Ecological Restoration Permitting Study Report

Submitted by the Maryland Department of the Environment
Water and Science Administration

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To the Governor and the Maryland General Assembly

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Permitting for Ecological Restoration Projects – Required Study 2024

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Executive Summary

During the 2022 Legislative Session, Maryland passed Chapter 465 (Ch. 465), requiring the Maryland Department of the Environment's (MDE or Department) Wetlands and Waterways Protection Program to conduct a comprehensive study, analysis, and evaluation of ecological restoration permitting in Maryland (Study). Chapter 465 also required the Department to consult and coordinate with a diverse range of stakeholders, conduct outreach to other state programs, and to submit the Study's findings, including legislative and regulatory recommendations, to the Governor and General Assembly by June 1, 2024.

On May 9, 2024, Governor Moore signed into law the Whole Watershed Act (Chapters 558 and 559) making several legislative changes to MDE's permitting process related to stream and floodplain restoration projects and directly addressing several permitting shortcomings identified through the Study consultation process. The Whole Watershed Act expands public notice and community engagement, requires a more holistic analysis of co-benefits from stream and floodplain restoration projects, and mandates post-construction monitoring for a period of 5 years.

Because the Whole Watershed Act addressed several legislative needs identified in development of this Study, MDE considered additional legislative and regulatory recommendations to further improve the permitting landscape for ecological restoration, as well as actions that MDE will implement through its existing authority. The recommendations are summarized below, organized by the focus areas in Ch. 465.

Recommendation and Actions

Focus Area 1 - Define Ecological Restoration in Maryland

- *Recommendation 1A:* **Provide Clarity on the Scope of Ecological Restoration**
    - The General Assembly should adopt the following definition for Ecological Restoration: *"Activities undertaken with the goal of recovering, re-establishing, or enhancing a degraded, damaged, or destroyed ecosystem through:*
        1. *improvements to physical, chemical, or biological characteristics or processes;*
        2. *returning natural or historic functions or services; or*
        3. *protecting or improving resiliency."*
    - MDE will also incorporate the statutory definition of ecological restoration in regulation.
- *Recommendation 1B*: **Create Consistency for Living Shoreline Projects**
    - MDE will update the definition for living shoreline and nonstructural stabilization measures in MDE's regulations to ensure consistency with the Maryland Board of Public Works (BPW) regulations.

Focus Area 2 - Refine the Permit Application and Decision Process

- *Recommendation 2A*: **Align State and Federal Programs**
    - MDE will request that BPW delegate additional living shoreline approval authority to MDE.
    - MDE will seek delegated approval authority from BPW for all tidal projects covered by the U.S. Army Corps of Engineers (USACE) in the Maryland State Programmatic Permit and Nationwide Permit 54 for Living Shorelines.
- *Recommendation 2B*: **Streamline Reviews of Certain Approved Restoration Practices**

    - MDE will develop Regional and Statewide Letters of Authorization, General Permits or Certifications for ecological restoration permits, in line with USACE Nationwide and Regional General Permits.
- *Recommendation 2C:* **Remove Barriers to Scientific Studies**
    - MDE will request that BPW delegate approval authority for permanent scientific instruments through regulation.
    - MDE will request that BPW update its regulations to include a permitting exemption for temporary scientific instruments and studies in tidal wetland systems.
    - MDE will update its regulations to include a permitting exemption waiver for temporary scientific instruments and studies in tidal wetland systems for consistency.

Focus Area 3 - Establish a Regular Evaluation of Regulations

- *Recommendation 3:* **Regulatory Flexibility for Scientific Advancements**
    - MDE will continue to conduct regulatory reviews every 8 years to determine if changes are needed based on scientific advances. Additionally, MDE will implement interim measures if critical changes are identified between regulatory reviews.

Focus Area 4 - Identify Continued Education Needs for MDE and Maryland Department of Natural Resources Staff

- *Recommendation 4*: **Stay Current on Restoration Practices and Ecosystem Effects**
    - MDE will encourage staff participation in external training and scientific conferences.

Focus Area 5 - Ensure Permits are Issued in a Timely Manner

- *Recommendation 5A:* **Clearly Outline State and Federal Regulations for Applicants**
    - MDE will update the Stream Restoration Authorization Checklist at least annually, or as needed to reflect state and federal law and regulation changes.
- *Recommendation 5B*: **Streamline Application Review and Increase Quality Assurance**
    - MDE will continue to coordinate with the Maryland Department of Information and Technology to expand its electronic application platform for non-fee exempt projects.
    - MDE will require any stream or floodplain restoration project applicant subject to the requirements in the Whole Watershed Act to submit a pre-application meeting request to MDE at least 30 days prior to providing public notice to residents and businesses.

Focus Area 6 - Develop a Holistic Review of Permits

- *Recommendation 6:* **Include Environmental Justice Considerations**
    - MDE will expand upon the community engagement requirement of the Whole Watershed Act to include Environmental Justice screening and outreach.

Focus Area 7 - Recommend Changes to Statutes and Regulations

- *Recommendation 7*: **Incentivise Living Shorelines for Private Landowners**
    - MDE will evaluate information received to date to determine whether monitoring and reporting requirements for living shoreline projects can be reduced to years 2, 3, and 5 post-construction without adverse impact to project success.

Focus Area 8 - Identify Any Resource Needs

- *Recommendation 8*: **Evaluate Resource Needs on an Ongoing Basis**
    - MDE will evaluate any additional resource needs on an ongoing basis and coordinate with the Governor's Office on any additional funding or staff needed for successful implementation of the state’s programs.

Background

Chapter 465 of 2022 Requirements

During the 2022 Legislative Session, the Maryland General Assembly passed Chapter 465 (Ch. 465) (House Bill 869, "Wetlands and Waterways Program Division – Permitting for Ecological Restoration Projects – Required Study"), which required MDE Wetlands and Waterways Protection Program (Program) to conduct a comprehensive study, analysis, and evaluation of ecological restoration permitting in Maryland (Study). This law specifically required the Program to include in its Study:

1. State statutes and regulations affecting permitting or completion of ecological restoration projects permitted by the Wetlands and Waterways Protection Program;
2. The permit and permit review process for ecological restoration projects;
3. Opportunities for robust public comment and community review of ecological restoration projects with the goal of assessing whether project goals align with those of the community as well as the scientific justification for a project and its connection to the overall watershed;
4. The average time between project submittal and approval of ecological restoration projects in Maryland as compared to other states; and
5. The efficiency and effectiveness of current Joint Permit Application (JPA) and permit review processes, including counter incentives to watershed-based stream restoration.

The law required MDE to conduct the Study in consultation and coordination with a number of participants including: the Maryland Department of Natural Resources (DNR), representatives from the ecological restoration industry, environmental advocacy organizations, community groups and community-based advocacy environmental organizations, and county governments in Maryland (including environmental policy directors and county sustainability officers). Additionally, the law required MDE to consult with representatives from The University of Maryland Center for Environmental Science Chesapeake Biological Laboratory, the University of Maryland Palmer Lab, and other scientific research centers or laboratories specializing in ecosystem restoration, if available. After completion of the Study, the Program was required to formulate legislative and regulatory recommendations related to the following focus areas:

1. A definition of ecological restoration which incorporates measurable scientific aims including "the reduction of nitrogen, sediment, and phosphorus pollution" and "the improvement of benthic environment as compared with conditions existing at the site of the project during site selection";
2. Recommendations for a separate, distinct permit application and process for watershed-based ecological restoration permits;
3. Development of a schedule for regular evaluation of regulations to determine any necessary changes due to scientific advances;
4. Evaluation of continuing education requirements for relevant staff of MDE and DNR;
5. Recommendations for ensuring permits are issued in a timely manner and any other process improvements;
6. Recommendations for permits to be reviewed holistically in a manner that weighs the benefits of a restored ecosystem over individual resources;
7. Changes to current statutes and regulations that may hinder permitting, the review process, or project implementation for ecological restoration projects which are needed to ensure permitting

efficiency and optimal restoration outcomes; and

8. An analysis to determine if additional staff or resources are needed for the initiation of a new permit process

Ch. 465 required MDE to submit to the Governor and General Assembly a report summarizing Study findings and related recommendations by June 1, 2024. During initial planning for the Study, the Program determined that nontidal wetland restoration, tidal marsh restoration, living shoreline implementation, and stream restoration were all within scope of the Study[1].

To accomplish the requirements of Ch.465, MDE conducted a comprehensive study on ecological restoration and stakeholder engagement. Between October 2022 and February 2024, MDE consulted with Maryland state agencies, federal agencies, local governments, community environmental-based advocacy organizations, non-governmental environmental organizations, and academic representatives through 6 stakeholder meetings. The Department also reached out to 6 mid-Atlantic jurisdictions (including Delaware, North Carolina, Pennsylvania, Virginia, Washington, D.C., and West Virginia) to compare permitting timelines and approaches, and compiled an online library of literature documenting ecological restoration practices and their ecosystem effects. Findings from the Study are summarized below.

2024 Whole Watershed Act

During the 2024 Legislative Session, the Maryland General Assembly passed the Whole Watershed Act (Chapters 558 and 559). The Act revised the statutory requirements for stream and floodplain restoration projects permitting in Maryland. Section 2 of the Whole Watershed Act takes effect on July 1, 2025, and introduces new criteria for these projects. MDE concluded the stakeholder consultation after the Act was passed and considered the Act when developing recommendations for this report.

Key Requirements

- **Defined Terms:** "Limit of clearing" refers to the boundaries for vegetation cutting and clearing. "Limit of disturbance" refers to the boundaries for construction and related activities.
- **Public Notice and Participation:** At 30% design completion, applicants must notify residents and businesses within 200 feet of the project boundary and post public notices at the project site. At 60% design completion, applicants must hold an in-person public meeting with virtual options, providing detailed project information. Applicants also must post application details on their website within 24 hours of submission to MDE.
- **Application Submission Requirements:** Applications must include design reports and drawings, forest stand delineations, responses to MDE's checklist, and public meeting records.
- **MDE Application Assessment for Decision:** MDE will assess degradation criteria and co-benefits such as wildlife habitat, carbon sequestration, and public health. MDE will ensure community notifications and incorporation of BMPs to minimize ecological impacts. MDE will

[1] This study does not include recommendations for the Chesapeake Bay Program Total Maximum Daily Load (TMDL) nutrient and sediment limits crediting protocols or Best Management Practices (BMPs) for implementing the Chesapeake Bay Agreement goals, or crediting under any National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System (MS4) permits or allocations under TMDLs.

ensure that applicants prioritize the use of existing staging areas, limit construction road widths, and minimize forest impacts. MDE's review process will also incorporate a focus on applicants removing nonnative and invasive species.

- **Monitoring:** MDE authorizations for stream restoration will include a condition that the authorized person conduct at least five years of monitoring for stream stability, function, and vegetation viability.
- **Annual Reporting:** By December 1, 2024, and annually thereafter, MDE will report any changes to the Stream Restoration Authorization Checklist to relevant Senate and House Committees.

Chapter 465 Findings & Recommendations

The Study included a comprehensive examination of the regulatory landscape governing restoration projects, encompassing the entire permitting process from pre-application to post-construction monitoring. Key findings are summarized in **BOLD** below, paired with any relevant recommendations.

Focus Area 1 - Define Ecological Restoration in Maryland

Findings

- **Through extensive deliberation across multiple meetings, it was clear that any common definition must include the intention of the project to improve physical, chemical or biological factors, restore some level of ecological function or service, and prevent the further degradation of a system.** Across stakeholder collaboration meetings, it was evident that there was an inconsistent understanding of ecological restoration and associated project types. Without a clear definition for ecological restoration across state agencies and with the public, confusion and miscommunication will persist over what projects are being included in ecological restoration permitting processes.

- **Updating MDE's regulations to incorporate the BPW's living shoreline definition and redefining nonstructural stabilization measures will create consistency and expand permitting authority to MDE for qualifying ecological restoration projects.** Additionally, MDE does not explicitly define living shoreline in its regulations, but includes it under the definition of non-structural shoreline stabilization measure[2]. BPW regulations provide a broader definition of living shorelines[3] compared to the parameters set forth in MDE regulations. Although BPW's definition is more inclusive, MDE's restrictions on qualifying techniques may hinder ecological restoration projects, including living shorelines, as outlined in this Study. By expanding MDE's regulations to align with the BPW, MDE will increase its flexibility to permit diverse living shoreline projects and create consistency across the regulatory landscape.

Recommendations

- *Recommendation 1A:* **Provide Clarity on the Scope of Ecological Restoration**

[2] COMAR 26.24.01.02 : Nonstructural Shoreline Stabilization Measure.
(a) "Nonstructural shoreline stabilization measure" means an erosion control measure that is dominated by tidal wetland vegetation and is designed to preserve the natural shoreline, minimize erosion, and establish aquatic habitat.
(b) "Nonstructural shoreline stabilization measure" includes a living shoreline.

[3] COMAR 23.02.04.03: "Living shoreline" means an approach that uses plants and sand, rock, oyster shell, or other natural materials to protect shoreline and to create, maintain, or enhance habitat.

- The General Assembly should adopt the following definition for Ecological Restoration: *"Activities undertaken with the goal of recovering, re-establishing, or enhancing a degraded, damaged, or destroyed ecosystem through:nationwide*
    1. *improvements to physical, chemical, or biological characteristics or processes;*
    2. *returning natural or historic functions or services; or*
    3. *protecting or improving resiliency."*
- MDE will also incorporate the statutory definition of ecological restoration in regulation.

- *Recommendation 1B*: **Create Consistency for Living Shoreline Projects**
    - MDE will update the definition for living shoreline and nonstructural stabilization measures in MDE's regulations to ensure consistency with BPW regulations.

Focus Area 2 - Propose A Distinct Permit Application and Processes

Findings

- **The BPW delegating MDE the authority to permit all qualifying Nationwide Permit 54 projects and increasing authority for projects that qualify for the Maryland State Programmatic General Permit would better align state and federal programs to streamline permitting.** The State of Maryland and the Federal government both have programs to streamline permitting for living shorelines. At the state level, the BPW has delegated authority to MDE to permit smaller living shoreline projects (less than 500 feet in length and 35 feet channelward)which has a stated goal of a 90-day project review period. The BPW retains authority to review and approve larger projects with a review period of 240 days (no information public hearing held) or 320 days (public information hearing held). At the federal level, the U.S. USACE uses two programs to streamline permitting; the Maryland State Programmatic Permit and the Nationwide Permit 54 for Living Shorelines. The Maryland State Programmatic Permit allows the state to issue the federal permit when it issues the state authorization for certain thresholds of impact with minimal adverse impact. However, some thresholds in the USACE state programmatic permits may exceed the size limits of BPW's delegated authority, despite the minimal level of impacts, and require the extended BPW review.

- **MDE adopting Regional and Statewide Letters of Authorization, general permits or certifications would reduce review times and staff resources for certain approved restoration practices.** Although there is no separate approval category for ecological restoration, MDE has the authority to use permitting tools like Regional and Statewide Letters of Authorization, or general permits and certifications to streamline reviews. MDE could use general permits or certifications, which have been shown to significantly reduce review times in other states, to pre-approve certain types of restoration projects. MDE could also expand these tools to cover certain watershed-based projects, reducing review times significantly.

- **MDE and BPW creating an exemption for temporary scientific research would streamline the process for researchers engaged in temporary activities, fostering innovation and expediting the dissemination of knowledge vital for effective ecosystem restoration.** Scientific studies in tidal habitats are intended to educate and inform future ecological restoration

efforts. However, permitting requirements on research activities create additional barriers. These activities often include the installation of scientific equipment in tidal habitats with minimal impacts to the ecosystem. Recognizing the crucial role scientific research plays in advancing ecological restoration practices, there is a compelling need for the establishment of a permitting exemption. BPW adopted regulations[4] and delegated authority to MDE to permit certain activities in tidal wetlands. To remove barriers to scientific study, MDE will request delegated authority from the BPW for approval of permanent scientific instruments. MDE will also update its own regulations, and request that the BPW update its regulations, to include a permitting exemption for temporary scientific instruments in tidal wetlands.

Recommendations

- *Recommendation 2A*: **Align State and Federal Streamlining Programs**
    - MDE will request that BPW delegate additional living shoreline approval authority to MDE.
    - MDE will seek delegated approval authority from BPW for all tidal projects covered by the USACE in the Maryland State Programmatic Permit and Nationwide Permit 54 for Living Shorelines.
- *Recommendation 2B*: **Streamline reviews of certain approved restoration practices**
    - MDE will develop Regional and Statewide Letters of Authorization, General Permits or Certifications for ecological restoration permits, in line with USACE Nationwide and General and Programmatic Permits.
- *Recommendation 2C*: **Remove Barriers to Scientific Studies**
    - MDE will request that BPW delegate approval authority for permanent scientific instruments through regulation.
    - MDE will request that BPW update its regulations to include a permitting exemption for temporary scientific instruments and studies in tidal wetland systems.
    - MDE will update its regulations to include a permitting exemption waiver for temporary scientific instruments and studies in tidal wetland systems for consistency.

Focus Area 3 - Establish a Regular Evaluation of Regulations

Findings

- **MDE developing an approach to implement out of schedule regulatory changes or interim measures will ensure Maryland's regulatory landscape adapts to any scientific advancements.** Currently, MDE is required to conduct regulatory reviews every 8 years in accordance with State Government Article §§10-130–10-139 and Executive Order 01.01.2003.20. If MDE identifies that critical changes to regulations are needed during the annual checklist reviews, then MDE may pursue changes earlier than the 8-year regulatory reviews or implement interim measures to address the issue until it can be thoroughly reviewed as part of the routine review process.

Recommendations

- *Recommendation 3:* **Regulatory Flexibility for Scientific Advancements**

[4] COMAR 23.02.04

- MDE will continue to conduct regulatory reviews every 8 years to determine if changes are needed based on scientific advances. Additionally, MDE will implement interim measures if critical changes are identified between regulatory reviews.

Focus Area 4 - Identify Continued Education Needs for MDE and Maryland Department of Natural Resources Staff

Findings

- The current science on ecological restoration shows mixed results on the benefits of restoration across a range of restoration techniques and environmental outcomes.

- **MDE and DNR staff attending external trainings and scientific conferences as available would allow the agencies to remain current on the state of ecological restoration and other nature based solutions.** Ongoing efforts such as the Chesapeake Bay Program Scientific and Technical Advisory Committee workshops and the Pooled Monitoring Initiative[5] are essential for improving restoration outcomes and informing future decisions. It is crucial for MDE and DNR staff to stay informed about ongoing research and development in restoration techniques and to understand the effects of different approaches.

Recommendations

- *Recommendation 4*: **Stay Current on Restoration Practices and Ecosystem Effects**
  - MDE will encourage staff participation in external training and scientific conferences.

Focus Area 5 - Ensure Permits are Issued in a Timely Manner

Findings

- **MDE updating the restoration checklist to align with the Whole Watershed Act, removing redundancies, including requirements for Design Reports and Hydrologic and Hydraulic Analyses, and clarifying post-construction monitoring will improve clarity on the permitting process.** Varying federal requirements, shifting to online applications during the COVID-19 pandemic, and changing requirements under the Whole Watershed Act, have made it challenging for applicants to navigate the permitting landscape. In 2016, MDE developed a checklist to streamline the review of stream restoration projects. Applicants must now submit responses to the Department's checklist as part of an application to comply with the Whole Watershed Act. A recent MDE survey confirmed that stakeholders find the checklist useful, prompting updates for better usability and compliance verification. The revised Stream Restoration Authorization Checklist (Version August 1, 2024) is available on MDE's website.

- **MDE adopting an online portal for submitting all ecological restoration permit applications would increase the quality of applications, increase public transparency, and reduce permit review times.** Through outreach to other states, MDE learned that an online application system can dramatically reduce the resources needed to manage applications, increase quality assurance, be better integrated with online data portals and reduce administrative delays by up to several weeks. MDE is currently working with DoIT to implement a modern, scalable solution for online

[5] The Pooled Monitoring Initiative is a research program the Chesapeake Bay Trust implements to answer several key restoration questions related to barriers to watershed restoration project implementation

submission of agency forms with funding available in FY25 through DoIT's Major Information Technology Development Project.

- **MDE requiring applicants to participate in a pre-application meeting would reduce the potential for increased turnaround times, more effectively implement the Whole Watershed Act, and foster earlier communication regarding ecological restoration projects occurring in environmental justice areas and incorporate climate change considerations.** MDE staff identified, through outreach to other states, that pre-application coordination directly impacted the quality of applications, reduced the number of concerns from the regulatory agencies, and improved turnaround times on permit reviews. Most ecological restoration project applicants take advantage of the opportunity for a pre-application meeting, or engage in one of the other resource agency meeting platforms MDE hosts, though these are not mandatory requirements.

Recommendations

- *Recommendation 5A:* **Clearly Outline State and Federal Regulations for Applicants**
    - MDE will update the Stream Restoration Authorization Checklist as needed to reflect state and federal law and regulation changes.
- *Recommendation 5B*: **Streamline Application Review and Increase Quality Assurance**
    - MDE will continue to coordinate with the Maryland Department of Information and Technology to expand its electronic application platform for non-fee exempt projects.
    - MDE will require any stream or floodplain restoration project applicant subject to the requirements in the Whole Watershed Act to submit a pre-application meeting request to MDE at least 30 days prior to providing public notice to residents and businesses.

Focus Area 6 - Develop a Holistic Review of Permits

Findings

- **MDE screening projects for impacts to overburdened or underserved communities would ensure equitable distribution of benefits.** MDE recognizes that expanding public engagement through the Whole Watershed Act will increase public confidence in ecological restoration projects and ensure they are compatible with local community expectations. However, the Whole Watershed Act does not specifically address Environmental Justice during the public engagement process for stream and floodplain restoration. In 2022, MDE adopted an "Environmental Justice Policy and Implementation Plan" to address environmental disparities and ensure fair treatment in environmental decisions. This policy highlights the disproportionate impact of pollution on minority and low-income communities and aims to involve these communities in policy development, permitting, and enforcement, ensuring equitable distribution of environmental benefits. MDE's Environmental Justice (EJ) Screening Tool, developed to inform planning and permitting, calculates an EJ score based on demographic, socioeconomic, and pollution exposure data. MDE has not developed a formal EJ process for wetlands and waterways permitting, but the Program has integrated the EJ Screening Tool into the application screening process to identify

projects where additional outreach and communications may be needed. MDE will continue staff training as necessary through its Office of Environmental Justice.

- **The Whole Watershed Act requires applicants to submit a more detailed and holistic analysis of restoration projects, including co-benefit analysis, forest stand delineation, avoidance and minimization measures to native plants and specimen trees, and limitations on construction impacts.** A comprehensive evaluation is necessary to ensure balanced environmental protection and sustainable development. As described above, MDE anticipates that the Whole Watershed Act will broaden the scope of analysis included in applications and provide staff additional information needed for a more holistic analysis.

- **The Whole Watershed Act requires more robust post construction monitoring, and allows MDE to hold individual restoration projects more accountable to project goals and measures of success.** Historically, MDE has required post-construction monitoring on a case-by-case basis for stream and floodplain restoration projects but began applying monitoring requirements to all projects in 2023. The Whole Watershed Act will require the authorized person to conduct a minimum of five years of monitoring and establishes minimum criteria for monitoring.

Recommendations

- *Recommendation 6:* **Include Environmental Justice Considerations**
    - In coordination with MDE's office of Environmental Justice and as described in the Whole Watershed Act community engagement and outreach will expand.

Focus Area 7 - Recommend Changes to Statutes and Regulations

Findings

- **MDE reducing the obligations to monitor living shorelines can lessen financial barriers to living shorelines implementation for private landowners.** MDE requires applicants to monitor and report on living shorelines and marsh creation projects annually for a period of five consecutive years. Private landowners have viewed these requirements as a disincentive to proposing more ecologically-beneficial shoreline stabilization measures because alternative structural shoreline stabilization practices do not have post-construction monitoring requirements.

Recommendations

- *Recommendation 7*: **Incentivise Living Shorelines for Private Landowners**
    - MDE will evaluate information received to date to determine whether monitoring and reporting requirements for living shoreline projects can be reduced to years 2, 3, and 5 post-construction without adverse impact to project success.

Focus Area 8 - Identify Any Resource Needs

Findings

- **MDE will evaluate the needs on an ongoing basis.** As MDE begins to implement the recommendations in this study, the Department may require additional resources to address both one-time and ongoing changes to the permitting process.

Recommendations

- *Recommendation 8*: **Evaluate Resource Needs on an Ongoing Basis**
    - MDE will evaluate any additional resource needs on an ongoing basis and coordinate with the Governor's Office on any additional funding or staff needed for successful implementation of the state's Programs.

Acknowledgments

Thank you to all of the participants of the Ecological Restoration Permitting Study, programmatic staff from our Mid-Atlantic neighbors, and to the dedicated staff of the Wetland and Waterways Protection Program. Special thanks to Heather L. Nelson and Danielle Spendiff for leading and coordinating the Ch. 465 study for MDE and to Michael Macon, a Maryland Sea Grant Science Policy Fellow, for his assistance in compilation of the study findings and the final report preparation.