

Wetland Program Plans Handbook

*An updated resource to assist states
in developing strategic approaches
for comprehensive wetland programs*

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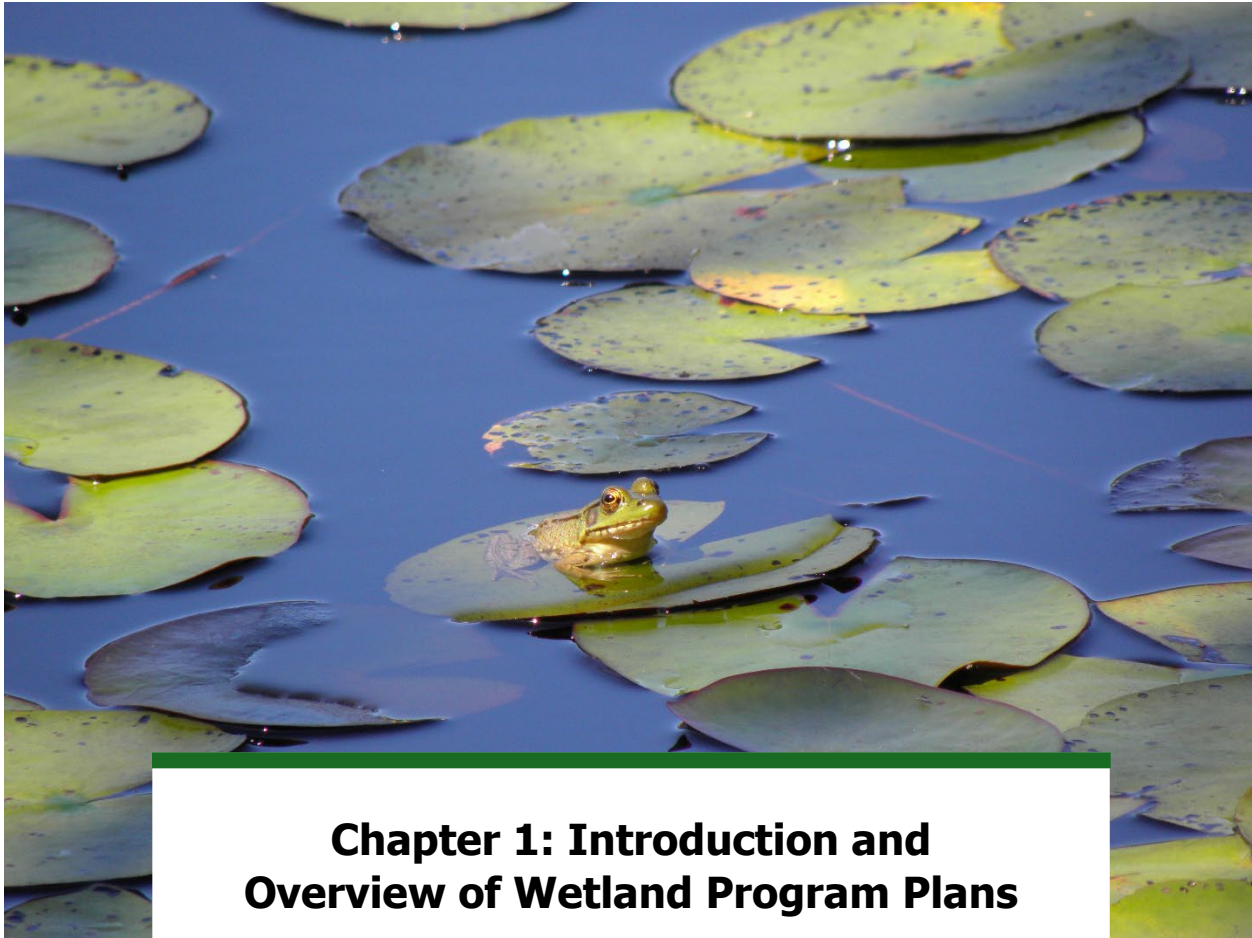
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Chapter 1: Introduction and Overview of Wetland Program Plans

This updated handbook has been developed as part of a project by the National Association of Wetland Managers (NAWM) to provide states and territories with information about how to develop and implement Wetland Program Plans (WPPs), reflecting state experience, best practices, and lessons learned since the original handbook was written in 2013. Since the original handbook, many states and Tribes have developed and implemented WPPs and several territories have expressed interest in developing WPPs. This updated handbook focuses on state experiences, although information in the handbook may be helpful to territories and Tribes as well. Tribal WPPs are the focus of the Environmental Protection Agency (EPA) document “Protecting Waters and Wetlands in Indian Country,” published in December 2022.¹

¹ EPA, “[Protecting Waters and Wetlands in Indian Country: A Guide for Developing Tribal Wetland Management Programs](#),” (December 2022: EPA 840B21005).

The EPA defines WPPs as:

...voluntary plans developed and implemented by state agencies and tribes which articulate what these entities want to accomplish with their wetland programs over time. WPPs describe overall program goals along with broad-based actions and more specific activities that will help achieve the goals.

WPPs provide states with a blueprint for future action and can establish priorities and set short- and long-term program development goals. To be effective, a wetland program plan should be tailored to the unique opportunities and challenges that occur within a given state. Wetland resources and challenges vary dramatically from state to state around the country. State wetland program staff working with their leadership and partners determine the process, priorities, and content of their WPP. Therefore, this handbook does not provide a recipe for developing a wetland program plan. Rather, it provides information about the different components that can be part of a WPP and explores how a state might develop a plan.

This handbook is divided into five major chapters. This chapter provides an overview of EPA's Enhancing State and Tribal Programs (ESTP) initiative and WPPs generally. Chapter 2 focuses on the core elements of a wetland program, as identified by EPA. Chapter 3 explores additional wetland program components that a state may decide to include in their WPP, such as education and outreach programs. Chapter 4 discusses cross-cutting wetland program considerations, such as effectively integrating wetland programs with other state initiatives. Finally, Chapter 5 summarizes key points of the handbook. Footnote references and two handbook appendices provide supplemental information and directs readers to reports, web pages, examples from state WPPs describing activities implementing the Core Elements, and other resources that provide more information.

Introduction to EPA's Enhancing State and Tribal Programs Initiative, the Core Elements Framework, and Wetland Program Plans

In 2007, EPA launched the "Enhancing State and Tribal Programs" (ESTP) initiative. The goal of the ESTP initiative was (and is) to enhance EPA's delivery of technical and financial support for states and tribal wetlands programs. The overall objective is to accelerate program development on a national scale.

Several major areas of activity have occurred since EPA established the ESTP initiative. For example, states, Tribes, and EPA regional offices have increased their interactions on wetland protection efforts. EPA has provided targeted technical assistance to states and Tribes and

The core elements as well as the array of different actions and activities that can occur under each of the core elements are described on EPA's website at: [What is the Enhancing State and Tribal Programs Initiative? | US EPA](#)

aligned the Wetland Program Development Grants (WPDGs) with a framework that incorporates core elements of a WPP. EPA, states, and Tribes have routinely tracked programmatic progress.

One of the more significant areas of activity under the ESTP has been clearly defining the core elements of a WPP. In 2008, EPA worked with a state and tribal workgroup to establish the Core Elements Framework (CEF). The CEF identifies four core elements that comprise a comprehensive wetland program. They are:

1. **Monitoring and Assessment** – gathering data to understand the health and extent of wetlands;
2. **Regulatory Activities** – using regulatory programs to protect wetlands, such as federal Clean Water Act programs and comparable state and tribal laws;
3. **Voluntary Restoration and Protection** – implementing programs that encourage voluntary actions for wetland protection and conservation; and
4. **Water Quality Standards for Wetlands** – setting designated uses and scientific criteria to establish standards to protect the quality of wetlands.

The ESTP and CEF were designed for state and tribal wetland programs that are in the developing stages, but can be useful to all states and Tribes, including those that are refining more mature wetland programs.

In 2023, EPA reorganized and updated the 2008 CEF to reflect current policies and recent experiences. The updated CEF describes the four core elements and provides a menu of program-building activities for each core element to help states and Tribes design their own wetland program. Before each element's menu of activities, the CEF discusses program goals and which phase of program activities to start with based on program status and needs. Specifically, the updated CEF adds language regarding phasing of activities to address a core element: Phase 1, planning considerations; Phase 2, data collection and assessment considerations; and Phase 3, refinement and wetland management decision-making considerations. The CEF also provides a new discussion of WPDGs and WPPs.

EPA has strongly encouraged states and Tribes to develop WPPs. In addition, EPA has recommended linking WPPs to work done under WPDGs. EPA and other federal agencies have been required in recent years to demonstrate outputs and outcomes gained from grants, to support continuation of grant funding by Congress.² State and tribal wetland program plans provide both the opportunity for comprehensive program development and the ability to measure progress in attaining identified goals and objectives over time

² EPA has redesigned its online Wetland Grants Database, creating a more transparent and user-friendly resource for states, Tribes, territories, local partners, nonprofits, and researchers to discover approaches used by wetland grant projects across the country. [Wetland Grants Database](#).

(outputs and outcomes). Analysis of existing programs indicates that states with strategic plans have found them to be effective in guiding and prioritizing program development.

What are Wetland Program Plans?

WPPs are plans developed by states and Tribes, that describe both overall wetland program goals and specific activities to help achieve those goals. Although not required, EPA strongly recommends state and tribal wetland programs develop WPPs. WPPs do not need to be elaborate documents. An effective WPP can be a concise list of planned actions to help create a focused and sustainable wetland program. EPA Regional offices review WPPs to ensure they contain certain minimum components. Plans approved by EPA are published on the Agency's web page, and a state's application for a WPDG is considered in the first tier of applications, increasing its likelihood of receiving funding.

Existing State and Tribal Wetland Program Plans are available at: [State and Tribal Wetland Program Plans | US EPA](#)

WPPs should include five minimum components described in a 2009 EPA memorandum as being necessary to establish a focused and sustainable wetland program. These necessary components include:

1. An overall goal statement for the program over the time period covered by the WPP.
2. An overall timeframe for the WPP, with a minimum timeframe of three years and a maximum of six years, starting from the time of plan submittal to EPA.
3. A list of actions consistent with the CEF that the program intends to carry out over the WPP timeframe, and which, if collectively met, will accomplish overall plan goal(s).
4. An intended schedule for the achievement of each action.
5. A listing of more specific activities to be accomplished under each action.³

WPPs need not include activities addressing all four core elements, although many state plans do. The CEF is comprehensive so that states can choose the array of actions and activities that are best suited to their goals and available resources. EPA recognizes that program development and implementation activities will continue to be incremental and

³ EPA Memorandum from David Evans, EPA Wetlands Division Director, to State and Tribal Wetland Program Managers and State Water Division Directors (2009), p. 3. Available at: [2009 Wetland Program Plan Memorandum | US EPA](#)

bound by the goals and resources within a state.⁴ The Agency does not expect simultaneous development of all core elements by every state.

A state also can add other elements. Currently, many state plans include elements beyond those in the CEF, such as technical assistance to landowners, steps to ensure sustainable funding, communication strategies and priorities, and other actions that may be difficult to classify but the state has determined are necessary to achieve long-term goals. Chapter 3 of this handbook discusses additional wetland program elements that states may decide to include in their WPP.

EPA reviews a WPP to determine if the plan is sufficient to make a state's WPDG application eligible for consideration as part of the first tier of grant applications. To be eligible, a state must submit their plan to the EPA Regional Office. The Region will review the Plan and determine whether the plan includes the minimum components. In addition to this initial review of the WPP, the EPA Regional Office and state submitting a WPP will periodically discuss progress on the plan's actions and activities, any assistance that EPA can provide, and any adjustments that the WPP may need. These discussions may be annual, or less frequently if limited by available staff time.

As a WPP nears the end of its time period, a state should submit to EPA a revised WPP with a new three- to six-year time period. This allows its WPP to remain current. If the WPP is not updated and expires, the state will not necessarily qualify for first tier consideration when applying for a WPDG until it submits a new WPP to EPA for review.⁵

Benefits of a Wetland Program Plan

A WPP provides states with a roadmap that explains the goals of the program and specific steps needed to get there. Numerous state WPPs incorporate an enthusiastic discussion of the benefits of WPPs, which accrue in at least three ways:

1. By bringing people together to develop the plan;
2. By implementing the plan; and
3. By using the plan as a communication tool to gain broad support for wetland protection and conservation efforts.

As noted earlier, each state will need to tailor the planning and implementation process to their specific circumstances. The extent of collaboration involved, the specific core elements addressed, and the particular actions identified will vary widely from state to state. Despite that variation, states that have developed plans through a collaborative

⁴ *Id.*

⁵ *Id.* at 5.

process with other agencies and interested outside groups have identified numerous benefits.

For example, many states have indicated greater confidence when identifying priority actions, because collaborative discussion increases understanding of the current state of the wetland resource and its current and future threats, and of specific potential actions to address those threats. Collaboration also encourages agencies to think ahead and anticipate problems and solutions.

Many states believe wetland resources will benefit from new and stronger partnerships enhanced by a collaborative planning process. Participants discover shared goals, enabling agencies to gain support from unexpected allies and potentially making it possible to undertake projects that are beyond the scope of an individual agency or group. Stronger partnerships serve to coordinate uncoordinated efforts, reduce duplication of effort, diminish competition among partners, and coordinate use of resources so they go farther. Overall, many states have found that collaborative discussions have encouraged them to think outside the box when designing solutions.

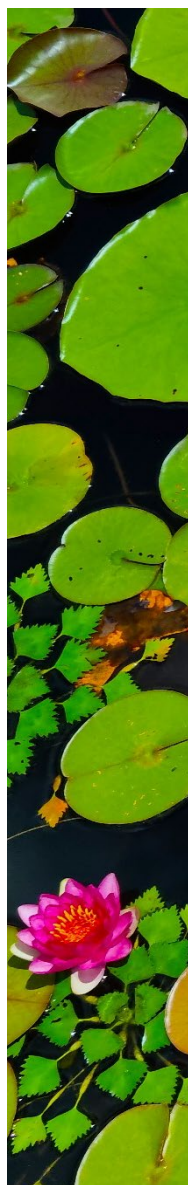
States also have found additional support for wetlands programs when they develop a WPP through a collaborative approach. Collaboration increases transparency about wetland program goals and actions. Other agencies, elected officials, stakeholders, and the general public are more likely to support wetland programs when they understand them.

In sum, states that have taken a collaborative approach to the development of a plan have discovered the process yields many benefits. Just by thinking broadly, bringing together partners, and sharing expertise and ideas to develop a WPP, states have realized new and significant opportunities for wetland protection and restoration. This process takes time and it is sometimes difficult, particularly in the early stages. But the benefits are significant. Chapter 4 of this handbook discusses collaborative planning in greater detail.

Once the WPP is done, it serves as a road map to guide future activity. The plan can keep agencies focused on making progress toward completing specific actions to improve wetlands protection. In addition, many states have used the WPP itself as a communication tool. For example, Montana and Wisconsin have published colorful materials on their websites that describe the goals and future actions of their wetland agencies, and the importance of wetlands.⁶ Such general materials as well as the WPP itself have been invaluable for communicating with the public and elected officials.

⁶ See, e.g. “Wisconsin’s Wetland Strategy,” available at [p267601coll4_35340.pdf](#); “Montana Wetlands Program Overview,” available at [Wetlands | Montana DEQ](#); “Virginia’s Monitoring and Assessment Strategy,” available at [Monitoring & Assessment Strategy | Virginia DEQ](#); “New Mexico Wetlands Program,” available at [New Mexico Wetlands Program](#).

A WPP can allow agencies to be proactive about developing future solutions with the full support of their leadership. For example, a state administration may not be supportive of developing a regulatory permitting program. However, they may support activities that today would benefit a voluntary approach to wetlands protection, that also lay the foundation for a future state permitting program should the need arise. A state agency that has developed wetland water quality standards, mapped and assessed condition of wetlands, or developed a strong Clean Water Act section 401 water quality certification program, would be able to respond more quickly to a demand for a permitting program. The potential need for programmatic “gap-filling” is not theoretical. In recent years, several states have responded to federal policy changes and U.S. Supreme Court decisions by shifting reliance on wetlands protection more towards state programs rather than federal.



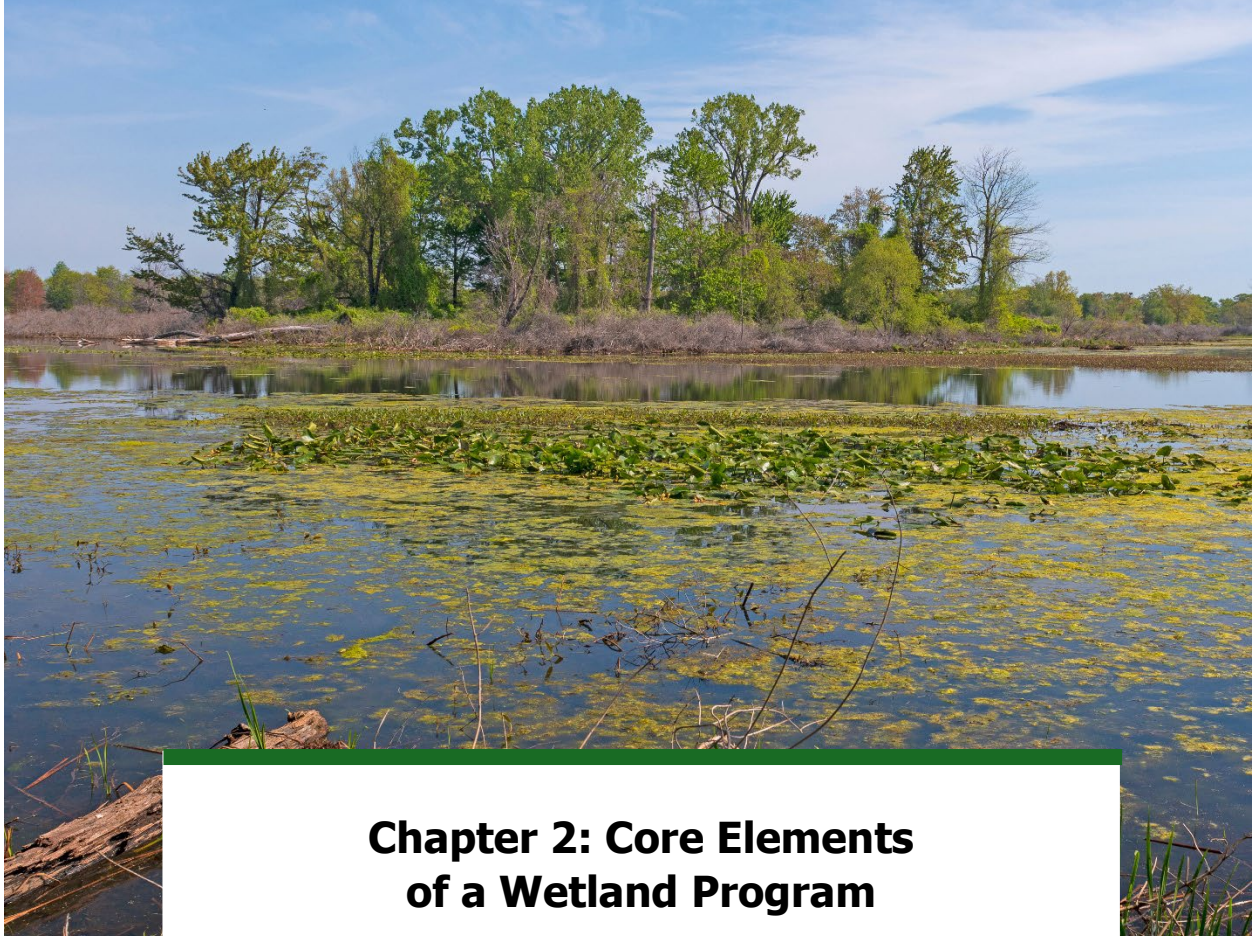
How Does a WPDG Differ from a WPP?

Wetland Program Plans (WPPs) are plans developed by states or Tribes that describe both overall wetland program goals and specific activities to help achieve those goals. Wetland Program Development Grants (WPDGs) are financial assistance agreements to help develop or refine programs that protect, manage, and restore wetlands. EPA may award WPDGs to state, tribal, territorial, and local government agencies, interstate/intertribal entities, and non-governmental organizations.

WPDGs are EPA's primary source of financial support for state wetland programs, competitively awarded for projects that can last between two and four years. EPA Regions issue regional Requests for Applications (RFAs) every two years, typically in the spring of odd numbered years. EPA Headquarters also issues a national RFA to which non-profit, non-governmental organizations, interstate agencies, and intertribal consortia may apply. For more information about the WPDG program and upcoming RFAs, go to EPA's webpage at [Wetland Program Development Grants and EPA Wetlands Grant Coordinators | US EPA](#).

WPDGs are intended to develop the capacity of state governments to increase the quantity and quality of wetlands. Currently, these grants only support program development and are not allowed to be used for routine program activities and other implementation measures.

A successful WPDG proposal needs to demonstrate a linkage with the Core Elements Framework and must use one or more of the “Core Elements” to achieve the project goals. If a state has an approved WPP, it may include grant-eligible actions from the WPP in the proposal.



Chapter 2: Core Elements of a Wetland Program

Introduction: Begin Anywhere

The framework developed by the U.S. Environmental Protection Agency (EPA) for Wetland Program Plans (WPPs) envisions a focus on one or more of four “Core Elements” of a state or tribal wetland program.⁷ These include:

1. Monitoring and Assessment
2. Regulatory Activities
3. Voluntary Restoration and Protection
4. Water Quality Standards for Wetlands.

EPA worked with states and Tribes when establishing the Core Elements Framework (CEF) and defining the Core Elements of a wetland protection program. The structure provides a

⁷ For detailed information on the Core Elements Framework (CEF) and the four Core Elements, go to EPA’s website at: [Core Elements of Effective State and Tribal Wetland Programs | US EPA](#).

logical and comparable framework for planning and discussion. However, the CEF also is very flexible. EPA encourages but does not mandate that a Wetland Program Plan (WPP) include all four Core Elements. Several state WPPs focus on a subset of the Core Elements. Other states have addressed all four Core Elements, while adding other elements that are key to their individual needs, such as education, wetland resiliency with changing environmental conditions, or cultural concerns. Chapter 3 discusses state WPPs reflecting a modified set of Core Elements.

In the long-term development of state wetland programs, there is no single starting point. Many states have a long history of wetland stewardship and restoration associated with the management of fish and wildlife habitat. Other states began to develop wetland protection regulations well before the federal government, to address development pressure on natural systems. Moreover, the wetland program Core Elements are interrelated to a degree, and often one need will logically follow another. EPA has noted that program-building actions and activities developed under one Core Element can be used as building blocks to develop other Core Elements as opportunities and resources allow.⁸ For example, a state may identify the need for wetland restoration to protect water quality and buffer floodwaters, but conclude wetland mapping and assessment is necessary before establishing a comprehensive wetland restoration program. The Core Elements are not designed to be implemented in a specific order. Instead, state strategic planners are encouraged to begin with program elements and options that resonate with resource managers and the public – providing the best potential to address their current wetland needs. So: begin anywhere!

Core Element: Monitoring and Assessment

Monitoring is the systematic observation and recording of current and changing conditions of wetlands, and assessment is using that data to evaluate and appraise wetlands to support planning and decision-making.

A well-designed and implemented wetland monitoring and assessment program can be a critical tool for states to manage and protect their wetland resources. Effective wetland monitoring and assessment require considerable expertise, careful planning, and can be costly. However, monitoring and assessment can be an important component of virtually all other wetland program Core Elements, by providing information about the frequency, location, and condition of the wetland resource. As a result, states should view monitoring and assessment as components of a state program plan, while thinking carefully about the strategic steps needed to build expertise in this area. It also is very helpful to link data

⁸ EPA, “Tribal, State, and Territory Wetlands Program Core Element Framework,” (EPA-843-R-23-002, February 2023) at 7.

resulting from monitoring and assessment efforts to other Core Elements, as well as to overall program decision-making.

Wetland managers frequently comment that they are “data rich and analysis poor.” Effective monitoring and assessment depend to a significant extent on asking the right questions and gathering the right information to answer those questions. Scientists who set out to evaluate wetlands may be initially uncertain of what information to collect, or what questions to ask. Strategic planning can help ensure collected data is linked to program needs, with data collection and monitoring linked to assessment tools that minimize expenditures and improve decision making. In other words, part of the plan should be to define ultimate use of the data that is gathered.

What Activities are Included in Wetland Monitoring and Assessment?

Wetland monitoring – like other water quality monitoring – is the process of systematically collecting data on the presence, type, condition, and quality of wetlands, including chemical, physical, and biological characteristics. Many tools exist for collecting wetlands data, including direct monitoring, mapping, and remote sensing methods. Given the scope of wetland resources in many states, broader assessment tools may be more practical on a large scale than site-specific monitoring efforts for many purposes, although both approaches have a role.

Wetland assessment is using available data, including data collected through wetland monitoring, to evaluate or appraise wetlands in support of planning and decision-making. Wetland assessment can involve many analyses, such as a comparison to different wetlands (i.e., “reference wetlands”), describing changes in wetland condition over time, and an evaluation of the outcome from wetland management actions.

The EPA typically uses a three-level approach to monitor and assess the condition of a wetland, which can help organize the multiple activities a state may wish to incorporate into its WPP and its broader aquatic resource monitoring and assessment programs. This approach, illustrated below, organizes assessment and monitoring into three levels:

- Level 1 – Landscape Assessment - relies primarily on mapping, remote sensing, and modeling to evaluate wetlands on a regional, statewide, or watershed scale. This approach provides a “big picture” that can be very useful for explaining wetland condition to the public, and for tracking changes over time.
- Level 2 – Rapid Wetland Assessment – refers to on-the-ground site specific work that can be done quickly and in a single visit. As such, rapid assessment methods rely heavily on readily visible indicators of wetland condition, on identification of local stressors (such as land use, wetland alteration) which impact condition, and on best professional judgment to fill in gaps. This type of assessment can support

regulatory decision-making, decisions regarding restoration or preservation, and similar needs.

- **Level 3 – Intensive Site Assessment** – includes more traditional field work and longer-term scientific investigations. Detailed chemical, physical, and biological information may be gathered over time, using traditional scientific methods. Intensive assessment may often be conducted by third parties as academic research, but results can be evaluated to develop more rapid indicators or indices.

Note that these three levels of monitoring and assessment are interrelated – each level is used to support the other, and feedback from each level can help to validate other studies. For example, mapping information may be used to plan statistically valid intensive site assessments and the information from both level 1 and level 3 may be used to construct a rapid assessment method for a given geographic area.

3-Tiered Technical Approach	
	Products/Applications
<p><u>Level 1 - Landscape Assessment:</u> Evaluate indicators for a landscape view of watershed and wetland condition</p>	<ul style="list-style-type: none"> •Status and Trends •Targeting Restoration and further monitoring •Landscape Condition Assessment •Integrated Reporting (305(b)/303(d))
<p><u>Level 2 – Rapid Wetland Assessment:</u> Evaluate the general condition of individual wetlands using relatively simple indicators. These assessment are based upon identification of stressors (i.e. road crossings, tile drainage, ditching).</p>	<ul style="list-style-type: none"> •401/404 Permit Decisions •Identify potential impacts/stressors •Integrated Reporting •Assign designated uses
<p><u>Level 3 – Intensive Site Assessment</u> Designed to provide quantitative data on wetland condition within an assessment area, used to refine rapid wetland assessment methods and diagnose the causes of wetland degradation.</p>	<ul style="list-style-type: none"> •WQS Refinement •Integrated Reporting (attainment decisions) •Rest./Mitig. Performance Criteria •TMDL Dvlpmt. & Implementation •Verify Levels 1 and 2

Federal agencies have produced a significant amount of technical information that supports each of these three levels. Strategic planners may wish to begin with the Monitoring and Assessment chapter in EPA’s “Tribal, State, and Territory Wetlands

Program Core Element Framework.”⁹ Additional resources are provided in this handbook’s Appendix A.

Considerations in Designing a State Monitoring and Assessment Strategy

States with existing monitoring programs face different challenges than a state designing a new monitoring approach. Existing programs can build off what is in place already, but nonetheless, they should identify program goals and determine whether existing monitoring activities should be amended to more effectively achieve those goals. Similarly, programs being newly designed should clarify goals and identify programmatic options. For both types of programs, goals should shape program design. The ultimate goals of monitoring and assessment programs may include contributing to evaluation of overarching national goals – no net loss of wetlands in the short term, and an increase in wetland area and condition in the long term.

WPPs Should Specify Goals for a Wetland Monitoring and Assessment Program.

“The overarching goal of Michigan’s Wetland Assessment and Monitoring Program is to address the success of the state in protecting, managing, and restoring Michigan’s wetlands such that they will continue to provide the public benefits defined by the legislature. ... More specifically, the assessment and monitoring of Michigan’s wetland resources is needed to provide information to address diverse program issues at a variety of scales, from the status and trends of statewide wetland acreage to the detailed evaluation of individual wetland sites. ... Moreover, the evaluation of individual wetlands is an integral component of Michigan’s regulatory program under Part 303 and Section 404 of the Clean Water Act, which also requires annual reporting on statewide regulatory impacts. And, on a different scale, land use planners are increasingly considering wetland functions, wetland quality, and restoration opportunities in watershed scale planning and in local nonpoint source control programs.” From: “State of Michigan Wetland Monitoring and Assessment Strategy,” available at [Michigan's Wetland Monitoring and Assessment Strategy](#)

Existing monitoring programs. Some states developing or updating their WPP may have previously developed a wetland monitoring and assessment strategy, perhaps as a component of broader state water monitoring strategies requested by EPA through Clean Water Act (CWA) §106 monitoring programs. If this is the case for your state, it likely would be helpful to review program goals and the extent to which monitoring and assessment actions are consistent with those goals. Then, the state’s WPP discussion of wetland monitoring and assessment could basically summarize the existing strategy, provide

⁹ Available at: https://www.epa.gov/system/files/documents/2023-02/EPA_Core_Elements_Framework_February_2023.pdf

needed updates, and further define steps needed to implement the plan with an appropriate timeline.

A state may also wish to use the WPP to explain and document the linkages between wetland monitoring and assessment activities and other wetland program elements. For example, monitoring data may be analyzed to support development of water quality standards, to assist in permitting or in other decisions, to help define restoration priorities, or to evaluate the success of restoration and protection programs. In other words, the WPP can help to clarify both the purpose of monitoring and how its results are used.

New monitoring programs. For states that do not yet have a comprehensive monitoring plan, staff will want to carefully consider questions such as the following:

- *What are the monitoring and assessment goals? What programmatic questions do you need to answer? Is the extent of wetland resources within state boundaries well defined? Can the current condition and function of state wetlands be described to policy makers and to the public? Do the responsible agencies understand the extent of wetland loss or degradation, causes and consequences?*
- *Is support needed for land use decision-making? For water management purposes? To support decisions regarding permits for wetland alteration? Does the state need to know more about the success of wetland restoration or management programs? Is there a focus on management of priority watersheds? Restoration of scarce wetlands?*
- *Do the state and its partners have the expertise necessary to design and implement the desired monitoring? If not, the strategy may focus on building the methods and expertise that are needed.*
- *What resources are available - including staff, funding, and equipment – that the state and their partners can bring to the monitoring and assessment effort? Resource needs may be significant, including tools and datasets such as sampling equipment and Geospatial Information System (GIS) software. As a result, choices may have to be made regarding priority projects. It is typical for monitoring and assessment programs to be developed over a period of many years.*

Common Issues and Challenges Associated with Wetland Monitoring and Assessment

Monitoring and assessment support and strengthen almost every component of wetland programs. Even so, implementation is often limited due to a variety of factors. Significant factors include limited time, limited funding, and limited expertise. Government policy makers sometimes indicate that they have a difficult time justifying expenditures for monitoring, rather than for “getting something done.” Strategic planning can help to

overcome this common perspective by demonstrating the necessity of gathering objective information to support other program elements and to make informed decisions. Ultimately, programs supported by monitoring and assessment can be more cost effective, because data is available to help ensure restoration and management projects are tailored to local circumstances.

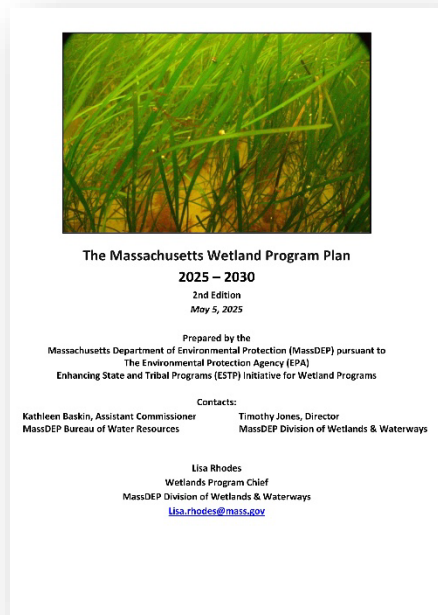
When developing a wetland monitoring plan, a state may find it helpful to anticipate potential challenges, such as:

- **Cost, time, and expertise.** Monitoring can be expensive, and as a result the state agency should carefully define the purpose of monitoring programs. Monitoring and assessment efforts can be built over time as experience increases; starting small with pilot programs can be an effective way to begin. Partnerships with other organizations, including academic research programs, also can help to limit agency costs. States may also wish to consider a volunteer monitoring program.¹⁰

WPPs should clearly define the benefits of monitoring. Among these are increased staff expertise which may be applied in other program areas.

- **The scope and variability of wetland resources.** A site-specific sampling program for a tidal marsh is very different than one for a peat bog. Numerous ecological wetland types exist in the nation, and not all will fit neatly into a single monitoring effort. A WPP should explain how it accommodates these differences. States may decide to focus primarily on particular types of wetlands, or on the wetlands in a limited geographic area (such as a small watershed or coastal zone).

Massachusetts' WPP is an example of focusing monitoring and assessment activities on particular types of wetlands of concern. The state dedicates a significant part of its monitoring and assessment efforts to develop and test methods for salt marshes. The state is exploring the use of Unmanned Aerial Systems (UAS) to map salt marsh features and document stress and degradation. Massachusetts' program also is exploring the use of Landsat data and land use modeling to



¹⁰ For EPA information regarding volunteer monitoring of wetlands, go to:
<http://water.epa.gov/type/wetlands/assessment/volmonitor.cfm>

develop a more effective model for assessing ecological integrity.¹¹ Connecticut’s monitoring program focuses more on a particular type of threat rather than a particular wetland type. Its monitoring program is seeking to identify areas impacted by use of environmentally persistent pesticides. The program selects monitoring sites based in part on annual pesticide use summary reports submitted by certified applicators indicating usage of certain pesticides of concern.¹²

- **Limited basic research.** Extensive information is available about many common wetland types, and through web searches can be relatively easy to obtain. However, states may have greater difficulty finding data regarding rarer wetland systems. A state monitoring program should identify basic research questions and needs about these rarer types, so that research agencies can fill information gaps over time.
- **Poorly defined monitoring goals and design.** A monitoring program needs a well-designed sampling program that will result in accurate and useful information needed to answer research and policy questions. Experienced research staff may be needed early in the design phase. A poorly designed monitoring plan may not provide data that is statistically valid, may fail to collect information on a key parameter, or may otherwise result in failure to achieve the results needed. A strategic plan for developing monitoring and assessment capabilities should include technical assistance in sampling design, to help ensure monitoring goals are achieved.
- **Lots of data, not much analysis.** Many programs eventually find themselves in the position of having a large amount of data but not much analysis of its implications. States should fully explore the possible opportunities for analysis of data. In some instances, the data collected for one purpose may prove to be valuable for other reasons, given enough time for analysis. Strategic planning should propose sufficient time and staff expertise to carry out anticipated analytical tasks, report preparation, and dissemination of results.

Developing Actions and Activities for Wetland Monitoring and Assessment Programs

The 2023 “Wetlands Program Core Element Framework” discusses activities for each Core Element as falling into three phases: Phase 1 is planning considerations, Phase 2 is data collection and assessments considerations, and Phase 3 is refinement and wetland management decision-making considerations. When discussing a particular Core Element, EPA’s Framework provides a table with actions and a menu of activities for each

¹¹ “The Massachusetts Wetland Program Plan, 2019-2024,” available at: [2019-05-09-ma-wetland-program-plan-2019-2024-final.pdf](#)

¹² “Connecticut Wetland Program Plan 2023-2027,” available at [ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf](#)

of the three phases. The EPA tables for the Monitoring and Assessment Core Element provide several potential actions a state might consider when developing its monitoring and assessment program, and when summarizing that program in its WPP.¹³

EPA Table 1, Phase 1: Monitoring and Assessment Planning Considerations

Actions	Menu of Activities
a. Identify program decisions and long-term environmental outcome(s) that will benefit from a wetland monitoring and assessment program (i.e., develop a wetland monitoring strategy)	<ul style="list-style-type: none"> • Document program’s long-term environmental goals • Identify programs that may use monitoring data (e.g., CWA section 401 certifications, restoration, permitting programs) • Collaborate with water quality programs in a state/tribe • Identify how wetland data can be used to implement watershed planning and integrated into existing water quality monitoring efforts, other critical issues like environmental justice and climate change, and emerging issues related to aquatic resource health and management
b. Define wetland monitoring goals and objectives, which generate data that serve management decision needs	<ul style="list-style-type: none"> • Coordinate with most relevant partners, for example: federal, state, tribal, and local agencies, universities, regional and national work groups • Examine other sources for monitoring information within the Tribe or State to identify monitoring objectives and goals • Define data needs and uses, including emerging issues
c. Select and integrate multiple designs to meet the full range of decision needs	<ul style="list-style-type: none"> • Determine classification scheme to group the type, class, and size of wetlands • Develop mapping system to be used as part of the sampling design (including how wetland inventory maps will be updated) • Describe site selection process • List/map universe of wetland resources using the National Wetland Mapping Standard from which sites could be selected if available • Determine which data are already available.
d. Select a core set of indicators to represent wetland condition or a suite of functions	<ul style="list-style-type: none"> • Identify indicators that are relevant for established monitoring objectives • Confirm indicators are scientifically defensible • Develop/select field method(s) and timing • Add supplemental indicators, including socio-economic indicators, to provide insight on wetland role in overburdened communities.

¹³ EPA, “[Tribal, State, and Territory Wetlands Program Core Element Framework](#),” (EPA-843-R-23-002, February 2023), pp. 13-15.

EPA Table 2, Phase 2: Monitoring, Data Collection, and Assessments Considerations

Actions	Menu of Activities
<p>a. Ensure the scientific validity of monitoring and laboratory activities</p>	<ul style="list-style-type: none"> • Draft and peer review Quality Management Plan and Quality Assurance Project Plan • Develop Field Operations Manual • Select, prioritize, and peer review candidate site assessment indicators • Review Tribal/State environmental justice policies and data collection requirements • Review Tribal/State climate strategies and data needs at the regional and local level • Train staff in monitoring and assessment techniques
<p>b. Monitor wetland resources as specified in strategy</p>	<ul style="list-style-type: none"> • Conduct pilot monitoring projects (e.g., small-scale projects to test methods, calibrate, enhance reference network) • Develop a schedule for monitoring wetland resources • Engage or expand involvement in National Wetland Condition Assessment or intensification projects • Partner with other programs (e.g., fish, forest, highways), federal agencies, underserved or overburdened communities, academic institutions, or NGOs
<p>c. Establish reference condition</p>	<ul style="list-style-type: none"> • Define reference condition (the gradient from unimpaired to impaired) • Define reference standard condition (e.g., Best Attainable Condition, Least Disturbed Condition, Minimally Disturbed Condition, Historical Condition, Best Professional Judgment) • Determine process for measuring reference standard condition (e.g., reference sites, historical data) • Select reference sites using systematic approach
<p>d. Track monitoring data in a system that is accessible, updated on a timely basis, and integrated with other state or tribal water quality data</p>	<ul style="list-style-type: none"> • Design a data management system that supports program objectives • Administer and update data system so that state or tribal can use it for analysis. Plan for data storage in a location that is accessible to all users • Geo-reference data as it is gathered for reporting • Identify sites to sample repeatedly for a trend network • Integrate with other water quality data systems (e.g., State watershed planning databases)
<p>e. Analyze monitoring data to evaluate wetlands extent and conditions/function or to inform decision-making</p>	<ul style="list-style-type: none"> • Document data analysis and assessment procedures • Develop assessment method to determine condition thresholds relative to reference standard condition (i.e., departure from reference standard condition) • Establish baseline condition • Analyze changes in wetland extent or condition relative to reference conditions and/or in response to climate change • Assess wetlands status and trends (e.g., annual reporting of no net loss, net gain, or CWA section 305(b) reports for wetlands)

EPA Table 3, Phase 3: Refinement and Wetland Management Decision-Making Considerations

Actions	Menu of Activities
<p>a. Evaluate monitoring program to determine how well it is meeting a Tribe/State’s monitoring program objectives</p>	<ul style="list-style-type: none"> • Develop schedule to evaluate monitoring program • Track program reviews • Ensure assessment method(s) are providing the necessary information • Make changes as necessary to the program • Review other wetland program elements (e.g., restoration, regulation, water quality standards) • Modify other aspects of wetland program as needed based on review of monitoring data • Plan for and consider long term needs – frequency of repeated monitoring, covering of cost, etc.
<p>b. Evaluate the environmental consequences of a federal or state/tribal action or group of actions; modify programs as needed based on M&A data</p>	<ul style="list-style-type: none"> • Inform state/tribal wetland permit decisions or determinations of “waters of the tribe” or “waters of the state” • Inform CWA section 401 certification decisions on federal licenses or permits • Inform CWA section 401(a)(2) reviews and objections to discharges from neighboring jurisdictions • Modify licensing/permitting or CWA section 401 certification practices as needed based on assessment information • Demonstrate the use of M&A data in decision making (e.g., list and track) including targeting risk reduction strategies in overburdened communities and mitigation of hazards related to climate change • Make data accessible to EPA and the Corps to help inform their determinations of federal jurisdiction
<p>c. Improve the site-specific management of wetland resources</p>	<ul style="list-style-type: none"> • Incorporate monitoring and analysis into restoration techniques • Establish ecologically meaningful benchmarks for gauging restoration success • Evaluate the performance of compensatory mitigation sites • Evaluate the ecosystem services provided by individual wetlands, consider using screening tools to connect ecosystem services to underserved or overburdened communities • Innovative mapping tool develop and use using the National Wetlands Mapping Standard (e.g., NWI plus and other refinement tools, consider including socio-economic data to reflect underserved or overburdened communities) • Partner with other programs (e.g., fish, forest, highways), federal agencies, academic institutions, underserved/overburdened communities, or NGOs to share information, ideas, technologies
<p>d. Develop geographically defined wetland protection, restoration, and management plans</p>	<ul style="list-style-type: none"> • Identify and prioritize management areas (e.g., identify vulnerable wetlands, prioritize restoration potential underserved or overburdened communities) • Incorporate wetlands into a comprehensive watershed plan that serves Tribal or State water quality management needs and addresses all waters • Evaluate progress toward meeting wetland objectives identified in other projects/programs (e.g., wildlife action plans, climate action plans, and water and equity strategies) • Inform broader watershed activities (e.g., reducing erosion, providing floodplain storage, reducing nutrient loading, reducing risks to underserved/overburdened communities)

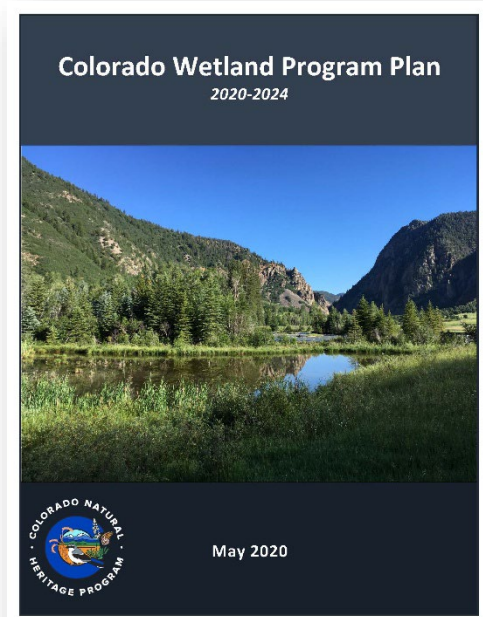
As discussed earlier, EPA typically uses a three-level approach to monitor and assess the condition of a wetland. These levels include:

- Level 1 – Landscape Assessment - evaluates wetlands on a regional, statewide, or watershed scale, typically via a desktop exercise using GIS.
- Level 2 – Rapid Wetland Assessment – involves on-the-ground site specific work that can be done quickly and in a single visit.
- Level 3 – Intensive Site Assessment – includes more traditional, longer term field work and scientific investigations.

A state should consider which level of monitoring and assessment will result in the type of data best-suited for its intended use. Is the state hoping to characterize the status of its wetland resources for the general public? A level 1 landscape assessment can result in data helpful to the state when portraying its wetland resources as part of public outreach. In contrast, a level 2 rapid assessment could quickly provide data to support a simple permit decision. If the state is hoping for detailed data on wetland condition to assist in developing wetland water quality standards or a complex permit decision, a level 3 intensive site assessment may be necessary.

Level 1 – Landscape Level Assessment. Level 1 activities can be helpful if the state’s questions focus on the extent and condition of state resources on a broad scale. Activities might include, for example, updating or analysis of National Wetland Inventory (NWI) maps or similar sources of data. Some states are also adding geographic information to existing NWI map databases to enable a landscape level assessment of wetland function to support multiple programs.

For example, Colorado’s WPP discusses its efforts to enhance the statewide NWI dataset to reflect the latest NWI codes and mapping guidance, and to produce a State of Colorado Wetlands Report. This effort has involved adding LLWW (Landscape, Landform, Water Flow Path, Waterbody), and functional attributes to statewide NWI data in order to model wetland ecosystem services.¹⁴



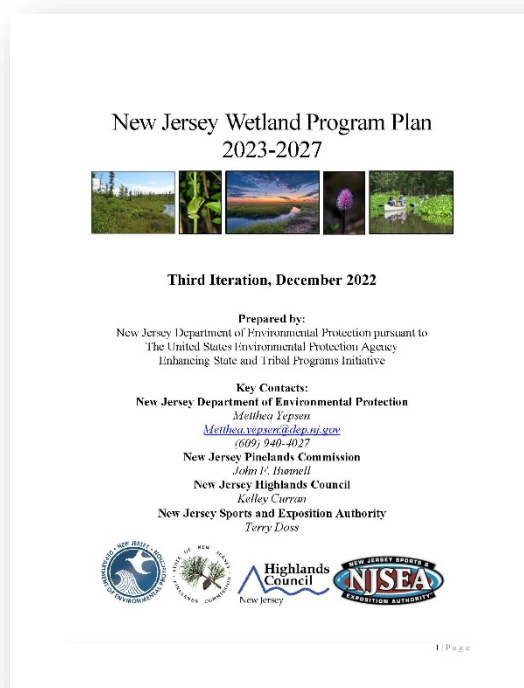
¹⁴ Colorado Wetland Program Plan 2020-24, available at colorado-wetland-program-plan-2020-2024.pdf.

Maryland is establishing a common recommended wetland guidance map using available GIS layers and designating the layers as the recommended source for guidance and planning. This map will consolidate the available map layers into a single recommended guidance map for presence of wetlands. The layer will be available through iMap, Maryland’s comprehensive online portal for digital map layers.¹⁵

Level 1 program elements might also include development of staff expertise in use of geospatial resources. Training in geospatial analysis may be helpful in both statewide planning and assessing cumulative impacts on local resources to inform permit decision-making or water quality certification under Clean Water Act (CWA) section 401. Geospatial mapping can also be used to help define restoration priorities and other management needs. The benefits of mapped and landscape-level information for local planning cannot be overstated. Providing a clear image of past and current wetland resources, and potential for future gains, can help create a greater understanding of wetland program goals and stimulate wetland planning at the local and watershed scale.

For example, New Jersey’s WPP explicitly relies on its monitoring data for both large-scale and small-scale program decision-making. Using monitoring data, the state evaluates the ecosystem services provided by individual wetlands or types of wetlands to determine best management options. New Jersey also has established ecologically meaningful benchmarks for gauging restoration success, using monitoring data to evaluate the performance of compensatory mitigation sites as well as voluntary restoration and protection sites.¹⁶

Level 1 activities might include monitoring to provide data about a specific resource challenge a state is facing. For example, Colorado’s WPP includes efforts to research and model the role that wetlands play in reducing the severity and



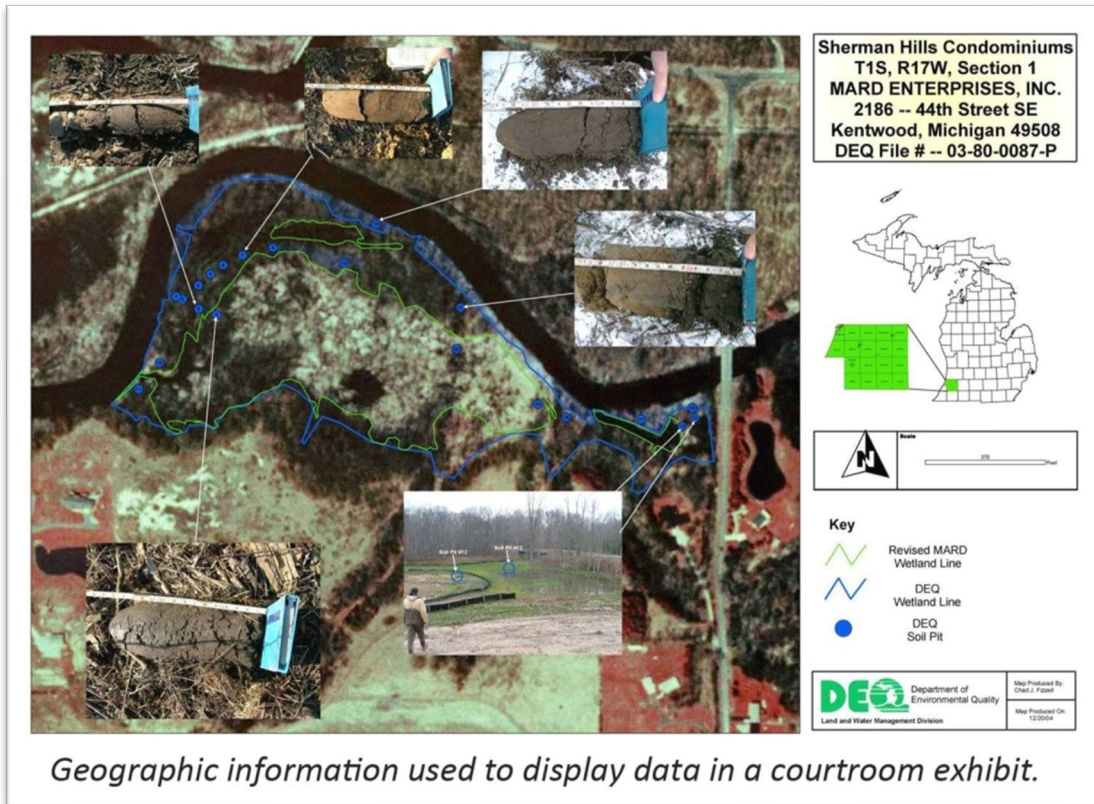
¹⁵ “Maryland Wetland Program Plan 2021-2025” available at: [md_wetland_program_plan_2021-2025.pdf](#)

¹⁶ “New Jersey Wetland Program Plan 2023-2027,” available at: https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf

spread of wildfires, as well as in mitigating post-fire flooding, soil erosion, and sediment transport in streams.¹⁷

A WPP might include plans to build geospatial information through acquisition of related map layers, such as soils information and digital elevation. The WPP might call for map layers showing the location of special wetland resources, such as designated habitat for listed species, coldwater streams, rare wetland types, or public lands.

Formation of partnerships with other state mapping organizations may be an important program element in a WPP. The Wetland Mapping Consortium¹⁸ encourages consistent national mapping as defined in the National Wetland Mapping Standards,¹⁹ and shares information about innovative techniques and application of GIS data. Regional wetland planning in areas such as the Chesapeake Bay, the Great Lakes, the Gulf of Mexico, and the Mississippi River Basin all rely on the ability to summarize and convey information through accurately mapped wetland and aquatic resources.



¹⁷ [colorado-wetland-program-plan-2020-2024.pdf](#)

¹⁸ For information and webinars related to the National Wetland Mapping Consortium, go to: <https://nawm.org/search.html?q=Wetland+Mapping+Consortium>

¹⁹The Wetlands Mapping Standard is available at: [FGDC Wetlands Mapping Standard](#)

Level 2 – Rapid Site Assessment Methods (RAMs). Rapid site assessment has been used for many years in regulatory programs to obtain a quick, but objective, evaluation of existing site conditions needed to support a decision regarding the likely impact of site loss or alteration. Rapid site assessments may also be useful in evaluating sites for wetland restoration, management, or protection, or in evaluating the success of restoration mitigation or management.

Several RAMs have been developed nationally (see Appendix A). A good first step for states interested in this approach is to evaluate existing tools. An effective RAM should be able to produce a single score, or group of scores, of a site within a relatively short timeframe (ideally, hours) by looking for established indicators and characteristics. The score can then be compared with a disturbance gradient for the geographic area in question, demonstrating the extent of disturbance compared to similar wetlands.

Developing a RAM is a technical process that involves several stages. The developer should gather information to define locally effective indicators that can quickly differentiate between stressed or altered and intact wetlands, and design a method to interpret results. Those potential indicators should be tested in the field. Each of these stages might be an element of a state strategy in a WPP. The initial development of a RAM is often time and labor intensive. However, once developed the RAM may be indispensable in making rapid and objective decisions.

For example, Maine’s WPP calls for the state to update its core set of indicators representing wetland condition or a suite of functions. Current core indicators include aquatic macroinvertebrates, algae, water chemistry and habitat indicators for emergent and aquatic bed wetlands. While refining its core indicators, the state plans to continue exploring its current indicators’ applicability to additional types of wetlands, and developing new indicators and methods as needed to address emerging issues of concern.²⁰

Other rapid assessment methods may be developed for specific purposes. These include plant community evaluations, such as the Floristic Quality Assessment Method used in several states, assessments based on hydrogeomorphic features, and inclusion of stressor checklists. Steps taken in the development of any of these methods could be appropriate actions in a WPP.

Level 3 – Intensive Site Assessments Methods. This level of monitoring is site-specific, similar to a RAM, but involves more rigorous data collection than a rapid assessment. Sampling might include biological measures, such as inventories of species that are present over a longer period of time. Sampling may be intended to support indices

²⁰“Maine Wetland Program Plan 2023-2028,” available at: [Maine Wetlands Program Plan](#)

of biological integrity (IBIs) — that allow for comparison among sites or over time. Physical and chemical information often is based on the hydrogeomorphic functions of the site.

Level 3 monitoring can be thought of in terms of a “research” level. Not only does level 3 monitoring provide a detailed evaluation of the site, but an analysis of that information can be used to identify indicators used in rapid assessment, and to verify rapid assessment methods.

Reporting

Some of the value of monitoring and assessment is lost unless results are analyzed, summarized, and reported. The U.S. EPA requires a biennial report on the condition of the nation’s waters, including wetlands. Known as the Section 305(b) report (after the applicable Clean Water Act section establishing the report requirement), this report can be used not only to transmit information to Congress, but to the general public in a state.²¹ When developing a monitoring and assessment strategy, state planners should consider the best means to provide data that is provided to the public through national and state reporting processes.

Participation in National or Regional Wetland Monitoring Programs and Workgroups

The incorporation of regional and national monitoring workgroups in state WPPs provides a way to extend scientific knowledge, strategic thinking, and practical application of monitoring and assessment data beyond political boundaries. These groups encourage collaboration to achieve wider goals, while participants share expertise among agencies and organizations.

Participation in cooperative national or regional workgroups or monitoring programs can result in several benefits for a state program. State staff and managers can increase their expertise in any or all levels of monitoring, can allow for input into regional or national monitoring plans, and can ensure understanding of and access to collected data.

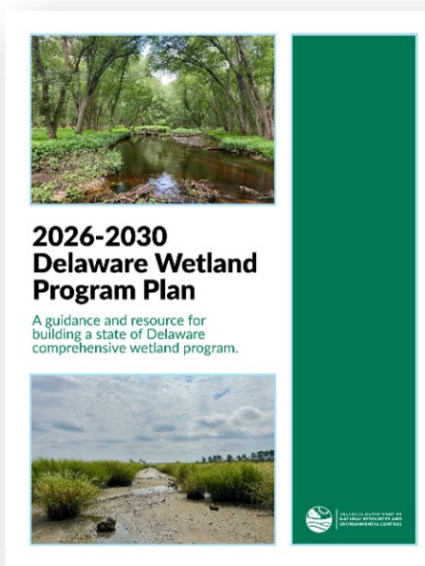
State wetland program planners may want to consider involvement in regional and national workgroups. Some examples include:

- **The National Wetland Condition Assessment (NWCA).** Wetlands are one component of EPA’s National Aquatic Resource Surveys program. Under this program, EPA and partners complete statistically valid sampling of various types of waters (such as lakes, rivers and streams, coasts, and wetlands) on a national

²¹ To read more about 305(b) reports and view recent and past reports, go to: [National Water Quality Inventory Report to Congress | US EPA](#)

basis. Each type of water is resampled every 5th year. The first NWCA²² was carried out in 2011, and the most recent report issued in 2021.²³ WPPs can include participation in future surveys, or use the NWCA report and its data to provide public information and support other wetland program elements.

- **Wetlands Regional Monitoring Network (Wetland RMN).** A Wetland RMN was developed by EPA, states, Tribes, and other entities starting in 2021 to better understand wetland functions, hydrologic conditions, plant community composition over time.²⁴ The RMN uses select NWCA sites that meet additional criteria as reference sites to be monitored for changes over time. The Wetland RMN began with sites in the Mid-Atlantic area and is expanding within EPA Regions 1, 2, 3, and 5.
- **National Wetland Monitoring Assessment Work Group.** The mission of the National Wetland Monitoring and Assessment Work Group is to help states and Tribes build their capacity to sustain and improve the quantity and quality of the nation’s wetlands. The goals of the Work Group are: 1) The development and implementation of monitoring and assessment tools and programs that are integrated into a state or Tribe’s overall water quality monitoring strategies; and 2) to ensure that assessment related science is integrated into state and tribal wetland programs. The goals of the Work Group are aligned with EPA’s Core Elements Framework which outlines the components of comprehensive state and tribal wetland programs.²⁵
- **Mid-Atlantic Wetland Workgroup (MAWWG).** The primary goal of MAWWG is to support a forum in which to facilitate the development and implementation of wetland monitoring strategies, including elements of a comprehensive wetland monitoring program, that meet the needs of the mid-Atlantic states (i.e., wetland monitoring programs to be



²²For information about the National Wetland Condition Assessment and access its report and data, go to: <http://water.epa.gov/type/wetlands/assessment/survey/index.cfm>

²³ [National Wetland Condition Assessment 2021 Results | US EPA](#)

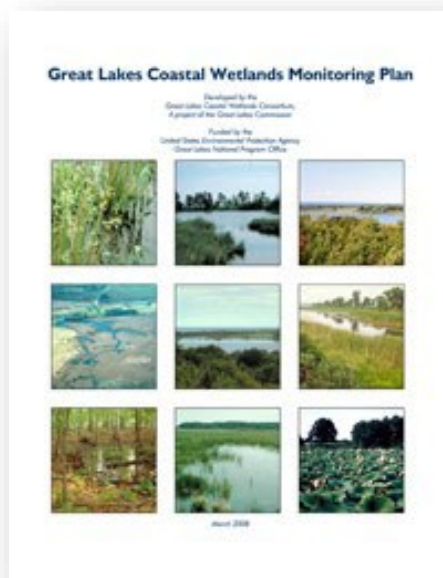
²⁴ <https://www.epa.gov/rmn/regional-monitoring-networks-wetlands>

²⁵ To view webinars by the National Wetland Monitoring and Assessment Workgroup Webinars, go to: [National Wetland Monitoring & Assessment Work Group Webinars.](#)

implemented at the state level).²⁶ MAWWG participants represent federal and state regulatory personnel and scientists from the following states: Delaware, Maryland, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Virginia, and West Virginia.

- **New England Biological Assessment of Wetlands Workgroup (NEBAWWG).** The NEBAWWG works to increase access to methods, research, and data that inform regulatory and management decisions to ensure effective wetlands protection across New England.²⁷ Participants include wetland managers and scientists from state, federal, tribal, nonprofit, and conservation organizations located in Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont.
- **Great Lakes Coastal Wetlands Consortium²⁸.** Funded by the EPA Great Lakes National Program Office as part of the Great Lakes Restoration Initiative, this project established a basin-wide coastal wetland monitoring program. Fish, invertebrate, bird, amphibian, and plant communities, along with chemical and physical variables, were assessed in the majority of coastal wetland areas throughout the Great Lakes basin.

The program produced information on the status and trends of Great Lakes coastal wetlands, and enable managers to identify the highest quality, most degraded and most threatened coastal wetlands in both the United States and Canada. Multiple experienced scientists - representing several academic and other institutions from six states and provinces, along with the U.S. EPA and Environment Canada - are cooperating in this effort.



²⁶ [Mid-Atlantic Wetland Monitoring and Assessment | US EPA](https://www.epa.gov/great-lakes-restoration-initiative/mid-atlantic-wetland-monitoring-and-assessment-us-epa) and <https://nawm.org/wetland-programs/mawwg-nebawwg/mawwg-overview.html>. For additional information, go to: [National Wetland Monitoring & Assessment Work Group Webinars](https://www.epa.gov/great-lakes-restoration-initiative/national-wetland-monitoring-and-assessment-work-group-webinars)

²⁷ <https://neiwpc.org/our-programs/wetlands-aquatic-species/nebawwg/>

²⁸ For additional information about the Great Lakes Coastal Wetlands Consortium and its pilot studies, go to: [Great Lakes Coastal Wetlands Consortium: Coastal Wetlands Investigations - Great Lakes Commission](https://www.greatlakescommission.org/great-lakes-coastal-wetlands-consortium-coastal-wetlands-investigations)

- **San Francisco Bay Area – Wetland Regional Monitoring Program (WRMP).**²⁹ The WRMP is one component of the San Francisco Bay Wetlands Restoration Program, and has as its mission to deliver coordinated regional monitoring of the San Francisco Estuary’s wetlands to: (1) inform science-based decision-making for wetland restoration and adaptive management, and (2) increase the cost-effectiveness of permit-driven monitoring associated with wetland restoration projects.

The recognition of regional and national monitoring workgroups in state WPPs provides a way to extend scientific knowledge, strategic thinking and practical application of monitoring and assessment data beyond political boundaries. These groups encourage collaboration in order to achieve wider goals, while participants share expertise among agencies and organizations.

Core Element: Regulatory Activities

States take different approaches towards a regulatory program protecting wetlands. Some states view a regulation protecting wetlands from alterations such as discharge of dredged or fill material as the foundation of a state wetland program. Such states might build additional program components to address regulatory programmatic needs, such as mapping, wetland assessment methods, and mitigation. Other states have viewed regulation as the culmination of program development that began with monitoring and assessment and view a regulatory program as protecting wetlands by making use of state expertise. Successful regulatory programs have evolved from either direction. Some states may prefer not to establish a wetlands regulatory program, instead turning to voluntary programs which may be more consistent with the state’s overall governance approach. Voluntary programs are discussed on page 39 of this handbook.

The federal Clean Water Act (CWA) section 404 establishes a national permit program regulating discharges of dredged or fill material into waters of the United States.³⁰ Section 404 is co-administered by the U.S. Army Corps of Engineers (Corps) and EPA, with the Corps managing the day-to-day administration of the permitting program. As a result of the national section 404 program, most states coordinate their regulatory programs to some degree with the section 404 program administered by the Corps. For those states that have not previously administered a regulatory program, an initial consideration may be the extent of responsibility that the state wishes to assume relative to the federal program,

²⁹ For more information on the San Francisco Bay’s Wetland Regional Monitoring Program, go to: [About - Wetlands Regional Monitoring Program](#).

³⁰ CWA §404, 33 U.S.C. §1344.

as discussed below. States that are currently regulating activities that alter wetlands might wish to consider whether to modify or expand state responsibilities.

Some Pros and Cons of State Regulatory Programs

Why regulate wetland alteration, including discharges of dredged or fill material? Given that the CWA provides national protection for wetlands, questions frequently arise regarding the need for state and local regulations. Wetland regulations are frequently controversial – yet at least 20 states issue permits for dredge or fill activities in wetlands and most states conduct a CWA section 401 certification analysis of impacts from proposed federal licenses and permits to varying extents.

Benefits of state wetland regulation include, for example, the following:

- In a state wetland program, staff with expertise in local resource needs will use professional judgment to allow, prohibit, or condition alteration of wetland resources. Their knowledge of priority state issues and related state aquatic programs, backed by support by the administration and the state legislature, can result in relatively strong protection of wetland resources.
- State programs are frequently more efficient than federal programs, relying on local staff and local offices to provide a prompt permitting decision informed by local conditions. State permit programs often integrate multiple regulatory reviews (including reviews for coastal zone, or floodplain resources) to further streamline regulations.
- State programs may regulate other activities affecting wetlands, in addition to federally regulated discharges of dredged or fill material.
- Many state regulations fill gaps in federal law, protecting small but locally significant wetland areas, or activities that are not regulated under the CWA. Additionally, state laws may protect ecosystem services that are not a focus of federal law. Since multiple U.S. Supreme Court decisions narrowed the extent of “waters of the United States” protected by the CWA,³¹ several states have begun to develop state law-based protections for wetlands and waters no longer protected by federal law.
- Combining state and federal permitting for discharge of dredge or fill material can integrate federal and state perspectives and expertise, leading to greater overall efficiency, profitability and accountability that benefits both permit applicants and the general public.

³¹ See, for example, *Sackett v. Environmental Protection Agency*, 598 U.S. 651 (2023), available at: [21-454 Sackett v. EPA \(05/25/2023\)](#)

On the other hand, state regulatory programs can be costly to operate, can be complex and controversial, and may be to some extent duplicative of federal requirements. A state deciding whether to regulate wetland impacts, or establishing the scope of regulation, will need these and related factors to define program goals and strategic steps to achieve those goals.

Considerations in Designing a State Regulatory Program

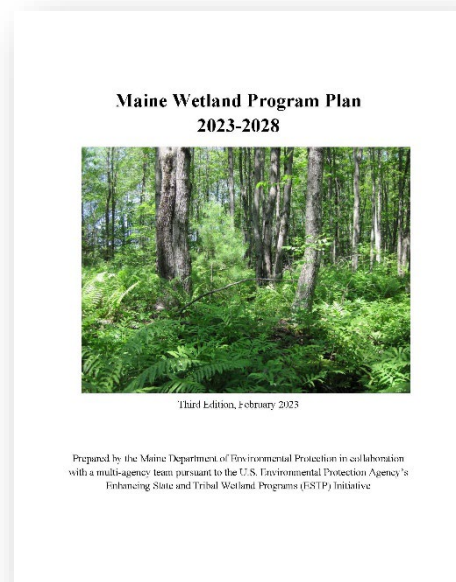
General considerations and challenges

A state planning to create or modify a wetland regulatory program will need to weigh numerous concerns, scientific viewpoints, and opportunities as it designs and implements the program. Most permit programs require ongoing adjustments to address both social and scientific concerns.

The following list of issues may help to guide thinking during strategic planning:

- **Political support.** How strong is support for, or at least acceptance of, regulation among various interest groups and the general public? Should the WPP include additional education and consensus building activities?
- **Cost, staff needs, and financial support.** The cost of different levels of regulation can vary significantly. For example, providing comments through a 401 water quality certification program can be much less costly than administering a full permit program. Do not overlook the associated cost of enforcement, which can be much higher per case than review and issuance of a permit. A realistic budget and identification of funding needs and sources are a critical strategic element of program development.
- **Priority wetlands and associated aquatic resources.** Given the available level of financial and political support, and realistic program expectations, where should regulatory efforts be focused? Is expanded protection needed for particular types of wetlands, or to support maintenance of certain ecological services? For example, is a new initiative needed to provide coastal protection for flood storage in the context of sea level rise? Are there gaps in resource protection resulting from federal regulatory changes?

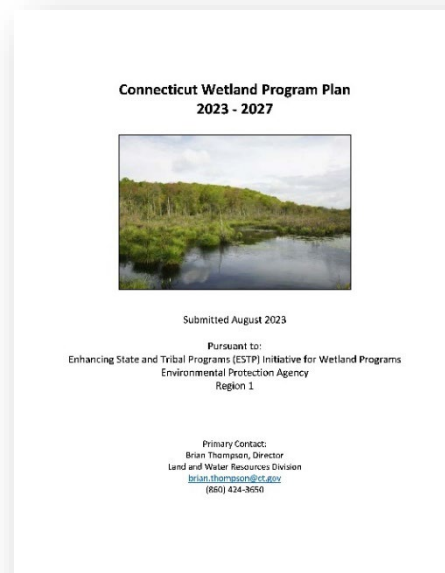
State WPPs typically emphasize particular wetland types or locations for special emphasis. For example, Maine emphasizes the importance



of monitoring and protection of coastal wetlands and shorelines.³² New Jersey’s WPP similarly emphasizes protecting coastal wetlands, while also using research and monitoring to identify and prioritize wetland management areas for restoration and enhancement, incorporating wetlands into comprehensive Watershed Management Plans that serve state water quality management needs.³³

- **Scope of jurisdiction.** What wetlands will be protected by the program, in terms of size, type, and location? How will regulated wetlands be identified? Will a mapping system be a strategic need? What activities will be regulated?

Many states view clear jurisdiction as a critical component of their WPP. For example, Connecticut’s WPP calls upon its state agency to identify a clear scope of jurisdiction, and develop new guidance documents web pages, social media, FAQs and other formats which clearly define municipal vs. state vs. federal jurisdiction over tidal and inland wetlands.³⁴ The Connecticut WPP also emphasizes the importance of a clear scope of regulated activities, which are defined in state statute and regulations, developed and regularly updated on state websites so that regulated activities are easily found and understood.³⁵



- **Leveraging protection through cooperation with other programs.** Many states work with transportation agencies to coordinate needed planning and construction, while freeing up federal permitting resources to focus on other issues. State wetland programs may also draw on the expertise of state fish and wildlife biologists, nonpoint source managers, or state floodplain engineers. Coordinated efforts make sense in terms of resource management and best use of limited staff resources. WPPs may call for developing new relationships among existing agencies and organizations.

³² “Maine Wetlands Program Plan 2023-2028,” available at: [Maine Wetlands Program Plan](#).

³³ “New Jersey Wetland Program Plan 2023-2027,” available at: https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf

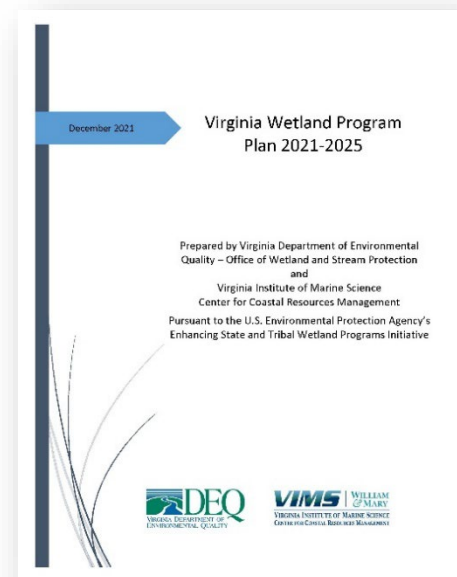
³⁴ “Connecticut Wetland Program Plan, 2023 – 2027,” available at: [ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf](#)

³⁵ Id.

Most state WPPs emphasize the benefits of coordination among state agencies. For example, Virginia’s WPP calls for an Integrated Guidance for Tidal Shorelines, which considers and incorporates regulatory programs under several different state agencies, including the VA Department of Environmental Quality, the VA Marine Resources Commission, and Local Wetland Boards.³⁶ Similarly, Maryland’s WPP includes streamlining environmental review coordination between the state’s Department of the Environment, Department of Natural Resources, and other pertinent agencies.³⁷

- **Staff training.** Regulatory staff need multiple kinds of expertise. They must be able to exercise sound judgment regarding proposed impacts based on their knowledge of aquatic resources, and on any specialized assessment tools or models developed to support the regulatory program. In addition, state regulatory staff need to understand legal issues, regulatory criteria, and potentially enforcement. Staff may be asked to use technical mapping equipment including GIS and GPS, and to maintain regulatory databases. Skills in working with private citizens who may be unfamiliar with permit requirements also are important. The success of a regulatory program thus often rests with the strength of staff recruitment and training. Joint training with partnering agencies may be essential where regulatory responsibilities are shared.

Training is emphasized in most state WPPs, establishing training opportunities for agency staff and decision-makers, as well as for stakeholders and the general public. For example, the Connecticut WPP provides for agency staff to attend national training on inland wetlands condition to gain knowledge that provides a basis for making informed evaluations and decisions.³⁸ Virginia’s WPP includes ongoing presentations to explain the use of the state’s Wetland Condition Assessment Tool (WetCAT) to localities for their comprehensive land use planning. Virginia also anticipates continued workshops, trainings, and publications to support shoreline decision-making.³⁹ Florida’s WPP includes developing a Professional Wetland Delineator Certification Program, to promote the competent application of existing wetland delineation rules by



³⁶ “Virginia Wetland Program Plan 2021-2025,” available at: [Virginia Wetland Program Plan 2021-2025](#).

³⁷ “Maryland Wetland Program Plan 2021-2025,” available at: [md_wetland_program_plan_2021-2025.pdf](#)

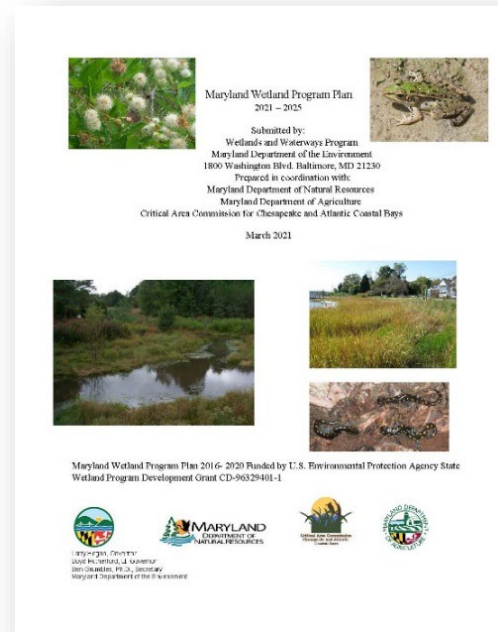
³⁸ “Connecticut Wetland Program Plan, 2023 – 2027,” available at: [ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf](#)

³⁹ “Virginia Wetland Program Plan 2021-2025,” available at: [Virginia Wetland Program Plan 2021-2025](#).

applicants, consultants, and agency staff. Michigan’s WPP includes staff training to improve consistency of its regulatory program, including a schedule and training modules.⁴⁰

- **Program evaluation and reporting.** Program evaluation provides a feedback loop for measuring program success which can in turn lead to identification of future actions. In addition, annual reports of program accomplishments can be very valuable in gaining and retaining program support, particularly when budgets and staffing are tight.

Several state WPPs include explicit activities involving program evaluation and reporting. Maryland’s WPP describes activities to improve the reporting capability and accuracy of its data systems describing authorized wetland losses and gains, which provide critical information for evaluating program performance.⁴¹ New Jersey’s WPP includes several activities related to program evaluation and reporting, such as continuing to monitor wetland mitigation sites for compliance and success rates, assessing values of wetland or riparian buffers, and evaluating the effectiveness of the NJ Coastal Wetlands Act with respect to identifying, protecting, and restoring coastal wetlands.⁴²



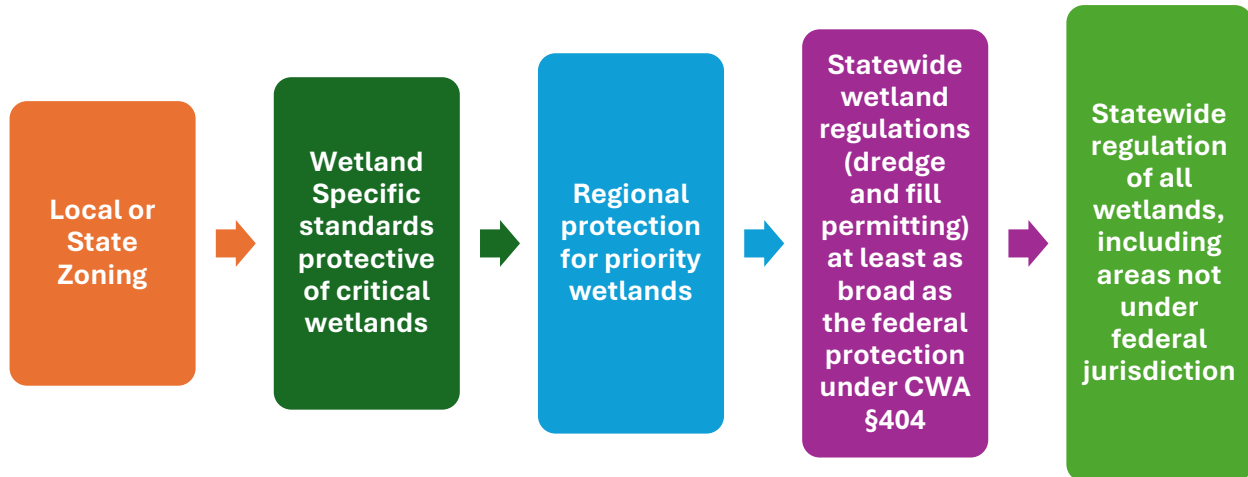
Options for State Regulatory Programs: Differing Levels of Resource Protection

The particular needs of a state might be met by a range of regulatory options. Generally speaking, more advanced regulatory approaches provide more comprehensive regulatory protection, but are also more costly to administer and require greater expertise. Each state will need to evaluate public interest, need for wetland protection (based on both rarity of resources and development pressure), and available financial support. A general continuum of basic to more advanced programs may be described as follows.

⁴⁰ “Michigan Department of Environmental Quality Wetlands Program Plan 2019-2024,” available at: [mdeq_program_plan_2019.pdf](https://www.mdeq.com/wp-content/uploads/2019/03/mdeq_program_plan_2019.pdf)

⁴¹ “Maryland Wetland Program Plan 2021-2025,” available at: [md_wetland_program_plan_2021-2025.pdf](https://www.dnr.state.md.us/wetlands/2021-2025/WetlandProgramPlan2021-2025.pdf)

⁴² “New Jersey Wetland Program Plan 2023-2027,” available at: https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf

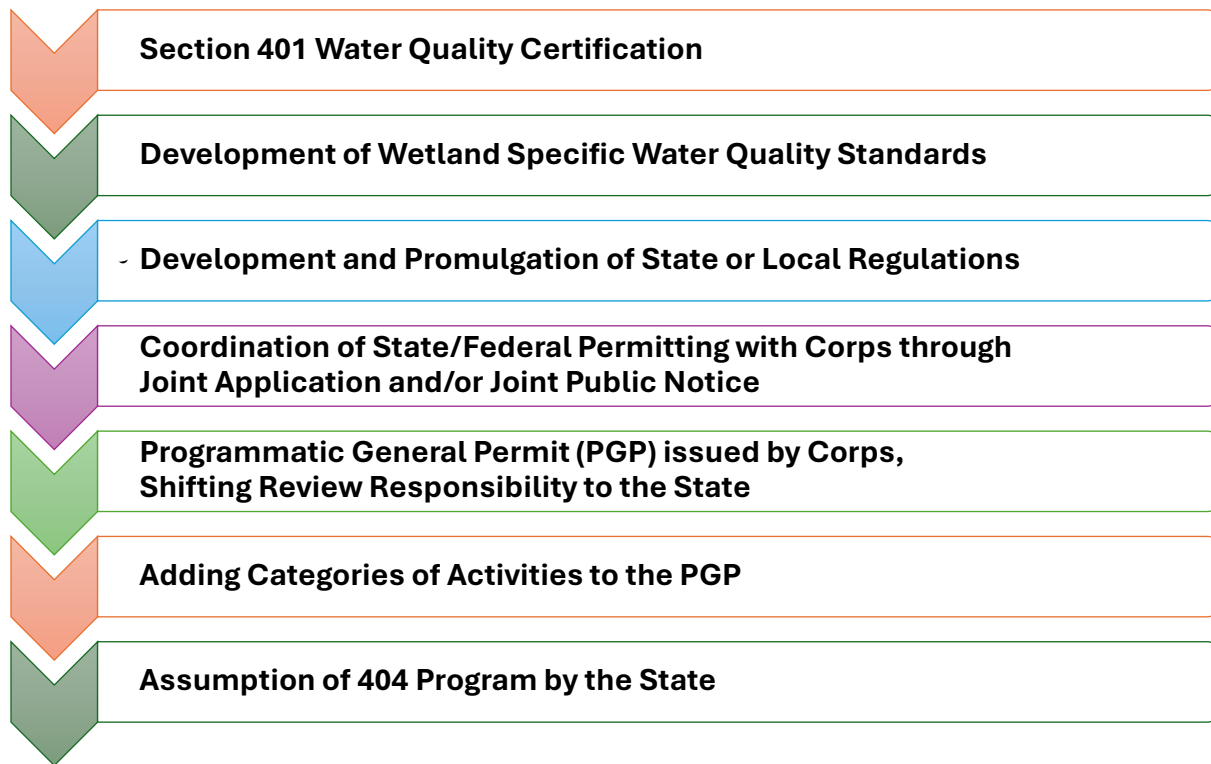


- **Local or state zoning.** Basic protection for wetlands may be provided by zoning provisions that limit defined land uses in wetlands, or that require setbacks from wetlands.
- **Wetland specific standards protective of critical wetlands.** State wetland water quality standards can identify critical wetland areas – such as habitat for rare species, special cultural areas, or groundwater recharge areas – and provide additional protection for defined wetlands. Wetlands water quality standards are a Core Element, discussed on page 52 of this handbook.
- **Regional protection for priority wetlands.** In some states, regulation is carried out only in specified geographic areas – such as wetlands within the defined boundary of a Coastal Zone Management Program. Other states use statutes and regulations to regulate only wetlands above a specific size (acreage), of a certain type (such as vernal pools), or in a particular geographic area (such as a particularly valued and vulnerable watershed).
- **Statewide wetland regulations establishing a permitting program for discharges of dredged or fill material, at least as broad in scope as federal protection under CWA Section 404.** Generally, state regulations can provide protection for the same wetlands regulated under federal law, but with provisions that are specific to the state. States can develop the evaluation criteria for a permit application, and conditions in the resulting permit, that meet their particular resource needs. States also may regulate actions beyond the scope of the federal CWA, such as placement of structures over the wetland, draining wetlands, or alteration of wetland vegetation.
- **Statewide regulation of all wetlands, including areas not under federal jurisdiction.** Since implementation of the federal CWA, the U.S. Supreme Court and other courts have gradually limited the wetlands and waters subject to CWA section 404 permit requirements. Some states have established regulatory programs protecting all state

wetland areas, including geographically isolated wetlands such as some prairie potholes, that are not protected by federal law.

Options for State Regulatory Programs: Differing Levels of State Involvement in Federal Permitting

States wishing to participate in the CWA section 404 permitting program have a wide range of potential levels of state involvement and responsibility from the perspective of federal agencies. The following approaches to regulation involve increasing levels of involvement and responsibility, with associated state cost and staffing needs.



- **Section 401 Water Quality Certification.** All states have the authority under CWA section 401 to review federal licenses or permits that may result in a discharge to waters of the United States. Under 401 certification, the state may certify the proposed discharge would be consistent with applicable water quality standards as well as certain other CWA and state water quality requirements, or waive their authority to do so. The state also may deny certification. If a state does not issue either a certification (with or without conditions) or a waiver, the federal agency may not issue the license or permit.⁴³ Section 401 is applicable to all CWA section 404 permits issued by the Corps, and to several other types of federal authorizations.

⁴³ CWA §401, 33 U.S.C. §1341. For more information on CWA section 401 water quality certification, go to: [Section 401 of the Clean Water Act | US EPA.](#)

Many states rely primarily on section 401 to protect wetlands from undesirable alteration.

- ***Development of Wetland Specific Water Quality Standards.*** While state water quality standards may be generally applicable to wetlands as well as other waters, states can establish more specific standards to protect wetlands. Wetlands-specific water quality standards may look different from standards developed for other types of waters such as lakes and streams. For example, the acceptable minimum dissolved oxygen levels in a wetland may be considerably below levels for other waters, because of the nature of the wetland resource. Some states include other provisions in their water quality standards addressing the alteration of wetlands, roughly parallel to the CWA's section 404(b)(1) guidelines for environmental review of Section 404 permit applications. Wetland water quality standards are a Core Element and discussed on page 52 of this handbook.
- ***Development and Promulgation of State or Local Regulations.*** A state or locality might promulgate a wide range of regulations governing the alteration of wetlands, relying on the state's land use management authority and public trust interest in aquatic resources. Depending on state constitutional provisions, the state may also own the bottomland of wetlands in open water areas and may be able to exert an ownership interest. State and local regulations might parallel provisions of the federal CWA in protecting wetlands from avoidable alteration or destruction, or may be somewhat more or less inclusive, depending on the priorities of the state or locality.
- ***Coordination of State/Federal Permitting with Corps through Joint Application and/or Joint Public Notice.*** A state may coordinate with federal agencies in wetland-related permitting actions, to reduce duplication between agencies and to assist the public. State and federal agencies may, for example, develop a joint permit application form, which could be submitted to either agency, or use a joint public notice soliciting input.
- ***Programmatic General Permit (PGP) issued by Corps, Shifting Review Responsibility to the State.*** Where state authority is at least equivalent to federal authority for specified actions affecting wetlands, the Corps may issue a state Programmatic General Permit (PGP or SPGP), under which approval and issuance of the permit depends primarily on review by the state agency. This in effect shifts responsibility for decisions on specific project categories to the state. Larger projects will still require both state and federal review. The overarching general permit document (agreement) must be renegotiated and reissued every five years.
- ***Adding Categories of Activities to the PGP.*** As states gain regulatory experience, and the relationship between state and federal agencies matures, the Corps may

add more categories to the PGP, thereby relying to a greater extent on the state agency. Expansion of a PGP may be considered as a step in a WPP.

- ***Assumption of 404 Program by the state.*** In 1977, Congress added provisions to Section 404, allowing a state to assume full responsibility for the section 404 permit program in most waters,⁴⁴ excluding traditionally navigable waters (typically, the oceans, the Great Lakes, and large rivers such as the Mississippi or Ohio that carry commercial navigation) and their adjacent wetlands. Since 1977, only three states have been approved to administer the 404 program,⁴⁵ but interest continues among states that wish to further reduce duplication, and to rely to a greater extent on state water programs and environmental criteria.

Any of these steps to develop a regulatory program may be reflected in a state WPP. An addition, revision, or expansion of a program might require multiple actions, such as:

- assessing state needs and priorities;
- drafting potential regulatory language and guidance;
- providing for input from stakeholders and the general public as the state develops regulations;
- developing administrative materials such as permit application forms;
- developing decision-making tools such as assessment methods;
- developing computerized tracking systems; and
- staff training, among others.

The 2023 “Wetlands Program Core Element Framework” discusses activities for each Core Element as falling into three phases: Phase 1 is planning considerations, Phase 2 is data collection and assessments considerations, and Phase 3 is refinement and wetland management decision-making considerations. When discussing a particular Core Element, EPA’s Framework provides a table with actions and a menu of activities for each of the three phases. The EPA tables for the Regulatory Programs Core Element provide several potential actions a state might consider when developing a regulatory program, and when summarizing that program in its WPP.⁴⁶

EPA recommends that states first identify their specific regulatory program needs. After outlining its needs for the program, the state can identify program goals. Program goals can help a state to determine which phase is most appropriate. As EPA notes, “if the goal

⁴⁴CWA §404(g), 33 U.S.C. §1344. Under state assumption of the section 404 program, the Corps retains responsibility for traditional navigable waters and their adjacent wetlands. For more information on CWA section 404 assumption, go to: [Clean Water Act Section 404\(g\) Tribal and State Assumption | US EPA](#)

⁴⁵ States that have assumed the CWA section 404 program include Michigan and New Jersey. Florida had assumed the program, but a court invalidated the assumption based on endangered species considerations.

⁴⁶ EPA, “Tribal, State, and Territory Wetlands Program Core Element Framework,” (EPA-843-R-23-002, February 2023), pp. 17-19.

is to develop a comprehensive and/or formal program, Phase 1 actions and activities are the starting point. If implementation is the focus, then start with Phase 2. If program refinement or decision-making is the focus, then start with Phase 3.”⁴⁷ States should design the program to reflect its specific needs, which could result in a blending of some activities from the same phase or different phases.

EPA recommends that Tribes and States first identify their program specific regulatory program needs. After the needs are outlined for the program, program goals can be identified. The program goals can be used to determine which phase to enter. For example, if the goal is to develop comprehensive and/or formal programs, Phase 1 actions and activities are the starting point. If implementation is the focus, then start with Phase 2. If program refinement or decision-making is the focus, then start with Phase 3.

EPA recommends that you design and build your program to address your specific needs, which could result in a blending of some activities from the same phase or of different phases. The phases are as follows (Table 4-6):

EPA Table 4, Phase 1: Regulatory Planning Considerations

Actions	Menu of Activities
a. Provide clear and comprehensive jurisdictional coverage of aquatic resources	<ul style="list-style-type: none"> • Define “waters of the Tribe or State,” and understand limits of waters of the United States • Make the definition of Tribal or State waters at least as inclusive as CWA (Tribal or State permit program does not need to be as comprehensive as CWA, or they can be more expansive). • Delineate wetlands in a manner that is at least equivalent (or consistent) with the federal program (Tribal or State permit program does not need to be as comprehensive as CWA). • Extend Tribal or State jurisdiction to aquatic resources that are not “waters of the United States” (e.g., isolated wetlands) • Base all water related regulatory programs within a Tribe or State on the same definition of “waters of the Tribe or State” (or even more expansive)
b. Clearly identify a comprehensive scope of activities to be regulated	<ul style="list-style-type: none"> • Adopt clear definition of regulated activities that are regulated under waters of the Tribe or State. (Tribal or State permit program does not need to be as comprehensive as CWA) • Coordinate with other CWA or Tribe or State aquatic regulatory programs to cover all impact types and methods (e.g., quality vs. quantity, point vs. nonpoint source pollution, classes of activities) • Extend Tribal or State jurisdiction to activities that are not regulated under the CWA (e.g., excavation or ditch maintenance)
c. Provide clear guidance to public on how to identify jurisdictional waters and activities	<ul style="list-style-type: none"> • Develop clear, publicly accessible guidance and/or training on how to identify waters of the state/tribe for wetlands, streams, and other waters • Develop clear, publicly accessible guidance on what activities in waters of the state/tribe require which authorizations
d. Evaluation	<ul style="list-style-type: none"> • Periodic review of state/tribal program to ensure all potentially regulated activities are addressed and take appropriate programmatic action (See next table.)

⁴⁷ EPA, “Tribal, State, and Territory Wetlands Program Core Element Framework,” (EPA-843-R-23-002, February 2023) at 17.

EPA Table 4, Phase 2: Regulatory Data Collection, and Assessments Considerations

Actions	Menu of Activities
a. Adopt regulations or rules to implement Tribal or State and/or federal water quality statutes	<ul style="list-style-type: none"> • Adopt guidance to implement statutes as appropriate • Adopt regulations that identify agency goals and responsibilities for all water quality statutes
b. Develop and operate according to a clear and effective set of criteria for reviewing and responding to applications	<ul style="list-style-type: none"> • Develop publicly accessible criteria for applying for and agency review of applications • Establish reasonable timelines for initially responding to applications in regulatory guidelines • Establish reasonable timelines for providing final responses to applications in regulatory guidelines • Develop and implement internal procedures for responding to Federal agencies on permits
c. Actively review proposed impacts to the waters of the Tribe or State	<ul style="list-style-type: none"> • Actively review proposed impacts to waters of the state/tribe or waters of the United States • Develop standard practices or general authorizations for like projects impacting similar aquatic resources
d. Adopt and apply comprehensive project review criteria	<ul style="list-style-type: none"> • Adopt 404(b)(1) Guidelines or comparable review criteria for assessing and minimizing impacts • Adopt more stringent review criteria than the 404(b)(1) Guidelines
e. Coordinate among agencies, programs, and industry groups to reduce duplicative efforts by the programs and the regulated public	<ul style="list-style-type: none"> • Use joint internal and external review processes and practices • Develop clear guidelines for roles, responsibilities, and procedures for review of permits for activities that require approval from more than one state/tribal agency • Issue permit decisions with conditions that they must meet the requirements of other agency permit requirements
f. Require effective mitigation for authorized impacts	<ul style="list-style-type: none"> • Tribe or State establishes a “No Net Loss” policy for regulated aquatic resources • Require effective mitigation for authorized impacts • Tribe or State participate in or serve as Co-Chairs of Mitigation Interagency Review Teams • Require long-term protection at mitigation sites (e.g., restrictive covenant, easement, deed restriction) • Establish minimum requirements and review criteria for mitigation proposals • Require financial assurances for mitigation projects
g. Track permit/certification program activity	<ul style="list-style-type: none"> • Track permit/certification program activity • Map impact and mitigation sites • Administer and regularly update publicly accessible tracking system for impacts and mitigation

EPA Table 4, Phase 3: Regulatory Refinement and Wetland Management Decision-Making Considerations

Actions	Menu of Activities
a. Monitor the implementation of permit/certification conditions	<ul style="list-style-type: none"> • Track # of pre-operation inspections performed by the certifying authority under 40 CFR 121.11(a) • Track# of times certifying authority provides support to Federal agency on enforcement/compliance with certification conditions
b. Enforce aquatic resource protections	<ul style="list-style-type: none"> • Develop and implement enforcement and compliance mechanisms to monitor compliance and deter violations • Set timeframe for sites to come into compliance
c. Ensure impact assessments and mitigation crediting lead to replacement of aquatic resources with similar structural, functional or condition attributes	<ul style="list-style-type: none"> • Develop or adopt functional or condition assessment methodologies • Establish performance standards and success criteria for mitigation • Evaluate mitigation against reference and pre-impact sites regularly; revise performance standards, review criteria, and/or functional/condition assessment methods accordingly • Coordinate regulatory programs with other entities conducting restoration to share best practices, mitigation/restoration priorities, and/or assessment methodologies
d. Incorporate the watershed approach into the regulatory decision-making process	<ul style="list-style-type: none"> • Establish methods for determining cumulative impacts to aquatic resources within a watershed • Evaluate cumulative impacts to aquatic resources within a watershed, with consideration given to communities with environmental justice concerns • In addition to required guidelines, use watershed plans to guide permitting and restoration priorities • Consider impacts and benefits to communities with environmental justice concerns within the watershed when setting priority areas for mitigation and enforcement • Use watershed plans to set priority areas for mitigation • Use Special Area Management Plans, as appropriate
e. Perform public education and outreach about wetland protection, regulated waters and activities, and authorization process	<ul style="list-style-type: none"> • Make education/outreach documents or activities available on important programmatic topics such as: <ul style="list-style-type: none"> ○ Importance of aquatic resources ○ Regulatory program requirements ○ How to identify protected waters ○ Listing regulated activities ○ Regulatory program performance ○ Opportunities for public participation in the protection of aquatic resources, such as public notice and comment periods • Make information available through readily accessible outlets (hotline, website, brochures, etc.) and develop approaches to reaching communities with environmental justice concerns
f. Measure Environmental Results	<ul style="list-style-type: none"> • Tribe or State program develops tracking system used for: <ul style="list-style-type: none"> ○ % permitted sites that are inspected per year ○ % permits in compliance ○ % non-compliant sites where enforcement actions taken ○ % non-compliant sites brought into compliance within timeframe ○ # of unauthorized impacts brought into compliance (annual tracking) ○ % mitigation sites monitored ○ % mitigation sites established ○ % mitigation sites meeting performance goals

Core Element: Voluntary Restoration and Protection

Typically, state wetlands programs have enthusiastically embraced voluntary restoration of wetlands by public and private agencies and organizations, and the long-term protection of wildlife refuges and other wetland natural areas. States can encourage and assist these activities, either directly or with technical support and interagency coordination. WPPs can be useful in defining common goals, defining shared roles and responsibilities, and calling for coordination among organizations and agencies that undertake voluntary programs.

What is Voluntary Restoration and Protection?

EPA's Wetlands Program Core Elements Framework defines wetland restoration as the manipulation of a former or degraded wetland's physical, chemical, or biological characteristics to return to its natural functions. Wetland protection removes a threat or prevents decline of wetland conditions. Voluntary protection can secure and protect wetlands from development through legally binding agreements such as conservation easements,⁴⁸ and so may not rely on a regulatory framework to compel actions.

This handbook broadly addresses those activities that are undertaken by individuals and organizations on a voluntary basis to restore, enlarge, or improve wetlands to support a wide range of ecological functions. Project goals associated with voluntary restoration and protection may include habitat management, water management, flood attenuation, recreation, and other objectives.

Restoration and Compensatory Mitigation. This handbook distinguishes voluntary wetlands restoration efforts from compensatory mitigation restoration efforts called for under the CWA section 404 permitting program. Compensatory mitigation is subject to a different process than voluntary restoration, focusing on whether a proposed project has avoided impacts where possible, has minimized unavoidable impacts, and provided compensation for minimized unavoidable impacts that would result from permit issuance. Wetlands are commonly restored, enhanced, or preserved to provide compensatory mitigation as a condition of a section 404 permit for actions that result in the loss of wetlands, such as construction of roads or buildings. Compensatory mitigation is part of a wetland regulatory program and must be consistent with legally defined standards and specific permit conditions.

⁴⁸ EPA, "Tribal, State, and Territory Wetlands Program Core Element Framework," (EPA-843-R-23-002, February 2023) at 21.

Conservation organizations may use the terms wetland “restoration,” “creation or establishment,” “enhancement,” and “maintenance,” and wetland management programs might include elements of all of these actions. There are many valid definitions for these terms. For reasons of clarity in tracking wetland losses and gains, several years ago a federal interagency committee adopted consistent definitions, which are reflected in EPA’s Core Elements Framework and adapted as follows for use in this document.

Wetland Restoration: the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former or degraded wetland. Restoration practices are sometimes more specifically defined to include (1) re-establishment, the building of a former wetland, and (2) rehabilitation, repairing the functions of a degraded wetland.

Wetland Creation or Establishment: the manipulation of physical, chemical, or biological characteristics to develop a wetland that did not previously exist.

Wetland Enhancement: the manipulation of the physical, chemical, or biological characteristics of a wetland site, undisturbed or degraded, that heightens, intensifies, or improves specific functions. Enhancement might also be for purposes such as water quality improvement, flood water retention or wildlife habitat. Enhancement results in a change in certain wetland functions and can lead to a decline in other wetland functions, and does not result in a gain in wetland acres.

Wetland Maintenance: the removal of a threat to, or preventing decline of, wetland conditions by an action in or near a wetland. Wetland maintenance can refer to the repair or replacement of structures that are already in place, such as dikes or berms, water control structures, or habitat structures. It can also refer to regular modification of hydrology, such as the raising or lowering water levels to achieve management goals, replanting of vegetation, or removal of unwanted vegetation.

Potential State Roles and Activities in Voluntary Restoration and Protection

Voluntary restoration and protection elements in a state’s WPP will depend largely upon identified objectives and specific needs. Needs often vary, reflecting objectives such as habitat improvement, management of water quantity and water quality, and on public interest.

A good starting point for a WPP is an inventory of existing in-state wetland restoration programs supported by state or federal agencies, or by non-governmental organizations and citizen groups. Are these programs sufficient to meet state goals? Would better coordination among voluntary efforts likely result in greater wetland benefits? Are sufficient monitoring and other data available to determine the level of success for restoration programs? Could technical assistance improve program success? Are existing restoration efforts addressing state priorities? What options exist to protect high value

wetlands? How are these efforts coordinated to achieve maximum benefit? These and similar questions may be asked about either new or existing protection and conservation programs.

Answers to such questions might suggest specific activities that a state may decide to include in its WPP, such as the following categories of roles and actions.

Identify wetland status and trends, and define restoration and protection priorities. If a state lacks information necessary to set priorities, a greater understanding of wetland status and trends is a logical starting point. Monitoring and assessment activities, a Core Element discussed earlier, might provide important information to support decision-making. Multiple stakeholders may contribute to the definition of restoration priorities for their own program areas – that is, the priority actions for conservation of habitat for endangered species may be significantly different than the priority actions for conservation of a wetland to provide stormwater management. In other cases, however, goals may align, e.g., restoration to provide flood storage in riparian areas may also enhance wildlife corridors.

Terminology of Voluntary Restoration and Protection. Many agencies and non-governmental organizations doing voluntary wetland restoration and protection sometimes use terms differently. For example, some use the term “conservation” when discussing voluntary wetland efforts, and view the term “protection” as intrinsically referring to regulations and regulatory programs and not encompassing non-regulatory means of preservation. EPA’s CEF uses the terms “voluntary restoration and protection.” This handbook uses the EPA terms for voluntary programs without inferring that protection invariably involves regulation.

Several state WPPs include clusters of activities to help define wetland restoration and protection priorities. For example, Maine’s WPP emphasizes the importance of threats from invasive plants, and includes several activities focused on assessing invasive plants and developing invasive plant management plans.⁴⁹ New Mexico collects and refines information that provides economic justification and other benefits from wetlands restoration, such as cultural, traditional, and aesthetic values.⁵⁰

Define statewide priorities and goals for wetland restoration and preservation, by geographic area or ecological type. Determining goals and priorities is a challenging task, and one that will require input from multiple interest groups to be most effective. Each interest group may have its own priorities, especially groups that work in only a

⁴⁹ “Maine Wetlands Program Plan 2023-2028,” available at: [Maine Wetlands Program Plan](#).

⁵⁰ “Wetlands Program Plan for New Mexico,” available at: [STRATEGIC PLAN FOR WETLANDS PROGRAMS IN NEW MEXICO](#)

particular geographic region. However, a cooperative process may help to determine where priorities overlap, and how individual program goals add up to statewide goals.

For example, Maine’s WPP calls for establishing goals that are consistent or compatible across relevant agencies and organizations, establishing an interagency process to review and update Focus Areas of Statewide Significance (biodiversity hotspots), including significant wetlands. The interagency process considers information about identified threats and historic losses.⁵¹ Iowa’s WPP includes efforts to restore complexes of wetland areas to ensure that several types of wetlands are present on Iowa’s landscape, not just permanent and semi-permanent types.⁵²

Create a coalition of partners and interest groups. Several states have formed ongoing restoration partnerships to facilitate restoration and preservation. These groups can share technical information, support projects of mutual interest, and cooperatively promote public funding and support for voluntary wetland restoration. Partners can encompass state, tribal, federal, and local agencies – including not only habitat and wildlife agencies, but transportation and floodplain managers, watershed managers, agricultural and forestry agencies, and other “unexpected” partners. Non-governmental organizations can include conservation groups such as Ducks Unlimited and Trout Unlimited, land conservancies and trusts, and state or local wetland and aquatic resource associations, among others.

Several state WPPs discuss working collaboratively with localities and non-governmental organizations on wetland restoration and protection projects. For example, as part of local partnerships, Nebraska works to identify rare, vulnerable, or important wetlands and prioritizes them for restoration and conservation. In particular, the effort identifies wetlands with rare plant or animal species and/or high quality plant communities.⁵³

Provide technical training and support. Technical assistance and training can be costly but are often essential for improved wetland protection and restoration. States can organize training opportunities, based either on their agencies’ own expertise or in cooperation with academic institutions or other organizations that can provide training. In some states, on the ground technical support can be provided for demonstration projects. Many long-established wetland restoration programs draw upon multiple agencies and non-profit organizations to provide expertise.

Many state WPPs include specific activities that provide technical training and support for volunteer groups restoring or protecting wetlands. For example, New Jersey’s WPP activities include guidance documents that provide clear options and steps to follow for

⁵¹ “Maine Wetlands Program Plan 2023-2028,” available at: [Maine Wetlands Program Plan](#).

⁵² “Wetland Program Plan for Iowa,” available at: [iowa_wpp_final_1_29_16.pdf](#)

⁵³ “Wetland Program Plan for Nebraska 2019-2023,” available at: [final_wetland_program_plan_nebraska_2019.pdf](#)

restoration, creation, enhancement, and “protection” of wetlands.⁵⁴ New Jersey also provides technical assistance for coastal shoreline resilience projects.⁵⁵ Maine’s WPP includes activities that involve providing clear guidance on appropriate restoration and management techniques and success measures. Maine also provides training and other technical assistance for the evaluation of invasive plants (such as invasiveness, level of threat, habitat associations, management guidelines), and works with partners to encourage the development of invasive plant management plans.⁵⁶ Connecticut has developed technical assistance for wetland restoration and protection, such as a design manual on nature-based solutions and other guidance on appropriate restoration and management techniques and success measures.⁵⁷

Evaluate and report on project and program success. Given funding constraints, the evaluation of project success is often limited. However, the cooperative evaluation of restoration and protection efforts – including an assessment of progress toward defined goals – is essential to support future efforts, and to adjust methods and approaches to improve success. Monitoring and assessment are essential tools for adaptive management.

Directly participate in wetland restoration or protection to meet identified state goals. Many states directly undertake restoration and protection projects. The actions and underlying objectives can vary. For example, states may carry out wetland restoration and enhancement on public lands to meet habitat goals, support floodplain restoration projects through stormwater or floodplain management programs, protect water quality by establishing filter strips or similar projects through nonpoint source programs, provide expertise in carrying out federal programs such as the Wetland Resource Program or the North American Conservation Act, obtain easements over critical rare habitat types or wetlands with special cultural significance, or participate in many similar efforts. This work may be carried out directly by the state or in partnership with other stakeholders funded in part by the state.

Provide public education and information. Non-governmental organizations, local agencies, and private landowners may be interested in wetland protection or restoration but lack the information to proceed. States can provide technical information, including cautions regarding unintended consequences and information about when a voluntary

⁵⁴ “New Jersey Wetland Program Plan 2023-2027,” available at: https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf

⁵⁵ Id.

⁵⁶ “Maine Wetlands Program Plan 2023-2028,” available at: [Maine Wetlands Program Plan](#).

⁵⁷ “Connecticut Wetland Program Plan 2023-2027,” available at: [ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf](#)

restoration project may require permits. States also can help link these groups to additional resources and generally facilitate and encourage voluntary efforts.

For example, the Wisconsin Department of Natural Resources provides a series of online materials on wetland restoration, including potential sources of project funding.⁵⁸ New Jersey's WPP calls for the state to identify funding opportunities that could enable its Department of Environmental Protection to partner with education outreach groups. New Jersey also recruits volunteers for restoration projects to increase hand-on experience, community building, and the feeling of ownership.⁵⁹ Maine's WPP calls for a review of approximately 600 Forest Management Plans annually for five years. It also calls for wetlands data to be available to owners managing more than five million acres of private forest land in an effort to promote wetland conservation on private lands. Data includes information about significant wetland habitats and rare species to enable owners to make informed decisions on forested and other types of land.⁶⁰

Improve existing or develop new wetland restoration and preservation methods and programs. More experienced or advanced state programs may wish to experiment with more difficult restoration efforts – such as those to restore forested wetlands or peatlands. They may consider development of new methods to provide legal protections – a range of conservation easement models have been developed in various parts of the country.

Incorporate wetland restoration and preservation into state watershed management plans. States that have developed the expertise needed to identify and guide wetland restoration and protection needs and tools are encouraged to participate directly in watershed planning. The restoration of wetlands has the potential to contribute significantly to watershed goals. In some instances, wetland restoration may be a key component in maintaining the integrity of watershed functions. Chapter 4 discusses several federal programs that provide funds for wetland restoration, and for watershed plans that can help locate restoration projects where they will provide significant benefits.

Many state WPPs include efforts to consider wetlands restoration and protection efforts on a watershed basis, including incorporating such efforts into watershed management plans. For example, Colorado has developed and maintains its Watershed Prioritization Dashboard to help users prioritize watershed conservation and restoration efforts to maintain and improve the quality of Colorado's aquatic resources.⁶¹ Maine's WPP explicitly considers watershed planning, wildlife habitat, and other objectives when selecting sites

⁵⁸ Wisconsin Department of Natural Resources materials on wetland resources are available at:

<http://dnr.wi.gov/topic/wetlands/restoration.html>

⁵⁹ "New Jersey Wetland Program Plan 2023-2027," available at:

https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf

⁶⁰ "Maine Wetlands Program Plan 2023-2028," available at: [Maine Wetlands Program Plan](#).

⁶¹ "Colorado Wetland Program Plan 2020-2024," available at: [colorado-wetland-program-plan-2020-2024.pdf](#)

for wetland restoration or protection.⁶² Maine also works with partners to incorporate marsh migration and coastal resilience data into conservation, restoration, or municipal planning decisions.⁶³ Nebraska considers watershed planning, wildlife habitat, water quality, and other objectives when selecting wetland restoration or protection sites.⁶⁴

Explore new or developing issues. Strategic planning should include thinking about future needs and about responding efficiently to new or unexpected issues. Environmental resiliency, adaptation, and mitigation fit into both categories – responses to changing rainfall, temperature, and other parameters will be a long-term process, but some immediate needs are already apparent. For example, approaches to restoration of wetland habitat damaged by the combination of sea level rise and extreme storm events are already a concern in some southern and east coast states. States may also need to respond to unexpected emergency situations – such as a major oil spill that contaminated wetlands adjacent to the Kalamazoo River in Michigan.⁶⁵ State wetland managers will be better prepared to address new or unexpected threats if they have developed general expertise in wetland restoration, and also if they have built networks with other knowledgeable agencies and organizations.

As discussed in previous chapters, the 2023 “Wetlands Program Core Element Framework” discusses activities for each Core Element as falling into three phases: Phase 1 is planning considerations, Phase 2 is data collection and assessments considerations, and Phase 3 is refinement and wetland management decision-making considerations. When discussing a particular Core Element, EPA’s Framework provides a table with actions and a menu of activities for each of the three phases. The tables for the Voluntary Restoration and Protection Core Element provide several potential actions a state might consider when developing an approach towards voluntary restoration and protection activities, and when summarizing that approach in its WPP.⁶⁶

EPA recommends that states first identify their program specific voluntary restoration and protection needs. After a state has outlined its needs for the program, a state can identify its program goals. The program goals can be used to determine which phase to enter. For example, if the goal is to determine program needs or to develop a more comprehensive or formal program, Phase 1 actions and activities are the starting point. If implementation is the focus, then start with Phase 2. If program refinement or decision-making is the focus, then start with Phase 3.

⁶² “Maine Wetlands Program Plan 2023-2028,” available at: [Maine Wetlands Program Plan](#).

⁶³ Id.

⁶⁴ “Wetland Program Plan for Nebraska 2019-2023,” available at: [final_wetland_program_plan_nebraska_2019.pdf](#)

⁶⁵ Information on the Kalamazoo River oil spill is available at several online sites, such as: [Kalamazoo River oil spill - Wikipedia](#); [Oil Spill – KRWC](#).

⁶⁶ EPA, “Tribal, State, and Territory Wetlands Program Core Element Framework,” (EPA-843-R-23-002, February 2023), pp. 23-28.

EPA Table 7, Phase 1: Voluntary Restoration and Protection Planning Considerations

Actions	Menu of Activities
<p>a. Establish or become an active partner in a state or tribal voluntary restoration and protection program</p>	<ul style="list-style-type: none"> • Determine if the state or tribal has a formal “no net loss” of wetland acreage or function policy • Determine if the state or tribal has a formal aquatic resource/wetlands protection and restoration program • Investigate Tribal or State environmental justice policies and demographic mapping information • Examine Tribal or State agencies that have aquatic resource protection and restoration in their mission; consider objectives related to forestry, wildlife management, nonpoint source pollution, equitable access to ecosystem services, natural heritage, flood control, historic preservation, parks and recreation, climate adaptation and coastal zone management • Develop a multi-agency stakeholder group to coordinate restoration/ protection efforts and share wetland restoration priorities; include climate adaptation programs, community based environmental justice organizations, and overburdened or underserved communities • Develop a comprehensive restoration and protection strategy • Consider different partnership models: <ul style="list-style-type: none"> ○ Various programs within one agency ○ Multi-agency body ○ Federal Land Management Agencies ○ Stakeholders ○ Other • Develop formal goals that are consistent or compatible across relevant agencies • Outline benefits or steps to establish “no-net loss of wetland acreage” policy • Evaluate wetland restoration and protection in existing state or tribal watershed planning efforts • Determine inclusion of aquatic resource protection in state or tribal conservation planning • Determine inclusion of aquatic resource protection in state or tribal environmental justice initiatives • Gather information on wetland location, class, and condition/functions and socioeconomic data
<p>b. Collect and enhance wetland information as a foundation for a restoration and protection actions, strategy, or program</p>	<ul style="list-style-type: none"> • Inventory science- based tools used in Tribal or State wetland restoration and conservation planning • Enhance wetland data for informing restoration decisions, consider using various types of Tribal/State specific information such as: <ul style="list-style-type: none"> ○ Aquatic resource mapping data ○ Color-infrared photography

Actions	Menu of Activities
	<ul style="list-style-type: none"> ○ Wetland monitoring and assessment data ○ Field inspection of soil, vegetation, and hydrologic conditions) to identify and prioritize restorable wetlands ○ Functional assessment methods • Develop a needs assessment for wetland restoration decision making tools (i.e., monitoring protocols, functional assessment, restoration prioritization methods) • Identify or collect Tribal/State information related to rare, vulnerable, culturally important wetlands • Identify or collect information on cultural practices that are dependent on wetlands • Identify and collect information on economic trends, resiliency and activities that are dependent on specific wetland complexes in your Tribe or State • Pursue other specific information on how wetlands contribute to quality of life in your Tribe or State • Identify local decision makers and key stakeholders involved in wetland conservation and restoration. • Identify opportunities for local decisionmakers and key stakeholders to support wetland restoration and protection goals • Develop a targeted communication strategy for sharing data on restoration priorities, high value wetlands, vulnerable wetlands, and aquatic resources in your Tribe or State with special considerations given to communities with environmental justice concerns. Consider developing communication and outreach products in various languages • Increase accessibility of Tribal or State data, information and assessment tools used to prioritize areas for protection and restoration • Establish data sharing partnerships to leverage additional wetlands restoration and protection • Evaluate gaps and utility in Tribal or State data and assessment tools used to prioritize areas for protection and restoration. Evaluate gaps in information related to overburdened and underserved communities.
<p>c. Consolidate and provide guidance on Tribal and State restoration and protection management techniques and success measures</p>	<ul style="list-style-type: none"> • Implement communications strategy to share restoration and protection information and priorities with stakeholders • Provide wetland and aquatic resource data layers to existing state-level GIS and land-use decision making tools • Develop and promote model approaches to incorporating wetlands protection and restoration in comprehensive watershed plans, e.g., prioritize restoration sites within a watershed • Actively promote the use of Tribal or State data and assessment tools in Tribal or State conservation plans

Actions	Menu of Activities
	<ul style="list-style-type: none"> • Provide clear guidance for wetlands restoration to address climate adaptation, flood protection, coastal resiliency. • Develop long-term management plans for protected wetlands. Maintain an inventory of voluntary wetland protection and restoration projects. Consider tracking: <ul style="list-style-type: none"> ○ Large scale conservation programs active in the Tribal/State lands, ○ Demonstrations connecting wetland restoration to regulatory requirements and reporting (e.g., WQS, TMDLs, CZRA) ○ Specific projects demonstrating wetlands' role in landscape scale watershed planning and water quality improvements. ○ Projects that utilized innovative sustainable financing ○ Projects in communities with environmental justice concerns • Develop restoration and management guidance specific to wetland types, locations, census tracks (e.g., urban vs. rural) • Establish ecological benchmarks for gauging restoration success • Establish measures of restoration success, (e.g., adopt functional and/or condition indicators and field methods) • Establish performance standards based on reference wetland site in a relatively undisturbed condition • Through guidance, encourage restoration outcomes that recreate natural self-sustaining systems and reduce the need for ongoing management • Verify restoration techniques with site visits and adapt as necessary • Train restoration partners to use guidance techniques



Necedah National Wildlife Refuge in Wisconsin

EPA Table 8, Phase 2: Voluntary Restoration and Protection Data Collection, and Assessments Considerations

Actions	Menu of Activities
<p>a. Increase wetland acreage through restoration (reestablishment)</p>	<ul style="list-style-type: none"> • Develop restoration and management plans for reestablished wetlands consistent with restoration guidance. Consider tracking: <ul style="list-style-type: none"> ○ Acres of wetlands re-established ○ Restoration sites using techniques that comply with guidance ○ Level of function/condition based on indicators • Provide technical assistance to re-establishment projects as needed
<p>b. Improve natural wetland conditions and functions through restoration (rehabilitation)</p>	<ul style="list-style-type: none"> • Develop restoration and management plans for rehabilitated wetlands consistent with restoration guidance. Consider tracking: <ul style="list-style-type: none"> ○ Acres of wetlands rehabilitated ○ Improvement on function/condition indicators ○ Net change in water quality, flood control, or habitat ○ Acres of wetlands rehabilitated, improvement on function/condition indicators, net change in water quality, flood control, habitat access to recreation in underserved communities • Provide technical assistance to restoration projects as needed • Share restoration and protection priorities with partners • Develop restoration and management plans for restored wetlands consistent with restoration guidance. Consider tracking: <ul style="list-style-type: none"> ○ Number of restoration agreements ○ Acres of wetlands restored through partnerships ○ Acres of priority wetlands restored through partnerships • Provide technical assistance to partners as needed
<p>c. Establish and institutionalize long-term protection, through Tribal/State support and assistance using mechanisms such as incentives, purchase of land title or easements to protect wetlands</p>	<ul style="list-style-type: none"> • Develop or identify guidance and resources for protecting Tribal/State wetlands through land acquisition and conservation easements • Identify and promote model local ordinances for open space protection, wetland conservation, flood control, nature-based solutions/green infrastructure • Develop inventory of wetland conservation efforts - Consider tracking: <ul style="list-style-type: none"> ○ Number of partnerships created for wetland protection and restoration ○ Number of stewardship agreements

Actions	Menu of Activities
	<ul style="list-style-type: none"> ○ Acres of wetlands protected through partnerships ○ Acres of vulnerable wetlands protected through partnership ● Develop long-term management plans for protected wetlands. Consider tracking: <ul style="list-style-type: none"> ○ Acres of wetlands protected, with focus on benefits to communities with environmental justice concerns ○ Acres of vulnerable wetlands protected, with a focus on benefits to communities with environmental justice concerns

EPA Table 9, Phase 3: Voluntary Restoration and Protection Refinement, and Management Decision-making

Actions	Menu of Activities
<p>a. Track restoration/protection projects over time using short-term and long-term benchmarks of success</p>	<ul style="list-style-type: none"> ● Develop and populate accessible tracking database for restoration/protection sites ● Administer and update tracking database regularly. Consider Tracking: <ul style="list-style-type: none"> ○ % of total acres of restoration/protection sites throughout state or tribal lands that are in database ○ Track projects by watershed or another relevant spatial unit
<p>b. Monitor restoration/protection sites to ensure that they are managed correctly, contribute to meeting water quality goals and ecological health</p>	<ul style="list-style-type: none"> ● Monitor effectiveness of all or a sample of sites representative of wetland class, type, and size using adopted indicators and methods. ● Track acres or numbers of restored/protected wetlands that are comprehensively monitored for ≥ 3 years ● Select subset of indicators (core indicators) to monitor effectiveness of all restoration and protection sites ● Monitor effectiveness of restoration/protection sites using core indicators-Consider: <ul style="list-style-type: none"> ○ Acres or % of restored/protected wetlands monitored for ≥ 3 years using core indicators ○ Acres or % meeting established performance goals based on function/condition indicators ● Update monitoring and performance records regularly ● Regularly report wetland restoration/protection efforts to relevant entities (other agencies, public, etc.)

<p>c. Modify restoration/protection techniques as needed</p>	<ul style="list-style-type: none"> • Develop process to review restoration and protection methods and modify as needed • Develop process to review restoration and protection sites as needed and plan for follow-up site maintenance, restoration, and protection activities, particularly for sites in overburdened or underserved communities
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Common Issues and Challenges

Voluntary restoration and protection of wetlands are typically viewed as positive “feel-good” steps when undertaken in cooperation with private landowners. However, some issues can arise. Planners should be aware of the following:

- **Conflicting resource or land management goals.** While many restoration projects can provide multiple wetland functions and benefits when completed, others may favor one type of wetland or wetland function over others. For example, impoundment of a stream may be beneficial to waterfowl, but detrimental to some fish habitat and plant communities. Expansion of wetlands to provide stormwater treatment may result in degradation of the existing aquatic system. Those interested in preservation of open space may also discover opposition from development interests. Restoration strategies should recognize the potential for conflict and establish a means to address it through interagency workgroups or other means.
- **Difficult-to-restore wetland types.** Some types of wetlands can be difficult to re-establish once altered. These can include forested wetlands, peatlands, and other types that are highly sensitive to hydrologic alterations and can require decades to restore. It may be difficult to restore *any* type of wetland if surrounding land use changes limit the available water supply. Strategic planning should include consulting with experts in restoration techniques.
- **Permitting requirements.** Restoration planners may be surprised to learn that permits are frequently required for wetland restoration. This is because restoration often involves some form of construction (e.g. dikes, blocking of streams) or filling of portions of wetlands to build dams to hold water that may trigger state and federal permit requirements. WPPs should include support for the permit process.
- **Changing environmental conditions.** Traditionally, restoration of the type of wetland that existed historically on a site has been considered the most effective approach, because it replaces what “belongs” on site. However, as environmental conditions change, it may be more effective to consider projected future conditions when planning for restoration of sustainable wetland areas. WPPs provide an

opportunity to address adaptive management and other means of adding flexibility to project plans.

- **Cost.** There is no doubt that cost is one of the most significant limiting factors in wetland restoration and protection. Collaboration among multiple interest groups is the most common way to address this need, sharing costs and staff expertise. It is also important to demonstrate program success – by monitoring and reporting on completed projects – in order to support future funding from the state and other organizations.

Core Element: Water Quality Standards for Wetlands

The federal Clean Water Act (CWA) establishes goals including “restore and maintain the chemical, physical, and biological integrity of the nation’s waters,”⁶⁷ and attain “water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water.”⁶⁸ Water quality standards articulate these general statutory goals in a form specific enough to serve as a benchmark from which many things happen under CWA programs.

Water quality standards serve several purposes. Standards can be used to determine whether state waters are clean enough to be usable for their intended uses such as drinking water supply, or whether waters are degraded and in need of cleanup or protection. Standards determine the extent of treatment required for discharges of pollutants under the CWA section 402 National Pollutant Discharge Elimination System (NPDES) program. Proposed CWA section 404 permits for discharge of dredged or fill material must be consistent with applicable water quality standards. Standards are one of the decision criteria as states consider whether to issue a CWA section 401 water quality certification for a proposed federal permit or license that may result in a discharge to waters of the United States.

The CWA requires states to develop water quality standards for all “waters of the United States” protected under the CWA, including wetlands.⁶⁹ In practice, wetlands have lagged behind other types of waters in terms of water quality standards development. States have addressed this gap in different ways. Some have adjusted general state standards so that they apply to wetlands as well as other waters. Others have developed wetland-specific water quality standards, reflecting the special characteristics and needs of wetlands. Because wetlands are distinctive, standards may rely more on biological and functional

⁶⁷ CWA §101(a), 33 U.S.C. §1251(a).

⁶⁸ CWA §101(a)(2), 33 U.S.C. §1251(a)(2).

⁶⁹ See CWA §303, 33 U.S.C. §1313.

measurements, such as vegetation or macroinvertebrate diversity, than on chemical parameters alone.

Common Elements of a Wetland Water Quality Standards Program

EPA has developed five key steps for developing water quality standards for wetlands:

1. Define wetlands as “state waters”
2. Designate uses that protect the structure and function of wetlands;
3. Adopt narrative criteria, and appropriate numeric criteria in the standards to protect the designated uses;
4. Adopt narrative biological criteria in the standards; and
5. Extend the antidegradation policy and implementation methods.⁷⁰

These five steps often result in states undertaking a suite of standards-related activities, described below.

Ensure that wetlands are included in the definition of “state waters” and protected by the state’s water quality program. This step includes expressly including wetlands in the state statute defining “state waters” or establishing the water quality standards program. The state will also need a definition of wetlands, typically in regulations providing additional detail about the statutory water quality programs. The definition of state waters and wetlands should be at least as inclusive as the CWA definition.

Develop wetland-specific designated uses. These designated uses should protect the structure and function of wetlands, such as habitat for water-dependent wildlife, flood flow attenuation, groundwater recharge, nutrient cycling, and native floral and faunal diversity and abundance. In addition, designated uses should reflect cultural and

Developing Wetland Water Quality Standards May Involve Several Steps.

New Mexico’s Wetlands Program has developed a nine-step process for the development of wetlands water quality standards. (1) Mapping and classification update; (2) Identifying wetland functions by wetland type (designated uses); (3) Hydrogeomorphic classification applied to mapped wetlands (4) Measuring the condition of wetlands by wetland type; (5) Identifying stressors that affect wetland condition (impairments); (6) Database development; (7) Unique identifiers for each wetland (Assessment Units); (8) Using these data to develop a defensible narrative standard by wetlands type; (9) Plan for outreach to the public regarding the development and uses of wetland water quality standards. From: “Strategic Plan for Wetlands Programs I New Mexico,” available at: [STRATEGIC PLAN FOR WETLANDS PROGRAMS IN NEW MEXICO.](#)

⁷⁰ See “EPA Water Quality Standards for Wetlands: National Guidance” (July 1990); Appendix D of the Water Quality Standards Handbook Online Edition (2024).

traditional uses, recreation, and other uses. Wetland-specific designated uses may require analysis of monitoring information and other data. Depending on state wetland goals and the diversity of wetland types, states may wish to establish different designated uses for different types of wetlands.

Several state WPPs include development of wetland water quality standards, including steps addressing the need to evaluate potential wetland designated uses and criteria. For example, Connecticut is evaluating whether designated uses for wetlands are necessary, and if wetlands-specific water quality classifications are needed or useful for the state.⁷¹ Maine’s WPP describes steps the state is taking to establish and adopt appropriate wetland-specific designated uses. Currently, designated uses for other surface waters in the state apply to wetlands, including tiered aquatic life uses.⁷²

Establish narrative criteria to describe the wetland condition or functions that are expected to achieve each designated use. Most states do not have extensive experience developing water quality standards specifically for protecting wetlands. Establishing narrative criteria is typically the best approach when first developing water quality standards for these complex waters. Narrative criteria may describe the structure and species composition of a wetland type. They may also define condition – often in a “free from” format, such as free from oils and grease. Narrative standards should be well documented, including procedures for determining compliance with the standards. EPA has provided narrative templates for developing wetland water quality standards.⁷³

Connecticut’s WPP describes plans to consider adopting narrative criteria to define and support existing water quality standards as they apply to wetlands. In addition, the state is evaluating the need for additional narrative criteria and standards to support the wetlands management program and other programs with wetland-related tasks.⁷⁴ Currently, Maine’s narrative criteria for other surface waters applies to wetlands, including narrative biological criteria.⁷⁵ New Jersey is selecting a core set of indicators to represent wetland condition and a suite of functions, including presence of wetland-dependent wildlife, diatom indices, and those needed to develop wetland water quality standards.⁷⁶

⁷¹ “Connecticut Wetland Program Plan 2023-2027,” available at: [ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf](https://www.ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf)

⁷² “Maine Wetland Program Plan 2023-2028,” available at: [Maine Wetlands Program Plan](https://www.maine.gov/wetlands/program-plan).

⁷³ “Narrative Templates for Wetland Water Quality Standards,” available at: [Templates for Developing Wetland Water Quality Standards | US EPA](https://www.epa.gov/wetlands/narrative-templates-for-wetland-water-quality-standards).

⁷⁴ “Connecticut Wetland Program Plan 2023-2027,” available at: [ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf](https://www.ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf)

⁷⁵ “Maine Wetland Program Plan 2023-2028,” available at: [Maine Wetlands Program Plan](https://www.maine.gov/wetlands/program-plan).

⁷⁶ “New Jersey Wetland Program Plan 2023-2027,” available at: https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf

Establish numerical criteria to provide quantitative limits for specific chemical, physical, and biological parameters. Where feasible, states should develop numeric criteria to target specific pollutants and other parameters that could impact wetland functions. Numeric criteria can be difficult to define for wetlands, given the extreme range in “normal healthy” condition for wetlands. For example, desirable levels of dissolved oxygen in rivers, lakes and other surface waters are far greater than found in a healthy wetland. Normal pH also varies significantly among wetlands. For this reason, many wetland water quality standards currently rely heavily on narrative criteria. Some states have established their own numeric criteria, including adopting the federal goal of no net loss of wetlands.

Some states are considering numeric criteria for wetlands. For example, Maine’s WPP indicates the state has established provisional numeric criteria for wetlands involving macroinvertebrates and epiphytic algae. The state is initiating rulemaking to incorporate wetland-specific numeric criteria for wetland macroinvertebrates and algae into Maine’s biological criteria rules. The state also is using biological monitoring data to complete statistical models for macroinvertebrates and epiphytic algae to interpret narrative criteria for wetlands. Models will serve as a basis for wetland-specific numeric criteria when implemented into rules.⁷⁷

Develop antidegradation policies that protect wetland designated uses and prohibit lowering the quality of outstanding wetlands. Anti-degradation policies protect existing water quality from pollution and degradation. These policies typically reflect three tiers of protection: Tier I protects existing uses in all waters, Tier II safeguards high-quality waters from significant degradation. Tier III provides the highest level of protection for “Outstanding National Resource Waters” (ONRWs), which are waters with exceptional attributes, often prohibiting new discharges altogether.

State WPPs that include plans to develop water quality standards should also address the states’ anti-degradation policies protecting wetlands. For example, Maine’s WPP includes steps to review its anti-degradation policy as part of numeric criteria rulemaking process and will clarify issues for wetlands as needed.⁷⁸

Submit new or modified water quality standards to EPA for review every three years. When a state submits water quality standards for approval by EPA, those standards must include designated uses, the criteria to protect those uses, and an anti-degradation policy. These standards are reviewed every three years by the state and EPA as part of the “Triennial Review Process.” New and modified standards for wetlands and other surface waters can be developed in anticipation of a Triennial Review.

⁷⁷ “Maine Wetland Program Plan 2023-2028,” available at: [Maine Wetlands Program Plan](#).

⁷⁸ “Maine Wetland Program Plan 2023-2028,” available at: [Maine Wetlands Program Plan](#).

Incorporate wetland specific water quality standards into decision-making. Approved wetland standards will govern many state decisions affecting water quality. For example, if a state implements a NPDES permit program in lieu of the federal program, those permits will include requirements to treat discharged pollutants at levels consistent with applicable water quality standards.⁷⁹ Under CWA section 401 water quality certification, state decisions regarding whether to issue a certification with or without conditions, or to deny certification, must be consistent with applicable water quality standards.⁸⁰ Section 404 permits for discharge of dredged or fill material must not violate applicable water quality standards.⁸¹ More broadly, state watershed-based planning ideally will be informed by applicable wetland water quality standards.

Link water quality standards to monitoring and assessment programs, and to program reports to EPA. Development and implementation of defensible wetland water quality standards is a data-intensive effort and is likely to be dependent on a successful wetland monitoring and assessment program. For example, New Jersey is developing a monitoring and assessment strategy to help inform the development of potential wetland water quality standards. The state is evaluating existing indices and examining the potential to develop new indices that are relevant to water quality impacts on wetlands. In addition, New Jersey is inventorying existing datasets and completing a literature search to help set thresholds of wetland-specific water quality standards, and compiling wetland water quality reference criteria by wetland function and type.⁸²

States may use data collected through aquatic resource monitoring programs in its biennial reports to EPA on the quality of assessed waters. The resulting EPA Section 305(b) Report (named after the CWA section requiring the report) provides a state-by-state assessment of water quality in rivers, lakes, streams, wetlands, and other surface waters.

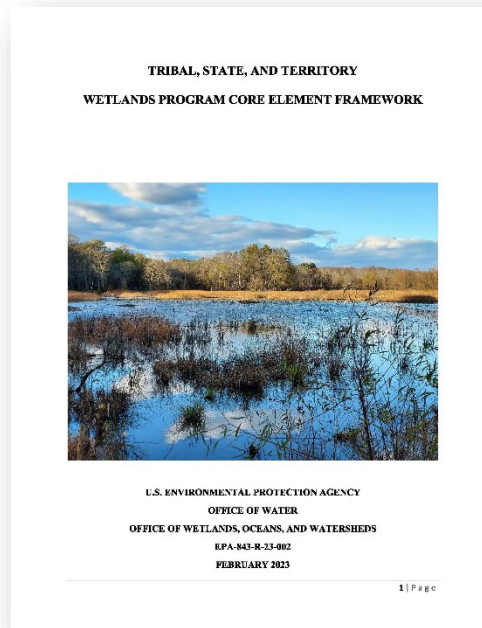
⁷⁹ See, e.g., “NPDES Permit Writers’ Manual,” available at: [NPDES Permit Writers' Manual | US EPA](#).

⁸⁰ CWA §401(a), 33 U.S.C. §1341. See also 40 C.F.R. Parts 121, 122, and 124.

⁸¹ See the CWA section 404(b)(1) Guidelines at 40 C.F.R. §230. These regulations are the substantive environmental criteria the Corps and EPA use in evaluating activities regulated under CWA §404.

⁸² “New Jersey Wetland Program Plan 2023-2027,” available at: https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf

As mentioned previously, EPA’s 2023 “Wetlands Program Core Element Framework” discusses activities for each Core Element as falling into three phases: Phase 1 is planning considerations, Phase 2 is data collection and assessments considerations, and Phase 3 is refinement and wetland management decision-making considerations. When discussing a particular Core Element, EPA’s Framework provides a table with actions and a menu of activities for each of the three phases. The tables for the Water Quality Standards for Wetlands Core Element include potential actions a state might consider when developing wetland water quality standards, and when summarizing its approach in the state WPP.⁸³



EPA Table 10, Phase 1: Water Quality Standards for Wetlands Planning Considerations

Actions	Menu of Activities
<p>a. Adopt an appropriate definition of “waters” that includes wetlands</p>	<ul style="list-style-type: none"> • Include wetlands in State/Tribal legal definition of “waters” • Ensure “wetlands” definition is at least as inclusive as the CWA definition • Ensure legal definition of “waters of the Tribe or State” is at least as inclusive as the CWA definition • Remove any regulatory language excluding defined wetlands from water quality standards
<p>b. Ensure the appropriate wetlands definition is included in water quality standards</p>	<ul style="list-style-type: none"> • Include appropriate definition of “wetlands” in Tribal or State policy or regulations authorizing water quality standards program (e.g., wetland size, type, ownership)

⁸³ EPA, “Tribal, State, and Territory Wetlands Program Core Element Framework,” (EPA-843-R-23-002, February 2023), pp. 31-35.

EPA Table 11, Phase 2: Wetland-Specific Water Quality Standards Data Collection and Assessment Considerations

Actions	Menu of Activities
<p>a. Collect and analyze monitoring data and other information that will become basis of wetland water quality standards</p>	<ul style="list-style-type: none"> • Define wetland types/classes (e.g., HGM, Cowardin or both) • Identify and map wetlands that will be monitored for water quality standards • Establish reference conditions for defined wetland types in terms of functional/condition performance and other physical and biological measurements • Assess and document the gaps in the Tribal and State wetland protection and restoration efforts, and the consequences of failure to protect water quality and hydrologic integrity • After the gaps in protection are identified, a Tribal and State can then begin to develop a plan for filling the gaps. Consider tailoring the Tribes' and States' existing monitoring and assessment activities to support better protection. Answer the following questions: a) Do functions of specific wetland types need to be documented? b) What is a logical strategy for developing future, strengthened wetland standards? and c) Does the information needed already exist or should additional monitoring or studies be conducted? • An analysis should be made of existing Tribal or State authorities. Sometimes authorities exist in Tribal and State law that has not been fully utilized. Tribes and States should assess what new authorities (if any) are needed to fill the gaps. • Develop a plan for more comprehensive protection by including both regulatory and non-regulatory components such as working with NRCS, local watershed groups, etc. • Form an advisory group consisting of experts from pollution control, flooding, stormwater, transportation, forestry, fish & wildlife, natural hazards and other agencies to help with

Actions	Menu of Activities
	<p>development and implementation of a strategic plan.</p> <ul style="list-style-type: none"> • Conduct scientific studies to support water quality criteria to protect designated uses and determine if there are sufficient parameter or constituents to protect the designated uses. Monitor and maintain the biological, physical and chemical conditions of reference wetlands, specifically: base flow, flow regime, wetland hydroperiod; chemical, nutrient, dissolved oxygen regime of the wetland; conditions favorable to protection and propagation of threatened, endangered, and at-risk species; conductivity; floristic quality; integrity of species diversity, abundance, zonation; normal movement of fauna; pH of wetland waters; salinity (if applicable); size shape; soil type horizon structure; water currents, erosion, or sedimentation patterns; water levels or elevations; and water temperature variations.
<p>b. Establish appropriate wetland specific designated uses to be achieved and protected</p>	<ul style="list-style-type: none"> • Identify appropriate designated uses for different wetland types taking into consideration the use and value of a wetland for base flow discharge, flood flow attenuation, groundwater recharge, indigenous floral fauna diversity & abundance, nutrient cycling, organic carbon export/cycling, protection of downstream water quality, fish and wildlife habitats, cultural and traditional uses, recreational purposes, resilience against climatic effects, sediment/shoreline stabilization, and surface water storage. <ul style="list-style-type: none"> o Monitor designated uses o Map where designated uses apply
<p>c. Adopt appropriate wetland specific designated uses to be achieved and protected</p>	<ul style="list-style-type: none"> • Incorporate designated uses into Tribal and State administrative regulations, guidance, or statutes. Tribes and States may best adopt designated uses as administrative regulations with some requirements (e.g., permit guidance) issued as guidance. • Develop an outreach and communication strategy to ensure Tribal and State government and the public (incl the regulated community) understand the purpose, importance, and benefits of more comprehensive and coordinated protection.
<p>d. Establish narrative criteria where numeric criteria cannot be established or to supplement numeric criteria that qualitatively describe the condition or suite of functions that must be achieved to support a designated use</p>	<ul style="list-style-type: none"> • Establish narrative physical criteria (e.g., fill material not present, no hydrologic alterations) • Establish narrative biological criteria (e.g., species composition, population dynamics, structure) • Develop General Requirements • Determine Aesthetic Qualities language • Develop Protection of Cultural and Traditional Uses language • Develop Downstream Protection language • Monitor and maintain the biological, physical and chemical conditions of reference wetlands,

Actions	Menu of Activities
	<p>specifically: base flow, flow regime, wetland hydroperiod; chemical, nutrient, dissolved oxygen regime of the wetland; conditions favorable to protection and propagation of threatened, endangered, and at-risk species; conductivity; floristic quality; integrity of species diversity, abundance, zonation; normal movement of fauna; pH of wetland waters; salinity (if applicable); size shape; soil type horizon structure; water currents, erosion, or sedimentation patters; water levels or elevations; and water temperature variations</p> <ul style="list-style-type: none"> • Develop technical documents to support the narrative criteria with numerical data; this document describes the types of narrative and numerical data that will be used in determining attainment of the standard
<p>e. Adopt narrative criteria that qualitatively describe the condition or suite of functions that must be achieved to support a designated use</p>	<ul style="list-style-type: none"> • Incorporate narrative criteria into state/tribal administrative regulations, guidance, or statutes. Tribes and States may best adopt narrative criteria as administrative regulations with some requirements (e.g., permit guidance) issued as guidance.
<p>f. Establish numeric criteria representing wetland specific values for chemical, physical, and biological parameters that may not be exceeded, must be exceeded, or some combination to protect or restore designated uses</p>	<ul style="list-style-type: none"> • Establish numeric criteria for biological attributes based on wetland type and location (e.g., plant or macroinvertebrate indices, algae) • Establish numeric criteria for chemical constituents based on wetland type and location (e.g., nutrients) • Establish numeric criteria for physical parameters based on wetland type and location (e.g., buffer characterizations, microhabitats) • Review the numeric water quality criteria in Tables 1-6 (EPA's Section 304a National Recommended Water Quality Criteria). • Determine if omitting a criterion for some or all of its wetlands is needed. • Determine if any adjustments need to be made to any or some of the criterion values before adopting them into the Tribal or State water quality standards.
<p>g. Adopt numeric criteria representing wetland specific values for chemical, physical, and biological parameters that may not be exceeded, must be exceeded, or some combination to protect or restore designated uses</p>	<ul style="list-style-type: none"> • Incorporate numeric criteria into state/tribal administrative regulations, guidance, or statutes. Tribes and States may adopt numeric criteria as administrative regulations with some requirements (e.g., permit guidance) issued as guidance.
<p>h. Better define Tribal and State antidegradation policies for wetlands, requiring full protection of existing uses (functions and/or condition), maintenance of functions/condition in high quality wetlands, and a prohibition against lowering functions/conditions in outstanding national resource waters</p>	<ul style="list-style-type: none"> • Include wetlands in antidegradation policies • Include restoration potential of wetlands in antidegradation policies • Administer and enforce antidegradation policies for wetlands • Develop measures to ensure antidegradation is being applied successfully in a manner specific to wetlands

Actions	Menu of Activities
	<ul style="list-style-type: none"> • Develop general policies addressing implementation issues (e.g., low flows, variances, mixing zones). Tribes and States must not only adopt water quality standards for “waters of the United States.” but must assess waters and review and revise water quality standards (CWA section 303(c))
<p>i. Draft and finalize water quality standard regulations</p>	<ul style="list-style-type: none"> • Examine the regulations and WQS of other Tribes and States such as Wisconsin, Minnesota, Ohio, and North Carolina • Consider EPA's 1990 recommendations for state wetland water quality regulations; consider the draft regulations in Appendices A and B of the templates • Anticipate and plan for EPA approval of your water quality standards for wetlands at a future date. The Tribal or States regulations should be structured so that it is possible for only the 'standards" portion of the state's program to be forwarded to EPA for review and approval. • Determine if adopting such regulations can be done in stages, such as administrative regulations, or as a comprehensive approach such as adopting wetland water quality standards and a new permitting authority all at once

EPA Table 12, Phase 3: Refinement and Wetland-Specific Water Quality Standards for Decision-making

Actions	Menu of Activities
<p>a. Use wetland water quality standards as basis for regulatory decisions</p>	<ul style="list-style-type: none"> • Use wetland water quality standards (as part of the Tribe or State’s water quality requirements) to develop CWA section 401 certification decisions • Base permit decisions, including mitigation requirements, on wetland water quality standards • Track wetland impacts avoided or mitigated based on wetland water quality standards, via permitting actions
<p>b. Use wetland water quality standards as basis for evaluating restoration/protection projects and mitigation/compensation projects</p>	<ul style="list-style-type: none"> • Use wetland water quality standards in restoration guidelines • Track restoration/protection projects that are monitored for compliance with wetland water quality standards • Track restoration/protection sites that meet wetland water quality standards • Identify remedial measures for sites that do not meet wetland water quality standards
<p>c. Incorporate wetland water quality standards into monitoring and assessment program</p>	<ul style="list-style-type: none"> • Update monitoring strategy and methods based on wetland water quality standards • Track acres monitored for compliance with wetland water quality standards • Regularly report on wetland status and trends relative to wetland water quality standards
<p>d. Develop geographically defined wetland protection, restoration, and management plans</p>	<ul style="list-style-type: none"> • Identify and prioritize management areas (e.g., identify vulnerable wetlands, prioritize restoration potential underserved or overburdened communities) • Incorporate wetlands into a comprehensive Watershed Plan that serves Tribal and State water quality management needs and addresses all waters • Evaluate progress toward meeting wetland objectives identified in other projects/programs (e.g., wildlife action plans, climate action plans, and water and equity strategies) • Inform broader watershed activities (e.g., reducing erosion, providing floodplain storage, reducing nutrient loading, reducing risks to underserved/overburdened communities)

Common Issues and Challenges

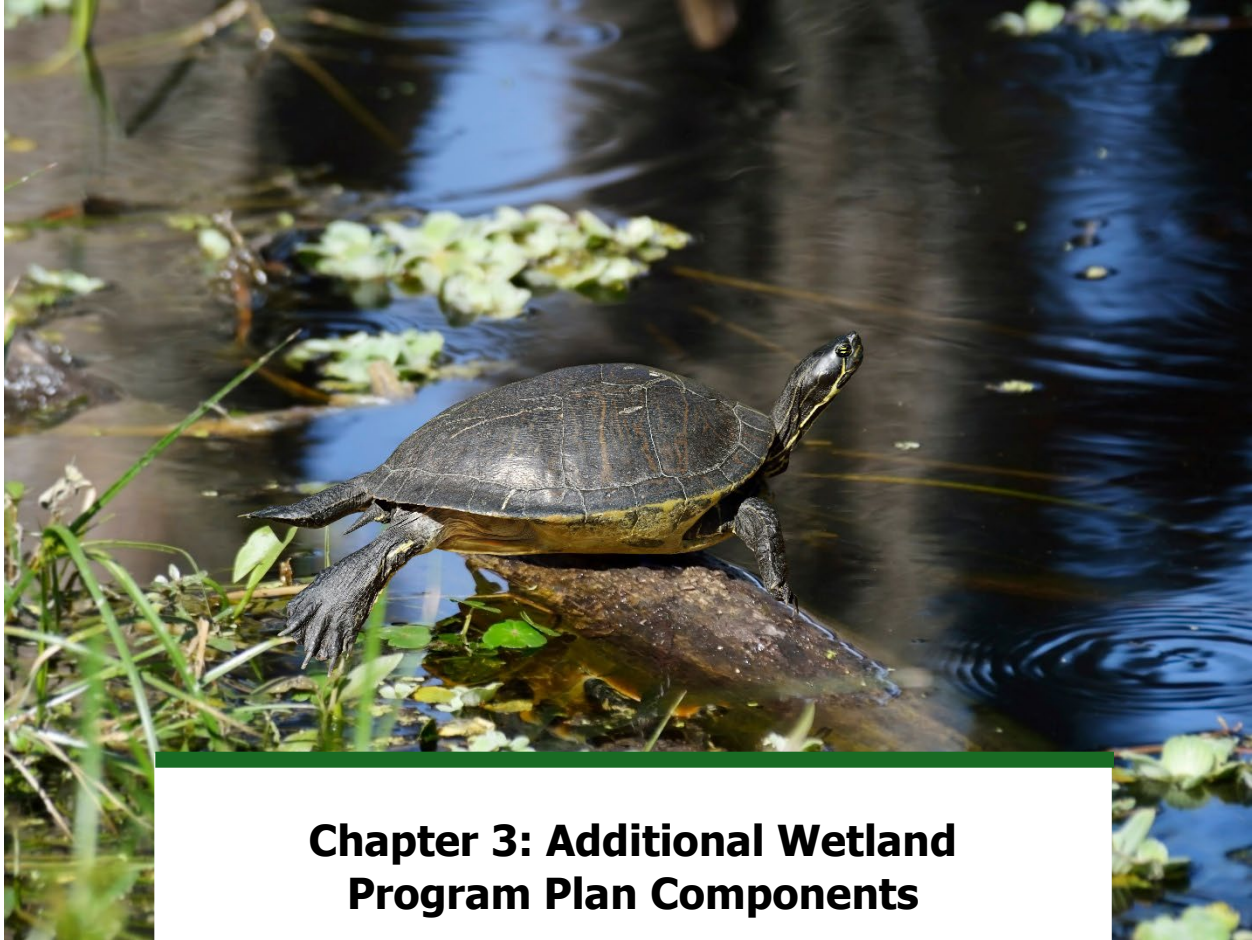
Lack of technical information and data. Many states have not completed all potential components of wetland-specific water quality standards simply due to the lack of technical information. States may lack scientifically informed and acceptable numeric criteria for many parameters, or lack monitoring data for all wetlands within state boundaries. As a result, a WPP might focus initially on aspects of wetland water quality standards that demand less specific data, such as the definition as waters, narrative criteria, and designated uses. If numeric criteria are a goal, then a WPP may need to include a suitable research and monitoring program.

Lack of understanding of wetland issues by water program managers, and lack of knowledge of water quality standards requirements by wetland managers. Ideally, water quality program and wetland program experts will work together to develop wetland-specific standards. Agency staff who are familiar with the technical requirements of water quality standards can help guide wetland managers, who in turn can point out issues specific to wetlands such as variability of pH and dissolved oxygen in a healthy wetland. It is important to recognize that wetland and water quality standard experts use different terminology to describe similar, but not identical concepts. For example, wetland functions could be used as designated uses but will need discussion with and consideration by the water quality staff.

Concern about added layers of state regulation. Stakeholders subject to NPDES permits to control water pollution, or section 404 permits addressing dredged or fill material, may be wary of new state water quality standards for wetlands. Stakeholders may raise concerns about added layers of state regulation and associated costs and delays. There may be concerns regarding increased regulation of stormwater or other discharges to wetlands. Strategic planning should recognize the need for clearly defined goals, and plan to work with stakeholders and the general public throughout the process.

New Jersey's WPP describes a collaborative approach for considering options for wetlands-specific narrative and numeric standards, involving the Department of Environmental Protection's Natural and Historic Resources, Science and Research, Land Use Management, and Water Resource Management offices, as well as the Pinelands Commission and Highlands Council. New Jersey is also evaluating the nexus between water quality standards for wetlands and existing mechanisms to protect, maintain, and restore the wetlands.⁸⁴

⁸⁴ "New Jersey's Wetland Program Plan 2023-2027," available at: https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf



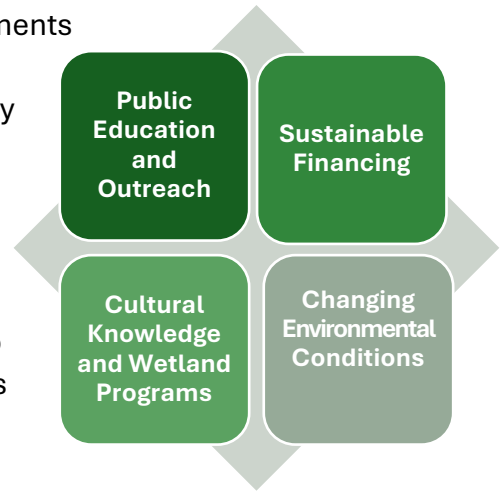
Chapter 3: Additional Wetland Program Plan Components

As discussed earlier, the Core Elements Framework (CEF) defines the four Core Elements of a wetland protection program⁸⁵. The CEF structure provides a logical and comparable framework for planning and discussion that also is flexible. EPA does not require state Wetland Program Plans (WPPs) to include all four Core Elements. Many WPPs address all four Core Elements while others focus on a subset, and still others include additional elements beyond those in the CEF to tailor a WPP to a state's individual needs. These additional program elements might be intended to place greater emphasis on activities by placing them in their own WPP section even though they arguably could fall under other

⁸⁵ Core Elements in the Core Element Framework include (1) Monitoring and Assessment, (2) Regulatory Activities, (3) Voluntary Restoration and Protection, and (4) Water Quality Standards for Wetlands. See EPA, "Tribal, State, and Territory Wetlands Program Core Element Framework," (EPA-843-R-23-002, February 2023). For additional information on the Core Elements Framework (CEF) and the four Core Elements, go to EPA's website at: [Core Elements of Effective State and Tribal Wetland Programs | US EPA](#).

Core Elements. Alternatively, the additional program elements might address issues of importance to a state that are not currently a priority by the Environmental Protection Agency (EPA). This chapter explores some of the additional wetland protection elements that appear in WPPs.

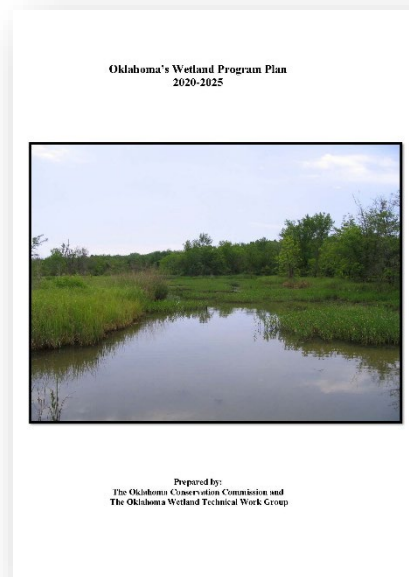
For many states, additional or alternative program elements emerge as part of the WPP development process as discussions highlight activities most central to achieving the state’s wetland program goals. Other states actively engage the public for input regarding what should be included as a WPP’s Core Elements. For example, Nevada sent a WPP-focused survey to a wide variety of wetland stakeholders. Based on the results of this survey and additional stakeholder conversations in subsequent years, Nevada’s current WPP focuses on four program elements, representing a mix of those in the CEF and issues flagged by stakeholders. Core Elements for Nevada’s WPP include: Monitoring and Assessment; Voluntary Restoration and Protection; Partnerships, Outreach and Education; and Sustainable Financing.⁸⁶



Public Education and Outreach

Most states include public education and outreach as activities within the CEF, often placing those activities under the Core Elements of Monitoring and Assessment and Voluntary Restoration and Protection. For example, New Jersey seeks to increase community involvement and a sense of ownership in voluntary restoration, creation, and enhancement projects. To achieve this goal, New Jersey holds forums with communities to ensure local needs are directly addressed in local projects, and actively recruits volunteers for restoration projects to increase hands-on experience, community building, and the feeling of ownership.⁸⁷

Other states identify public education and outreach as sufficiently important to be considered as its own Core Element. Oklahoma’s WPP reflects each of the



⁸⁶ [WPP_NV_2023_Final.pdf](#)

⁸⁷ https://www.epa.gov/system/files/documents/2023-6/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf

four Core Elements in the CEF, and an additional Core Element of “Education and Outreach” because the state sees education as a crucial step towards improved wetland management in Oklahoma.⁸⁸ Similarly, Iowa’s WPP adds a fifth Core Element in its WPP, “Program Development Activities for Education”⁸⁹ and Virginia’s WPP includes “Outreach and Education” as a Core Element.⁹⁰ New Jersey includes public outreach and education as an additional Core Element, even though outreach and education are addressed in several of the Core Elements in its WPP, because of the integral importance of education and outreach to successful efforts in wetland assessment, regulation, restoration, and protection.⁹¹

Public education and outreach activities often fall into two categories: training on available wetland data, methods, and tools, and general public outreach regarding the importance of wetlands and their status and trends.

Training. State WPPs frequently include training programs for state and local watershed organizations and other groups, on topics such as wetland restoration, monitoring and assessment, and monitoring protocols. Such training provides important guidance for citizen monitoring as well as voluntary restoration and protection projects. For example, New Jersey has developed best management practices documents for use by the public to identify, design, construct, and monitor restoration projects. The state is also exploring the development of a citizen science wetland monitoring program, backed by an educational program for state and local watershed groups.⁹² Connecticut similarly has provided guidance on appropriate restoration and management techniques and success measures, and has developed a nature-based solutions design manual as technical assistance.⁹³ Vermont provides ongoing guidance on how to identify jurisdictional wetlands.⁹⁴ New Mexico has developed several technical guides, such as “Applying Keyline Design Principles to Slope Wetland Restoration in a Headwater Ecosystem,” and provides workshops and training. Goals of New Mexico’s technical assistance are to engage and inform partners, enhance partners’ capacity to proactively monitor and restore wetlands, encourage stakeholders to be more involved in wetland issues, and increase the role and capacity of the state wetlands program.⁹⁵

⁸⁸ [Microsoft Word - Oklahoma_WPP_2020_12.01.2020.docx](#)

⁸⁹ [iowa_wpp_final_1_29_16.pdf](#)

⁹⁰ [Virginia Wetland Program Plan 2021-2025](#)

⁹¹ https://www.epa.gov/system/files/documents/2023-6/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf

⁹² https://www.epa.gov/system/files/documents/2023-6/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf

⁹³ [ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf](#)

⁹⁴ [10/15 DRAFT – excerpt from MA Wetland Program Plan - SAMPLE](#)

⁹⁵ [STRATEGIC PLAN FOR WETLANDS PROGRAMS IN NEW MEXICO](#)

Outreach. Several state WPPs emphasize the relationship between an informed citizenry and support for wetland protection programs. Most if not all WPPs include activities that disseminate information about the importance of wetlands in the landscape, as well as the state’s wetlands condition and function. For example, Oklahoma’s WPP includes several outreach and education-related activities intended to provide landowners, land-users, resource managers, and policymakers with the necessary information to manage wetland resources and provide the general public with information regarding the importance of wetlands.⁹⁶ Vermont’s WPP includes several types of public education and outreach, such as a series of wetlands-focused regional workshops for interested municipalities, organizations, and citizens, and creating an annual report of wetland losses and gains.⁹⁷ New Jersey’s WPP seeks to increase the opportunities for school children to have positive hands-on experiences in and around wetlands, thereby fostering meaningful connections to the resource.⁹⁸

Sustainable Financing

Most state wetland programs are funded through a combination of state and federal sources. Securing sustained funding is always challenging, particularly during times when states are evaluating competing priorities in light of shrinking budgets. State wetland program managers work actively to find funding sources.

State wetland programs typically pay for personnel, lab monitoring supplies, travel, contractual work, data management, mapping, website maintenance, outreach & education, training, permitting (e.g. site visits, applications), vehicles for field work, overhead expenses, grant administration, and other costs. Because a state has limited funds for its environmental programs, the state’s wetland programs often seek to identify additional sources of funding. To do this, sometimes a state wetland program may partner with another agency on a grant, where each agency gets part of the funding. EPA’s Wetland Program Development Grant (WPDG) program has been an important source of support for many state wetland programs. However, one of the challenges is that WPDGs cannot be used for program implementation; currently funds can only be used for program development, such as writing regulations but not issuing permits. As a result, most state wetland programs have funding that comes from multiple sources.

⁹⁶ https://www.epa.gov/system/files/documents/2022-02/oklahoma_wpp_2020-2025-12-01-2020.pdf

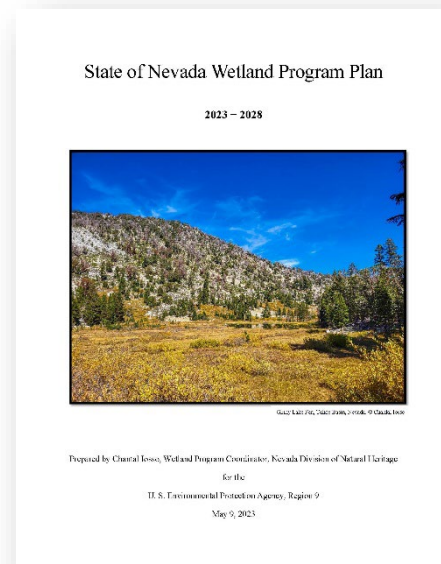
⁹⁷ [10/15 DRAFT – excerpt from MA Wetland Program Plan - SAMPLE](#)

⁹⁸ https://www.epa.gov/system/files/documents/2023-6/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf

State WPPs often include activities involving identifying and securing funding for wetland protection programs. For some, such as Nevada, sustainable financing is considered so important the state’s WPP identifies sustainable financing as a Core Element. Nevada’s WPP notes that, without reliable and diverse funding for its Wetland Program, activities can become piecemeal and subject to inevitable changes in agency priorities or staffing. Therefore, the WPP views activities to secure sustainable financing as “paramount to its success in protecting wetlands in the face of threats that do not disappear when funding does.”⁹⁹ Montana is actively developing additional funding sources within Montana Department of Environmental Quality (DEQ) to support wetland program work, and to

institutionalize the Wetland Program as a component of DEQ water resource responsibilities. These efforts include identifying other DEQ programs with impacts to wetlands and riparian areas or programs with opportunities to financially support wetland program activities, such as EPA grants for nonpoint source-related projects under Clean Water Act (CWA) section 319 funding.¹⁰⁰ Some state wetland protection programs are looking outside the state’s environmental agency for funds. For example, Colorado’s WPP discusses an income tax refund check-off program that provides opportunities for a portion of a tax refund to voluntarily go to “funding for all phases of wetland and riparian creation, restoration, and enhancement.”¹⁰¹ Several states have considered raising permitting fees to help offset program costs.

Most state wetland protection programs seek federal grant funding for support. EPA’s website provides substantial information on available funding from EPA and other federal agencies.¹⁰² EPA intends WPDGs to provide eligible applicants an opportunity to conduct projects that promote coordination and acceleration of research and demonstrations, training, surveys and studies that help develop an effective wetland program.¹⁰³ Other EPA grants similarly may be a source of funding for wetland programs. For example, EPA’s Five Star and Urban Waters Restoration Program provides “modest” financial assistance to diverse local partnerships for wetland, forest, riparian, and coastal habitat restoration,



⁹⁹ [WPP_NV_2023_Final.pdf](#)

¹⁰⁰ [mtdeq_wetland_program_plan_3_6_20.pdf](#)

¹⁰¹ [colorado-wetland-program-plan-2020-2024.pdf](#)

¹⁰² See, e.g., [Funding and Grants | US EPA](#)

¹⁰³ For more information about the WPDG program, go to: [Wetland Program Development Grants and EPA Wetlands Grant Coordinators | US EPA](#)

stormwater management, outreach and stewardship with a particular focus on water quality, watersheds, and the habitats they support.¹⁰⁴ The Clean Water and Drinking Water State Revolving Funds (SRFs) could be a substantial source of wetland program funding for state, local, and volunteer projects. The two SRFs combine federal capitalization grants and state funds to provide below market interest rate loans for eligible projects. As the low-interest loans are repaid, those funds are then available to be used again for new projects; hence the “revolving” nature of these funds. Projects that may be eligible for funds from the Clean Water SRF include wetland acquisition, creation, restoration and purchase through conservation easements.¹⁰⁵ The Drinking Water SRF may fund wetland projects with drinking water-related benefits.¹⁰⁶ EPA recently issued a resource guide for states and Tribes applying for wetland program funding from the SRFs.¹⁰⁷ Other sources of potential EPA funding for wetland programs include CWA section 106 grants for water pollution control,¹⁰⁸ and CWA section 319 grants for nonpoint source control,¹⁰⁹ among others.¹¹⁰

Cultural Knowledge and Wetland Programs

Cultural knowledge, often referred to as indigenous knowledge or traditional ecological knowledge (IK/TEK), is the knowledge held by Indigenous cultures about the environment, the cultural practices that build on that knowledge, and the evolving relationship between humans and the natural world. It includes knowledge, practices, and beliefs that have developed over generations and in some cases centuries or millennia. Wetlands and other water resources hold an essential place within IK/TEK. Tribes and other indigenous communities recognize the critical role of these resources in maintaining the health and welfare of both community members and the community itself. The health and management of these resources can affect every aspect of indigenous life. The importance of tribal WPPs is discussed at length in “Protecting Waters and Wetlands in Indian Country: A Guide for Developing Tribal Wetland Management Programs.”¹¹¹

Tribes and other indigenous communities increasingly are forming partnerships with state agencies and other entities. Such partnerships require that states and others learn about

¹⁰⁴ For more information on the Five Star and Urban Waters Restoration Grant Program, go to: [Five Star Wetland and Urban Waters Restoration Grants | US EPA](#) and [5_star_and_urban_waters_fact_sheet.pdf](#)

¹⁰⁵ A complete list of SRF eligibilities is available at: [Overview of CWSRF Eligibilities](#)

¹⁰⁶ To read eligibility criteria for the Drinking Water SRF, go to: [Drinking Water State Revolving Fund Eligibility Handbook](#) and [Scanned Document](#).

¹⁰⁷ [srf-wetlands-resource-guide.pdf](#)

¹⁰⁸ [Water Pollution Control \(Section 106\) Grants | US EPA](#)

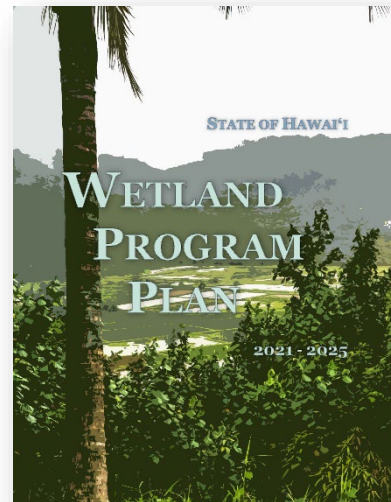
¹⁰⁹ [319 Grant Program for States and Territories | US EPA](#)

¹¹⁰ For a discussion of other EPA grants potentially funding wetlands protection activities, as well as grant programs from other federal agencies, go to: [Funding and Grants | US EPA](#)

¹¹¹ EPA, “Protecting Waters and Wetlands in Indian Country: A Guide for Developing Tribal Wetland Management Programs,” (December 2022: EPA 840B21005).

the meaning and role of IK/TEK in indigenous cultures. Working with state, local, and federal agencies and institutions, as well as other partners, tribal or indigenous leadership may propose creative options for wetlands management and protection. For the collaboration to succeed, partners may need to create more flexible and appropriate mechanisms for funding, sustaining programs, and protecting and nurturing wetland ecosystems and aquatic resources. In recent years, presentations, webinars, and conferences have brought IK/TEK practitioners together with state agencies, academics, and others to exchange knowledge and increase understanding.¹¹²

Several states' WPPs explicitly consider IK/TEK when developing and implementing wetland protection programs. Hawaii's WPP integrates social, cultural, and traditional uses of wetlands into its management and planning efforts. Hawaii's Department of Land and Natural Resources (DLNR) works with local stakeholders to identify social, cultural, and traditional uses of wetlands, and encourages appropriate practices within communities for wetland-based activities. DLNR also has developed guidance for rulemaking and management plans to provide and protect sustainable uses.¹¹³ New Mexico's WPP



emphasizes that the interests of the state are critically linked economically, ecologically and culturally to good water quality and wetlands. To help ensure cultural and traditional values are reflected in wetlands program decision-making, the state is continuing to refine information on cultural and traditional values of wetlands restoration, along with economic and aesthetic justifications.¹¹⁴

Changing Environmental Conditions

State websites frequently discuss benefits from wetlands, including how wetlands can help adapt to changing environmental conditions and increase overall environmental resiliency.¹¹⁵ Wetlands are dynamic systems that experience cycles of wet and dry phases on seasonal, annual, and decadal scales. Because of that natural variability, wetlands may be able to continue providing ecosystem services despite environmental changes, such as cleaning up polluted water, recharging groundwater, slowing and storing

¹¹² Id.

¹¹³ [hawaii_wetland_program_plan_2021.pdf](#)

¹¹⁴ [STRATEGIC PLAN FOR WETLANDS PROGRAMS IN NEW MEXICO](#)

¹¹⁵ See, e.g., [Wetlands & climate change - Washington State Department of Ecology](#)

flood waters, and providing habitat for many different native plant and animal species. As environmental conditions change, many of these wetland services will be in greater need.

State and local agencies and organizations are becoming increasingly interested in the science and development of adaptation, resiliency, and mitigation plans that incorporate nature-based solutions such as wetland protection, restoration and creation. Coastal communities are being heavily damaged from extreme storm events and sea level rise. Inland communities are being impacted by severe flooding and drought.¹¹⁶

Several states' wetland programs address both potential effects of changing environmental conditions on wetlands and other aquatic resources, as well as the role wetlands can play in enhancing environmental resiliency. States' interest in wetland restoration and protection programs to protect remaining wetlands is increasing, particularly in coastal states. For example, Maryland has sought to implement wetland restoration and conservation programs to protect the state's remaining coastal wetlands from changing environmental conditions. Maryland uses the Sea Level Affecting Marshes Model to factor in sea level rise projections to create a comprehensive understanding of coastal wetland areas throughout the state, helping to identify wetland migration areas and high priority wetlands for protection.¹¹⁷ New Hampshire has developed a Climate Action Plan, and incorporated several of its activities into the state's WPP. For example, New Hampshire participates in Wildlife Action Plan revisions to incorporate changes in species lists and stream program improvements.¹¹⁸ The Virginia Coastal Master Planning Framework acknowledges the risk of coastal flooding and noted in its WPP that "Virginia needs a unified and comprehensive strategy to identify critical assets and areas of concern, and preferred approaches to improve resilience."¹¹⁹ Of the WPP's 18 objectives, eight are specifically linked to resiliency issues including sea level rise. As noted in Virginia's WPP, "[t]his reflects the import of climate impacts on wetlands and conversely, the role of wetlands to moderate climate processes and provide climate related benefits such as flood storage, flood buffering, erosion abatement, water quality improvement and more."¹²⁰



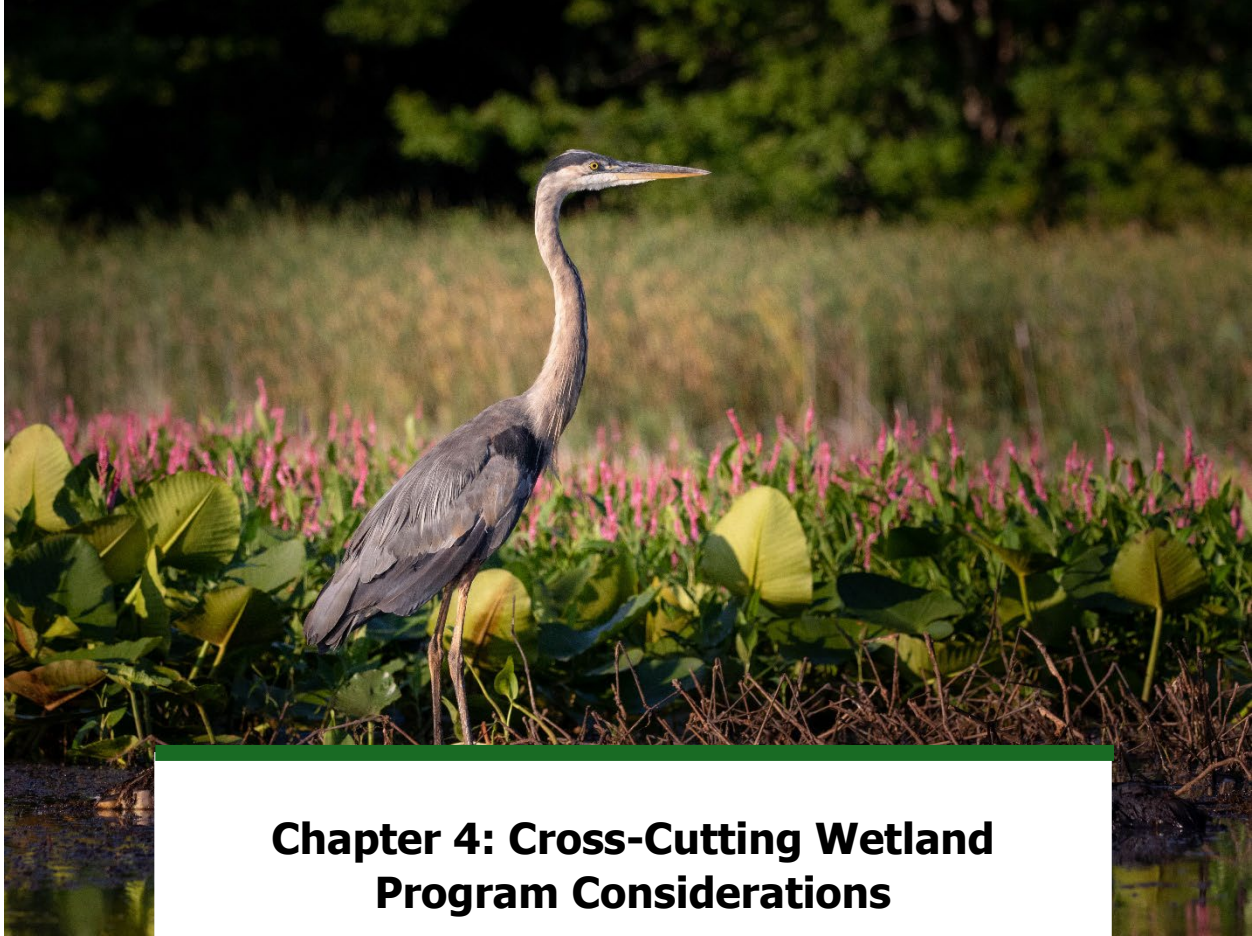
¹¹⁶ See, e.g., [Wetlands & Climate Change](#)

¹¹⁷ See, e.g., "Maryland Analyzes Coastal Wetlands Susceptibility to Climate Change," available at: [Maryland Analyzes Coastal Wetlands Susceptibility to Climate Change: Case Studies: ERIT: Environmental Resilience Institute: Indiana University](#)

¹¹⁸ [10/15 DRAFT – excerpt from MA Wetland Program Plan - SAMPLE](#)

¹¹⁹ [Virginia Wetland Program Plan 2021-2025](#)

¹²⁰ Id.



Chapter 4: Cross-Cutting Wetland Program Considerations

This chapter discusses considerations a state might keep in mind when developing or updating its Wetlands Program Plan (WPP). These considerations cut across the four Core Elements of Monitoring and Assessment, Regulatory Activities, Voluntary Restoration and Protection, and Water Quality Standards for Wetlands. In effect, they represent an overarching strategy to help ensure the WPP as a whole is an effective wetlands management tool. Considerations discussed in this chapter include: integrating wetland programs with other state initiatives, developing partnerships, long-term planning including training new staff, and updating a WPP.

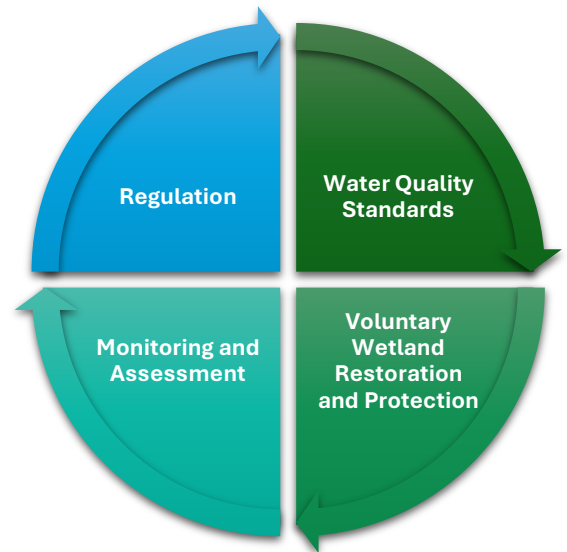
Integrating Wetlands with Other State Programs

The core elements of a state wetland program, including those additional elements a state may have added, are interrelated and build on one another. The WPP should acknowledge the links between core elements and encourage integrated strategies for advancing each element.

Equally important is linking wetland management to the broader management of aquatic resources, protection of fish and wildlife habitat, land use management, and related programs. Wetlands are, almost by definition, found at the interface of land and water, or at the intersection of various aquatic systems. They both influence and are influenced by these systems, and thus are often a linchpin needed to maintain the integrity of larger terrestrial and aquatic systems.

Program integration goes beyond the basic recognition of other program areas. Wetland managers are often experts at working with multiple disciplines and across the boundaries of organization charts to achieve multiple goals. Wetland program strategies should explore and demonstrate opportunities and common needs for a range of policy makers, managers, stakeholders and the public.

There are many opportunities to interweave wetland management with other resource programs of importance to a state and their partners, to the benefit of all stakeholders. Explicitly defining these links in a WPP will encourage collaboration. The following are but a few examples.



Water quality

- Inclusion of wetland issues in §319 nonpoint source programs, and specifically in development of watershed plans. Wetlands can increase protection of other waters through wetland restoration, establishment of artificial wetlands as filter strips, and other measures.
- Consideration of wetlands creation, restoration, and protection in Total Maximum Daily Load (TMDL) programs to reduce or manage nonpoint source loading.
- Inclusion of wetlands in integrated program reporting, and listing of impaired waters.

Water management and protection of water supplies

- Use of constructed wetlands for treatment of concentrated stormwater, and natural wetlands, as appropriate, for stormwater storage and infiltration. Such usage may be inappropriate where a natural wetland becomes degraded.
- Groundwater recharge and protection of drinking water recharge areas.

Protection from Natural Hazards

- Integration of wetland and floodplain management programs such as wetland restoration to increase potential water storage.

- Protection of coastal areas from storm surges, or from winter ice damage in northern areas such as the Great Lakes.

Habitat Management

- Provision of critical habitat for waterfowl and other wildlife, including birds, reptiles, amphibians, mammals, and other groups.
- Provision of habitat corridors, linking other aquatic and natural areas.

Biodiversity

- Protection of rare community types, such as bogs and fens, vernal pools, and Carolina bays.
- Preservation of a significant percentage of rare plant and animal species in the U.S. that are found in wetlands.

Land Use

- Watershed planning and management on the local level.
- Consideration of wetland functions in agricultural and silvicultural areas, including water storage, evapotranspiration for local rainfall, greenbelts along stream systems, and for some types of timber production.
- Enhancement of residential areas, or buffers between differing land use types (e.g. urban and industrial).

Recreation and open space

- Significant economic contributions through hunting and fishing, birdwatching, canoeing and kayaking, and other activities.
- Opportunities for combined open space, education, and water management in urban areas.
- Essential links in greenways and habitat corridors.

Many state WPPs discuss activities to better integrate wetlands and wetland protection into other state aquatic resource programs. For example, Michigan’s wetland program works with the state’s nonpoint source program to incorporate wetlands into watershed planning and implementation projects addressing nonpoint source pollution.¹²¹ Similarly, Michigan’s wetland

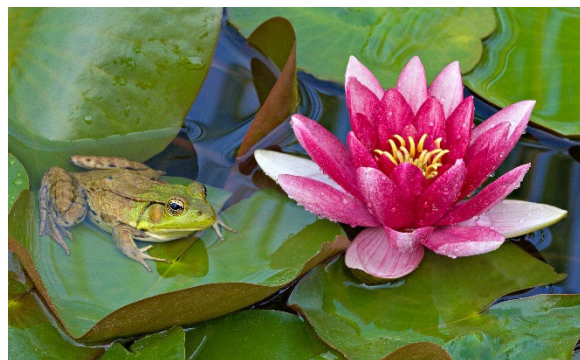


Photo by Dean Pennala in Michigan

¹²¹ [mdeq_program_plan_2019.pdf](#)

program coordinates protection of wetlands with its stormwater program, and with Michigan’s Office of the Great Lakes, including its Area of Concern program, to address wetland habitat and quality concerns.¹²² New Hampshire’s WPP calls for coordinating with the state’s Public Affairs Division of Fish and Game to provide tools for public outreach, such as fairs, “train the trainer” opportunities, and Discover Wild New Hampshire Day.”¹²³

Connecticut not only aims to protect and restore wetland resources, but also to bring awareness to the significance of its wetland resources in the overarching goal of environmental resiliency. At an internal level, this requires the involvement and cooperation of more than one bureau and many divisions within the Connecticut Department of Energy and Environmental Protection. This includes but is not limited to the Bureau of Water Protection and Land Reuse in which the Water Planning and Management Division and the Land and Water Resources Division (LWRD) belong; the Bureau of Natural Resources through the Divisions of Fisheries, Forestry and Wildlife; and the Office of Climate Planning. Externally, this includes inter-agency collaboration with the Department of Transportation and other state agencies, and coordination with outside partners and stakeholders.¹²⁴ Connecticut’s WPP includes activities to develop geographically defined wetland protection, restoration, and management plans, and determines if wetland restoration or protection plans should be developed as part of Clean Water Act (CWA) 303(d)’s TMDL program.¹²⁵

Developing Partnerships and Collaboration

In a complex environmental, political, economic, and regulatory environment, program managers cannot work effectively on wetland-related issues in isolation from other programs and efforts. As discussed above, many state wetlands programs work collaboratively with other state aquatic resource programs. Partnerships and collaboration can work equally or better with outside entities such as watershed groups, land trusts, conservation commissions, sportsmen/women organizations and other interest groups, and other stakeholders. Many states developed their WPPs through collaboration with outside groups, and during implementation often have concluded that partnerships and collaboration are indispensable tools for wetland program managers. Partnerships and collaboration are particularly common in state programs encouraging voluntary wetland restoration and conservation (discussed in Chapter 3 above).

Collaboration is a process tool which, when utilized effectively, brings together two or more entities to work jointly to identify solutions and create greater outcomes than the

¹²² Id.

¹²³ [10/15 DRAFT – excerpt from MA Wetland Program Plan - SAMPLE](#)

¹²⁴ [ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf](#)

¹²⁵ Id.

partners can independently. Organizations enter into collaborative agreements to achieve their own goals, negotiating among competing interests and brokering coalitions among competing value systems, expectations, and self-interested motivations. Collaboration requires hard work, focused attention, adequate time, and considerable dedication of staff and funding resources by all participants. Some of the primary benefits of collaboration include, for example: better information, better integration of activities, conflict prevention, improved fact-finding, increased social capital and acceptance, easier implementation, enhanced environmental stewardship, and reduced litigation.

Creating effective collaborations can be hard work. Most studies about collaboration list the inability to invest sufficient staff time and organizational resources as one of the greatest barriers to collaboration success. However, there are many guidance documents that can help you develop effective collaborative processes, as well as identify under what circumstances a full collaborative approach may not be the best option for your program and its potential partners. Considerations include the socio-economic and political environment in which the collaboration must function, the governance and structure of the collaboration, leadership, resources, and social capital between members.

Many state WPPs include activities to develop partnerships and collaborative projects. For example, Connecticut's WPP calls for working with specific groups to develop focused guidance on benefits and techniques of wetland protection, such as realtors, coastal property owners, land trusts, the Connecticut Farm Bureau, and regional planning organizations.¹²⁶ Connecticut also coordinates with external partners on wetland assessment and monitoring capacities, and on best management practices. Their wetlands program has expanded collaboration with groups such as the New England Biological Assessment of Wetlands Workgroup (NEBAWWG), Save the Sound, and other groups addressing wetlands in Connecticut.¹²⁷ Maine's wetlands program has established partnerships to leverage additional wetland protections. For example, the program reviewed approximately 600 Forest Management Plans per year over five years and provided wetlands data to owners of more than five million acres of private forest land. State wetlands staff have worked with forest owners through various avenues, such as forest management plans and forest certification, to promote wetland conservation on private land.¹²⁸ New Jersey's wetland program hosts forums with communities to ensure that needs are directly addressed in local wetland projects, and recruits volunteers for restoration projects to increase hands-on experiences, community building, and the feeling of ownership.¹²⁹

¹²⁶ [ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf](#)

¹²⁷ Id.

¹²⁸ [Maine Wetlands Program Plan](#)

¹²⁹ https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf

Investing in the Future: Long-Term Planning, Staff Training, and Updating a WPP

Developing or revising a WPP is an opportunity for states to design and endorse future actions that build and improve wetland programs. In addition, a WPP can serve as the basis for a communications plan to achieve wetlands goals. Wetland managers frequently express concern over the lack of a coherent communication strategy and a WPP can include actions to address communication challenges. Some states, such as Wisconsin, have used the plan itself as a tool to promote communication.

Experienced wetland program managers are aware that unexpected changes will occur, and adjustments will need to be made if on-the-ground circumstances change since the WPP's initial development. The planning process provides wetland managers with the opportunity to discuss and provide a framework for responding to new challenges and sudden changes in public policy.



Lowland marsh in Waukesha County Wisconsin

Staff Training. Many WPPs include staff training as a critical ongoing activity, both to ensure existing staff are familiar with emerging issues and tools and as part of onboarding new staff. For example, Michigan's Department of Environment, Great Lakes, and Energy (EGLE)¹³⁰ has developed a staff training program with modules and schedules, to help ensure consistency in implementation of the wetland regulatory program.¹³¹ Maine's WPP includes steps to train and license staff on the use of small drones to help implement the state's monitoring plan for coastal marshes.¹³²

Some state WPPs call for state staff to participate in national trainings. For example, Connecticut's WPP indicates staff will attend a national training on inland wetland condition and bioassessment, to gain knowledge and provide a basis for making informed evaluations and decisions.¹³³ WPPs can also envision staff training as part of educational opportunities offered by local professional organizations. For example, Connecticut is

¹³⁰ At the time of Michigan's last WPP, its environmental agency was called the Michigan Department of Environmental Quality (DEQ). It has since changed its name to EGLE. See [Environment, Great Lakes, and Energy](#).

¹³¹ [mdeq_program_plan_2019.pdf](#)

¹³² [Maine Wetlands Program Plan](#)

¹³³ [ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf](#)

expanding its joint training series and partnerships on wetland delineation, monitoring, and assessment with local professional organizations such as CT Association of Wetland Scientists and the Connecticut Society of Civil Engineers.¹³⁴

Updating WPPs. Wetland Program Plans should be updated approximately every five years. When a state first develops its WPP, the Environmental Protection Agency (EPA) Regional Office reviews the WPP to determine if the plan is eligible for consideration in the first tier in the Wetland Program Development Grant (WPDG) funding competition process. In addition to this initial review of the WPP, the EPA Regional Office and state submitting a WPP will periodically discuss progress on the plan’s actions and activities, any assistance that EPA can provide, and any adjustments that the WPP may need. These discussions may be annual, or less frequently if limited by available staff time.

As a WPP nears the end of its time period, a state should submit to EPA a revised WPP with a new three- to six-year time period. This allows the state WPP to remain current. If the WPP is not updated and expires, the state WPDG application may not be for consideration in the first tier of applications until it submits a new WPP to EPA for review.¹³⁵

Most states have a process for developing or updating their WPP. For example, Nevada’s Division of Natural Heritage (NDNH) conducted many individual and small group meetings with other federal, state, and nonprofit partners to refine the current plan. As a result of these conversations, NDNH added a fourth core element to its WPP, “Partnerships, Outreach, and Education.” During the NDNH conversations, stakeholders expressed strong interest in broadly sharing information about wetland restoration statewide and about reference wetlands of high conservation value. These and other stakeholder interests have strongly influenced the WPP objectives and the process of updating the WPP.¹³⁶

Kentucky has approached its WPP update process by holding a series of workgroups meetings that each focused on one to two of the core elements. The workgroups consisted of staff within the wetland division. Workgroups met monthly for approximately three months, in which participants reviewed the progress made toward the 2020-2024 WPP activities and determined which activities should be carried forward into the updated WPP. Workgroup participants also determined new activities that the updated WPP should include. Staff report that some aspects of Kentucky’s process have gone well and others have been challenging. Each workgroup worked efficiently to develop the list of activities and timelines for each core element, and the process went well. Having a list of activities

¹³⁴ [ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf](#)

¹³⁵ *Id.* at 5.

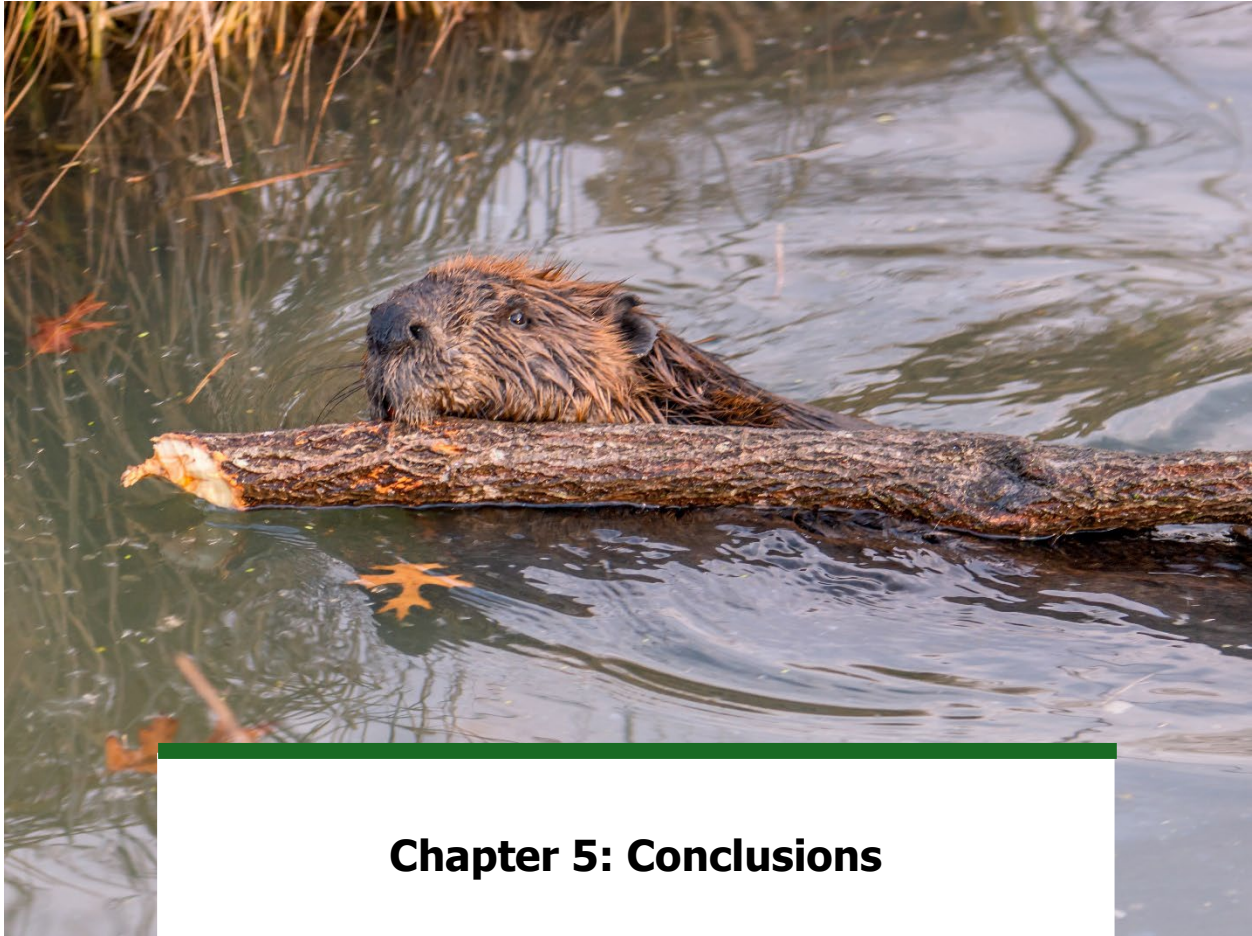
¹³⁶ *Id.*

to refer to in EPA’s Core Elements Framework was very helpful. The biggest challenge has been the changing conditions that have occurred at the state level and within the Division. Specifically, a new regulation has caused uncertainty in which wetlands, if any, are regulated within the state. Another aspect that has been challenging is balancing the inclusion of as many activities as possible to ensure they can be funded under a WPDG, but not to include so many activities that completing all of them becomes unlikely. This balancing act was challenging because the state wanted to include many more activities than it could accomplish with the level of staffing. The state had to cull many activities and, based on what the wetland program has accomplished so far, some believe the state probably should have culled more during the WPP development process.¹³⁷



Cumberland Falls State Park Corbin Kentucky

¹³⁷ [KY-WPP.pdf](#); conversation with Samantha Vogeler, Supervisor, Water Quality Certification Section, Kentucky Energy and Environment Cabinet, October 14, 2025.



Chapter 5: Conclusions

This updated handbook has been developed as part of a project by the National Association of Wetland Managers (NAWM) to provide states with information about how to develop and implement Wetland Program Plans (WPPs), reflecting state experience, best practices, and lessons learned since the original handbook was written in 2013. This updated handbook focuses on state experiences, although information in the handbook may be helpful to Tribes as well.

WPPs are plans developed by states and Tribes, that describe both overall wetland program goals and specific activities to help achieve those goals. Although not required, the Environmental Protection Agency (EPA) strongly recommends state and tribal wetland programs develop WPPs. WPPs do not need to be elaborate documents. An effective WPP can be a concise list of planned actions to help create a focused and sustainable wetland program.

The framework developed by EPA for WPPs envisions a focus on one or more of four “Core Elements” of a state or tribal wetland program. These include:

1. Monitoring and Assessment
2. Regulatory Programs
3. Voluntary Restoration and Protection
4. Water Quality Standards for Wetlands.

The Core Element Framework (CEF) is very flexible. EPA encourages but does not mandate that a WPP include all four Core Elements. Several state WPPs focus on a subset of the Core Elements. Other states have addressed all four Core Elements, while adding other elements that are key to their individual needs, such as education, financial sustainability, and resiliency with changing environmental conditions.

To be effective, a wetland plan should be tailored to the unique opportunities and challenges that occur in the state. Wetland resources and challenges vary dramatically from state to state around the country. As a result, this handbook does not provide a recipe for developing a WPP. Rather, the handbook provides information about the different components that can be part of a WPP and explores how a state might develop a plan that addresses opportunities and challenges within the state. Key points are informed by dialogue with and feedback from state wetland program managers and reflect their years of state experiences developing WPPs and implementing wetland programs. In addition, the handbook's Appendix A offers links to potentially helpful references.

As indicated early in the handbook, “begin anywhere!”



Acadia National Park, Maine

Appendix A: Additional Resources

General References for Development of a State or Tribal Wetland Program Plan

- “Enhancing State and Tribal Programs Initiative,” EPA webpage, available at [What is the Enhancing State and Tribal Programs Initiative? | US EPA](#)
 - EPA webpage discussing key components of the ESTP, the Core Elements Framework, and role of Wetland Program Plans.
- “Tribal, State, and Territory Wetlands Program Core Element Framework,” U.S. Environmental Protection Agency, February 2023. Available at: [EPA_Core_Elements_Framework_February_2023.pdf](#)
 - This document provides a detailed discussion of the “Core Elements” that may be included in state or tribal wetland program plans – regulation, voluntary restoration, water quality standards, and monitoring & assessment.
- “State and Tribal Wetland Program Plans,” available at [State and Tribal Wetland Program Plans | US EPA](#)
 - This EPA webpage includes links to approved state and tribal plans.
- “A Guide for Developing Tribal Wetland Management Programs,” U.S. Environmental Protection Agency, 2022, available at [A Guide for Developing Tribal Wetland Management Programs | US EPA](#)
 - Tribal Guide was designed to aid tribal leadership and tribal natural resource managers in strategic wetland resource planning and management. The Guide provides information about how to begin wetland program planning and addresses EPA’s core elements framework for developing strong wetland programs, funding and other sources of support, and suggests collaboration approaches.

Monitoring & Assessment Core Element

- “EPA Wetland Monitoring and Assessment Information,” webpage with general information on wetland monitoring and assessment, available at <https://www.epa.gov/wetlands/wetlands-monitoring-and-assessment>
- “Hydrogeomorphic Approach to Assessing Wetlands Functions,” webpage available at [HGM Approach](#)
- “Benefits and Applications of Wetland Bioassessments,” webpage available at [Benefits and Applications of Wetland Bioassessments | US EPA](#)

- “Connectivity of Streams & Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence,” EPA 2015, available at [Wetlands Protection and Restoration | US EPA](#)
- “National Wetlands Inventory” webpage discussing the NWI with links to the National Wetlands Reports, available at [Wetlands Status and Trends | U.S. Fish & Wildlife Service](#)
- “National Wetland Condition Assessment,” webpage discussing EPA’s national wetland status and condition, available at [National Wetland Condition Assessment | US EPA](#)
- “Mid-Atlantic Monitoring and Assessment,” EPA webpage on regional studies on wetland status and condition assessment available at [Mid-Atlantic Wetland Monitoring and Assessment | US EPA](#)
- “Pacific Southwest (EPA Region 9) Monitoring and Assessment Efforts,” EPA webpage on monitoring and assessment in the Southwestern U.S., available at [Pacific Southwest \(EPA Region 9\) Monitoring and Assessment Efforts | US EPA](#)

Regulatory Activities Core Element

- “Clean Water Laws, Regulations, and Executive Orders Related to Section 404,” EPA webpage available at [Clean Water Laws, Regulations, and Executive Orders related to Section 404 | US EPA](#)
- “Permit Program Under CWA Section 404,” EPA website available at [Permit Program under CWA Section 404 | US EPA](#)
- “Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material,” Corps of Engineers and EPA final rule, available at [eCFR :: 40 CFR Part 230 -- Section 404\(b\)\(1\) Guidelines for Specification of Disposal Sites for Dredged or Fill Material](#)
- “Clean Water Act Section 404(g) Tribal and State Assumption,” EPA website available at [Clean Water Act Section 404\(g\) Tribal and State Assumption | US EPA](#)
- “Clean Water Act Section 404 Tribal and State Assumption Program,” (89 Fed.Reg. 103454 (December 18, 2024)), available at: [2024-29484.pdf](#)
- “Corps of Engineers Regulatory Program Links,” Corps website available at [Civil Works Regulatory Program and Permits](#)

- “Wetland Regulatory Authority Fact Sheet,” EPA 2015, available at [Untitled-1](#)
- “Enforcement Under CWA Section 404” EPA webpage available at [Enforcement under CWA Section 404 | US EPA](#)
- “Clean Water Act Approved Jurisdictional Determinations,” EPA webpage and database, available at [CWA Approved JDs](#)
- “Background about Compensatory Mitigation Requirements under CWA section 404,” EPA webpage available at [Background about Compensatory Mitigation Requirements under CWA Section 404 | US EPA](#)
- “Compensatory Mitigation for Losses of Aquatic Resources: Final Rule,” EPA and the Army Corps of Engineers, Federal Register, April 2008, available at [Document](#)

Voluntary Restoration and Protection Core Element

- “EPA Wetland Restoration Fact Sheet,” EPA 2002, available at [Wetlands Restoration](#)
- “Partnering with Land Trusts Fact Sheet,” EPA 2003, available at [Wetlands Protection: Partnering with Land Trusts](#)
- “Recommendations for a Nonregulatory Wetland Restoration Plan for Oregon,” by James W. Good and Calvin B. Sawyer, Oregon Sea Grant, 1998. Available for purchase or download at <http://seagrant.oregonstate.edu/sgpubs/nonregulatory-wetland>.

Wetland Water Quality Standards Core Element

- “What Are Water Quality Standards?” EPA webpage available at [What are Water Quality Standards? | US EPA](#)
- “EPA National Guidance Water Quality Standards for Wetlands,” available at <https://www.epa.gov/cwa-404/national-guidance-water-quality-standards-wetlands>
- “Water Quality Standards Handbook,” EPA 2015 and updates available at [Water Quality Standards Handbook | US EPA](#)
- “Reference Library of Water Quality Standards Policy and Guidance Documents,” EPA website available at [Reference Library of Water Quality Standards Policy and Guidance Documents | US EPA](#)

- “EPA Templates for Developing Wetland Water Quality Standards,” available at [Templates for Developing Wetland Water Quality Standards | US EPA](#)

Wetlands Program Funding

- “EPA Wetlands Program Development Grants and EPA Grant Coordinators,” available at: [Wetland Program Development Grants and EPA Wetlands Grant Coordinators | US EPA](#)
- “Funding for Wetlands,” available at [Funding and Grants | US EPA](#)
- “Five Star Wetland and Urban Waters Restoration Grants,” EPA website available at [Five Star Wetland and Urban Waters Restoration Grants | US EPA](#)
- “Clean Water & Drinking Water State Revolving Funds: Resource Guide for Wetland Applications,” EPA 2025, available at [srf-wetlands-resource-guide.pdf](#)
- “Using the Clean Water State Revolving Fund,” EPA Fact Sheet 2002, available at [Wetlands Protection: Using the Clean Water State Water Revolving Fund](#)
- “Wetlands Projects Funded by the Clean Water State Revolving Fund,” EPA 2002, available at [2002_05_23_cwfinance_cwsrf_wetcase.pdf](#)
- “Clean Water Act 106 Grants for Water Pollution Control,” EPA webpage available at [Water Pollution Control \(Section 106\) Grants | US EPA](#)
- “Clean Water Act 319 Grant Program for States and Territories,” EPA webpage available at [319 Grant Program for States and Territories | US EPA](#)
- “Estuaries and the National Estuary Program,” EPA webpage available at [Estuaries and the National Estuary Program | US EPA](#)

Appendix B: Illustrative Examples of Core Element Activities in State Wetland Program Plans

Links current as of December 2025

Chapter/Section	State	WPP Date	Source	Example Activity/Policy
Chapter 2: Core Elements				
Monitoring and Assessment				
Importance of monitoring and assessment to wetlands goals	MI	2019-2024	mdeq_program_plan_2019.pdf	Monitoring and assessment of Michigan’s Wetlands is needed to determine the current condition of Michigan’s wetlands, determine trends, provide information to the public and stakeholders, and determine the effectiveness and future direction of Michigan’s wetland program. Michigan has developed a Wetland Monitoring and Assessment Strategy to guide the development and implementation of its wetland monitoring and assessment program (available at www.mi.gov/wetlands).
Training	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Attend national training on inland wetland condition to gain knowledge to provide a basis for making an informed evaluation & decision on the direction of wetlands bioassessments for Connecticut.
Tools	MA	2019-2024	2019-05-09-ma-wetland-program-plan-2019-2024-final.pdf	Continue development and testing of wetland monitoring and assessment methods for salt marshes. Explore the use of Unmanned Aerial Systems (UAS) to map salt marsh features and document stress and degradation. Explore the use of Landsat data and land use modeling to develop a more effective CAPS model for assessing ecological integrity.
Reference conditions	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	Review and update the process for identifying reference standard condition (e.g., reference sites, historical data, sediment core diatoms) for tidal and non-tidal wetlands. Continue to add monitoring data to the Riparia Reference Wetland Database, the New Jersey Tidal Wetlands Monitoring Network Database and NatureServe EcoObs Database and use this data for determining reference condition.
Indicators	ME	2023-2028	Maine Wetlands Program Plan	Select a core set of indicators to represent wetland condition or a suite of functions. Current core indicators include aquatic macroinvertebrates, algae, water chemistry and habitat indicators for emergent/aquatic bed wetlands. Continue refinement of core indicators, including exploring their application to additional types of wetlands. Develop new indicators and methods as needed to address emerging issues of concern.

Indicators	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	Select a core set of indicators to represent wetland condition or a suite of functions. Explore the development of new indicators of wetland condition that include wetland-dependent wildlife. Add supplemental indicators of condition and/or function as needed, including wetland-dependent wildlife, diatom indices, and those needed to develop Water Quality Standards for Wetlands. Ensure that data system is compatible with wetland metrics that may be collected and used in Water Quality Standards for Wetlands Evaluate wetland function metrics to be used in the development of a wetland functional assessment.
Prioritization	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Identify areas impacted by use of environmentally persistent pesticides.
Prioritization	ME	2023-2027	Maine Wetlands Program Plan	Increased coastal wetland monitoring and partnership building. Identify short and long-term coastal wetland ecological monitoring and assessment needs, resources, and partnership opportunities to benefit tidal wetlands as well as staffing needs and priorities to efficiently conduct work and collaborate with partners. These may include long term monitoring and identifying trends, pre- and post-restoration monitoring, high resolution mapping, technical support or ecological review of conservation, restoration or enhancement projects, climate change planning, species or habitat vulnerability assessments, and blue carbon evaluation.
Prioritization	CO	2020-2024	colorado-wetland-program-plan-2020-2024.pdf	Release and maintain the Watershed Prioritization Dashboard to help users prioritize watershed conservation and restoration efforts to maintain and improve the quality of Colorado's waters.
Mapping	CO	2020-2024	colorado-wetland-program-plan-2020-2024.pdf	Enhance the statewide National Wetland Inventory (NWI) dataset to reflect the latest NWI codes and mapping guidance and produce a State of Colorado Wetlands report summarizing mapped wetland acres 2020 CNHP, CPW, USFWS In progress with CPW funds. Results are summarized in the 2020 State of Colorado Wetland Report (CNHP 2020). Support the development of high quality, updated NWI maps in priority areas in Colorado. Add Landscape, Landform, Water Flow Path, Waterbody (LLWW) and functional attributes to statewide NWI data in order to model wetland ecosystem services.
Research role wetlands play in wildfire prevention.	CO	2020-2024	colorado-wetland-program-plan-2020-2024.pdf	Research (and model) the role that wetlands play in reducing the severity and spread of wildfires, as well as the mitigating post-fire flooding, soil erosion, and sediment transport in streams.

Integrating wetlands data for tracking and decision-making	VA	2021-2025	Virginia Wetland Program Plan 2021-2025	Develop and institute a process for integrated wetland status and trends tracking. Virginia needs this data for reporting progress on Chesapeake Bay Agreement goals. DEQ has an effective regulatory permitting database process in place to track impact amounts of non-tidal wetlands and a new process has been initiated by VMRC to track tidal impacts. However, voluntary restoration, natural losses and unpermitted losses tracking efforts are nonexistent or hugely inaccurate.
Data and sustainability in coastal areas	VA	2021-2025	Virginia Wetland Program Plan 2021-2025	Continue to develop data and tools for the community-scale comprehensive coastal resource management portals (CCRMP) and assess use of products. The Center for Coastal Resources Management (CCRM) has created a CCRMP for each coastal locality in Virginia. As data such as landuse/ landcover and LiDAR have improved in precision, we are evolving this process into a Coastal Virginia scale rather than locality specific portals. The existing portals are still available on-line, but CCRM is shifting the focus of this effort to enhance the VIMS-CCRM Shoreline Management Model. Continue the required Tidal Marsh Inventory and Comprehensive Coastal Inventory as input data for the shoreline management model. Continued focus on model updates and refinement is needed as new data becomes available. Incorporate new remotely sensed data as available. Explore new technologies and approaches for tools and data analyses and delivery. As necessary, modifications to support changes in management preferences, such as new legislation, regulation or guidance, will be incorporated as appropriate. Possible app development. Apply model outputs and information to inform shorescape management and decision-making.
Incorporating monitoring data into decision-making	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	Incorporate monitoring data into agency decision-making. Evaluate monitoring program to determine how well it is meeting the State's monitoring program objectives. Develop schedule to evaluate monitoring programs; including regular meetings with regulators to develop list of monitoring and research needs to support regulatory changes. Cultivate new technology for monitoring and assessment (e.g., drones, remotely sensed data, eDNA, and diatom identification). Ensure assessment methods are providing the necessary information and make changes if needed. Review other wetlands program elements with respect to monitoring and assessment (e.g., regulation, restoration, water quality standards, adaptation, resilience and mitigation in a changing climate).

Integrated wetland mapping for regulations, guidance, and planning	MD	2021-2025	md_wetland_program_plan_2021-2025.pdf	Establish a common, recommended wetland guidance map using available GIS layers and designate the layer(s) as the recommended source for guidance and planning. This map would consolidate the available map layers into a single recommended guidance map for presence of wetlands. The layer would be available through iMap, Maryland's comprehensive online portal for digital map layers. The layer would also be available to entities managing the Watershed Resources Registry.
Tools/Data mgmt	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Develop a data collection Quality Management & Quality Assurance Project Plan for traditional environmental monitoring, collection of online or observational data, field surveys, etc. as appropriate for DEEP programs.
Tools/Data mgmt	CO	2020-2024	colorado-wetland-program-plan-2020-2024.pdf	Expand the Watershed Planning Toolbox (and associated updated and expanded wetland dataset) to include all major source water subbasins for Colorado; work with state wetland managers to identify 1-5 priority HUC 8 subbasins for near-term Toolbox expansion.
Tools/Data mgmt	ME	2023-2028	Maine Wetlands Program Plan	Have completed steps to train and license staff in small UAVs (drones); developed draft UAV monitoring plan for coastal marshes. Plan calls for incorporating flights and/or UAV-derived imagery into wetlands monitoring, in particular long-term monitoring sites (freshwater and coastal).
Developing remote sensing tools / data management	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	Advance regional research to generate modeling and ArcGIS maps to guide conservation efforts, identify and prioritize management areas for restoration and enhancement (e.g., identify vulnerable wetlands, prioritize restoration potential, prioritize wetland acquisition and project funding). Incorporate wetlands into comprehensive Watershed Management Plans that serve state water quality management needs.
Tools/Data mgmt	CO	2020-2024	colorado-wetland-program-plan-2020-2024.pdf	Update wetland and riparian guidance from the Native Plant Revegetation Guide for Colorado (CNAP et al. 1998), including recent research on controlling noxious weeds, and host information online. Partially funded by a WPDG from EPA.
Data mgmt	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Develop a refined mechanism to collect, store and analyze data reported by municipal inland wetland agencies, land use boards, etc.
Data mgmt	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Develop a data management system to track tidal wetland loss vs. gain based on verification of data resulting from state and federal permitted activities (leverage existing federal NOAA and Coastal Zone Management reporting)
Data mgmt	ME	2023-2028	https://www.epa.gov/system/files/documents/2023-04/ME%20WPP_2023-2028.pdf	Have surveyed, databased, and mapped rare, exemplary and high value wetlands hosting rare and endangered species statewide. Continue to identify data gaps for rare, exemplary, or high value wetland communities and ecosystems (by geography or wetland type) and work toward addressing these on a statewide scale while also updating historic data to improve accuracy and maintain currency.

Data management; reference sites; benchmarks for restoration and mitigation.	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023/06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	For projects requiring compensation, impact locations are geo-referenced by points. For compensation projects approved through the MNRCP, compensation parcels are georeferenced by shape files.
Partnerships for data management and decision-making	VA	2021-2025	Virginia Wetland Program Plan 2021-2025	Develop Integrated Guidance for Tidal Shorelines. This effort requires consideration and incorporation of regulatory programs falling under several different agencies, notably VMRC, the Department of Environmental Quality, and Local Wetland Boards. An integrated management framework for decision-making is particularly critical given anticipated losses of coastal wetlands due to sea level rise. New guidance (2021) from the VMRC and DEQ would be the foundation for this effort.
Work collaboratively with state agencies to update and modernize wetland databases.	RI	2020-2025	STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS	A priority for the DEM Freshwater Wetlands Program is the modernization of the database system that supports statewide permitting. In planning and development for several years, DEM is actively collaborating with the RI Division of Information Technology to replace its current system with a cloud-based modern data system that will be integrated with Geographic Information Systems (GIS) and aligned with related systems including other DEM permitting programs as well as the on-line building permit system utilized by most RI communities. The modernization effort will result in changes in processes with the potential for online application filing and other changes that are expected to improve the permitting process.
Data collection and mgmt	ME	2023-2028	Maine Wetlands Program Plan	Building off of acquisition of LiDAR data in Maine, support the acquisition of improved wetlands mapping data for the state (such as NWI+ or other remote mapping methods). DEP/BMP to convene workgroup to discuss the interest in and process to acquire updated NWI maps.
Data collection and management	MD	2020-2025	md_wetland_program_plan_2021-2025.pdf	Improve reporting capability and accuracy for authorized losses and gains. Rationale: MDE uses data systems that currently fail to meet demands for complicated data review; processing deadlines; and linking to GIS systems. Improvements to the data management systems are necessary to provide critical information for evaluating MDE program performance.

Partnerships for monitoring and assessment	CA	2023-2028	CA WPP 2023 Final Signed.pdf	To support the California Water Quality Monitoring Council (CWQMC), the California Wetlands Monitoring Workgroup (CWMW) has provided periodic updates to the Wetland Program Plan. CWMW's mission is to improve the monitoring and assessment of wetland and riparian resources by developing a comprehensive stream, wetland, and riparian area monitoring plan for California and through increasing coordination and cooperation among local, state, and federal agencies, tribes, and non-governmental organizations. The workgroup reviews and coordinates technical and policy aspects of wetland monitoring tool development, implementation, and data use to improve wetland management in California. In November 2007, a Memorandum of Understanding (MOU) was signed by the Secretaries of the Cal/EPA and the California Natural Resources Agency to establish the California Water Quality Monitoring Council (CWQMC). The MOU was mandated by CA Senate Bill 1070 (Kehoe, 2006) ¹⁰ and requires the boards, departments and offices within the Cal/EPA and the California Natural Resources Agency to integrate and coordinate their water quality and related ecosystem monitoring, assessment, and reporting. In December 2020 a new MOU was signed that replaced the original MOU signed in 2007 and recognized the continued need for collaboration and coordination across the two agencies.
Partnerships for monitoring and broader WPP implementation	AK	2015	Alaska Wetland Program Plan	DEC and DNR will establish and co-chair an Alaska Wetland Workgroup. The purpose of the workgroup is to oversee the WPP, provide guidance on overarching wetland issues, identify information gaps and needs, and establish Alaska-specific monitoring and assessment protocols. The workgroup would be comprised of federal, state, and local agencies and other key stakeholders as needed. The workgroup would partner with the Statewide Interagency Review Team and other comparable workgroups depending on the current needs. The workgroup would meet at least three times a year or more as needed. On a yearly basis, the workgroup would review progress and reassess priorities for future activities. Activities include (1) identifying potential workgroup participants from a variety of background and disciplines (2) establishing roles and expectations for workgroup members and develop a Memorandum of Understanding (MOU); (3) consulting with state and federal resource agencies, industry groups, tribes, non-governmental organizations, and other stakeholders to identify resources, information needs, and gaps. (4) researching and network with national or regional wetland monitoring programs and workgroups; communicating with stakeholders; and create a network of federal, state, and local agencies and tribal organizations

Regulatory				
Identify mandates, jurisdiction	CT	2023-2027	https://www.epa.gov/system/files/documents/2024-02/ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	State statute mandates that any operation within or use of an inland wetland or watercourse involving removal or deposition of material, or any obstruction, construction, alteration or pollution, of such inland wetlands or watercourses, be regulated by municipal inland wetlands agencies (MIWA). CGS Sec. 22a-42 of the IWWA states, “it is hereby declared to be the public policy of the state to require municipal regulation of activities affecting the wetlands and watercourses within the territorial limits of the various municipalities or districts.” Currently, there are 171 such agencies. Under the IWWA, activities affecting inland wetlands and watercourses are subject to the same regulatory review and consideration regardless of size or quality of the resource. Only State agency actions involving any operation within, or use of an inland wetland or watercourse, or activities on state land, are regulated by DEEP.
Identify scope of jurisdiction	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Identify clear scope of jurisdiction. Develop new guidance documents, web pages, social media, FAQs, and other formats which clearly define municipal vs. state vs. federal jurisdiction over tidal and inland wetlands; incorporate amendments/updates and modernize guidance.
Identify scope of jurisdiction	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Identify clear scope of regulated activities. Activities are defined in state statute and regulations, develop and update DEEP website to include non-consumptive water diversions and so that regulated activities are easily found and understandable
Regulatory decision-making	ME	2023-2028	Maine Wetlands Program Plan	Develop and operate according to a clear and effective set of criteria for reviewing and responding to applications. Work toward new mapping protocols and protection guidelines for ETSC wetland species and rare/exemplary natural communities and ecosystems potentially subject to environmental review. Prepare application instructions and pamphlet that explains the LUPC and Army Corps requirements for wetland permits.
Regulatory decision-making	ME	2023-2028	Maine Wetlands Program Plan	Incorporate the watershed approach into the regulatory decision-making process. Update Compensation Planning Framework, as required by ACOE for continuation of ILF program. Follow up on data gaps and research needs identified through compensation planning framework process (draft update completed).

Regulatory decision-making; mitigation tool	VA	2021-2025	Virginia Wetland Program Plan 2021-2025	Mitigation bank tracking, evaluation and guidance development. Continue to enhance the Wetland Condition Assessment Tool (WetCAT). WetCAT application for mitigation decision-making. Build on previously funded and completed efforts to enhance use of WetCAT for mitigation targeting with an emphasis on TMDLs and water quality. WetCAT allows recalculation of WQ scores if the surrounding landscape is modified so placement of a mitigation bank could improve downstream wetlands water quality stress levels depending on the type landcover change. In addition, WetCAT provides a calculation of the amount of impaired waters within a HUC for mitigation banking targeting decisions. Incorporate Interagency Review Team processes. This is a continued objective from 2015-2020 with new elements.
Clarifying and updating BMPs	NH	2017-2023	10/15 DRAFT – excerpt from MA Wetland Program Plan - SAMPLE	Updating wetland best management practice (BMP) manuals for agriculture, forestry, routine roadway, trails, and utility.
Linking research and monitoring to regulations	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	Improve coordination between wetland monitoring, data analysis, research and regulation programs to ensure alignment and optimization. Link research and monitoring to regulations. Develop a Statewide non-tidal wetland monitoring network and expand/coordinate efforts towards the existing NJ Tidal Wetland Monitoring Network. Define parameters that effectuate wetland protection activities consistent with the water quality goals and objectives of comprehensive watershed management. Foster and enhance intra- and interagency exchange of wetland research. Quarterly/Annual meetings between regulatory, monitoring and research staff to ensure continued alignment. Identify opportunities for optimization of efforts through enhanced community data sharing (e.g., periodic newsletter or subject matter expert contact list), joint research and analysis, and coordinated data management. Continue What’s Happening in NJ’s Wetlands seminar series.
Training on regulatory decision-making tools	VA	2021-2025	Virginia Wetland Program Plan 2021-2025	Maintain outreach for decision-makers. Continue effort to provide presentations to explain the use of WetCAT to localities for their comprehensive land use planning. Continue workshops, trainings and print/ digital publications to support shoreline decision making. Continued from 2015-2020.
Opportunities for improving permit review	MD	2020-2025	md_wetland_program_plan_2021-2025.pdf	Evaluate regulations to identify areas where requirements result in inefficient permit review and do not advance wetland protection. (in progress). Complete revisions to nontidal wetland mitigation and tidal wetland regulations. Develop tracking and/or notification system for Special Conditions including marsh maintenance plans, bathymetric surveys, mitigation projects.

Opportunities for improving permit review	MI	2019-2024	mdeq_program_plan_2_019.pdf	Maintain, and make improvements to, a streamlined permitting process, including consolidated permitting, preapplication and wetland identification services, and excellent customer service, while ensuring effective resource protection.
Intrastate environmental permit review coordination	MD	2020-2025	md_wetland_program_plan_2021-2025.pdf	Streamline environmental review coordination between MDE, DNR, and other pertinent agencies. Rationale: MDE uses environmental GIS data as a screening tool to identify which permit applications should be sent to DNR for additional review and comment related to high value living resource and habitat concerns. Many of these data layers describe ecologically sensitive areas identified by DNR. As additional field surveys and resource assessments are conducted by DNR staff, these data layers become outdated and require updating and distribution to partner agencies.
Coordinate multi-permit requirements	MD	2020-2025	md_wetland_program_plan_2021-2025.pdf	Continue to improve coordination of multiple permit requirements. Develop a coordinated interagency approach on stream and wetland restoration protocols that inform and streamline design, expedite permit review, funding and construction and result in functional uplift for wetland and associated stream resources, including adjacent riparian areas.
General permits	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Develop a new state Inland Wetlands and Watercourses General Permit for state actions to address common/minor regulatory activities
General permits	MI	2019-2024	mdeq_program_plan_2_019.pdf	Continue to improve Minor Project and General Permit categories to simplify permitting for routine projects that have minimal individual and cumulative impacts and encourage the use of best management practices.
Technical assistance for wetland type conversion	MD	2020-2025	md_wetland_program_plan_2021-2025.pdf	Prepare new guidance and standards for wetland type conversion, ponds in forested wetlands; stormwater management activities in wetlands, and waterways; and forestry practices.
Mitigation	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Require effective mitigation for authorized impacts. Develop wetland mitigation guidance for Tidal Wetland and Inland Wetlands and Watercourses programs.
Mitigation	ME	2023-2028	Maine Wetlands Program Plan	For projects requiring compensation, impact locations are geo-referenced by points. For compensation projects approved through the MNRCP, compensation parcels are georeferenced by shape files.
Mitigation	CO	2020-2024	colorado-wetland-program-plan-2020-2024.pdf	Utilize wetland and stream mitigation banking, and other forms of ecosystem services banking as potential revenue streams for State Lands, and in collaboration with private landowners to incentivize wetland protection and conservation.

Evaluate regulatory activities and determine environmental results	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023/06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	Continue to monitor wetland mitigation sites for compliance and/or success rates. Continue the process of integrating and coordinating Statewide habitat preservation and land acquisition activities (e.g., through the Land Acquisition Review Committee) . Assess values of wetland or riparian buffers to resource health based on water quality indicator research. Identify and document secondary impacts on wetland and floodplain resources. Evaluate storm damage assessments and integrate sustainable development practices where possible (e.g., using wetlands as buffers to address flooding resulting from increased extreme rainfall events and other climate change threats). Evaluate the effectiveness of the NJ Coastal Wetlands Act of 1970 with respect to identifying, protecting, and restoring coastal wetlands. Identify properties suitable for mitigation statewide. Continue to study the effectiveness of wetland restoration projects to inform regulations. Coordinate cross-program with other State, Federal, and Local Agencies. Establish goals and needs to support intra- and inter-agency exchange of wetland research information. Annually evaluate wetland research results, reports, and wetland permitting data relative to their application to regulatory needs and goals.
Clarify 401 certification processes and decision criteria.	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Develop clear processes and criteria for responding to 401 and other applications. Continue coordination efforts with US ACOE, EPA & DOT on the 404/401 Water Quality Certification process for infrastructure projects (monthly and bi-weekly meetings); further develop administrative efficiencies and develop inter-agency training programs; assess and modify (as needed) coordination.
Interstate partnerships using cooperative agreements	VA	2021-2025	Virginia Wetland Program Plan 2021-2025	Enhance neighboring jurisdictional (interstate) wetlands programs. Coordinate with adjacent jurisdictions. Collaboration/ Agreements/ Research with Maryland and North Carolina. Building on the partnerships via the Chesapeake Bay Program and the NC/ VA MOA on the Albemarle Pamlico Sound. New Objective for 2020-225.
Partnerships and enhanced information sharing	VA	2021-2025	Virginia Wetland Program Plan 2021-2025	Improve communication among state, neighboring jurisdictions, federal, local non-governmental and governmental partners managing or working in wetlands. Virginia has multiple parties engaged in wetlands preservation and management, including state (including North Carolina via VIMS and DEQ engagement in APNEP), federal (USACE), and local agencies, as well as numerous local, state, and regional nongovernment organizations (NGOs). The lack of an effective method of consistently sharing information among these groups has been problematic in obtaining common goals because of funding sources, individual agency goals and agency resources.

Partnerships with Federal agencies' programs	NE	2019-2023	final_wetland_program_plan_nebraska_2019.pdf	The Wetland Reserve Easements (WRE) program, administered by the Natural Resources Conservation Service (NRCS), has been a very important program to protect and restore wetlands throughout Nebraska. The state will continue to partner with NRCS to deliver this program, and NGPC has hired a Biologist to help NRCS with management planning for WRE tracts
Partnerships	ME	2023-2028	Maine Wetlands Program Plan	Coordinate among agencies, programs and industry groups to reduce duplicative efforts by the programs and the regulated public.
Partnerships	ME	2023-2028	Maine Wetlands Program Plan	Share information on who has what data related to wetlands and evaluate needs/potential outcomes of making more data available through a variety of printed and digital formats.
Partnerships/collaboration	CO	2020-2024	colorado-wetland-program-plan-2020-2024.pdf	Maintain dialogue and collaboration among affected parties on needs for streamlining water rights reviews related to wetland conservation and restoration. In a WPP survey, water rights issues were ranked as one of the biggest obstacles to conserving and restoring wetlands.
Delineator training	FL	2013-2016	The State of Florida Wetland Program Plan (2013-2016) (DRAFT)	Develop a Professional Wetland Delineator Certification Program In Florida, the delineation of wetlands and other surface waters by state and local governmental entities must be performed in accordance with the rules in Chapter 62-340, F.A.C. Those rules are also frequently used by permit applicants, private environmental consultants and others who interact with those state and local agencies. Proper application of these procedures requires considerable training, experience and scientific judgment, and the state's delineation experts often observe improper application of those rules. There is currently not a standardized, statewide program for the training and certification of the proper application of those rules. DEP believes that a professional wetland delineator certification program would promote the competent application of the existing delineation rules by applicants, consultants and agency staff. It is anticipated that this program would not preclude the application of Florida's delineation methods by those who do not possess the certification, but that it would establish administrative, procedural and/or economic incentives for those who do. Rulemaking would be needed to establish minimum qualifications, initial and recurring testing requirements, fees, and procedures for oversight, auditing, suspension and revocation of certifications. With this in mind, DEP's Division of Water Resource Management has recently restructured itself to facilitate the creation and stewardship of such a program. This rulemaking effort would require legislative authority, and would most likely be performed primarily by DEP, in coordination with the WMDs.

Voluntary Restoration/Protection				
Increase community involvement and sense of ownership in restoration, creation, and enhancement projects	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	Host forums with communities to ensure that needs are directly addressed in local projects. Recruit volunteers for restoration projects to increase hands-on experiences, community building, and the feeling of ownership; look to other examples of successful community education and partnership programs (e.g., Masonville Cove Environmental Justice Initiative in Maryland). Create programs for urban communities to enhance education regarding urban restoration and climate change. Produce guidance documents that provide clear options and steps to follow to for restoration, creation, enhancement, and protection of wetlands. Identify funding opportunities DEP can apply for to partner with education outreach groups.
Goal-setting; coordination	ME	2023-2028	Maine Wetlands Program Plan	Establish goals that are consistent or compatible across relevant agencies. An interagency process to review and update Focus Areas of Statewide Significance (biodiversity hotspots) included some of Maine's most significant wetlands. Using information about identified threats and historic losses, continue to coordinate with relevant resource agencies to identify priorities and develop strategies for wetland protection and restoration. Also relevant to Core element 1.
Targeting opportunities for voluntary programs	ME	2023-2028	Maine Wetlands Program Plan	Explicitly consider watershed planning, wildlife habitat, and other objectives when selecting restoration / protection sites. Use field surveys, landscape analysis, and other data sets to prioritize mitigation opportunities within ecoregions and communicate results to partners to facilitate the Maine Natural Resource Conservation Program (MNRCP). Update marsh migration modeling based on user input and new sea level rise scenarios. Continue to update and work with partners to incorporate marsh migration and coastal resilience data into conservation, restoration, or municipal planning decisions.
Targeting opportunities for voluntary programs	NE	2019-2023	final_wetland_program_plan_nebraska_2019.pdf	Consider watershed planning, wildlife habitat, water quality, and other objectives when selecting restoration/ protection sites. Identify rare, vulnerable, or important wetlands and prioritize them for restoration/protection, this would include wetlands with rare plant or animal species and/or high-quality plant communities. Most of this is being done by local partnerships.
Targeting opportunities for voluntary programs	IA	2016-2020	iowa_wpp_final_1_29_16.pdf	Continue to focus on restoring complexes of wetland areas to ensure that several types of wetlands are present on Iowa's landscape; not just permanent and semi-permanent types.

Long-term protection through acquisition and other mechanisms	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	Establish long-term wetland protection through acquisition and other mechanisms. Continue to acquire conservation easements or acquire land in fee that includes wetlands as well as associated uplands for wetland-dependent wildlife. Partner with local communities to establish land stewardship programs when State acquisition is not feasible. Continue to pursue grant opportunities for wetland acquisition and land stewardship programs. Explore ways to protect marsh migration areas from development and tidal restriction. Establish a working committee of Department staff and representatives of local communities (e.g., agricultural, urban, etc.). Coordinate and complete “Outside, Together!” to capture the State’s open space and recreation needs and priorities to create the New Jersey 2023-2027 Statewide Comprehensive Outdoor Recreation Plan.
Improve resilience of coastal shorelines	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	Develop site-specific plans to improve coastal shoreline resilience consistent with guidance and monitor completed projects. Develop methods to track length of shoreline improved and associated acres of wetlands restored, created, and enhanced as well as how many are implemented in environmental justice communities. Continue to provide technical assistance for coastal shoreline resilience projects as needed.
Technical guidelines, assistance re BMPs	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	Share best management practices documents with public for identifying, designing, constructing, and monitoring restoration projects.
Technical guidelines, assistance	ME	2023-2028	Maine Wetlands Program Plan	Provide clear guidance on appropriate restoration and management techniques and success measures. Ongoing evaluation of potential threat of specific invasive plants. Update Maine's invasive plant list as needed; Provide technical assistance and expertise to the evaluation of invasive plants (e.g. invasiveness, level of threat, habitat associations, management guidelines). Work with partners to encourage the development of invasive plant management plans, provide technical support and critical tools for implementation, and review invasive plant management strategies as needed.
Gathering information on economics and other values of wetlands	NM	2021-2026	STRATEGIC PLAN FOR WETLANDS PROGRAMS IN NEW MEXICO	Continue to refine information that provides economic justification and other value, including cultural/traditional and aesthetic for restoring wetlands.

Technical assistance for public-private partnerships	ME	2023-2028	Maine Wetlands Program Plan	Establish partnerships to leverage additional protections. Reviewed approximately 600 Forest Management Plans/year over the past 5 years, and provided wetlands data to owners of 5 million + acres of private forest land. Work with forest landowners through various avenues (FMPs, forest certification) to promote wetland conservation on private land. Distribute information about significant wetland habitats and rare species to private landowners to make informed decisions on forested and other types of land.
Technical guidelines, assistance	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Provide clear guidance on appropriate restoration and management techniques and success measures. Develop nature-based solutions technical assistance, including nature-based solutions design manual.
Wetland Water Quality Standards				
Steps for developing wetland water quality standards	NM	2021-2026	STRATEGIC PLAN FOR WETLANDS PROGRAMS IN NEW MEXICO	The Wetlands Program has developed a nine-step process for the development of wetlands water quality standards for New Mexico. 1. Mapping and classification update 2. Identifying wetland functions by wetland type (designated uses) 1 12 3. Hydrogeomorphic classification applied to mapped wetlands 4. Measuring the condition of wetlands by wetland type 5. Identifying stressors that affect wetland condition (impairments) 6. Database development 7. Unique identifiers for each wetland (Assessment Units) 8. Using these data to develop a defensible narrative standard by wetlands type 9. Plan for outreach to the public regarding the development and uses of wetland water quality standards
Evaluate need for wetland designated uses, criteria	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Work with partners to review EPA recommendations, consider incorporating wetlands into the Water Quality Standards. Evaluate whether designated uses should be established for wetlands in Connecticut. Evaluate whether wetlands-specific water quality classifications are needed or useful for Connecticut. Adopt narrative criteria to define and support existing water quality standards as they apply to wetlands. Evaluate the need for additional narrative criteria and standards to support the wetlands management program and other programs with wetland related tasks.
Designated uses for wetlands	ME	2023-2028	Maine Wetlands Program Plan	Establish and adopt appropriate wetland specific designated uses to be achieved and protected. Designated uses for other surface waters apply to wetlands, including tiered aquatic life uses. Narrative criteria for other surface waters apply to wetlands, including narrative biological criteria. Provisional numeric criteria established (macroinvertebrates and epiphytic algae). Initiate rulemaking to incorporate wetland-specific numeric criteria for wetland macroinvertebrates and algae into Maine's biological criteria rules (Chapter 579). Review anti-degradation policy as part of numeric criteria rulemaking process and clarify/better define issues for wetlands as needed.

Developing reference wetlands, water quality criteria and other data in support of standards development	MO	2024-2026	Missouri Wetland Program Plan 2023-2028	Develop a macroinvertebrate index of biological integrity (IBI) for wetlands, which is intended to follow the collection of water quality and biological data, and the identification of reference wetlands for Missouri. The IBI quantifies the invertebrate community with respect to its overall tolerance to pollution by summing the tolerances of individual taxon. The goal of establishing an IBI is to provide a tool for characterizing wetland function and condition, and to ultimately establish numeric water quality criteria.
Gather information that would inform standards development	KS	2024-2028	Kansas Wetland Program Plan 2024-2028	Gather and analyze monitoring KDA-DOC WPDG 20 data and other information that can be used as basis for water quality standards. Seek opportunities to collect additional water quality samples in private and public wetlands not currently sampled.
Gather information that would inform standards development	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	Evaluate hydrogeomorphic characterization as a potential tool to evaluate wetland ecosystem functions in New Jersey. Develop wetland condition ratings by tidal and non-tidal wetland types using existing Floristic Quality Assessment tools. Continue to utilize diatom identification tools and site diversity assessments in coastal and freshwater wetlands to determine if there is a relationship between wetland condition and diatom diversity or species composition. Conduct research on the relationship between groundwater quality and wetlands, and the influence of wetlands on downstream water quality. Define stressors to wetland water quality in the context of condition, function, and ecosystem service. Develop new research projects as needed.
Define wetland ecosystem functions and services by type	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	Explore options for differentiating and mapping wetland types by their functions and ecosystem services. Define and map wetlands by their designated uses (i.e., functional attributes) (e.g., flood protection, water storage, biodiversity and habitat conservation, carbon storage, etc.) Develop updated wetland, wetland buffer, and riparian zone mapping. Develop and field test a wetland and riparian zone rating methodology.
Ant-degradation policies	VT	2023-2028	10/15 DRAFT – excerpt from MA Wetland Program Plan - SAMPLE	Include wetlands in antidegradation policies. Include restoration potential of wetlands in antidegradation policies.

Evaluate options for wetland WQS development using available data	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023/06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	Consider options for wetlands-specific quality standards (narrative and numeric) through collective exploration involving NJ DEP Natural and Historic Resources, Science and Research, Land Use Management, Water Resource Management, as well as the Pinelands Commission and Highlands Council. Develop a monitoring and assessment strategy to help inform the development of potential wetland water quality standards. Evaluate existing indices and examine the potential to develop new indices that are relevant to water quality impacts on wetlands. Inventory existing datasets and complete a literature search to help set thresholds of wetland-specific water quality standards. Compile wetland water quality reference criteria by wetland function and type. Determine if there is a need to sample more wetlands to improve the representation of “poor,” “fair,” or “good” wetland water quality. Evaluate the nexus between water quality standards for wetlands and existing mechanisms to protect, maintain, and restore the wetlands.
Standards for plankton	ME	2023-2028	Maine Wetlands Program Plan	Used biological monitoring data to complete statistical models for macroinvertebrates and epiphytic algae to interpret narrative criteria for wetlands. Models will serve as basis for wetland-specific numeric criteria when implemented into rules. Finalize predictive model for phytoplankton. Analyze wetland vegetation data to consider future biological criteria based on plant communities.
Chapter 3: Additional Wetland Program Elements				
Subset of CEF				
Subset of CEF: voluntary restoration	WY	2018-2022	wy_wpp_1-26-2018_final.pdf	This plan will focus on Voluntary Restoration and Protection. Based on partner feedback and capacity in the state, a next step in wetland program development will include the addition of a Monitoring and Assessment component to a future plan revision.
Alternative or additional WPP goals				
Alternative WPP Elements	NV	2023-2026	WPP_NV_2023_Final.pdf	NDNH staff sent a WPP survey to a wide variety of wetland stakeholders. Based on the results of this survey and additional stakeholder conversations in the following years, the WPP’s focus is on four core program elements: Monitoring and Assessment; Voluntary Restoration and Protection; Partnerships, Outreach, and Education; and Sustainable Financing. Many of the threats wetlands throughout Nevada face are long term and have already resulted in major losses of wetland acreage and function (NDNH 2006). Understanding, preparing for, and mitigating these threats where possible requires consistent effort, driven by a strong Wetland Program.

Elements for WPP Beyond CEF; importance of cross-program coordination	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	The seven core elements addressed in this five-year plan are: 1) Monitoring and Assessment 2) Regulation 3) Voluntary Wetland Restoration, Creation, Enhancement, and Protection and Improved Coastal Shoreline Resilience 4) Wetlands Water Quality Standards 5) Adaptation, Resilience, and Mitigation in a Changing Climate 6) Public Outreach and Education 7) Environmental Justice The first four core elements are defined in EPA's 2009 Core Elements Framework. The fifth core element was to address the state's focus on the critical issue of climate change and resilience as it relates to wetland resources. The sixth core element (formerly core element 5) was added to elevate the importance of cross-program coordination with wetland monitoring, assessment, regulation, restoration, and protection in efforts regarding public outreach and education.
Elements for WPP Beyond CEF	OK	2020-2025	Microsoft Word - Oklahoma WPP 2020 1 2.01.2020.docx	The WPP is organized into five sections for each of the four USEPA core elements and the additional element of Education and Outreach.
Elements for WPP Beyond CEF	IA	2019-2023	iowa_wpp_final_1_29_16.pdf	Iowa's WPP includes all four Core Elements, and an additional Core Element of "Program Development Activities for Education."
Elements for WPP Beyond CEF	HI	2021-2026	hawaii_wetland_program_plan_2021.pdf	The WPP reflects goals, objectives, and strategies under five core elements: 1. Monitoring and Assessment 2. Regulation 3. Water Quality Standards 4. Protection and Restoration 5. Outreach and Partnership.
Elements for WPP Beyond CEF	UT	2018-2021	utahwetlandprogramplan_version1_december2017.pdf	The overall goal of Utah's WPP is to increase the amount and availability of scientific data on Utah's wetlands by continuing to build and deploy scientifically-based tools to assess wetland health and to afford greater protection by determining wetland specific beneficial uses and criteria to protect those uses. The actions covered by this WPP to advance this goal are divided into four sections: 1. Mapping and Landscape Planning: Develop data, tools and methods that allow wetland data to be better incorporated into landscape-scale planning, including mapping to support planning and monitoring efforts. 2. Monitoring and Assessment: Develop and deploy methods to evaluate the condition, function, and beneficial use attainment of Utah's wetlands. 3. Water Quality Standards: Define science-based beneficial uses for Utah's wetlands with appropriate criteria that are protective of the use. 4. Outreach, Coordination, and Data Dissemination: Increase public awareness of wetlands and use of wetland data through data accessibility, outreach, and collaboration.

Elements for WPP Beyond CEF	ID	2025-2020	idfg-wetland-program-plan-2015.pdf	This WPP focuses on the EPA wetland program core elements of Assessment and Monitoring (including classification, mapping, and inventory) and Voluntary Restoration and Protection (including management, maintenance, enhancement, and creation). The plan also includes important statewide wetland program building actions related to Coordination and Partnerships, including Data Management and Delivery, Mitigation, and Outreach and Education.
Elements for WPP Beyond CEF	VA	2020-2025	Virginia Wetland Program Plan 2021-2025	Virginia's WPP addresses the four core elements identified by the Environmental Protection Agency for a robust effective program, plus two additional elements that have been identified by Virginia as critical for a successful program. The elements in the Virginia Plan are: Monitoring and Assessment (Core element) Regulatory (Core element) Voluntary Restoration and Protection (Core element) Water Quality Standards (Core element) Planning and Sustainability (VA element) Outreach and Education (VA element).
Elements for WPP Beyond CEF	NH	2027-2023	10/15 DRAFT – excerpt from MA Wetland Program Plan - SAMPLE	NHDES identified four core program elements for the wetland planning process, which are as follows: 1. Regulation and Enforcement. 2. Restoration and Protection. 3. Data / Monitoring and Assessment / Water Quality Standards. 4. Outreach and Education / Local Capacity Building. These elements were used to focus the discussion and help to set priorities for action. Each element was assessed to identify strengths and weaknesses. A prioritization process was used to identify the most important elements to initially focus on. However, it was acknowledged that all elements are important. Suggested actions and activities to pursue over time were identified and listed in the WPP by each element.
Education/outreach				
Public education and outreach; citizen science	NJ	2023-2027	-	Develop a wetland monitoring and assessment education program for state and local watershed groups. Provide web-based information to the public on wetland condition and function, available wetland monitoring protocols and assessment tools. Present monitoring findings and new monitoring techniques at conferences and in peer-reviewed publications. Explore the development of a citizen science wetland monitoring program and partnering with other groups.

Public education and outreach	OK	2020-2025	Microsoft Word - Oklahoma_WPP_2020_1 2.01.2020.docx	While education and outreach is not among the core elements defined by the USEPA, the OWTWG believe that dissemination of wetland related information, guidance and tools to Oklahomans is an essential aspect of a successful wetland program. Because education and outreach are not fundable aspects of a wetland program, these efforts often take a secondary role to mandatory programmatic deliverables. However, the OWTWG has recognized education as a crucial step towards improved wetland management in Oklahoma. The objective of education and outreach for this WPP is to: Provide landowners, land-users, resource-managers, and policy-makers with the necessary information to manage wetland resources and provide the general public with information regarding the importance of wetlands. In order to meet the programmatic objective, the OWTWG identified two action items: 1. Improve the availability of wetland information to landowners, land-users, resource managers, policy-makers and the general public, and 2. Integrate outreach among OWTWG partners to provide information to the public on the importance of wetland ecosystems and how they are managed.
Public education and outreach; interagency training and coordination	NM	2021-2025	STRATEGIC PLAN FOR WETLANDS PROGRAMS IN NEW MEXICO	Developed several technical guides, including “Applying Keyline Design Principles to Slope Wetland Restoration in a Headwater Ecosystem,” “Exploring Springs and Wetlands and their Relationship with Surface Flows, Geology, and Groundwater in the La Cienega Area, Santa Fe County, New Mexico,” “New Mexico Wetlands Technical Guide: Wetland Functions,” “Characterization and Restoration of Slope Wetlands in New Mexico,” and “The Plug and Pond Treatment: Restoring Sheet Flow to High Elevation Slope Wetlands in New Mexico.” In addition, a landowner’s guide, “Healthy Streamside Wetlands, A Guide to Good Stewardship for Southwestern Bosque and Riparian Wetlands,” is available. In addition to our Wetlands Roundtables, the Wetlands Program provides workshops and training sessions to our partners and others. These workshops and trainings engage and inform partners, enhance partners capacity to proactively monitor and restore wetlands, influence stakeholders to be more involved in wetland issues, and increase the role and capacity of the Wetlands Program.
Public education and outreach	VT	2023-2028	10/15 DRAFT – excerpt from MA Wetland Program Plan - SAMPLE	Wetland public education and outreach activities include create new and update existing guidance documents; hold workshops for consultants and the regulated community; hold a series of regional workshops for interested municipalities, organizations, and citizens describing new rules, as needed; conduct outreach for non-regulated stakeholders; provide clear ongoing guidance to public on how to identify jurisdictional wetlands; create an annual report of wetland losses and gains, among others.

Public education and outreach	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	<p>Communicate the value of wetlands, in particular their functions and ecosystem services, and provide public education opportunities. Convene a wetlands outreach and education committee composed of NJDEP and outside partners twice a year to keep each other informed and find opportunities to collaborate. Increase the opportunities for school children to have positive hands-on experiences in and around wetlands, thus, fostering meaningful connections to the resource. Correlate, identify, and create publicly available wetlands curricula for NJ public schools. Partner with other education programs and create new wetlands curricula based on different age groups. Increase public programming at state parks, forests, WMAs, etc., especially in the field and hands-on experiences, about wetlands values and functions. Seek out funding for and start a social media campaign that has the objective of changing attitudes towards “wetlands” and other content. Share content among wetland organizations to reach a larger audience. Consider focusing on Wetlands Month/Day. Increase the capacity for public and school education programming by increasing staffing levels of educators and interpretive specialists. Implement a Wetland Public Opinion Survey in NJ for protection of water and habitat quality. A survey developed by NJDEP could be utilized to reach out to residents to improve awareness of the need for water and habitat quality protection. Develop public education programs on wetlands, their ecosystem services (e.g., flood abatement, carbon sequestration, water filtration, habitat provision), and threats to their functions (e.g., climate change, eutrophication, etc.) that can be used in training workshops and as exhibits at local events.</p>
Sharing information and tools with municipalities	NH	2027-2023	10/15 DRAFT – excerpt from MA Wetland Program Plan - SAMPLE	<p>Distribute information to municipalities related to wetland outreach efforts, assessment tools, and reporting on the ecological integrity of wetlands (including NWCA). Develop and distribute vernal pool guidance to municipalities via outreach or Municipal Ecolink.</p>

Public outreach and technical assistance	NJ	2023-2027	https://www.epa.gov/system/files/documents/2023-06/New%20Jersey%20Wetland%20Program%20Plan%202023-2027_FINAL.pdf	Develop and implement a wetland public education program including formal workshops and public outreach. Continue development of Department websites to improve information access and educational outreach. Develop and implement a more strategic plan for wetland public education, including community engagement and rule workshops for environmental consultants and state and local officials. Develop guidance documents to provide the public with targeted, in-depth information on specific aspects of wetland values, protection, and regulation. Conduct outreach and education around the Mitigation Technical Manual and incorporate risk management and adaptive management frameworks to ensure climate resilience. Develop education, outreach, and IT assistance for E-LOI submission (e.g., video tutorials) to ensure equal opportunity and to reduce knowledge and resource barriers X X Foster and enhance current efforts to combine LOI submissions with current wetland delineation work to produce accurate wetland maps for inquiring landowners. Ensure that all wetland educational materials, including mitigation and regulatory information is accessible to all (i.e., multiple language formats, video tutorials, infographics, paired documents using laymen's terms, etc.)
Sustainable Funding				
Income tax refund check-off program	CO	2020-2024	colorado-wetland-program-plan-2020-2024.pdf	Colorado's Wetland Wildlife Conservation Program includes “funding for all phases of wetland and riparian creation, restoration, and enhancement” as well as “funding for conservation easements and fee-title purchase through the Wildlife Habitat Program, wildlife and aquatic resource inventories, education and outreach, and project monitoring and evaluation.” https://cpw.state.co.us/ Colorado also runs a Healthy Rivers Fund, funded through the Colorado individual income tax refund check-off program.
Sustainable wetland program financing	MT	2020-2023	mtdeq_wetland_program_plan_3_6_20.pdf	Develop additional funding sources within Montana DEQ to support the Wetland Program and its work. - Identify and pursue additional opportunities for DEQ Wetland Program funding and institutionalize the Wetland Program as a component of DEQ water resource responsibilities. Identify programs with impacts to wetlands and riparian areas or programs with opportunities to financially support wetland program activities. Evaluate the feasibility for using funds from permitting activities to support wetland program activities. Work with partners to develop financial incentives to perform landscape conservation and restoration. Work with partners to develop projects that are applicable for 319 funding.

Sustainable wetland program financing	NV	2023-2026	WPP_NV_2023_Final.pdf	Without reliable funding for the Wetland Program, activities can become piecemeal and subject to inevitable changes in agency priorities or staffing. Therefore, seeking and attaining regular funding for the Wetland Program is paramount to its success in protecting wetlands in the face of threats that do not disappear when funding does. NDNH has secured several years of EPA funding to support the wetland program, including receiving multiple Wetland Program Development Grants (WPDGs) since 2002 and Multipurpose Grants (via NDEP) in fiscal years 2019 and 2020. The 2021 WPDG supported hiring a full-time Wetland Program Coordinator at NDNH to lead the Wetland Program and seek additional funding opportunities. Activities include: (1) Identify current and proposed wetland projects that can be funded by WPDGs, North American Wetlands Conservation Act Grants, and other funding sources. (2) Maintain funding to support full-time staff that focus on the Wetland Program. (3) Identify funding sources that will support and house a centralized wetland database for the state. (4) Coordinate with stakeholders to maximize outputs of existing funding.
Cultural Knowledge and Wetland Programs				
Integrating cultural and traditional uses into wetland management.	NM	2021-2025	STRATEGIC PLAN FOR WETLANDS PROGRAMS IN NEW MEXICO	New Mexico's WPP emphasizes that the interests of the state are critically linked economically, ecologically and culturally to good water quality and wetlands. To help ensure cultural and traditional values are reflected in wetlands program decision-making, the state is continuing to refine information on cultural and traditional values of wetlands restoration, along with economic and aesthetic justifications.
Integrate cultural and traditional uses into wetland management	HI	2021-2016	hawaii_wetland_program_plan_2021.pdf	Integrate social, cultural, and traditional uses of wetlands into management and planning efforts. Work with local stakeholders to identify social, cultural, and traditional uses of wetlands. Evaluate the different uses and develop strategies to minimize or mitigate potential impacts to wetland ecosystems. Identify and encourage pono practices within communities for wetland-based activities. Reduce conflict between mixed user groups through communication and planning. Develop guidance for rulemaking and management plans to provide and protect sustainable uses.

Changing Environmental Conditions				
Environmental resiliency as WPP goal	VA	2020-2025	Virginia Wetland Program Plan 2021-2025	In the fall of 2019, Virginia unveiled the Virginia Coastal Master Planning Framework. The framework acknowledged the risks to Virginia of coastal flooding and noted “Virginia needs a unified and comprehensive strategy to identify critical assets and areas of concern, and preferred approaches to improve resilience.” Of the 18 objectives identified for the 2020-2025 plan period, 8 are specifically linked to climate issues including sea level rise, and climate is implicitly incorporated into all objectives given the wetlands hydrology and the linkage between climate and hydrology. This reflects the import of climate impacts on wetlands and conversely, the role of wetlands to moderate climate processes and provide climate related benefits such as flood storage, flood buffering, erosion abatement, water quality improvement and more.
Environmental resiliency as WPP goal	NH	2027-2023	10/15 DRAFT – excerpt from MA Wetland Program Plan - SAMPLE	New Hampshire’s wetlands are of great importance for flood control, water purification, water storage and recharge for both groundwater and surface waters. These functions are more valuable with the expected increase in occurrence and severity of storm events associated with climate change. Wetlands also support the food chain, providing food and shelter for a variety of aquatic and upland plants and animals. ANH and NHDES have developed Climate Action Plans. With the increase in frequency and severity in extreme weather events, New Hampshire is seeing increased road washouts from undersized culverts and increased erosion and damage from storm events. Climate change is real, serious, and substantially anthropogenic and is responsible for many of the changing environmental conditions that put our New Hampshire’s residents, communities, and sensitive natural resources and wildlife and their habitats at risk. Working with local, state and federal partners and within our intra-agency programs to address climate change issues is more important than ever. As a FEMA study shows, a dollar spent on [impact] mitigation saves society an average of \$4.
Consideration of environmental resiliency in regulatory review affecting wetlands and other aquatic resources	MD	2021-2025	md_wetland_program_plan_2021-2025.pdf	Developing climate change adaptation criteria to guide restoration, preservation and permit review efforts where appropriate for wetland, waterway, and floodplain projects and activities subject to extreme weather events, sea level rise, coastal wetland migration corridors, inland flooding hotspots, climatic vegetation shifts, etc. Creating new guidance and review criteria for considering climate change and increased precipitation in regulatory review to evaluate effects on water resources, flooding, living resources, and dam safety.

Chapter 4: Cross-Cutting Wetland Program Considerations				
Integrating wetlands with other state programs				
Developing partnerships with other MI state program areas	MI	2019-2024	mdeq_program_plan_2019.pdf	In cooperation with Michigan's Non-point source program, incorporate wetlands into watershed planning and implementation projects to address non-point source pollution. Work with Michigan's Office of the Great Lakes, including the Area of Concern program, to address wetland habitat and quality concerns. Coordinate protection of wetlands with Michigan's stormwater program.
Coordinating outreach with other state agencies	NH	2017-2023	10/15 DRAFT – excerpt from MA Wetland Program Plan - SAMPLE	WPP calls for coordinating with the Public Affairs Division of Fish and Game to provide tools to relay messages (Discover Wild NH Day, fairs, "train the trainer" opportunities, etc.)
Integration with other state programs	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Connecticut not only aims to protect and restore wetland resources, but also to bring awareness to the significance of our wetland resources in the overarching goal of climate resiliency. At an internal level, this requires the involvement and cooperation of more than one bureau and many divisions within DEEP. This includes but is not limited to the Bureau of Water Protection and Land Reuse in which the Water Planning and Management Division and the Land and Water Resources Division (LWRD) belong; the Bureau of Natural Resources through the Divisions of Fisheries, Forestry and Wildlife; and the Office of Climate Planning. Externally, this includes inter-agency collaboration with the Department of Transportation and other state agencies, and coordination with outside partners and stakeholders.
Integration with other state programs	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Develop geographically defined wetland protection, restoration, and management plans. Coordinate/determine if wetlands water quality restoration or protection plans should be developed under Section 303(d) of the Clean Water Act.
Developing Partnerships and Strategic Communications				
Developing Partnerships	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Expand joint training series and partnerships on wetland delineation, monitoring, and assessment with local professional organizations. Potential partners include NRCS, CT Association of Wetland Scientists, American Society of Civil Engineers, CT Society of Civil Engineers, etc.
Developing Partnerships	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Coordinate with external partners on wetland assessment and monitoring capacities/BMPs/strategies. Expand participation with groups such as New England Biological Assessment of Wetlands Workgroup (NEBAWWG), LISS, Save the Sound, NERR, etc. Identify new potential monitoring partner organizations

Developing Partnerships	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Develop information and surveys regarding wetland protection, regulated waters and activities, and the authorization process; habitat fragmentation, sea level rise and marsh migration, climate resiliency, environmental justice, and more. Work with specific groups to develop focused guidance e.g., realtors, coastal property owners, land trusts, CT Farm Bureau, regional planning organizations, etc.
Developing Partnerships	CT	2023-2027	ct-deep-wpp-2023-2027-final-sent-to-epa-nov-2023-003.pdf	Establish collaborative relationships between LWRD, CT Association of Conservation and Inland Wetlands Commissions (CACIWC), Rivers Alliance, Conservation Districts, Colleges and Universities, Regional Planning Organizations, and other partners to further the purposes and policies of the IWWA and to protect inland wetlands and watercourses.
Onboarding/training new staff				
Staff training	MI	2019-2024	mdeq_program_plan_2019.pdf	Improve consistency in implementation of the regulatory program, including providing training and guidance to staff. Develop a high-quality training program for staff, including a schedule and training modules.
Updating WPP over time				
Stakeholder input to identify core elements in WPP	NV	2023-2026	WPP_NV_2023_Final.pdf	The current plan builds on the same core elements but draws from additional, more in-depth conversations with stakeholders. NDNH staff conducted many individual and small group meetings with survey respondents and other federal, state, and nonprofit partners to refine the current plan in 2022 and 2023. As a result of these conversations, a fourth core element, Partnerships, Outreach, and Education, was added. Stakeholders expressed a wide range of desires for the Wetland Program, but some common elements included a desire to broadly share information about wetland restoration statewide and to identify reference wetlands of high conservation value. Several were interested in training opportunities and statewide survey protocols that would allow them to better monitor wetland resources. Stakeholders also frequently cited challenges in finding funding and match for wetland projects. These and other common interests of stakeholders have strongly influenced the objectives and updated WPP.
Core elements and WPP updating	KY	2020-2024	KY-WPP.pdf	In our updated WPP, we have included each of the four core elements (i.e., Monitoring and Assessment, Regulatory, Water Quality Standards for Wetlands, and Voluntary Restoration and Protection). A background section and table of objectives, actions, and activities for each core element are provided. Each table has a yearly timeline for each activity. Several activities listed in the 2023 EPA Core Elements Framework were included in the

				WPP, for example, the ones related to establishing reference condition for wetlands.
Approach to WPP updating, challenges and opportunities	KY	2020-2024	KY-WPP.pdf	<p>Kentucky approached the WPP update process by holding a series of workgroups meetings that focused on one to two of the core elements each. The workgroups were as follows, 1) Monitoring and Assessment, 2) Regulatory and Water Quality Standards for Wetlands, and 3) Voluntary Restoration and Protection. The workgroups consisted of staff from within the division. Workgroup meetings were held monthly for approximately three months, in which we reviewed the progress made toward the 2020-2024 WPP activities and determined which activities we wanted to carry forward into the updated WPP. We also determined new activities that we wanted to address. Some aspects of the process have gone well and others have been challenging. Each workgroup worked efficiently to develop the list of activities and timelines for each core element, and the process went well. Having a list of activities to refer to in the EPA’s Core Elements Framework was very helpful. The biggest challenge has been the changing conditions that have occurred at the state level and within the Division. Specifically, a new regulation has caused uncertainty in which wetlands, if any, are regulated within the state. Another aspect that has been challenging is balancing the inclusion of as many activities as possible to ensure they can be funded under a Wetland Program Development Grant, but not to include so many activities that completing all of them becomes unlikely. This balancing act was challenging because the state wanted to include many more activities than it could accomplish with the level of staffing. The state had to cull many activities, and based on what the wetland program has accomplished so far, some believe the state probably should have culled more during the WPP development process.</p>



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