthy, 265 Ga. 750, 462 S.E.2d 708 (1995).
[65] State of Georgia v. Ashmore, 236 Ga. 401, 224 S.E.2d 334 (1976).
[66] GA. CODE ANN. § 52-1-2.

C. Riparian Rights

- Riparian owners along non-navigable tidewaters hold the exclusive right to harvest oysters in adjacent waters.[67]

- Along navigable waters, however, the exclusive right to harvest oysters only extends to the low water mark.[68]

- Acquiring conservation agreements with riparian owners over the non-navigable tidelands restricting oyster harvesting may represent a restoration option.

D. Shifting Property Lines – Accretion & Erosion

- Shorelines migrate as the result of accretion and erosion.

- Successful restoration projects may result in the growth of dry land along the water's edge, known as accretion.

- Traditionally, riparian owners acquire title to gradual accretions above the high water mark.[69]

- While some states distinguish between artificial and natural accretion, Georgia does not appear to have made this distinction.

- Therefore, any accretion resulting from living shoreline installations will accrue to the riparian owner.

E. Public Heath Regulation – Closed Waters

- Public health regulations are not a concern to Georgia restoration projects. Georgia allows and encourages restoration in closed waters.

- Living shorelines are permitted in both open and closed waters, but are not permitted for oyster harvest.

[67] GA. CODE ANN. § 44-8-6.
[68] GA. CODE ANN. § 44-8-7.
[69] Lines v. State, 245 Ga. 390, 264 S.E.2d 891 (1980).

- GADNR-CRD favors reef restoration in historic reef locations, including areas that are or were populated by oysters but are currently closed to harvesting.

- The GEORGIA reef restoration program predominantly constructs their restoration projects in closed waters and does not involve harvest (see Existing Restoration Efforts below).

- Oysters cannot be harvested or consumed unless the water body is delineated for harvest.

F. Key Issues in Permitting

In general, permitting of oyster restoration and alternative shoreline projects have encountered few challenges based on the interviews conducted during the project.

G. Overall Analysis

The Coastal Marshlands Protection Act sets a strong framework for supporting coastal restoration. However, the promotion of restoration activities is not clearly evinced in the regulatory and permitting process. The permitting process includes consideration of habitat interests, such as the no feasible alternatives analysis and the requirement that the project be in the public interest. Yet, the regulations anticipate non-restoration construction projects. Having regulations or exemptions for specific restoration projects would be advantageous and in line with the objectives of the CMPA.

## EXISTING SHELLFISH RESTORATION EFFORTS

GADNR-CRD has been engaged in wetlands work including projects such as marsh dieback, living shoreline implementation, National Wetland Inventory updates, wetland functional assessments, and estuarine wetland condition assessments.[70] The GADNR-CRD is starting to add oyster shell material back onto over-harvested recreational reefs to maintain and improve harvest; as well as, improve coastal water quality, aid in shoreline stabilization, and to increase fish habitat.

The Generating Enhanced Oyster Reefs in Georgia's Inshore Areas (GEORGIA) program is a community based oyster restoration project run by University of Georgia's Marine

[70] From: http://coastalgadnr.org/cm/wet

Extension Program. The program recycles oyster shells from restaurants and has 4 recycling centers, and participates in oyster reef creation and monitoring.[71] Since 2003, the GEORGIA program has used bagged recycled oyster shell to restore approximately 1 acre of oyster habitat coast-wide. Currently, all of the GEORGIA oyster reefs have been installed in closed water sites. The goal of most of the projects is to restore existing oyster reefs, to install new reefs in areas with poor water quality, or to reduce erosion. The projects sites are assessed for accessibility and presence of existing shell to evaluate project need.

The Sapelo Island National Estuarine Research Reserve constructed two living shoreline projects to control erosion on Sapelo Island in the spring of 2010. The projects are protecting 800 feet of shoreline from coastal erosion. One of the projects was experimental designed to enhance future living shoreline designs. The project consisted of three sections, low profile oyster bags, rock filled gabions, and rock filled gabions with loose oyster shell placed on top of the rock to form a laminate. The project has proven to be successful to date, with the low profile oyster bags proving to be a successful method to control erosion. They are continuing to monitor the project sites for not only erosion control but for oyster recruitment, oyster density, and other parameters.

[71] http://www.marex.uga.edu/shellfish/oysterrest.html.

# North Carolina

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## KEY POLICIES & REGULATIONS

A. Major Laws & Policies

- The Coastal Area Management Act

The Coastal Area Management Act (CAMA) is the primary state law aimed at protecting coastal resources, including shellfish habitat. The CAMA establishes a cooperative program between the state and local governments to address coastal land use.[72] The CAMA

[72] N.C. GEN. STAT. § 113A-101, et seq.

recognizes the importance of coastal and estuarine waters and marshes, as well as the increasing pressures of coastal development. Goals of the law include providing a management system designed to preserve the natural system, maintain natural productivity, and guide sustainable coastal development and preservation.

The CAMA applies to activities in all 20 coastal counties of North Carolina. All development in this region requires a permit from the North Carolina Department of Environment and Natural Resources, Division of Coastal Management (NCDENR-DCM). Development is defined broadly to include, among other things, "alteration of the shore, bank, or bottom of the Atlantic Ocean or any sound, bay, river, creek, stream, lake, or canal." [73] This includes shellfish and shoreline restoration. In addition to statewide requirements, local governments must develop local land use plans addressing coastal development, and these plans must be consistent with the policies of the CAMA.[74] Development must comply with the local land use plans.

Under the CAMA, certain areas are designated Areas of Environmental Concern (AEC). AECs are grouped into 4 broad categories: Estuarine & Ocean Systems, Ocean Hazards, Public Water Supplies, and Natural and Cultural Resource Areas.[75] The Estuarine & Ocean Systems category contains the majority of regulations related to marsh and wetland shoreline stabilization, while the Ocean Hazards section includes regulations pertaining to beach nourishment and dune restoration efforts.

The Estuarine & Ocean Systems are divided into 4 subcategories: Coastal Wetlands, Estuarine Waters, Public Trust Areas, and Coastal Shorelines. Coastal Wetlands include any salt marsh or other marsh subject to regular or occasional flooding by tides, including wind tides. However, this does not include hurricane or tropical storm tides. The regulations recognize coastal wetlands "as the first line of defense in retarding estuarine shoreline erosion." Allowable uses of coastal wetlands include wildlife habitat management. Erosion control structures are a secondary allowable use in estuarine waters, with highest priority given to "conservation of estuarine waters and their vital components."[76]

The Coastal Resources Commission within the NCDENR-DCM oversees the permitting process. Although shellfish and shoreline restoration projects are subject to the CAMA permitting process, the Estuarine & Ocean regulations do not contain any provisions specifically relating to restoration. Under the Estuarine & Ocean regulations, specific

[73] N.C. GEN. STAT. § 113A-103(5)(a).
[74] N.C. GEN. STAT. § 113A-109; 15A N.C. ADMIN. CODE 7B.0702.
[75] 15A N.C. ADMIN. CODE 7H.0101, et. seq.
[76] 15A N.C. ADMIN. CODE 7H.0206.

provisions are given for bulkheading and other activities, but no provisions are detailed specifically relating to oyster restoration or shoreline stabilization through living shoreline mechanisms. As discussed below, this can result in restoration projects being subjected to the far more intensive "major permit" process while other identified stabilization efforts may go through a less rigorous general permit process.

B. Estuarine Setbacks & Buffers

The CAMA establishes setback requirements along coastal shorelines for the improvement of water quality. All new development along coastal shorelines must be setback 30 feet landward of the mean high tide line.[77] Water dependent structures, such as piers and boathouses, are exempt from this requirement. Bulkheading is also allowed, although vegetation, sloping riprap, or gabions are required where possible.[78] Other exemptions may apply for residential structures.

Locally, larger buffers may apply. For instance, the North Carolina Department of Water Quality requires a 50-foot buffer from any coastal wetlands along the Neuse[79] and Pamlico[80] Rivers. Residential structures within the 20 coastal counties may qualify for variances from the buffer requirement. To qualify, the property owner must show that there are practical difficulties or unique hardships that prevent compliance with the buffer.[81] A variance runs with the land and will transfer to future property owners.

C. Shellfish Harvest & Protections from Resource Extraction

North Carolina allows shellfish cultivation on leased areas so long as the use is compatible with other public uses (such as navigation, fishing, and recreation). Shellfish extraction is regulated through the means of shellfish harvest (gear types) and the time and place of shellfish harvest (seasons, closed waters). The standard oyster harvesting season is from October 15 to March 31. Acceptable mechanical methods for oystering include: "dredges, stick rakes and other rakes when towed by engine power and patent tongs."[82] Rakes bigger than 12 inches wide or weighing more than six pounds are prohibited. Harvesting within

[77] 15A N.C. ADMIN. CODE 7H.0209(d)(10). Areas designated as ocean hazards (areas along the Atlantic including beaches, frontal dues, inlet lands, and other areas subject to substantial erosion) may be subject to more stringent setback requirements. 15A N.C. ADMIN. CODE 7H.0306.
[78] 15A N.C. ADMIN. CODE 7H.0208(7)(E).
[79] 15A N.C. ADMIN. CODE 2B.0233.
[80] 15A N.C. ADMIN. CODE 2B.0259.
[81] For more information on buffers and variances, see http://portal.ncdenr.org/web/wq/cgeninfo.
[82] 15A N.C. ADMIN. CODE 3I.0101(3)(l & m).

150 feet of a public pier that the North Carolina Department of Marine Fisheries (NCDENR-DMF) has placed culch below is also prohibited.[83]

D. Sanctuaries & Other Protections

- Shellfish Management Areas & Sanctuaries

North Carolina employs shellfish management areas and seed oyster management areas to provide additional shellfish protection. The Fisheries Director of the NCDENR-DMF establishes shellfish management areas.[84] To be designated as a shellfish management area, the area must possess appropriate conditions for shellfish growth, and the manager must use the property: (1) to produce commercial quantities of shellfish, (2) to produce seed for transplanting, or (3) to ***serve as sanctuary*** to increase spawning and disease resistance or to prevent predation. Shellfish restoration projects may qualify for sanctuary designation under this provision.

Once designated as a shellfish management area, certain protections apply, including a prohibition on the use of trawl net, long haul seine net, and swipe net in these areas. Additionally, no shellfish may be removed without a specific directive from the Fisheries Director when the area is closed and posted. The Fisheries Director can prohibit or limit fishing in and around any artificial reef or research sanctuary.[85]

Seed oyster management areas serve a similar purpose and have the same harvest restrictions as shellfish management areas. They are defined as an "open harvest area that, by reason of poor growth characteristics, predation rates, overcrowding or other factors, experiences poor utilization of oyster populations for direct harvest and sale to licensed dealers and is designated by the Marine Fisheries Commission as a source of seed for public and private oyster culture."[86]

- Coastal Habitat Protection Plan

As part of the Fisheries Reform Act of 1997, the Coastal Resources, Marine Fisheries and Environmental Management commissions must develop plans to protect and restore North Carolina's commercial and recreational fisheries. The plan includes habitat protections such as wetlands, nursery grounds, and shellfish beds. The plan was last revised in 2010

[83] 15A N.C. ADMIN. CODE 3K.0102; N.C. GEN. STAT. § 113-207.
[84] 15A N.C. ADMIN. CODE 3K.0103.
[85] 15A N.C. ADMIN. CODE 3I.0109.
[86] 15A N.C. ADMIN. CODE 03I.0101(1)(h). Existing seed oyster management areas are listed in the N.C. Regulations at 15A N.C. ADMIN. CODE 3R.0116.

and now includes considerations of sea level rise, climate change, and management needs. One goal of the plan is to expand habitat protections through the creation of subtidal oyster reef no-take sanctuaries.[87] The 2010 draft plan is available at the One North Carolina Naturally website.

- Ecosystem Enhancement Program

The Ecosystem Enhancement Program is a statewide non-regulatory program within the NCDENR for "the acquisition, maintenance, restoration, enhancement, and creation of wetland and riparian resources that contribute to the protection and improvement of water quality, flood prevention, fisheries, wildlife habitat, and recreational opportunities."[88] The program also coordinates a banking program for wetland and nutrient offsets.

## PERMITTING SHELLFISH & SHORELINE RESTORATION

A. Regulating Agencies

- North Carolina Department of Environment and Natural Resources (NCDENR)
    - Division of Coastal Management (DCM)
    - Division of Marine Fisheries (DMF)
    - Division of Water Quality (DWQ)
- U.S. Army Corps of Engineers (USACE)

B. Permitting Requirements

Oyster restoration and living shoreline projects are both permitted under the CAMA in North Carolina. NCDENR-DCM oversees CAMA permitting. With limited exceptions, most of these projects require a major permit. For shoreline restoration, general permits may be available for certain projects.

The Major Permit Process:

Most projects taking place in North Carolina's Areas of Environmental Concern (the 20 coastal counties) require a CAMA major permit from the NCDENR-DCM. This includes all

[87] 2010 North Carolina Coastal Habitat Protection Plan Draft, Goal 3, page vii, available at: http://www.onencnaturally.org/pages/CHPP_2010_Revision.html.
[88] N.C. GEN. STAT. § 143-214.8.

oyster restoration projects and many alternative shoreline stabilization projects. The agency encourages pre-application meetings with permit applicants. Depending on the project, required permits may include any of the following:

- DCM MP-1 - Every major development must complete the DCM MP-1 general application.
- DCM MP-2 - Shoreline stabilization projects also require the DCM MP-2 permit.
- DCM MP-4 - Structures within public trust areas require the DCM MP-4 permit in addition to the general permit.[89]

Permit applications must also include a variety of additional documentation, such as:

- Workplan drawings
- Project narrative
- Application fee
- Deed
- Consultant or Authorized Agent
- Wetland Delineation Approval
- Adjacent Property Owner Notification
- Stormwater Management Plan Certification
- Ocean and Inlet Hazard notices

General Permits:

The NCDENR-DCM has 5 general permits for estuarine shoreline stabilizations to facilitate permitting of these particular erosion control structures. They are listed below:

- General Permit for the construction of sheetpile sills;[90]
- General Permit for the construction of riprap sills for wetland enhancement and public trust waters;[91]
- General Permit for placement of riprap revetments for wetland protection in estuarine and public trust waters;[92]
- General Permit for construction of groins in estuarine and public trust waters and ocean hazard areas;[93] and

[89] Permit applications are available at: http://dcm2.enr.state.nc.us/Permits/apps.htm.
[90] 15A N.C. ADMIN. CODE 7H.2101.
[91] 15A N.C. ADMIN. CODE 7H.2702.
[92] 15A N.C. ADMIN. CODE 7H.2401.
[93] 15A N.C. ADMIN. CODE 7H.1401.

- General Permit for construction of bulkheads and riprap revetments for shoreline protection in estuarine and public trust waters and ocean hazard areas.[94]

There are no general permits available for shellfish restoration projects. However, the placement of shell material specifically for the purpose of oyster culture is not considered a filling project under the regulations addressing major permits and does not require a CAMA permit.[95] This exception may be useful in permitting oyster reef restoration activities.

Other Permitting Considerations:

Federal permitting components are incorporated into the CAMA major permit, meaning that a separate USACE permit application is not necessary. In ocean hazard areas (mainly beachfront), a hazard notification form may be required. Projects with a land-disturbing potential greater than one acre may require additional stormwater permitting.

C. Shoreline Restoration Permitting

- CAMA Permit: An alternative shoreline restoration project will require either a CAMA General Permit or a CAMA Major Permit.

    - Exemption: Use of vegetative planting for shoreline stabilization does not require a CAMA permit unless there is filling or grading.

    - CAMA General Permit – The following qualify for a general permit:
        - Sheetpile sills;
        - Riprap sills for wetland enhancement and public trust waters;
        - Riprap revetments for wetland protection in estuarine and public trust waters;
        - Groins in estuarine and public trust waters and ocean hazard areas; and
        - Bulkheads and riprap revetments for shoreline protection in estuarine and public trust waters and ocean hazard areas.

    - CAMA Major Development Permit – Needed if the project does not qualify for a general permit
        - Form DCM MP-1 General Application

[94] 15A N.C. ADMIN. CODE 97H.1101.
[95] 15A N.C. ADMIN. CODE 7J.0101.

        - Form DCM MP-2 Excavation and Fill
        - Form DCM MP-4 Structures (if project involves a breakwater or non-rock groin such as a sheetpile)
        - Permit includes federal components:
            - CMZA Consistency Review: Submit Consistency Certification to NCDENR-DCM
            - USACE Nationwide Permit 13 for Bank Stabilization

D. Oyster Restoration Permitting

- CAMA Permit: Oyster restoration projects will require a CAMA Major Permit.

    - Exemption: The placement of shell material specifically for the purpose of oyster culture is not considered a filling project under the regulations addressing major permits.

    - CAMA Major Development Permit
        - Form DCM MP-1 General Application
        - Form DCM MP-2 Excavation and Fill (if project involves fill)
        - Form DCM MP-4 Structures (if project involves a breakwater or non-rock groin such as a sheetpile)
        - Permit includes federal components:
            - CMZA Consistency Review: Submit Consistency Certification to NCDENR-DCM
            - USACE Nationwide Permit 27 for Aquatic Habitat Restoration

E. Design & Construction

Oyster reefs in North Carolina are constructed using primarily loose oyster shell, but shell hash, existing oyster rock, limestone marl, oyster bags, and riprap placed in gabion baskets are also used. Although cultch exists naturally, the NCDENR-DMF Shellfish Rehabilitation Program uses cultch planting to enhance and restore estuarine shell bottom in order to increase oyster spat and hard clam settlement and survival.

Erosion control options for estuarine shoreline stabilization suggested by the NCDENR are land planning, vegetative control, marsh toe protection revetments, sheetpile and rock sills, groins, riprap revetments, and bulkheads. The general permit for construction of rock sill breakwaters and riprap revetments is the most frequently used general permit material to control erosion. In order to use materials other than those allowed by a general permit, an

applicant will have to apply for a major permit. To a limited degree, use of bio logs, railroad timbers, and reef balls has been allowed. However, these types of materials are not generally encouraged.

Typically shellfish restoration or enhancement that is funded by the state is related to re-seeding or adding oyster shell or suitable material to public reefs. The NCDENR-DCM feels that using oyster shell in the proper erosional setting to reduce erosion would be permitted through the general permit for construction of rock sill breakwaters. In order to use oyster shells with this general permit, NCDENR-DCM and the project engineer would have to agree that the wave energy of the site would allow for optimum conditions for oyster settlement success, along with ensuring to a high degree of certainty that the shell will not be moved around by major storms.

F. Research Permits

Non-profit agencies and community oyster restoration projects may obtain research permits to construct research sanctuaries. These reefs are not typically open to public shellfish harvest. The sites are used to conduct research, improve oyster populations, or to enhance water quality. Signage would most likely be installed to keep oystermen from harvesting this area. Fishing in this area would typically be allowed. In addition, the site is unlikely to be located in the most productive oyster waters.

G. Conservation Leasing

North Carolina does not have regulations specifically addressing conservation leasing of water bottoms. However, the state may lease water-bottoms and water columns for shellfish cultivation so long as the lease is in the public interest.[96]

To be eligible for a shellfish cultivation lease, the area must: (1) be suitable for shellfish harvest in commercial quantities, (2) not contain a natural shellfish bed, (3) be compatible with public uses, including navigation, fishing, and recreation, (4) not impinge on the rights of riparian owners, and (5) not include any area designated as closed waters by the NCDENR-DMF. In addition, the lease area cannot be closer than 100 feet from a developed shoreline without consent from the riparian owner. North Carolina does not exclusively limit shellfish bottom leasing to commercial activities. However, leasing includes production and planting requirements that suggest this may not be the ideal mechanism for pursuing conservation leasing.[97]

[96] N.C. GEN. STAT. § 113-202.
[97] 15A N.C. ADMIN. CODE 3O.0201(c).

Water column leases are typically only granted for aquaculture facilities, where recreational boating and fishing might damage equipment in the area. A lease is required because the activity would preclude the public from access to the area. Water column leases are determined on a case-by-case basis.

## LIMITATIONS & CHALLENGES

Certain limitations and challenges exist for permitting shellfish and shoreline restoration projects. These issues include coastal property rights, public health concerns, and other key issues arising during permitting. This section is concluded with an overall discussion of whether existing laws encourage or discourage restoration efforts.

A. State Owned Submerged Lands

- State Owned Submerged Lands: all lands below the mean high tide line are held in trust for the public benefit.

- Public Trust Rights: navigation, swimming, hunting, fishing, recreation, and "the right to freely use and enjoy the State's ocean and estuarine beaches and public access to the beaches."[98]

- Leasing of Submerged Lands: may lease areas for shellfish cultivation or perpetual fisheries franchises;[99] may also lease the water column for aquaculture activities.[100]

    - Because the land is under state ownership, groups wishing to conduct restoration efforts may need permission from the state to use the waterbottoms. This permission is generally granted in the form of a waterbottom lease.

    - In practice, conservation projects led by The Nature Conservancy and the North Carolina Coastal Federation have been largely exempt from leasing

[98] N.C. GEN. STAT. § 1-45.1.
[99] N.C. GEN. STAT. § 113-206.
[100] N.C. GEN. STAT. § 113-202.1. Although state holds title to lands under navigable waters in public trust for use and benefit of all its citizens, state may permit exclusive use of such lands by private individuals, *i.e.,* a franchise, for specific purposes, such as shellfishing. Bryant v. Hogarth, 127 N.C.App. 79 (1997).

requirements, primarily because NCDENR determines the projects to be constructed for the enhancement of the coastal environment.

- A private property owner's lease application would be studied in more detail, to determine if the lease would be created for a restoration use with the actual intention of creating a private use, such as a private fishing or swimming area (thereby excluding the public use). Private uses require a waterbottom lease.

B. King's Grants

- In limited circumstances, private parties may own submerged lands generally by a grant from the king or early state officials. This is commonly referred to as a king's grant.

- In North Carolina, private parties claiming ownership of any submerged land underlying coastal navigable waters or any right to a fishery in those waters were required to register that claim with the State prior to 1970.

- Where a private party can demonstrate ownership of the waterbottom or a perpetual fishery franchise, that person may hold exclusive rights to harvest oysters in that area.[101]

- Perpetual fishery franchises are not transferrable unless approved by the state after public notice and hearing.[102]

C. Riparian Rights

- Waterfront property owners hold riparian or littoral rights to waters directly abutting their land.

- In North Carolina, these rights include the right to access navigable water and the right to construct piers, wharves, or landings.[103]

- Permits for shoreline restoration may include specific conditions stipulating that the project not interfere with riparian rights of neighboring properties.[104]

[101] State ex rel. Rohrer v. Credle, 369 S.E.2d 825 (N.C. 1988).
[102] N.C. GEN. STAT. § 113-202.2.
[103] Newcomb v. County of Carteret, 701 S.E.2d 325 (N.C. Ct. App. 2010).

- A 15-foot buffer, known as a riparian access line, must be left between any structure and the adjacent owner's property line.

- Water bottom and water column leasing may not interfere with the riparian rights of others.[105]

D. Shifting Property Lines – Accretion & Erosion

- Shoreline restoration resulting in artificial accretion may present property boundary complications. Living shoreline installations and shellfish restoration efforts, by their very nature, are designed to reduce erosion. Under some conditions, the restoration may result in the growth of dry land along the water's edge, known as accretion.

- When accretion happens as the result of man-made efforts, the law distinguishes the man-made or artificial accretion from natural accretion.

- Generally, waterfront landowners are not allowed to grow their property by artificial means. A waterfront property owner who consents to an alternative shoreline restoration project along his waterfront may not be able to claim ownership of any newly accreted land.

- The property owner would retain his riparian property rights, including the right to cross the new land to access the water.

E. Public Health Regulation – Closed Waters

- Oyster restoration can occur in closed waters. It has not been limited by public health concerns.

F. Key Issues Arising During Permitting

- Non-governmental agencies and research institutes that install living shoreline or oyster restoration projects that are using oyster shell as a breakwater to control

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[104] See 15A N.C. ADMIN. CODE 7H.2705(q). The sill shall not interfere with the exercise of riparian rights by adjacent property owners, including access to navigation channels from piers or other means of access.
[105] 15A N.C. ADMIN. CODE 3O.0201(4). Cultivation of shellfish in the leased area will not impinge upon the rights of riparian owners.

erosion must apply for a major permit. If the project is only placing loose oyster shell to enhance an oyster reef, no permit should be required. The NCDENR-DMF uses this exemption to restock or seed oyster sanctuaries, but the exemption can be used by other organizations. This exemption is found in the general definitions for the procedures for handling major development permits and states that the placement of shell material specifically for the purpose of oyster culture shall not be considered a filling project.[106] In addition, some living shoreline erosion control projects using oyster breakwaters could potentially use the general permit for construction of riprap sills to facilitate project approval.[107]

- Another concern raised during interviews was that regulatory agencies currently have no accurate way to measure project success for living shoreline and oyster restoration projects. At present, the project success is primarily determined by oyster density and abundance post installation. In the future other ecosystem services monitoring data could be used to document not only the need for oyster restoration, but for near shore living shoreline projects using oyster reefs as breakwaters as well. Some of these ecosystem services could include increasing oyster density and fecundity, increasing invertebrate and vertebrate use, habitat creation, and reduction of shoreline erosion.

- Resource and use conflicts related to offshore rock sills or oyster breakwaters are another concern. Natural resource agencies have been voicing concern with the NCDENR-DCM about evaluating the trade-offs when a sill or breakwater is created. One example is trading shallow bottom nursery habitat for newly created marsh habitat. When structures are placed out in the water, concerns also arise over whether these projects will create an obstacle that might interfere with recreational use or create a navigational hazard. The resource agencies must consider whether the structure allows for ingress or egress for neighboring property owners, as well as what should happen after a major storm event like a hurricane changes the project's intended shape or design. For example, will the permit holder be responsible for reconstructing the project to the original footprint?

    - For instance, one project in North Carolina used oyster shell bags to create an intertidal oyster reef. A tropical storm reshaped the constructed reef and actually enhanced the accumulation of oyster shell habitat. In this situation, the project was located in public protected waters so it was not an issue. However, if the site had been located where individual

[106] 15A N.C. ADMIN. CODE 7J.0102.
[107] 15A N.C. ADMIN. CODE 7H.2702.

property owners were involved, this could have created a dispute between neighboring property owners. A problem could also arise if a neighbor does not want an artificially created or restored oyster shell habitat or marsh on their property.

G. Overall Analysis

In North Carolina, existing regulations present difficulties that may discourage oyster restoration and alternative shoreline restoration efforts. For instance, the CAMA prohibits permanent erosion control structures (breakwater, bulkhead, groin, jetty, revetment, seawall, or any similar structure) on ocean shorelines, but exempts estuarine shorelines from this prohibition.[108] General permit scenarios are often tilted towards these traditional shoreline stabilization means while alternative measures may require the more onerous major permit process. Oyster restoration, likewise, falls into the major permitting process under the CAMA.

With regard to shellfish restoration and oyster reef creation, the state lacks a clear mechanism for seeking a "no-harvest" designation (or similar protection) of NGO-led reef creation (unless the restoration takes place in closed waters). Additionally, regulations addressing leasing water bottoms and water columns are clearly drafted with cultivation in mind, without a clear mechanism for conservation leasing.

## EXISTING SHELLFISH RESTORATION EFFORTS

A. Oyster Sanctuaries

- State

The NCDENR-DMF has established and developed nine Oyster Sanctuaries encompassing 4.6 – 47.7 acres each, totaling 167.9 acres, of which approximately 42.8 acres have substrate for oyster attachment. The sanctuaries are located around Pamlico Sound and constructed of multiple, high profile mounds using mostly Class B Riprap (fossil stone) and the use of shell and seeded shell as part of the research needs. The placement of sanctuaries by NCDENR-DMF has primarily focused on Pamlico Sound due to the large historic loss of oyster reefs in this area, as well as the sizeable amount of oysters in areas

[108] N.C. GEN. STAT. § 113A-115.1.

closed to harvest south of Pamlico Sound by reason of pollution. For a discussion of oyster sanctuary designation and protections, see Sanctuaries & Other Protections above.

- Non-Profit Organizations

Cultch planting sites have been installed in the central and southern region of the state sponsored by various non-profit organizations, a university, and one coastal community. These sites are designated as Research Sanctuaries[109] or Shellfish Management Areas[110] under the proclamation authority of the Fisheries Director. The North Carolina Coastal Federation has sponsored most of the sites. Since 1998, the North Carolina Coastal Federation has partnered with the NCDENR-DMF to restore over 84 acres of oyster reef habitat at 24 sites along the entire coast, including a NOAA American Recovery and Reinvestment Act funded project that resulted in 55 acres at 9 sites.

In addition, the St. James Plantation (golf course community) has built two large reefs (research sanctuaries) in Brunswick County that now serve as spat monitoring stations; the University of North Carolina at Wilmington has research sanctuaries in Spicer Bay/Kings Creek and Everett Bay; Pender Watch and TNC, which have sponsored two sites that will be designated as Shellfish Management Areas in closed shellfish harvesting waters.

B. Oyster Recycling Program

In 2005 and 2006, legislative actions to support Coastal Habitat Protection Plan implementation accelerated the acquisition of cultch material. Those actions included funding for a dedicated shell recycling coordinator, additional public recycling sites, and some important legislation. The shell recycling program had started in 2004 using local coordinators to collect discarded shells from individuals and businesses. Since 2005, contributions have increased each year to nearly 30,000 bushels in 2007. The following statutes also encouraged voluntary shell recycling:

- General Statute 105-130.48: A taxpayer who donates oyster shells to the Division of Marine Fisheries is eligible for a state tax credit of one dollar ($1.00) per bushel of oyster shells donated. This act will remain in effect until tax year 2014.

- General Statute 130A-309.10(f): No person shall knowingly dispose of oyster shells in solid waste landfills.

[109] 15A N.C. ADMIN. CODE 3I.0109.
[110] 15A N.C. ADMIN. CODE 3K.0103.

- General Statute 136-123(b): No landscaping or highway beautification project undertaken by the State may use oyster shells as a ground cover. If the State comes into possession of oyster shells, it shall make them available to the NCDENR-DMF for use in any oyster bed revitalization programs or any other program that may use the shells.

# South Carolina

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## KEY POLICIES & REGULATIONS

A. Major Laws & Policies

- Coastal Tidelands and Wetlands Act

South Carolina manages its coast through the Coastal Tidelands and Wetlands Act (CTWA), also referred to as the state Coastal Zone Management Act (CZMA).[111] Under this authority,

[111] S.C. CODE ANN. § 48-39-10 et seq.

the state developed its Coastal Management Program. South Carolina Department of Health and Environmental Control Office of Ocean and Coastal Resource Management (SCDHEC-OCRM) oversees the coastal program. The coastal program strives to protect sensitive and fragile areas while balancing development needs in South Carolina's eight coastal counties.

The CTWA designates as critical areas all coastal waters, tidelands, beaches, and beach/dune systems between the mean high tide line and the critical line. The "critical line" marks the boundary between the critical areas and non-critical areas. SCDHEC-OCRM sets the critical line. All activities taking place in the critical area (seaward of the critical line) require a permit from SCDHEC-OCRM including restoration efforts.

To regulate development within the critical areas, SCDHEC-OCRM created project standards for activities in tidelands and coastal waters. While these standards do not specifically address restoration projects, measures that favor restoration are included. For instance, wetland activities are restricted to the maximum extent feasible "in nursery areas and shellfish grounds and during periods of migration, spawning, and early development of important sport and commercial species."[112] Likewise, bulkheads and revetments are prohibited where marshlands are providing an adequate erosion buffer and where they may cause detrimental erosion or sedimentation to adjacent property.[113]

With regard to erosion control structures, SCDHEC-OCRM may permit erosion control structures on tidelands and coastal waters so long as the structures are advantageous for the state.[114] Likewise, SCDHEC-OCRM may also permit erosion and water drainage structures on tidelands, submerged lands and waters below the mean high water mark "as it may deem most advantageous to the State for the purpose of promoting the public health, safety and welfare, the protection of public and private property from beach and shore destruction and the continued use of tidelands, submerged lands and waters for public purposes."[115] This authority would allow SCDHEC-OCRM to permit alternative shoreline stabilization measures below the high tide line so long as the project was considered advantageous to the State.

SCDHEC-OCRM has permit authority over all coastal waters and tidelands critical areas, as well as beach and dune systems. When considering permit applications for projects in critical areas, SCDHEC-OCRM is guided by the following considerations:

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[112] S.C. CODE ANN. REGS. 30-12(G)(2)(c).
[113] S.C. CODE ANN. REGS. 30-12(C)(1)(c).
[114] S.C. CODE ANN. § 48-39-120(B).
[115] S.C. CODE ANN. § 48-39-120(F).

- Water dependency of project;
- Project impact to the natural flow of navigable water;
- Impacts to production of fish, shrimp, oysters, crabs, or clams or any marine life or wildlife, or other natural resources in a particular area, including but not limited to water and oxygen supply;
- Project ability to cause erosion, shoaling, or stagnant water;
- Impacts to public access;
- Impacts to endangered species or historical or archeological sites;
- Comparison of economic benefits to preservation benefits;
- Unavoidable adverse environmental impacts;
- Safeguards for avoidable adverse environmental impacts; and
- Impacts to adjacent landowners.[116]

These factors should generally favor permitting of restoration projects, as restoration will have beneficial impacts.

- Beachfront Management Act

The Beachfront Management Act addresses preservation of the beach and dune system with a focus on shoreline erosion and public beach access.[117] The statute defines erosion control devices as bulkheads, revetments, and seawalls. The legislature found that hardened erosion control devices were less effective than anticipated and that hard structures may even cause more harm than good. In the statement of policy, the legislature called for South Carolina to restrict the use of hardened erosion control structures and find more sustainable types of erosion control devices. Implementing regulations identify erosion problems resulting from "a persistent rise in sea level, a lack of comprehensive beach management planning, and poorly planned oceanfront development."[118]

To achieve this goal, South Carolina began a 40-year shoreline retreat policy by establishing a setback line along coastal beaches and inlets. The setback is calculated at 40 times the average annual erosion rate and cannot be less than 20 feet. Erosion zones are created for oceanfront sand dunes and inlets. Along inlets, the setback requirement extends one-half mile upstream. Administrative law judges also have the ability to move the line to accommodate development. Vegetation seaward of the setback line is protected.[119]

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[116] S.C. CODE ANN. § 48-39-150; S.C. CODE ANN. REG. 30-11.
[117] S.C. CODE ANN. § 48-39-250.
[118] S.C. CODE ANN. REGS. 30-1 (C)(4). "Sea level rise in this century is a scientifically documented fact."
[119] S.C. CODE ANN. § 48-39-310.

The policy does not restrict all activities within the setback. For instance, SCDHEC-OCRM allows construction or repair of homes and routine maintenance of existing erosion control structures. These activities do not require a permit but property owners must notify SCDHEC-OCRM in advance. Construction of new seawalls is prohibited but dune restoration is encouraged.[120] Based on the suitability of the site, this law would encourage alternative shoreline stabilization techniques.

B. Estuarine Setbacks & Buffers

South Carolina mandates a setback line along its Atlantic facing beach and dune systems, as discussed above. The setback is part of the Beachfront Management Act's 40-year retreat policy.[121] The setback is calculated at 40 times the annual erosion rate from the baseline (defined above) or at least 20 feet. However, this only applies to oceanfront areas and areas less than one-half mile from the mouth of an inlet. There is no statewide equivalent buffer for estuarine areas.

However, local governments may choose to implement additional buffers or setback requirements. For instance, Charleston County has implemented waterfront development standards that apply to any property that contains or abuts the OCRM Critical Line. Depending on the district, the critical line buffer ranges from 15 to 35 feet, with a building setback of 35 to 50 feet.[122] In Beaufort County, a 50-foot buffer is required along tidal waters and wetlands.[123]

C. Shellfish Harvest & Protections from Resource Extraction

Under the South Carolina Marine Resources Act of 2000, the South Carolina Department of Natural Resources (SCDNR) regulates all saltwater marine resources within the state.[124] South Carolina has 2 classifications of shellfish grounds: State Shellfish Grounds and Public Shellfish Grounds. Shellfish harvesting on state shellfish grounds is regulated through a licensing program. Licenses are issued by the SCDNR. The SCDNR designates harvest area, harvest season, harvest requirements and limit restrictions. A license lasts five years and cannot be for an area larger than 500 acres of bottoms or 100 acres of surface waters.[125]

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[120] S.C. CODE ANN. REGS. 30-13.
[121] S.C. CODE ANN. § 48-39-280.
[122] Charleston Base Zoning Districts, Article 4.22, available at: http://www.charlestoncounty.org/departments/Planning/pdf/CHAPTER4_All.pdf.
[123] Beaufort County Code 106-1616, Sec. 106-1845. - River buffer. The river buffer extends inland 50 feet from all tidal waters and wetlands beginning at the OCRM critical line.
[124] S.C. CODE ANN. § 50-5-20.
[125] S.C. CODE ANN. § 50-5-900.

Commercial oystermen obtain permits for exclusive harvest rights for a particular area. Commercial harvesting is not allowed on public grounds. Shellfish must be replanted after each season. There is a permit available for taking shellfish from public grounds to contribute to this replanting. The SCDNR regulates the recreational harvest of shellfish as well.[126] Other recreational oystermen or ones that cannot obtain a commercial permit due to shortage of available state grounds must harvest from the public oyster grounds.

To mitigate environmental damage from shellfish extraction, SCDNR can base permit issuance on whether or not the applicant has the ability to correct any environmental damage that he may cause.[127] Parties who damage a shellfish harvest area are responsible for the loss in value they have caused the licensee, and if a shellfish ground is closed the licensee must mitigate against any future adverse impact. The appropriate level of mitigation will be determined by SCDNR.[128] Other protections to the resource include the use of seasons and gear restrictions.

In addition to harvesting from state reefs, South Carolina also permits oyster cultivation through aquaculture and mariculture. The state may grant exclusive use of state-owned intertidal or subtidal waterbottoms for this purpose to South Carolina residents.[129] Non-commercial mariculture operations are allowed but limited to riparian owners. Mariculture permits specify what species can be grown and the area where the cultivation occurs. The SCDHEC–OCRM and USACE specify in the permit what type of gear is permissible for harvesting the shellfish. At present, most of the state's mariculture operations are hard clams but there is a growing trend towards oyster culture. There are currently 45 mariculture permits.

D. Sanctuaries & Other Protections

The South Carolina Secretary of Commerce has authority to designate estuarine or marine sanctuaries.[130] Estuarine sanctuaries are defined as research areas while marine sanctuaries refer more loosely to any waters and wetlands area. These areas are managed by the SCDHEC. Under this authority, certain areas have been temporarily designated as research areas. However, there are not any oyster sanctuaries located in the state. There are research reserves, preserves, and protected areas in the coastal region of the state, but not exclusively for the purpose of protecting oyster reefs for enhancement of oyster

[126] S.C. CODE ANN. § 50-5-955.
[127] S.C. CODE ANN. § 50-5-915 (7).
[128] S.C. CODE ANN. § 50-5-920 (C), (D).
[129] S.C. CODE ANN. § 50-5-900.
[130] S.C. CODE ANN. § 48-39-10 (L)(M).

populations, spat, or other ecosystem services. Within South Carolina waters, there is one National Marine Sanctuary at Gray's Reef.

Many areas serve as de facto sanctuaries by virtue of being closed to shellfishing because of SCDHEC Shellfish Sanitation classification. Also, there are oyster beds that have not been designated as shellfish grounds by SCDNR and are therefore not eligible for harvest. These areas are "no-harvest" zones by default. Lastly, SCDNR may regulate the amount of shellfish taken from public grounds and can use this authority to reduce the amount of oysters harvested in a given area.[131]

The state stormwater regulations also include protections for shellfish beds. Developments taking place within 1,000 feet of shellfish beds must demonstrate the ability to store the first 1.5 inches of runoff as a permitting condition. Similarly, new marinas cannot be constructed in shellfish harvesting waters.[132] South Carolina courts have acknowledged the ability to restrict development in instances where the development may substantially interfere with public access to public oyster grounds or reduce the quality of the oyster grounds.[133]

South Carolina also has a coastal monitoring program entitled the South Carolina Estuarine and Coastal Assessment Program (SCECAP). The program monitors estuarine habitats through periodic sampling and reports. While not specifically tied to restoration, the SCECAP program may help inform restoration priorities.[134]

## PERMITTING SHELLFISH & SHORELINE RESTORATION

### A. Regulating Agencies

- South Carolina Department of Natural Resources (SCDNR)
    - Marine Resources Division (MRD)
- South Carolina Department of Health and Environmental Control (SCDHEC)
    - Ocean & Coastal Resource Management (OCRM)

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[131] Coen, et al., *Managing Oysters in South Carolina: A Five Year Program to Enhance/Restore Shellfish Stocks and Reef Habitats Though Shellfish Planting and Technology Improvements*, Technical Report Number 105, at 6, available at: http://www.dnr.sc.gov/marine/pub/Coen2011ShellfishReport.pdf.
[132] S.C. CODE ANN. REGS. 30-12 (E)(1)(c).
[133] Sierra Club v. Kiawah Resort Associates, 318 S.C. 119, 456 S.E.2d 397 (S.C. 1995) (court upheld the Wildlife Department's decision to condition the permitting of 36 docks on the developer's payment of a fee and adoption of a specific management plan to protect the quality of nearby oyster grounds).
[134] For more information, see http://www.dnr.sc.gov/marine/scecap/summary.html.

    - Bureau of Water (Water)
- U.S. Army Corps of Engineers (USACE)

B. Permitting Requirements

SCDHEC-OCRM has permit authority over all coastal waters and tidelands critical areas as well as beach and dune systems.[135] All restoration efforts, both shellfish and shoreline, will require permitting from SCDHEC-OCRM because the projects take place within the coastal critical area. Permit applications fall into two categories: minor activities and major activities. Minor activities are "the construction, maintenance, repair or alteration of any private pier or erosion control structure, the construction of which does not involve dredging."[136] All other activities are considered major activities. Minor activities carry a lower fee schedule than major activities. Living shoreline installations may fall within the minor activity category while oyster reef restoration will be permitted as a major activity.

The Permit Process:

Restoration projects will require a Critical Area and Wetlands Permit from SCDHEC-OCRM. Pre-application meetings are encouraged. Permit applications must also include a variety of additional information including:

- Workplan drawing
- Plat of work area
- Affidavit of ownership or control
- List of adjoining landowners and addresses
- Project narrative
- Copy of Newspaper Public Notice
- Other information such as stormwater management plan, approved freshwater wetland delineation, and cultural resource and endangered species survey depending on project.[137]

Beachfront projects (areas subject to the 40-year retreat policy) must also include a certified copy of a plat that delineates the location of the baseline and setback line on the property. Project standards for coastal islands include dedication of conservation easements to offset environmental impacts of bridge and dock construction.[138]

[135] S.C. CODE ANN. REGS. R. 30-10.
[136] S.C. CODE ANN. REGS. 30-1(D)(34).
[137] S.C. CODE ANN. REGS 30-2.
[138] S.C. CODE ANN. REGS. 30-12(N)(4).

A small number of general permits are authorized under this program. However, estuarine restoration projects do not fall within these categories. In the event that alternative shoreline erosion controls are conducted in the Atlantic beachfront areas, general permits are available for dune vegetation and minor beach renourishment activities.

State and Federal Coastal Zone Consistency:

Under the South Carolina Coastal Zone Management Act, SCDHEC-OCRM reviews all state and federal permits within the 8 coastal counties for consistency with the state's Coastal Zone Management Plan. Restoration projects will require a consistency determination. SCDHEC-OCRM has created a checklist based on activity type.[139] The checklist for Wildlife and Fisheries Management projects includes artificial reef construction. For erosion control projects, the checklist includes additional questions such as consideration of sea level rise, transport of sand, and preservation of the beach profile. A separate checklist is available for areas of special concern such as barrier islands, wetlands, and dunes. It is highly unlikely that restoration projects would fail to meet the consistency requirement.

Stormwater Permitting:

The SCDHEC Bureau of Water oversees stormwater permitting. Any land disturbing activity taking place within one-half mile of coastal receiving waters that involves 2 acres or less of land may seek coverage under the State Construction General Permit prior to beginning activities. Land disturbing activities include clearing, grading, or excavating. For activities larger than 2 acres, a more detailed permitting process is required including construction plans and a stormwater management plan. Oyster reef restoration may not require a stormwater permit but living shoreline installations may, depending on project design.

Other Permitting Concerns:

Shoreline and shellfish restoration also fall under the USACE's wetlands permitting jurisdiction under the federal Clean Water Act. Restoration projects may qualify for Nationwide Permit 27 (aquatic habitat restoration) or Nationwide Permit 13 (bank stabilization). Otherwise, restoration projects will need an individual wetlands permit from the USACE and pre-application meetings are encouraged.

[139] Available at: http://www.scdhec.gov/environment/ocrm/czc.htm.

C. Shoreline Restoration Permitting

- Critical Area Permit: An alternative shoreline restoration project will require a Critical Area Permit, either as a minor or major activity.
    - Critical Area General Permit: Only available for beachfront projects
        - dune vegetation, and
        - minor beach renourishment activities
    - Critical Area Permit Application: For all other restoration projects
- USACE Permitting
    - Nationwide Permit 13 (bank stabilization)
        - Activities permitted under NWP 13 automatically fulfill consistency and stormwater permitting requirements.
    - Individual Permit: If project does not qualify for NWP 13.
        - If stormwater permitting is necessary, may request stormwater permitting under the State Construction General Permit for areas 2 acres or less.

D. Oyster Restoration Permitting

- Critical Area Permit: Oyster restoration projects will require a Critical Area Permit.
- USACE Permitting
    - Nationwide Permit 27 (aquatic habitat restoration)
        - Activities permitted under NWP 27 automatically fulfill consistency and stormwater permitting requirements.
    - Individual Permit: If project does not qualify for NWP 27.
        - If stormwater permitting is necessary, may request stormwater permitting under the State Construction General Permit for areas 2 acres or less.

E. Design & Construction

Materials used for oyster restoration projects include bagged oyster shell, loose oyster cultch, fossilized oyster shell, oyster castles, concrete, and revitalized crab traps. The SCORE program (discussed under restoration projects below) uses primarily bagged oyster shell, and the SCDNR shellfish program uses loose shell on their large-scale oyster restoration projects. These projects include enhancing public shellfish reefs and some mitigation work for the port expansion program. The Nature Conservancy in collaboration with the SCDNR Marine Resources Institute Shellfish Program used oyster castles to reduce erosion and to enhance ecological services such as oyster recruitment and fisheries enhancement.

Restoration using oyster shell on state owned submerged lands in front of single property owner residences is not necessarily promoted at this time for oyster restoration through state run programs. There is some concern that if one property owner receives benefit from the state, for instance from the SCORE program, that other property owners will want the state to install an oyster reef on their property. The SCORE program has been involved in some projects involving a community group or a homeowner associate to construct an oyster reef to protect a community dock or public beach from active erosion.

F. Research & Conservation Permits

Generally, non-governmental agencies and universities would have to fill out a critical area permit application and submit to the SCDHEC-OCRM and the NWP 27 permit to the USACE to conduct an oyster restoration project or alternative erosion control project. However, there is a potential exception for educational institutions and non-governmental agencies.[140] The exception allows for conservation, replenishment and research activities of state agencies and educational institutions as long as the project causes no material harm to the flora, fauna, physical, or aesthetic resources of the area.

SCDNR Marine Resources Institute Shellfish Program uses this exception to conduct large-scale oyster restoration projects. The projects still require a NWP 27 pre-construction notification to the USACE. Likewise, the SCORE restoration program, discussed below, uses this exception to conduct intertidal reef restoration projects. It also submits a pre-construction notification to the USACE under NWP 27, often including multiple projects.

[140] S.C. CODE ANN. § 48-39-130; S.C. CODE ANN. REGS. 30-5.

G. Conservation Leasing

South Carolina does not lease its water bottoms, making conservation leasing currently unavailable. While the state does issue exclusive licenses for shellfish cultivation, there is no clear mechanism to use water bottoms for oyster restoration.[141] However, the existing licensing program establishes a precedent for restricting public use of state owned tidelands in these circumstances. These provisions may be the most easily adaptable to a conservation leasing program or similar licensing mechanism. This would require working with state agencies (particularly SCDNR which oversees management of state submerged lands) to adopt or amend existing regulations to align with these purposes.

## LIMITATIONS & CHALLENGES

Certain limitations and challenges exist for permitting shellfish and shoreline restoration projects. These issues include coastal property rights, public health concerns, and other key issues arising during permitting. This section is concluded with an overall discussion of whether existing laws encourage or discourage restoration efforts.

A. State Owned Submerged Lands

- State Owned Submerged Lands: All lands below mean high tide line along tidal waters[142] are held in trust for the public.[143]

- Public Trust Rights: Includes, among other things: navigation, fishing, sailing, recreation, and use of land on the seashores and seabeds.[144]

    - The state is barred from permitting activity "that substantially impairs the public interest in marine life, water quality, or public access."[145]

- Leasing of Submerged Lands: South Carolina does not have a submerged lands leasing program but it does have a licensing program for activities on state-owned water bottoms.

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[141] S.C. CODE ANN. § 50-5-900; Bonnie E. Allen, *The Viability of Leasing Public Trust Lands for Conservation in South Carolina,* 15 SOUTHEASTERN ENVTL. L.J. 241, 254 (2006).
[142] Port Royal Mining Co. v. Hagood, 9 S.E. 686, 689 (S.C. 1889).
[143] State holds navigable watercourses subject to a public trust, and the state's ownership of public trust resources is generally not alienable. State v. Head, 498 S.E.2d 389 (S.C.App. 1997).
[144] Sierra Club v. Kiawah Resort Ass'n, 456 S.E.2d 397, 402 (S.C. 1995).
[145] McQueen v. S. C. Coastal Council, 580 S.E.2d 116, 119 (S.C. 2003).

- Licensing for shellfish centers on cultivation but may have applicability to reef restoration.

B. King's Grants

- The state presumptively owns all land below the mean high water mark but private parties may occasionally own submerged lands though a king's grant.

- In South Carolina, these grants may be called Lord Proprietors, British Crown, and State grants. To prove ownership, a person must show that there was a specific intent to convey title to submerged land.

- According to a 2011 technical report, there were 13 Grant areas as of 2007, though most had not been thoroughly surveyed for oyster grounds.[146]

- These privately held submerged lands may present an opportunity to partner with landowners in restoration efforts without the need to lease or license waterbottoms from the state.

C. Riparian & Littoral Rights

- In South Carolina, littoral rights are not clearly defined but generally allow for reasonable use of the adjacent tidelands and the right to access the water.[147]

    - Littoral rights do not include an automatic right to wharf out but riparian rights do include right to build docks and piers.

- Riparian owners hold the exclusive right to conduct non-commercial shellfish cultivation in adjacent waters.[148]

- The permission of littoral owners should be sought when conducting nearshore oyster restoration or alternative shoreline projects to alleviate potential concerns.

D. Shifting Property Lines – Accretion & Erosion

- Shorelines migrate as the result of accretion and erosion.

[146] Coen, et al, *supra* note 131 at 7.
[147] Lowcountry Open Land Trust v. State, 347 S.C. 96, 552 S.E.2d 778 (Ct. App. 2001).
[148] S.C. CODE ANN. § 50-5-900.

- Traditionally, riparian and littoral owners acquire title to any land naturally accreted just as the state gains title to eroded lands (as submerged lands).

- Living shoreline installations and shellfish restoration efforts, by their very nature, are designed to reduce erosion. Under some conditions, the restoration may result in the growth of dry land along the water's edge, known as accretion.

- When accretion happens as the result of man-made efforts, the law distinguishes the man-made or artificial accretion from natural accretion.

- In South Carolina, the waterfront property line cannot change through erosion control efforts. Any resulting accretions are owned by the state in trust for the public.[149]

- Consequently, a waterfront owner cannot claim ownership of any accretions resulting from shoreline restoration projects.

E. Public Health Regulation – Closed Waters

- Oyster restoration can occur in closed waters.

- The SCORE program (discussed under restoration projects below), which does community restoration, often works in closed waters.

    - For example, SCORE has already restored or constructed more than 8 acres of shellfish habitat in Charleston Harbor with another 4-5 acres planned in the next few years.

- Working in closed waters may actually provide the restoration project greater protections against future harvesting.

F. Key Issues Arising During Permitting

- Living shoreline and oyster restoration projects must submit a major permit application through the SCDEC-OCRM. If the projects are designed to enhance an oyster reef an exemption could be approved by SCHEC-OCRM and the project could be approved fairly quickly through the USACE for non-governmental agencies and

[149] S.C. CODE ANN. § 48-39-120(B).

educational institutions. Homeowners can face difficulty if they want to create a living shoreline project using an oyster shell breakwater. The property owner might find it easier to be granted approval for more traditional erosion control structures than for an oyster breakwater project. Homeowner associations would have a better chance of approval for a similar project using an oyster breakwater to protect a public beach or marina from shoreline erosion. In addition, assistance could be given from the SCORE program to support the community project.

- Oyster restoration projects involving oyster reefs have been supported and approved by SCDHEC-OCRM and partnered with by SCDNR Marine Resources Institute Shellfish Program in closed waters, but some concerns have been voiced related to spending state funds to support restoration in closed water areas. The question is whether or not it is reasonable to spend money on construction and state personnel to restore or create reefs rather than enhance existing harvestable oyster resources. With outside sources of money that includes grants and money from non-profits; restoration of areas that contain more unsuitable conditions for oyster growth due to pollution would be certainly encouraged to promote a more sustainable oyster industry.

G. Overall Analysis

South Carolina's laws clearly acknowledge the importance of its marine and estuarine resources and the need for their protection. In enacting the Coastal Tidelands and Wetlands Act, the legislature noted that increasing demands on coastal areas "have resulted in the decline or loss of living marine resources, wildlife, nutrient-rich areas, permanent and adverse changes to ecological systems, decreasing open space for public use and shoreline erosion."[150] In response, the state adopted several state policies including the protection, and where possible, restoration of the State's coastal resources.[151] State regulations further detail the value and benefits of coastal tidelands and concerns over erosion related to sea level rise.[152]

However, the state's strongest shoreline protection policies, including the 40-year retreat policy, are found in the Beachfront Management Act. For instance, use of shoreline armoring in the beach/dune system is severely restricted.[153] While these policies in many ways favor alternative restoration techniques, these additional protections apply to the

[150] S.C. CODE ANN. § 48-39-20(B).
[151] S.C. CODE ANN. § 48-39-30(B)(2).
[152] S.C. CODE ANN. REGS 30-1, 30-2.
[153] S.C. CODE ANN. REGS 30-2; S.C. Code Ann. § 48-39-260.

Atlantic facing beach and dune systems with little, if any, application to estuarine restoration. Extending this policy to estuarine shorelines would provide greater support for alternatives like living shorelines.

Permitting procedures provide another opportunity to promote restoration efforts. As previously discussed, the current permitting system generally favors traditional erosion control measures (so long as it does not involve dredging) in estuarine habitats.[154] On the other hand, some restoration like vegetation planting can be permitted under general permits in beach/dune areas. Adopting a general permit for living shorelines, or otherwise simplifying the permitting process, would ease the use of these alternative shoreline stabilization efforts and hopefully encourage use by property owners.

Lack of a submerged lands leasing program presents an additional hurdle to oyster restoration in South Carolina. Many commentators have called for the adoption of a program that would allow for conservation leasing.

## EXISTING SHELLFISH RESTORATION EFFORTS

A. Government Projects

- SCDNR Marine Resources Institute Shellfish Program conducts research, monitoring, and restoration related to the state shellfish resources to provide data and reports, to support the management of the state's commercial and recreational resources. It was documented that from 2002 to 2006, more than 150,000 bushels of oyster shells were planted at 34 sites covering an estimated nine acres. The SCDNR uses funds from the saltwater fishing licenses to plant oyster shell on state managed grounds. As of 2010, the state contains 4,936 acres of live oysters with the largest reef containing 8.7 acres.

- The South Carolina Oyster Restoration and Enhancement program funded through SCDNR restores and enhances oyster habitat by planting recycled oyster shells in the intertidal environment to form new, self-sustaining oyster reefs. This program is a community-based restoration program that uses volunteers to install the oyster bags. Typically most of these projects occur in closed waters. Since 2001, over 400 oyster reefs have been constructed at 44 sites from Hilton Head to Murrells Inlet.

[154] S.C. CODE ANN. REGS 30-2 30-1(D)(34).

- South Carolina Oyster Recycling Program funded through SCDNR provides oyster shells to enhance existing oyster beds. This program is funded by saltwater recreation fishing license sales. There are 25 shell recycling stations in South Carolina.

B. Non-Government Projects

- The Nature Conservancy has conducted a few oyster restoration projects. As a part of one project on Jeremy Island, TNC is testing the efficacy of oyster castles along the shoreline. This project site is managed by TNC and is located on a king's grant site. They have also launched a pilot project to use loose fossilized oyster shell deposited in a managed wetland.

# Federal Laws

Every state manages its coastline uniquely. However, certain federal laws are commonly involved in coastal management. This includes the Clean Water Act, the Coastal Zone Management Act, the Endangered Species Act, and others. This section provides a brief overview of provisions of federal laws that may impact shellfish and shoreline restoration projects.

## CLEAN WATER ACT

The federal Clean Water Act regulates activities in wetlands by regulating dredge and fill activities. The Clean Water Act also addresses stormwater and water quality issues.

**Wetlands Permitting**

- Lead Agency: U.S. Army Corps of Engineers, unless designated to a state agency.
- Permit required for dredge and fill activities in navigable waters of the United States.

- Permit types:
    - Individual Permit (IP)
    - General Permit – Regional (RGP) or Nationwide (NWP)
        - Used for activities that are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effect on the environment.

- Individual Permit (IP):
    - Issued for projects that propose extensive impacts, or impacts to rare or fragile aquatic environments.
    - Generally required for projects whose proposed impacts will be greater than one acre of wetland or stream, but USACE can chose to review any project under an individual permit, regardless of its impact or size.
    - Most detailed and time-consuming wetland permitting process.

- Regional General Permit (RGP):
    - Typically required for projects that fall somewhere between an IP and NWP in terms of their proposed impacts.

- Usually includes provisions intended to protect the environment and resources of a specific region that shares similar interests.

- Nationwide Permit (NWP):
  - A general permit that allows the USACE to authorize activities across the country that cause minimal impact.
  - Permitted activity must satisfy all of the permit conditions, which include compliance with state or regional laws and regulations.
  - NWPs relevant to restoration projects include NWP 13 and NWP 27.

- Nationwide Permit 13: Bank Stabilization
  - Authorizes activities necessary to prevent erosion and stabilize shorelines.
  - Limited to projects no more than 500 feet in length, unless waived by a USACE district engineer citing minimal adverse effects.
  - Permitted activity must also comply with any regional or state laws and regulations.

- Nationwide Permit 27: Aquatic Habitat Restoration, Establishment, and Enhancement Activities.
  - Authorizes activities associated with the restoration, enhancement, and establishment of tidal and non-tidal wetlands.
  - Specifically authorizes the construction of oyster habitat in tidal waters.
  - Permitted activity must also comply with any regional or state laws and regulations.

**Water Quality/Stormwater Permitting**

- Lead Agency: EPA, but generally authority delegated to state agencies.

- Water quality standards:
  - Set by states for each water body based on the designated use of the water body.
  - Used when setting permit limits for pollution discharge permits so that overall water quality standards are maintained.

- NPDES Stormwater Permitting:
  - Applies to activities that result in a discharge into navigable waters from a point source.
  - Regulated based on category, including small construction projects disturbing 1 to 5 acres.

## Coastal Zone Management Act

- Lead Agency: NOAA Office of Ocean and Coastal Resource Management
- The Coastal Zone Management Act (CZMA) encourages states to adopt a legally enforceable coastal management program.
    - Programs vary by state.
- Consistency Requirement: Once state programs are adopted, the CZMA requires federal consistency with state coastal programs.
    - Meaning that federal permits may not be issued unless the permitted activity is consistent with the state's coastal program.
- Consistency review is often incorporated into the state permitting process.

## Rivers and Harbors Act

- Lead Agency: U.S. Army Corps of Engineers
- Protects navigation on U.S. waters by regulating placement of structures.
- Prohibits building any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures without USACE approval.

## Endangered Species Act

- Lead Agencies: U.S. Fish & Wildlife Service & National Marine Fisheries Service
- Prohibits harm to endangered or threatened species, as well as significant habitat modification or degradation.
- Where proposed projects may pose threat to protected species, consultation may be required before a permit can be issued.
    - Consultation Agencies:
        - U.S. Fish & Wildlife Service
        - National Marine Fisheries Service
- Violations may result in civil and criminal charges.

## Magnuson-Stevens Act

- Lead Agency: National Marine Fisheries Service
- Essential Fish Habitat:
    - Regional councils identify essential fish habitat (EFH) for federally managed species.
- Habitat Areas of Particular Concern:
    - High priority areas for conservation and protection, also identified by the regional councils.
- Permitting proposed activities may require consultation with National Marine Fisheries Service if EFH is impacted. Consultation is required when:
    - A federal permit is required or the project is federally funded, and
    - The proposed activity may adversely affect EFH.
        - Can include physical, chemical, or biological changes to the water, injury to the species or habitat, and reduction of quality or quantity of EFH.

## Coastal Barrier Resources Act

- Lead Agency: U.S. Fish & Wildlife Service
- Limits the expenditure of federal money for development on coastal barrier islands.
- Impacted areas identified on map of the Coastal Barrier Resources System.
- Limitations include:
    - The construction or purchase of structure, facility, road, airport, etc., as well as projects to prevent erosion.
- Exceptions:
    - Nonstructural projects for shoreline stabilization that are designed to mimic, enhance, or restore a natural stabilization system.
    - Projects for the study, management, protection, and enhancement of fish and wildlife resources and habitats, including acquisition of fish and wildlife habitats and related lands, stabilization projects for fish and wildlife habitats, and recreational projects.

## State-by-State Comparison Chart

| | Florida | Georgia | North Carolina | South Carolina |
|---|---|---|---|---|
| **Permit Needed for Oyster Restoration** | Environmental Resource Permit | CMPA Permit | CAMA Permit | Critical Area Permit |
| **General Permits or Exceptions for Oyster Restoration** | De Minimus Exemption<br><br>USACE NWP 27 | Projects allowed under NWP 27 do not require a CMPA Permit | Placement of shell for oyster cultch exemption<br><br>USACE NWP 27 | USACE NWP 27 |
| **Permit Needed for Shoreline Restoration** | Environmental Resource Permit | CMPA Permit | CAMA Permit | Critical Area Permit |
| **General Permits or Exceptions for Shoreline Restoration** | De Minimus Exemption<br><br>LSL Exemption (NW District only)<br><br>USACE NWP 13 | Projects allowed under NWP 13 do not require a CMPA Permit | Vegetative Planting Exemption<br><br>Other GPs for sheetpile sills, riprap, groins, and bulkheads<br><br>USACE NWP 13 | Only for beachfront activities<br><br>USACE NWP 13 |
| **Do NGO's need permits for restoration projects?** | Yes | Yes | Yes | Yes, but may qualify for research permit |
| **Statewide Estuarine Setbacks and Buffers** | 50 foot construction setback<br><br>Does not apply to: bays, inlets, rivers, bayous, creeks, passes, and the like | 50 foot buffer along marshlands | 30 feet in coastal areas | Only for Atlantic facing beach and dune systems<br><br>Based on erosion rate, 20 feet minimum |

| | | | | |
|---|---|---|---|---|
| **Oyster Sanctuaries** | Yes | No | Yes | No, but legal authority exists |
| **Oyster Shell Placement in Closed Waters** | Yes, but not encouraged | Yes, but closed waters favored | Yes | Yes |
| **Research Permits** | No | No | Yes, for research sanctuaries | Yes |
| **Conservation Leasing** | Yes | No | May lease waterbottoms but no clear method for conservation leasing | No |
| **Kings Grants** | Yes | Yes | Yes | Yes |

## Appendix 1. Shoreline Management Expert Interviewees

### FLORIDA

- Amy Baldwin Moss, Ecosystem Restoration Section Supervisor for the Florida Department of Environmental Protection North West District
- Mark Berrigan, Bureau Chief, Bureau of Aquaculture Development for the Florida Department of Agriculture and Consumer Services, Division of Aquaculture
- Anne Birch, Marine Conservation Director for The Nature Conservancy Florida Chapter
- Lisa Prather, SLERP Permitting Manager, Florida Department of Environmental Protection Central District
- Mark Thompson, Team Leader, Fisheries Biologist for the NOAA Fisheries Service Panama City Field Office

### GEORGIA

- Tom Bliss, Shellfish Research Director for the University of Georgia Marine Extension Savannah Office
- Brad Gane, Chief of Ecological Services Section for the Georgia Department of Natural Resources Coastal Resources Division
- Dominic Guadagnoli, Leader of the Georgia Department of Natural Resources Shellfish Sanitation Program
- Dorset Hurley, Research Coordinator for the Sapelo Island National Estuarine Research Reserve
- Christi Lambert, Christi Lambert, Director of Marine and Freshwater Conservation for The Nature Conservancy Georgia Chapter

## NORTH CAROLINA

- Brian Boutin, Climate Adaptation Project Director for The Nature Conservancy North Carolina Chapter Outer Banks Office

- Anne Deaton, North Carolina Division of Marine Resources Habitat Section

- Doug Huggett, Manager of the Major Permits and Consistency Unit for the North Carolina Division of Coastal Management

- Lexia Weaver, Coastal Scientist for the North Carolina Coastal Federation

## SOUTH CAROLINA

- Joy Brown, Marine Restoration Specialist for The Nature Conservancy South Carolina Chapter

- Nancy Hadley, South Carolina Department of Natural Resources Shellfish Management Section

- Dr. Peter Kingsley-Smith, South Carolina Department of Natural Resources Marine Resources Research Institute, Shellfish Restoration & Management Section

- Blair Williams, Manager of the Wetland Permitting Section for South Carolina Department of Health and Environmental Control

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