

VOLUNTARY RESTORATION AND PROTECTION

Definition

Wetland **restoration** is the manipulation of a former or degraded wetland's physical, chemical, or biological characteristics to return its natural functions.¹ Restoration practices include:

- **Re-establishment**, the rebuilding a former wetland; and
- **Rehabilitation**, repairing the functions of a degraded wetland (US EPA, 2007a).

Wetlands **protection** is defined as removing a threat or preventing the decline of wetland conditions (US EPA, 2007a).²

Restoration and protection efforts can be either regulatory or voluntary. **Regulatory** restoration and protection results from federal, state, tribal, or local laws and regulations that prohibit, condition, or compensate for permitted impacts to existing wetlands. Examples include 401 certification, zoning, permitting programs, and mitigation requirements. The Regulatory core element includes actions to develop the regulatory aspects of wetlands restoration and protection. **Voluntary** restoration and protection refers to activities not required by statutes or regulations. Examples include land trusts purchasing titles or easements to wetland areas, community groups removing invasive species and planting native vegetation, and conservation programs that pay landowners to change practices such as cultivation or grazing that alter wetland areas. While by definition voluntary protection is not required, it can be secured through legally binding agreements, such as conservation easements.

Both regulatory and voluntary wetland restoration play a role in states and tribes broader implementation of Clean Water Act (CWA) and Safe Drinking Water Act programs. For example, CWA Section 319 grants provide funds and technical assistance to state and tribes to develop plans and implement them to promote the reduction of non-point source pollution. Strategic wetland restoration can play an important role in implementation of state and tribal non-point source plans. . In some cases, voluntary restoration and protection can strengthen regulatory programs. For example, states and tribes can share maps of vulnerable or rare wetland resources with regulatory programs so that permit

¹ Council of Environmental Quality, White House Wetlands Working Group Report. 2000.

² The White House Wetlands Working Group (WHWWG) also defines two activities related to but distinct from restoration: **establishment (also known as construction or creation)**: developing a wetland where one did not previously exist; and **enhancement**: manipulating the physical, chemical, or biological characteristics of an undisturbed or degraded wetland to heighten, intensify, or improve specific functions such as pollution control, flood water retention, and provision of wildlife habitat. This chapter does not address these activities as they do not return a wetlands to its natural functions as defined above. (US EPA, 2007a).

applications receive heightened review. They can also suggest areas prioritized for restoration as compensatory mitigation sites.

Whether as a stand-alone effort or as a complement to a state/tribal regulatory program, voluntary restoration and protection efforts help stem the loss and create a gain in natural wetlands and their associated functions. Voluntary restoration and protection is the subject of this core element, with particular focus on restoring or protecting natural wetlands to maintain or attain a high level of overall wetland function/condition. Many states and tribes rely on voluntary restoration and protection activities as a basis for their wetlands programs. Voluntary projects achieve important protections while providing opportunities to build partnerships, share data and pool resources with agency, community, and nonprofit groups. Voluntary projects can provide an excellent opportunity to educate the public about the value of water resources. States and tribes with regulatory programs may choose to supplement these efforts with voluntary restoration and protection activities.

Goals and Benefits

States and tribes enjoy numerous benefits of restoration and protection due to the many functions that natural wetland systems perform. Wetland restoration and protection is important to maintain critical wildlife habitat, help meet state and tribal watershed goals, and contribute to economic well-being. To achieve these goals, a number of States have invested in programs that help implement, support or coordinate local restoration efforts. For example, Natural Heritage programs often rely on state support and work through partnerships to protect wetlands as part of their habitat goals.

Wetlands provide critical habitat, breeding grounds, and sources of food for shellfish, fish, birds, amphibians, and other organisms (US EPA, 2007b, 50-51). More than one-third of the threatened and endangered species in the U.S. live exclusively in wetlands and nearly half use wetlands at some point in their life cycle. Consequently, species recovery plans commonly include targeted wetlands protection and restoration to provide habitat for threatened species. Wetlands play a crucial role in many state and tribal fishing economies. Approximately 70 percent of the nation's \$111 billion commercial and recreational fishing industry is generated from wetland-dependent species. Wetlands are also preserved to provide feeding and resting grounds for migratory birds and to create habitat corridors for wildlife populations. These services generate state and tribal commercial, recreational, and aesthetic benefits as well.

Wetlands also control erosion, limit flooding, moderate groundwater levels and base flow, assimilate nutrients, protect drinking water sources, and buffer coastal areas from storm surges (US EPA, 2007b, 50-51). States may pursue wetland restoration to improve water quality and comply with Total Maximum Daily Load (TMDL) pollutant allocations in impaired waters and watersheds. Researchers are studying the rate at which different types of wetlands can store nutrients, sediment, and carbon, as well as any unintended consequences of using wetlands to perform these services. Some programs are restoring

wetlands to store floodwaters and reduce the height of peak river flows. Many coastal communities are evaluating their wetlands' ability to absorb storm surges and the potential for wetlands protection and restoration to reduce hurricane damage. These actions illustrate how that wetland restoration and protection can play an important role in helping states and tribes adapt to changing weather patterns potentially including future impacts of global climate change.

It is important to recognize that an accurate and up-to-date inventory of wetlands is very valuable when embarking on a restoration program. If comprehensive data is not available, a program can start with available maps and data and expand from there.

States and tribes can pursue any or all of the following objectives as they develop voluntary restoration and protection efforts:

1. Clearly and consistently define restoration and protection goals throughout state or tribal territory;.
2. Protect wetlands from degradation or destruction;
3. Restore wetland acres, condition, and function; and
4. Track progress over time, document results, and modify practices as appropriate.

Program Building Activities Menu

Most of these program building activities will be relevant and should be linked to existing watershed plans (both quantity and quality focused) and critical environmental area plans. States and tribes can carry out the following actions and measures of progress to achieve their restoration and protection objectives.

Objective 1: Clearly and consistently define restoration and protection goals throughout state or tribal territory

Key Actions	Program Building Activities
a. Establish goals that are consistent or compatible across relevant agencies	<p>Coordinate with relevant agencies that outline restoration/protection goals and strategies and timeframes</p> <p>Develop multi-agency body to coordinate restoration/protection efforts</p> <p>Gather information on wetland location, class and condition/functions</p> <p>Set restoration goals based on agency objectives and available information .</p>

<p>b. Consider watershed planning, wildlife habitat, and other objectives when selecting restoration/ protection sites</p>	<p>Identify rare, vulnerable, or important wetlands and prioritize for restoration/protection</p> <p>Apply tools (GIS, color-infrared photography, mapping, modeling, field inspection of soil, vegetation, and hydrologic conditions) to identify and prioritize restorable wetlands,</p> <p>Integrate restoration/protection efforts on a watershed or landscape scale, e.g., prioritize restoration sites within a watershed</p> <p>Share priorities with other organizations involved in wetland protection and restoration, e.g., wildlife bureaus, agriculture/conservation agencies, land trusts, mitigation banks</p> <p>Share priorities with other water quality protection programs, e.g., identify riparian restoration projects that would reduce sediment and nutrient loadings to streams and implement TMDLs</p>
<p>c. Provide clear guidance on appropriate restoration and management techniques and success measures</p>	<p>Develop restoration and management guidance specific to wetland types and location (e.g. urban vs. rural)</p> <p>Establish measures of restoration success, e.g., adopt functional and/or condition indicators and field methods.</p> <p>Establish performance standards based on reference wetland site in a relatively undisturbed condition</p> <p>Through guidance, encourage restoration outcomes that recreate natural self-sustaining systems and reduce the need for ongoing management</p> <p>Verify restoration techniques with site visits and adapt as necessary</p> <p>Train restoration partners to use guidance techniques</p>

Objective 2: Protect wetlands from degradation or destruction

Actions	Program Building Activities
a. Establish partnerships to leverage additional protection	Share protection priorities with partners Develop management plans for protected wetlands. Consider tracking: <ul style="list-style-type: none">• Number of stewardship agreements• Acres of wetlands protected through partnerships• Acres of vulnerable wetlands protected through partnerships
b. Establish and Institutionalize long term protection, using mechanisms such as incentives, purchase of land title or easements to protect wetlands	Develop management plans for protected wetlands. Consider Tracking: <ul style="list-style-type: none">• Acres of wetlands protected• Acres of vulnerable wetlands protected

Objective 3: Restore wetland acres, condition, and function

Actions	Program Building Activities
<p>a. Increase wetland acreage through restoration (re-establishment)</p>	<p>Develop restoration and management plans for re-established wetlands consistent with restoration guidance. Consider Tracking:</p> <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 <p>Provide technical assistance to re-establishment projects as needed</p>
<p>b. Improve natural wetland conditions and functions through restoration (rehabilitation)</p>	<p>Develop restoration and management plans for rehabilitated wetlands consistent with restoration guidance. Consider Tracking:</p> <ul style="list-style-type: none"> • Acres of wetlands rehabilitated • Improvement on function/condition indicators • Net change in water quality, flood control, or habitat <p>Provide technical assistance to restoration projects as needed</p>
<p>c. Establish partnerships to leverage more restoration</p>	<p>Share restoration and protection priorities with partners</p> <p>Develop restoration and management plans for restored wetlands consistent with restoration guidance. Consider Tracking:</p> <ul style="list-style-type: none"> • Number of restoration agreements • Acres of wetlands restored through partnerships • Acres of priority wetlands restored through partnerships <p>Provide technical assistance to partners as needed</p>

Objective 4: Monitor and track progress over time, document results, and modify practices as appropriate

Actions	Program Building Activities
a. Track restoration/protection projects	<p>Develop and populate accessible tracking database for restoration/protection sites</p> <p>Administer and update tracking database regularly</p> <ul style="list-style-type: none"> • Consider % of total acres of restoration/protection sites throughout state or tribal territory that are in database • Track projects by watershed or other relevant spatial unit
b. Monitor restoration/protection sites to ensure that they are implemented and managed correctly and linked to relevant watershed planning efforts	<p>Monitor effectiveness of all or a sample of sites representative of wetland class, type, and size using adopted indicators and methods.</p> <p>Track acres or numbers of restored/protected wetlands that are comprehensively monitored for ≥ 3 years</p> <p>Select subset of indicators (core indicators) to monitor effectiveness of all restoration and protection sites</p> <p>Monitor effectiveness of restoration/protection sites using core indicators</p> <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 <p>Regularly report wetland restoration/protection efforts to relevant entities (other agencies, public, etc.)</p>
c. Modify restoration/protection techniques as needed	<p>Develop process to review restoration and protection methods and modify as needed</p> <p>Develop process to review restoration and protection sites as needed and plan for follow-up site maintenance, restoration, and protection activities.</p>

Resources

- Basic Restoration Fact Sheet at: http://www.epa.gov/owow/wetlands/pdf/restoration_pr.pdf (PDF) (2 pp, 402K, [About PDF](#))
- Working with Land Trusts Fact Sheet at: http://www.epa.gov/owow/wetlands/pdf/landtrust_pr.pdf (PDF) (2 pp, 406K, [About PDF](#))
- Tribal Case Examples at: <http://www.epa.gov/owow/wetlands/initiative/tribalpro.html>
- Environmental Law Institute (2005-2007). *State Wetland Program Evaluation: Phases I-IV*. Washington, D.C. Accessed at <http://www.eli.org>.

- Federal Interagency Stream Restoration Working Group. (1999) *Stream Corridor Restoration: Principles, Process, and Practices*.
http://www.nrcs.usda.gov/technical/stream_restoration/newgra.html
- Interagency Workgroup on Wetland Restoration (2003). *An Introduction and User's Guide to Wetland Restoration, Creation, and Enhancement*. National Oceanic and Atmospheric Administration, Environmental Protection Agency, Army Corps of Engineers, Fish and Wildlife Service, Natural Resources Conservation Service. Accessed at
<http://www.epa.gov/owow/wetlands/pdf/restdocfinal.pdf> (PDF) (102 pp, 647K, [About PDF](#)).
- Kentula, Mary E., et al. *Wetlands: An Approach to Improving Decision-Making in Wetland Restoration and Creation*. 1992. Island Press.
- Kusler, Jon. (2004). Multi-Objective Wetland Restoration in Watershed Contexts. <http://www.aswm.org/propub/restoration.pdf> (PDF) (108 pp, 1.4MB, [About PDF](#))
- Kusler, Jon. (2006a). *Common Questions: Wetland Restoration, Creation, and Enhancement*. http://www.aswm.org/propub/20_restoration_6_26_06.pdf (PDF) (17 pp, 333K, [About PDF](#))
- Kusler, Jon. (2006b). *Common Questions: A Guide for Legislators: Wetland Protection and Restoration*.
http://www.aswm.org/propub/1_legislator_6_26_06.pdf (PDF) (20 pp, 479K, [About PDF](#))
- Kusler, Jon. (2006c) *Developing Performance Standards for the Mitigation and Restoration of Northern Forest Wetlands*.
http://www.aswm.org/propub/jon_kusler/forested_wetlands_080106.pdf (PDF) (72 pp, 462K, [About PDF](#))
- Kusler, Joan and Mary E. Kentula. (1990). *WETLANDS CREATION AND RESTORATION: The Status of the Science*, 600pp.
<http://www.aswm.org/propub/pubs/other/ip0450.htm>
- Society of Wetland Scientists (2000). *Position Paper on the Definition of Wetland Restoration*. 3pp.
- [Tribal Wetland Program Highlights](#) | [PDF version](#) (93 pp, 1.8MB, [About PDF](#))
- US EPA (2000). *Principles for the Ecological Restoration of Aquatic Resources*. EPA841-F-00-003. Office of Water (4501F), Washington, DC. 4 pp.
- US EPA (2007a). *River Corridor and Wetland Restoration*. Accessed at
<http://www.epa.gov/owow/wetlands/restore/>.
- US EPA (2007b). Chapter 3: Water in *EPA's Report on the Environment: Science Report*. EPA/600/R-07/045. External Review Draft. May. Accessed at
<http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=140917> .
- United States Geological Survey Water Supply Paper 2425. *Restoration, Creation, and Recovery of Wetlands: National Water Summary on Wetland Resources*, Mary Kentula, 1999.
<http://water.usgs.gov/nwsum/WSP2425/restoration.html>