



# Challenges and Solutions to Permitting Living Shoreline Projects

## Lessons Learned from Virginia, North Carolina, and Florida

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## EXECUTIVE SUMMARY

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Despite growing interest and investment in nature-based solutions (NBS) such as living shorelines in the United States, it has been difficult to expand their use. One major hurdle is permitting challenges. Florida, North Carolina, and Virginia are three states where living shoreline installations have increased. We examined what policy conditions exist in these locations to enable project permitting, as well as how to address any remaining hurdles.

This paper summarizes findings from a series of expert conversations and a literature review that investigated specific permitting challenges and suggested actions and reforms that could help improve the living shoreline permitting process. These challenges and recommendations are summarized as follows and, while they are generally applicable, some of the challenges may not apply in every state thanks to some innovative permitting policies. Likewise, some of the recommendations are policy updates that have not yet been attempted, some may need to be adapted based on each state's current permitting policy framework, and others are already being successfully implemented.

### Challenges

1. The criteria for general permits are too restrictive. Thus, many ecologically beneficial projects are pushed into more time-consuming, complex, and expensive individual permit application routes.
2. Living shorelines are often more complicated to permit than shoreline hardening techniques, which encourages the use of shoreline hardening as the path of least resistance for property owners.
3. Greater technical assistance and data are needed for applicants and regulatory staff alike.
4. There is a limited ability to maintain nature-based projects without additional permits.
5. A lack of transparency at the US Army Corps of Engineers District Office Level prevents upfront communication between permit applicants and reviewers.
6. A lack of accountability for agencies to respond to or comment on permit applications in a timely manner drags out the permitting process.

### Recommendations

1. Change how NBS permits are reviewed to ensure that living shoreline permits are reviewed by staff with requisite knowledge of nature-based solutions.
2. Commission more research on living shorelines to ensure permit application criteria and permit review decisions are based on the best available science and are not being overcautious in preventing projects which would be beneficial to the area.
3. Eliminate the regulatory preference for hardened structures and instead encourage or require green infrastructure where feasible, like Virginia's Senate Bill 776.
4. Introduce more permit tracking systems like Virginia PEEP but across all levels of permitting (state, federal, and local). Maximize utility of these systems by hosting training sessions for practitioners on how to use the digital platforms.
5. Set up regionally coordinated joint permit applications that would be reviewed by designated staff that are specifically trained on the best approaches for that region.

## INTRODUCTION:

### WHY EXAMINE NATURE-BASED SOLUTIONS PERMITTING?

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Nature-based solutions, as defined in a 2022 report to the National Climate Task Force, “are actions to protect, sustainably manage or restore natural or modified ecosystems to address societal challenges, simultaneously providing benefits for people and the environment” (White House Council on Environmental Quality, White House Office of Science and Technology Policy, White House Domestic Climate Policy Office 2022). One commonly used nature-based solution in coastal areas is living shorelines.

*Living shorelines* are a method of shoreline stabilization that installs natural elements like marsh grasses, oyster reefs, and rock sills to shorelines. The marsh vegetation and oyster reefs naturally prevent erosion, reduce flooding, absorb wave energy, improve water quality, sequester carbon, and provide wildlife habitat (Davenport et al. 2022). Thus, living shorelines accomplish shoreline stabilization goals while simultaneously providing environmental benefits that hard, engineered structures like seawalls and bulkheads do not.

Though the United States has lost much of its coastal wetlands and marshes to development, these remaining ecosystems provide storm protection functions that are valued at \$23.2 billion each year (Foster et al. 2011). Proactive policies to boost coastal resilience are important because 42% of the US population resides in coastal communities that are important industry centers for tourism, fishing, transportation, and defense (Hilke et al. 2020).

In 2022, President Biden declared that capitalizing on the power of nature-based solutions to protect and restore nature should be an integral part of the United States’ environmental policies. The Biden-Harris administration has already made more than \$8.7 billion available to allow green infrastructure and nature-based projects to boost the nation’s climate resilience and \$8.6 billion for restoring coastal habitats through the Infrastructure Investment and Jobs Act and the Inflation Reduction Act (White House Council on Environmental Quality, White House Office of Science and Technology Policy, White House Domestic Climate Policy Office 2022).

Yet, while there is growing demand and funding for nature-based projects like living shorelines, it has been challenging to scale up their use. One major reason for this is permitting hurdles. This brief summarizes the major takeaways from a series of interviews that examined how these permitting challenges and potential streamlining solutions play out on the ground for living shoreline projects. We spoke to practitioners involved in the permitting process for living shoreline installations in Virginia, Florida, and North Carolina. Florida, Virginia, and North Carolina are among the states leading the nation in the number of living shoreline projects implemented, and this effort was meant to better understand how these states have been so successful and see if there are elements of their approach that other states could emulate (O’Shaughnessy 2020).

## Existing Attempts at Permit Reform and Streamlining

Generally, federal agencies like the US Army Corps of Engineers vet projects for compliance with the Clean Water Act, the National Environmental Policy Act, the Endangered Species Act, the Magnuson Stevens Fisheries Conservation and Management Act, and the National Historic Preservation Act. Then at the state level, resource agencies ensure the projects comply with the Coastal Zone Management Act, Section 401 of the Clean Water Act, local wetlands board rules, and other relevant state laws. Typically, nature-based projects go through both a state-level and federal (Army Corps) review when applying for a permit, but this can vary by state and project size, location, and scope.

### What Makes Permitting Coastal Nature-Based Solutions So Complex?

- **Overlapping statutes:** For coastal areas, overlapping statutes govern what kinds of development or construction projects are allowed. It can be confusing for project proponents to navigate the differences in requirements and jurisdictions between federal-, state-, and local-level regulations. This report does not go into the details of every statute that governs living shoreline projects in each state or list all the required permits, as other resources have done this well.<sup>1</sup> Instead, we highlight what is and isn't working in the existing permitting system and suggest how to improve the permitting process for coastal nature-based solutions.
- **Limited transparency:** Throughout the permit application process there is limited transparency, making it hard for project proponents to predict how long the permit application and approval process will take.
- **Greater review for green projects:** *Green, or nature-based,* projects are often subject to a more in-depth review than traditional, grey infrastructure designs. Permit reviewers are more familiar with shoreline hardening methods and materials because the permitting system was designed for those strategies, not shoreline restoration. Furthermore, to achieve maximal benefits, there are some steps in living shoreline installations that involve activities that the regulatory system is structured to prohibit. For instance, some shorelines require sand fill to elevate marshes, but sediment deposition can trigger additional regulatory review (i.e., CWA Section 404).
- **Submerged aquatic vegetation (SAV):** There is a regulatory proclivity to limit impacts to existing SAV and critical habitat,<sup>1</sup> which limits the potential for restoration activities in certain areas. This has frustrated many restoration workers because while there may be short-term impacts to SAV during living shoreline construction, living shoreline projects ultimately create habitat, unlike hardened shorelines.

There have been calls to reform the permitting process to allow more efficient permitting of living shoreline projects that can enhance resilience. To address some of the permitting challenges, some regions have established general permits, joint permits, or permit tracking systems. While general permits and joint permit applications (JPAs) are a step in the right direction to remove some of the regulatory hurdles for nature-based solutions, there are still aspects of the design and eligibility criteria that pose challenges. For instance, proposed projects near critical habitats, federal channels, or federal special waters often cannot go through the streamlined general permits and must use individual permits. Many of these joint and general permits also have a set list of material and size restrictions to which a proposed project must adhere in order to be eligible. While there is good reason to be cautious and try to avoid negative impacts, these restrictions can limit the effectiveness of a living shoreline. Additionally, this level of caution is uniquely applied to nature-based approaches and not to bulkheads, riprap, seawalls, or other shoreline hardening techniques.

### What are General Permits, Joint Permits, and Permit Tracking Systems?

- *General permits* are applicable for projects that fall within a set of criteria that enables faster review and helps reduce the workload on both applicants and agency staff.
- *Joint permits* are a system where project proponents fill out one permit application that gets forwarded to all the relevant agencies for review.
- *Permit tracking systems* are meant to keep agencies accountable and applicants informed about the progress of their permit applications.

## Nationwide

### Nationwide Permit (NWP) 54

A streamlined general permit application for small-scale living shorelines at the federal level. Some of the important criteria are:

- The living shoreline cannot extend into the water more than 30 ft from the mean low water mark in tidal waters (unless waived by the district engineer.<sup>1</sup>)
- The living shoreline cannot be more than 500 ft in length along the bank (unless the district engineer waives this in a written determination of no more than minimal adverse environmental effects). This general permit is fairly short in length to fill out and, in Florida, involves no application fee.

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<sup>1</sup> In some cases, the district engineer can allow certain shorelines leniency on this rule and waive the requirement in what the Army Corps refers to as a “written determination of no more than minimal adverse environmental effects” (USACE 2022).



## State-Specific

### Virginia

**Group 1 & Group 2 General Living Shoreline Permits.** Group 1 and Group 2 General Living Shoreline Permits are general JPAs issued by the Virginia Marine Resources Commission (VMRC). These JPAs speed up the review process and do not require the project proponent to go through a public hearing. In Virginia, public hearings involve addressing a local wetlands board at their monthly meeting. At these hearings, any citizen can attend and comment on proposed projects (VIMS 2024). This can delay the time it takes for a permit to be approved because the meetings only occur once a month and, if the design needs to be tweaked, the applicant has to wait until the next meeting to get approval once feedback is incorporated.

To submit a JPA, project applicants submit one permit application to the VMRC and the VMRC forwards the application to the local wetland board, if there is one for the locality, as well as the Army Corps and the Virginia Department of Environmental Quality (VIMS 2024). This is different than the previous system in which project proponents filled out multiple permit applications unique to each agency involved in the permit review process. The JPAs thus also lower costs because each permit previously required individual fees. Now, if a project fits within the Group 1 or Group 2 general permit criteria, the application fee is waived.

Both Group 1 and Group 2 JPAs require sand fill and planting for a project to be considered a living shoreline. Group 1 applies to nonstructural projects above mean low water. These are for low-energy environments where shoreline erosion is tidal—not from boat wake. They include elements like sand fill, fiber logs, and fiber mats. The Group 2 JPA can be used for designs that incorporate permanent elements like shell bags, oyster castles, and riprap, in addition to those covered in the Group 1 JPA. Group 2 projects cannot exceed 1.5 miles of fetch.<sup>2</sup> Group 2 permits are not more difficult to obtain but do require more review.

**Permitting Enhancement and Evaluation Platform.** Virginia's Department of Environmental Quality (VA DEQ) launched the Permitting Enhancement and Evaluation Platform (PEEP) in January of 2024 (VA DEQ 2024). PEEP is a publicly accessible platform that introduces transparency and accountability to the permit review process by acting as a central hub where anyone can track VA DEQ, Virginia Energy, and VMRC permits. This program is still new, so its effects are not yet easy to measure.

**Virginia Senate Bill No. 766 Makes it Mandatory to Consider Living Shoreline Options for Shoreline Stabilization.** In January 2020, the Virginia General Assembly passed Senate Bill No. 776, amending the existing statutory guidelines relating to shoreline stabilization in the state. This made living shorelines the mandatory option “unless the best available science shows that such approaches are not suitable.”<sup>3</sup> A clause like this is important because, on some properties, a living shoreline might be incompatible with the property owner's intended uses or otherwise infeasible because of logistics and/or the property's specific size and conditions. While this is not a direct change to permitting, a legal change like this encourages the use of green infrastructure by shifting the system's

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<sup>2</sup> *Fetch* is the technical term for the distance wind travels over open water. Shorelines with larger fetch have more wind-caused wave energy compared to lower fetch shorelines (Hardaway et al. 2017). This is an important measurement for determining what types of design and materials will be the most successful for a specific shoreline.

<sup>3</sup> Virginia General Assembly SB 776: Wetlands Protection; Living Shorelines.

default option for shoreline stabilization to living shorelines where possible. It is important to note that the language describing when a living shoreline is not scientifically suitable is subjective, making a potential loophole for developers to default to traditional shoreline hardening projects. Still, it is helpful to have a clear policy preference for living shorelines to encourage the use of green infrastructure where possible throughout the state.

## North Carolina

### **Coastal Area Management Act (CAMA) General Permits 2100, 2400, and 2700.**

These general permits are issued by the North Carolina Division of Coastal Management (DCM). DCM assigns a field representative to review the permit application, on a delegated authority from the Army Corps. These permits are valid for 120 days and were updated in April 2019. Most living shoreline and coastal nature-based solution projects will fall under permits 2400 and 2700 for marsh toe revetment projects and a general permit for the construction of marsh sills, respectively. Some projects, often in northeastern North Carolina, will have deep enough water to require a vertical structure and would fall under general permit 2100 for sheet pile sills. Each of these general permits are limited to use on projects that do not exceed 500 ft in length, cannot include backfill,<sup>4</sup> and are not constructed over existing SAV or oyster beds. The 2100 and 2700 permits require 5 ft openings along every 100 ft of the structure. The 2100 and 2700 general permits cost \$200 and the 2400 permit is \$400 per application. To see the other unique criteria for each kind of general permit such as the slope, permitted materials, and how far they can extend into waterways see [North Carolina Department of Environmental Quality's Coastal Resources Commission Rules](#) (n.d.).

**Wilmington District's Regional General Permit 1536 for Marsh Sills.** Projects that are eligible under a state CAMA general permit can also receive streamlined federal permitting under the Wilmington District's Regional General Permit (RGP) 1536 for Marsh Sills. This process is easier on applicants than permitting through NWP 54 because, unlike NWP 54, which always requires a preconstruction notification, under RGP 1536 a preconstruction notification is only required in special scenarios, typically when another statute like the Endangered Species Act (ESA) or National Historic Preservation Act is triggered (Shudtz 2024).

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<sup>4</sup> *Backfill* is the term for adding sediment landward of a living shoreline to increase the elevation and achieve a slope suitable for the planting of marsh vegetation.

## Florida

**Statewide Permit Exemption for Small-Scale Living Shorelines from the Florida Department of Environmental Protection.** Florida regulates living shorelines through Environmental Resource Permits (ERPs). Projects that obtain a letter of verification of the exemption from the Florida Department of Environmental Protection (FL DEP) and meet certain criteria (including some listed below)<sup>5</sup> do not require an ERP.<sup>6</sup>

- Fall within 10 ft of the mean high-water mark<sup>7</sup>
- 500 linear feet or less
- Plant native wetland plants appropriate for the site
- Remove any invasive species on the site
- Do not involve depositing sediment fill in wetlands or surface waters unless necessary for a breakwater

## State Programmatic General Permits

State Programmatic General Permits (SPGPs) allow certain shorelines that have met the state exemption criteria to use one general permit instead of submitting two very similar permits to the state and the Army Corps District Office. The SPGPs are submitted to the FL DEP, who reviews them on a limited, delegated authority from the Army Corps. It is not a full delegated authority system though, as DEP triages projects into red, yellow, and green categories based on different project criteria such as the size of the shoreline and proposed materials. Greenlit projects are approved without input from the Corps. Yellow projects are submitted to the Corps, who decide if they wish to be involved or not. Red projects are reviewed by both the Corps and FL DEP. One common reason projects fall into the red category is if the shoreline work would extend beyond a neighboring shoreline.

## PERMITTING CHALLENGES

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Even in regions attempting novel permitting strategies to streamline restoration, there are still some barriers to overcome. The following list of permitting challenges was gathered both from interviewees as well as a literature review. Specific examples of each challenge brought up during interviews in the three focal states are provided.

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<sup>5</sup> 5 FAC 62-330.051(12)(e)

<sup>6</sup> Most living shoreline projects in Florida also require a letter of authorization for using state lands from FL DEP even if they meet the criteria for the ERP exemption.

<sup>7</sup> *Mean high-water* is the average water level at a shoreline during high tides.



## The Criteria for General Permits Are Too Restrictive

Many ecologically beneficial projects are pushed into more time-consuming, complex, and expensive individual permit application routes.

### Examples from NWP 54

- Interviewees indicate a desire for additional flexibility on the 500 linear feet length requirement. This requirement makes larger municipal projects ineligible for the nationwide permit unless they obtain a waiver from the district engineer.
- If a project description uses the term “nourishment” it may not qualify for NWP 54. Permit reviewers should have the flexibility to make site-specific, holistic judgements about whether beach nourishment along with a living shoreline is appropriate. If there is beach nourishment and a living shoreline in Florida, the project must be reviewed by the Florida Department of Environmental Protection Beaches and Inlets division and involves an additional regulatory agency that slows down permit review times.

### Examples from the Florida Small-Scale Living Shoreline Permit Exemption

- The regulatory language protects SAV from impacts, which can prevent the installation of a living shoreline project even when the living shoreline would be arguably more beneficial to the area, especially compared to the effects of putting in a hardened shoreline (Martin 2023). The Florida Living Shoreline Permit Exemption mandates that all elements (both planting and breakwater) must be at least 3 ft from any existing SAV (like seagrass). Sometimes living shoreline designs can be altered to avoid or greatly reduce impacts to these types of vegetation, but interviewees indicate there should be flexibility within the regulatory system to allow for minimal SAV impacts if a living shoreline will be greatly beneficial for preventing erosion and enhancing shoreline stabilization. If there are SAV impacts, the project must go through the individual permit application process and mitigation fees will be involved.
- To qualify for the FL DEP small-scale living shoreline permit exemption, projects must occur within 10 ft from the mean high-water mark.<sup>8</sup> Sometimes, designs can be adjusted to fit within 10 ft of the mean high-water mark. However, in many cases, the most effective design would not be within that range and the property owner would have to apply for a permit. Though this streamlined pathway at the state level exists, it is not as effective at scaling up the use of living shorelines as it could be if the requirements were loosened. Furthermore, the language in the federal NWP 54 mandates that projects cannot extend into the water more than 30 ft from the mean low water mark in tidal waters. Interviewees report that if the FL DEP small-scale living shoreline exemption were rewritten to match this federal requirement, it would allow for a more intuitive design process, where landscape engineers would not have to work within two different arbitrary boundaries.
- To be eligible for a permit exemption for a breakwater in Florida, the project must also simultaneously plant vegetation. While this might appear beneficial, interviewees report that if the planting could occur at a later date (rather than at

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<sup>8</sup> According to [Florida Administrative Code 62-330.051\(12\)\(e\)\)](#)

the time of the breakwater installation), this would lead to projects with higher success rates because one can ensure the breakwater is successful, gauge the amount of sediment accrual, and then the plants' roots could take better hold once protected from wave energy. In some cases, the breakwater is going in to protect existing marsh vegetation, so planting may not be necessary. In other cases, just installing an oyster reef as a natural breakwater is the goal, but because there are no planned plantings, applicants cannot make use of the exemption and would have to go through the lengthy and costly individual permitting process. Having an element of flexibility in the permit would allow for greater efficiency on both fronts.

### Examples from North Carolina CAMA General Permits

- Interviewees report that DCM field representatives want 10 ft gaps every 100 ft of shoreline to allow for fish passage. A 10 ft gap is rather large, so this creates a weaker spot in the shoreline because the grasses behind the gap are not being shielded from wave energy by the sill. There could be flexibility on this length requirement because smaller gaps would still allow for fish passage, while letting less wave energy disrupt the vegetation.
- Like the SAV requirement for the Florida SPGP, living shorelines must be 10 ft away from existing SAV. This can limit the installation of living shoreline projects in some cases, even though living shorelines provide services like water quality improvement that may benefit the SAV. In other cases, the SAV that exists is already degraded and will likely not persist, so installing the shoreline would be better for the watershed from a holistic perspective.
- DCM has emphasized the condition that projects permitted under the CAMA general permits also must protect or restore coastal wetlands, which would restrict the ability to use this streamlined permit to install a living shoreline in front of a bulkhead or existing seawall.

### Compared to Shoreline Hardening Techniques, Living Shorelines are More Complicated to Permit

This encourages the use of shoreline hardening by being the path of least resistance for property owners.

### Example from Florida

Florida's Administrative Code requires all riparian projects to be set back at least 25 ft inside the property owner's riparian rights lines. If a project is being proposed within the 25 ft range, proponents need a letter of concurrence for a setback waiver from adjacent property owners stating they do not have objections or a determination from the Florida Board of Trustees of the Internal Improvement Trust Fund that locating the project in the range is necessary for avoiding impacts to natural resources. Shoreline hardening techniques like bulkheads, seawalls, and riprap are exempt from this rule, making the process for them more seamless.

## Example from North Carolina

Some living shoreline projects are given seasonal construction moratoriums, which limit the window when construction activities can occur to reduce impacts to the migrations of endangered or threatened species. This same construction hiatus does not always apply to the construction of bulkheads and other shoreline hardening measures, which incentivizes their use to shorten project timelines.

## Greater Technical Assistance and Data Are Needed for Applicants and Regulatory Staff Alike

The permit application process is full of dense paperwork that can be daunting or even impossible for an ordinary property owner to fill out without technical assistance from an environmental group or assistance from regulatory staff. For example, South Carolina requires professional drawings to submit a living shoreline permit application.

Furthermore, areas that do not have a joint permit system, like in Virginia, project proponents need permits from different local, state, and federal agencies. These often-confusing permits can overwhelm and discourage property owners from pursuing a living shoreline as opposed to the “default” hardened shoreline management approaches that are much easier to permit and contract for, despite their ecological impacts and diminishing performance over time.

Some areas have also switched from physical paperwork to electronic permitting systems. While these online systems can be good for showing updates more immediately, they are still in the early stages and have some hiccups to work out. For example, North Carolina has started a virtual application only for major or individual permits; it is not yet available for general permits. Furthermore, the landowner has to be the one who virtually initiates the application (even if a contractor or environmental nonprofit is the authorized agent). Interviewees report a few challenges associated with this. Even online, these permit applications can be confusing for property owners and can be challenging for older or less computer-savvy homeowners. Finally, property owners may not consistently check their inboxes for permit status updates. Since the authorized agents do not have direct access to the status information, this can cause delays if the homeowner doesn’t stay on top of application updates.

Many district-level Army Corps offices are understaffed. They see high rates of turnover and newly hired regulatory staff do not always understand the complex watershed-wide benefits that living shorelines provide. Furthermore, coastlines vary greatly even within a state, so shoreline protection approaches are not uniform. These staff need more technical support to make decisions about which shoreline stabilization strategies will actually be successful.

To address some of the concerns with the amount of work and low number of staff, Army Corps offices have started outsourcing permit reviews to other district offices. For instance, some Florida-based permits were sent to the Arkansas office for review. While this is theoretically a good idea to reduce overloads, permit reviewers in Arkansas or other landlocked states may not be as familiar with the coastal processes essential for being able to evaluate a proposed living shoreline design. Greater technical assistance could help solve this problem.

Finally, uncertainties about the impacts of living shorelines on surrounding ecosystems (including fish passage, SAV, neighboring shorelines) have encouraged regulatory rules and guidance that may be overly cautious.

## **Limited Ability to Maintain NBS Projects Without Additional Permits**

Conducting maintenance on a living shoreline can require an additional permit. This is often triggered by the addition of new material or expanding the footprint of the shoreline if the original construction permit is out of date (depending on the state). This means the length of time a permit is valid for matters. In Virginia, permits used to be valid for one year, and project proponents could apply for one-year extensions twice—effectively letting the permit last three years. Yet applying to renew a permit takes time and effort and clogs inboxes for the permit-reviewing agencies. In response, the Virginia Beach district decided to make living shoreline permits valid for three years at the outset. Even still, if there is a storm or major erosion event that requires shoreline maintenance aside from adding new sediment or replacing a core log, a permit would be required to complete that work.

## **Lack of Transparency and Delayed Communications Between State and Federal Agencies, Permit Reviewers, and Applicants Causes Inefficiencies and Bottlenecks**

### **Example from Virginia's Army Corps Norfolk District**

In Virginia, interviewees report close communication with VMRC review staff. Project proponents notify the reviewer of their project plans and even submit initial drawings to get feedback before submitting their Group 1 or Group 2 JPA. This helps the applicant tweak designs early on and makes the official review period shorter. Applicants wish they could do the same with federal project managers, but there is little transparency on who within the Army Corps office reviews specific permit applications. This means proponents cannot contact their project manager upfront to discuss design elements and make necessary adjustments before submitting their application.

### **Example from North Carolina**

North Carolina's DCM gives state resource agencies a 75-day window to review permits. However, there is no consequence for failing to meet this deadline and the agencies instead get an additional 75 days. This means the review window is effectively 150 days and many agencies do not submit their comments back to DCM until the end of the 150-days. This means proponents can be blindsided with a first set of comments only a few days before they expect the permit to be issued and approved. Such late notice of adjustments or additional surveys that the resource agencies may require can be expensive and cause significant delays for the project.

## **SOLUTIONS TO HELP EASE THE PERMITTING PROCESS**

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Permitting process improvement ideas were gathered both from interviewees as well as a literature review.

### **Changes to How NBS Permits are Reviewed**

A separate permit application track could be created only for nature-based, restoration projects. This track would be open to general, individual, and JPAs for green projects, but not to docks, bulkheads, seawalls or other shoreline hardening methods. Permit applications in this track would be reviewed by a designated staff that would receive training on nature-based designs and materials. This could account for variability in permit reviewer familiarity with nature-based projects and increase overall review efficiency.

Trainings and guidance should specify that staff should consider how the living shoreline would enhance the surrounding habitat (i.e., account for the ecosystem services and benefits in the project review). This could help give a more holistic view of the project, especially when considering minor SAV impacts (Restore America's Estuaries 2015). To help with this, regulatory bodies could incorporate a question in the permit application itself for project proponents to describe the benefits the living shoreline is intended to provide in addition to shoreline stabilization and erosion reduction.

### **Commission More Research on Living Shorelines to Ensure Permit Application Criteria and Permit Review Decisions Are Based on the Best Available Science**

Federal, state, and local governments can collaborate with organizations like NOAA Sea Grant, university extension programs, and environmental organizations to conduct long-term studies on the effects of different living shoreline designs and materials. As more of this data has been collected and analyzed, some of the more cautionary size and material restrictions on general permits could be adjusted if long-term studies show no negative impacts on surrounding habitat, SAV, or threatened species.

In addition to more general data collection to inform better living shoreline permit design, site-specific studies of living shoreline suitability for certain regions or waterways should be encouraged. These studies would look at things like typical wave energy, type of sediment, rates of erosion, and other factors and would be used to create biological opinions or assessments that project managers could use to support their decisions in that area.

### **Eliminate the Regulatory Preference for Hardened Structures and Encourage or Require Green Infrastructure Where Feasible**

States can adopt laws like in Virginia that make living shorelines the required method of shoreline stabilization where scientifically suitable.

The disparity in ease to repair or replace bulkheads and seawalls compared to living shorelines should also be corrected. Project proponents should be able to repair and replace living shorelines without needing to go through the permitting process again. A longer-term goal is to work climate and sea-level rise adaptation allowances into permits for living shorelines and green infrastructure projects. If an NBS project needs to be updated to keep up with rising sea levels, then the maintenance could take place without going through additional review first.



In some cases, there are seasonal construction windows for living shorelines to limit impacts to endangered or threatened species migrations. This same construction hiatus should also apply to bulkheads and other shoreline hardening measures.

### **Introduce More Permit Tracking Systems Like Virginia PEEP but Across All Levels of Permitting (State, Federal, and Local)**

More tracking systems would help keep various stakeholders updated on the permit status and identify where bottlenecks are in the permit review system. Interviewees noted this would be particularly helpful for the Army Corps district offices. This is public information, so there are no issues with data privacy.

In May 2024, the Army Corps announced its new online application portal, Regulatory Request System (RRS). RRS, so far, has helpful resources to determine which permits are needed, identify a project's jurisdiction, apply online for a permit, and research mitigation options. However, it does not yet offer a search feature with live permit status updates that is open to the public.

### **Change the Language in Permit Eligibility Requirements, Introducing a Reasonable Amount of Flexibility**

This would help particularly on the length cutoffs seen in many general and JPAs including NWP 54 and Virginia's Group 1 and Group 2 JPAs. If the earlier suggestions, such as training a staff to be familiar with nature-based designs and engineering to review these applications, are incorporated, their judgement should be trusted to decide if a project's intended benefits on the watershed are enough to justify any short-term costs, larger sizes, and other variables.

Another example of how this could help is that in North Carolina, there is a requirement that to make a living shoreline project eligible for the CAMA general permits, it must be proposed to prevent erosion or protect existing coastal wetlands. This limits the ability to permit projects that would create new habitat or add wetlands back into a highly developed area where vegetation has been removed.

### **Set up Regionally Coordinated Joint Permit Applications that Would Be Reviewed by Designated Staff Specifically Trained on the Best Approaches for the Region**

State agencies could create general/regional permits based on the data from [different living shoreline suitability model results](#) (FL FWC 2019). This would mean a lot of the site-suitability work is already done for homeowners, and regulatory staff could have pre-approvals in place. The review team would also be thoroughly familiar with nature-based designs and how they would perform in site-specific conditions. The existing Florida-Friendly Landscaping™ Program from the University of Florida Institute of Food and Agricultural Sciences (IFAS) (2024) could serve as an example for other build-outs.

## **The Importance of Community Outreach and Education Initiatives centered on Coastal Nature-Based Solutions**

Though not a direct change to permitting, we learned both through interviews and the literature review how public education and community outreach is crucial for success in scaling up the use of coastal nature-based solutions. To help with the current lack of familiarity of community members with living shorelines and their unique benefits and adaptability when compared to grey infrastructure, we propose the following to complement permitting reform:

- Provide property owner outreach and technical assistance via a university extension program, Sea Grant, or local environmental organization. Property owners are much more familiar with hardened structures like bulkheads and may not even consider living shorelines as an option unless there is more public education focused on spreading the word about the benefits of living shorelines and other nature-based shoreline stabilization approaches. This outreach should highlight any available public funding as well, so homeowners are not discouraged by the cost of living shorelines.
- The Mississippi-Alabama Sea Grant Consortium proposed sending postcards with educational information and contact information for people who can provide technical assistance to property owners on shorelines (Martin 2023). This could be important in Florida, where many residents may have recently moved from other areas and are unfamiliar with coastal processes first-hand.
- Create resources that allow property owners to see if their property is a good fit for a living shoreline, like Florida Living Shorelines or the VIMS Living Shorelines websites.
- Host trainings to familiarize contractors with the different types of successful living shoreline designs, how they differ based on site specifics, and their benefits. This will make contractors more likely to suggest living shoreline options rather than hardened structures to clients on site visits and consultations.
  - There are already some successful examples. The Chesapeake Bay Landscape Professionals organization hosts a number of training courses and courses on sustainable landscaping, including one centered on living shorelines.

### **The Importance of Community Outreach and Education Initiatives centered on Coastal Nature-Based Solutions (*continued*)**

- Restore America's Estuaries and the North Carolina Coastal Federation, in a cooperative agreement with the EPA, have developed a Living Shorelines Academy. Their goal has been to build out a bank of quality scientific, engineering, and policy information on living shorelines, provide training and educational materials, host in-person trainings, and coordinate further development of these materials.
- Florida Sea Grant has been coordinating the Living Shorelines Training for Marine Contractors throughout the state since 2019. This program educates industry professionals, local governments, and community organizations on living shoreline practices including design and permitting. This is representative of other Sea Grant efforts in the Gulf of Mexico and Atlantic coasts (Martin et al. 2024).
- Where possible, on public lands, living shorelines and other coastal nature-based solutions should be used to boost public exposure and show their effectiveness (Martin et al. 2024).

## **CONCLUSION**

This research explores the current challenges to permitting living shoreline projects, the effectiveness of existing attempts at regulatory reform, and summarizes proposed further suggestions for living shoreline permitting process updates. This report aims to share common permitting challenges and solutions amongst the practitioner and regulatory community to facilitate enhanced use of coastal nature-based and green infrastructure projects. By interviewing people involved across the different stages of a living shoreline project—design, permitting, installation, and maintenance—we identified a broad range of current challenges and ideas for improvements to the regulatory system for restoration projects.

This report intends to help bridge the gap between the current regulatory system and the needs of living shoreline projects. Furthermore, it hopes to make government agencies involved in permitting aware of how they could design, and review permits that anticipate and meet the needs of restoration projects. Streamlining living shoreline projects and other coastal nature-based solutions is not intended to make development projects that will have negative consequences on watersheds easier to permit. Instead, the objective is to level the playing field between green and gray infrastructure projects so that private property owners, restoration groups, and governments can make use of the adaptability and co-benefits associated with the use of nature-based solutions in their attempts to stabilize shorelines and boost the resilience of coastal communities.

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## APPENDIX A. PERMITTING TIMELINES

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### Virginia

Permitting generally takes between two to three months for a Group 1 or 2 JPA, but depends greatly on a variety of factors, including site specifics, the proposed design, and the individual permit reviewer. For example, if the proposed project is within a certain distance from a federal channel or near habitat for species listed under the ESA, it is subject to greater review. Most interviewees said that the permitting process is much easier and less expensive after the 2020 amendments to the JPA. This is especially true for Group 1 projects, which now need only sketch-level approval and do not require an engineering stamp. This means less work needs to be done by project proponents to submit the permit application.

### North Carolina

For CAMA general permits, interviewees report these can be approved in as little as one to three weeks if the field representative can visit the site right away. Sometimes applicants can run into challenges getting ahold of neighbors to sign off on proposed projects, which causes delays. For projects that do not fit within the criteria of the 2400 or 2700 general permit, an individual permit review is required. This is referred to as a *major CAMA permit*, which is a lengthy process involving 14 federal and state agencies in the review. Interviewees report that while these approvals are supposed to take five months, it more often takes roughly a year. One reason this takes so long involves the reality of scheduling meetings with that many attendees—not only the time it takes to get the meeting on the calendar, but also if a permit reviewer misses the meeting, it often results in confusion and more back and forth as the reviewer could misinterpret design specifications and have questions for the project proponents that could have been answered much faster in person. For instance, the recent Cherry Point shoreline project took three years to get its permit approved because of its size and some complications with the fact that it was being conducted on federal property.

### Florida

Interviewees state permit timelines are highly variable, but with some streamlining pathways in place it takes an average of two to three months for a state general permit to be approved. It takes longer for individual permit applications. Federal nationwide permits were reported to take between two to six months and individual or standard permits have a typical timeline of six to nine months. Yet interviewees note that there have been living shoreline permits that have taken one to two years. A combination of factors from project site specifics, proposed materials, proximity to special habitat, and the number of other permits and projects regulatory staff must review all impact the permitting timeline.

## APPENDIX B. OTHER SPECIFIC SOLUTIONS

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The following are solutions that would address permitting process issues specific to each state that came up in our interviews.

### Virginia

- Virginia could work on securing a delegated authority system to reduce the bottleneck at the Army Corps Norfolk District office.

### North Carolina

- North Carolina's DCM should require resource agencies to submit their first comments in the first 75-day period and enforce consequences for failing to meet this deadline. This will help avoid the current pattern where applicants do not receive comments until almost 150 days after submission.
- The North Carolina Coastal Federation should continue its work with its Living Shoreline Policy Working Group and collaborate with DCM to create a programmatic permit that would even further streamline standard living shoreline projects. This is expected to take four to five years but, if successful, could be a great model for other coastal states to replicate.

### Florida

- The Florida small-scale living shoreline exemption language ([FAC 62-330.051\(12\)\(e\)\)](#)) should be modified. It could be rewritten to match the language in NWP 54 (cannot extend into the water more than 30 ft from the mean low water mark in tidal waters). This would allow for a more intuitive design process, where landscape engineers do not have to work within two different arbitrary boundaries.
- To give more equal regulatory footing between living shorelines and hardening techniques, seawalls and bulkheads should no longer be exempt from needing a setback waiver if they fall within 25 ft of the riparian rights line. Alternatively, living shorelines could be added to the types of projects that are exempt.
- Florida could set up a JPA or expand their SPGP program for shorelines that do not fit within the statewide exemption.

## APPENDIX C. ORGANIZATIONS INTERVIEWED AND CONSULTED

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### Virginia

Bay Environmental, Inc.  
Chesapeake Bay Foundation  
Elizabeth River Project  
Lynnhaven River NOW

### North Carolina

Native Shorelines  
North Carolina Coastal Federation

### Florida

Coastal Engineering Consultants, Inc.  
Ecosphere Restoration Institute, Inc.  
Florida Fish and Wildlife Conservation Commission  
Florida Sea Grant  
University of Florida IFAS Extension

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Photo courtesy [Jesse Braud](#).

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