



FILLING THE GAPS

Strategies for States/Tribes
for Protection of Non-WOTUS Waters

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Introduction

A body of water such as a river, stream, wetland, lake, pond, tidal water, or other surface water is covered by the requirements of the federal Clean Water Act (CWA) only if it is a “water of the United States” (sometimes referred to as “WOTUS”).¹ The scope of the definition of “WOTUS” defines a host of protections of such waters under federal law and under state laws that implement federal requirements.

The CWA protections include the prescription of water quality standards,² the assessment of waters to determine whether they are impaired and the preparation of plans to restore their health,³ the regulation by permit of discharges of pollutants from point sources into such waters,⁴ the regulation of the placement of dredge and fill material into such waters,⁵ the applicability of requirements to prevent, report, and correct spills of oil and hazardous substances (and liability for such spills),⁶ and state review of federal licensing and permitting activities that may result in discharges.⁷

In contrast, non-WOTUS waters are protected from discharges of pollutants and disposal of dredge and fill material only by the laws of the state (or tribal lands) within which they are located. Thus, it is important to examine how these waters - and especially non-tidal wetlands – can be protected if federal protection is lacking.

Changes in the interpretation of WOTUS resulting from judicial decisions or federal rulemaking place a substantial burden upon state and tribal regulators and legislators. States, in particular, must determine whether, and how, to keep up with shifting federal coverage by adopting and implementing protections for waters that are not protected by federal law. This report examines strategies that states (and some tribes) can use, including discussion of protections already in place.

I. State Permitting and Regulation of non-WOTUS Waters

One of the ways in which states have protected waters that are not within the scope of the Clean Water Act is through enactment and implementation of state regulatory programs that require permits for persons to conduct activities affecting these waters. We examined current state regulatory programs to discern where regulatory protections for at least some non-WOTUS waters currently exist.

In assessing reliance on WOTUS, we examined whether the state has a permitting program for non-federal freshwater wetlands and tributaries that can serve the function that Section 401 of the Clean Water Act⁸ currently serves. In other words, does the state have an independent state permit program regulating placement of dredge and fill material in freshwater wetlands and tributaries? Many – if not

¹ 33 U.S.C. §1362(7). See also Oil Pollution Act, *id.* §2701(21).

² *Id.* §§1311, 1313(c).

³ *Id.* §1313(d).

⁴ *Id.* §1342.

⁵ *Id.* §1344.

⁶ *Id.* §§1321, 2702.

⁷ *Id.* §1341.

⁸ Section 401 of the Clean Water Act provides states the authority to grant, deny, or condition a certification of proposed federal licenses or permits that may discharge into waters of the United States. The state certification, if granted, becomes an element of the federal permit or license. Section 401 certification most often applies to state evaluation of decisions by the Corps to permit the placement of dredge or fill material into WOTUS.

most – states have broad “waters of the state” definitions, including many additional waters, such as groundwater, springs, wetlands, watercourses, and others. However, many states do not have permitting programs for all such waters.

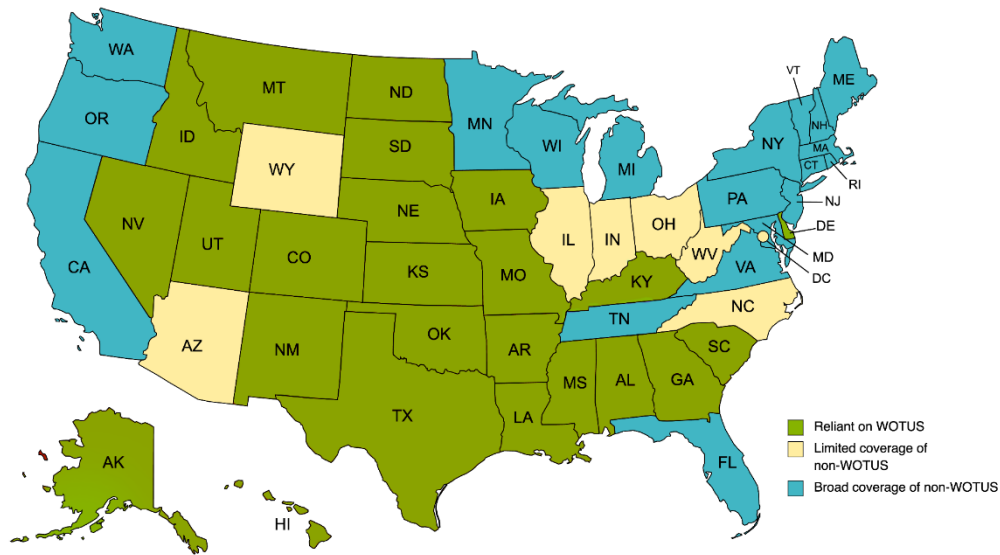
We identified relevant state regulatory permitting programs (of differing scopes and coverages) in 26 of the states and the District of Columbia. However, nearly half the states (24) do not operate an independent state permit scheme regulating dredge and fill activities in the state’s non-WOTUS waters.⁹ States that currently rely on federal authority for coverage of these waters are: Alabama, Alaska, Arkansas, Colorado, Delaware,¹⁰ Georgia, Hawaii, Idaho, Iowa, Kansas, Kentucky, Louisiana, Mississippi, Missouri, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, South Carolina, South Dakota, Texas, and Utah. (These states may apply Section 401 of the CWA to review and condition federal licenses and permits.) These 24 states, especially, will need to consider new strategies if the scope of the CWA is narrowed either by court decisions or federal rulemaking going forward.

For a more detailed summary, please see *State Protection of Non-Federal Waters*, prepared in conjunction with this report.¹¹

⁹ Some of these WOTUS-reliant states do have permit requirements narrowly limited to particular kinds of encroachments, such as stream alterations. For example, Hawaii issues stream diversion/alteration permits. HAW. REV. STAT. §174C-91 et seq. Idaho requires permits for alterations of streams and for “encroachments” on navigable lakes. IDAHO CODE ANN. §42-3801 et seq., §58-3801 et seq. Iowa requires permits for construction of diversions or structures in floodways. IOWA CODE §455B.275(3). Kansas requires permits for construction of levees or fills in streams and floodways, and for obstructions in designated streams. KAN. STAT. ANN. §§24-126, 82a-301. Kentucky requires permits for construction of structures or fills in streams and floodways. KY. REV. STAT. §151.250. Louisiana requires permits for dredge and fill activities in the coastal zone. LA. REV. STAT. ANN. §49:214.25. Montana requires permits for streambed alterations, MONT. CODE ANN. §§75-7-101 to 75-7-125, floodplain development, id. §§76-5-101 to 76-5-406, and lakeshore alterations, id. §75-7-204. South Dakota requires a permit for alteration to certain “meandered waters” and other waters. S.D. CODIFIED LAWS §41-2-18(5); S.D. ADMIN. R. 41:04:03:05. Utah requires a permit for stream relocation. UTAH CODE §73-3-29.

¹⁰ Delaware’s Tidal Wetlands Act, DEL. CODE tit. 7, §6601 et seq., includes a provision making its permit requirements applicable to nontidal, nonagricultural wetlands of “400 or more contiguous acres,” but this extremely large areal jurisdiction has never been found applicable to any actual nontidal wetlands in the state. Id. §6603(h).

¹¹ James McElfish, *State Protection of Non-Federal Waters: Turbidity Continues*, 52 *Envtl. L. Rep.* 10679-10691 (Sept. 2022). The discussion in this section of our report draws directly on this research.



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This map shows the status of state regulatory programs. The 24 states in green are the ones that have relied chiefly on CWA Section 401 to protect freshwater wetlands and tributaries from dredge and fill, rather than on independent state permit programs. Nineteen states (in blue) have fairly comprehensive permitting programs applicable to their waters (including wetlands) that may fall outside the coverage of the Clean Water Act. The seven states in yellow have adopted specialized laws and regulations, or case-by-case review practices, that are expressly intended to fill identified gaps in federal Clean Water Act coverage.

Broad Regulation of “Waters of the State”

Nineteen (19) states have fairly comprehensive permitting programs applicable to their waters (including wetlands) that may fall outside the coverage of the Clean Water Act. These are: California, Connecticut, Florida, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Tennessee, Vermont, Virginia, Washington, and Wisconsin.

The coverage of these programs varies. Virginia¹² and Maryland,¹³ for example, provide for state environmental agency permitting for activities affecting virtually all relevant state waters, including non-tidal wetlands. California divides its coverage among agencies, including the Coastal Commission and the Regional Water Quality Control Boards.¹⁴

¹² Va. Code Ann. §§62.1-44.5, 62.1-44.15; 9 Va. Admin. Code §§25-210-10 to 25-210-260.

¹³ Md. Code Ann., Env’t §9-101(1), §§5-901 et seq.

¹⁴ Cal. Water Code §§13000 et seq. (dredging and filling constitutes a discharge of waste to waters of the state); Cal. Pub. Res. Code §§30000 et seq. (protection of coastal wetlands from dredged and fill activities). See California

Other states with regulatory programs have various limitations. In New York, except for wetlands located within the boundaries of the Adirondack Park (where the park authority regulates wetlands of one acre or more), freshwater wetlands are regulated by the Department of Environmental Conservation.¹⁵ The Freshwater Wetlands Act law requires permits for dredging, filling, draining, and other activities.¹⁶ However, New York DEC’s jurisdiction extends only to freshwater wetlands of 12.4 acres or more in size, and to those that are smaller than 12.4 acres if of “unusual importance.” The law also protects a 100-foot buffer from the margin of the wetland. All such covered wetlands are to be included on a state wetlands map. Jurisdiction over freshwater wetlands smaller than 12.4 acres in size and not of “unusual importance” is delegated to the local municipality within which they are located. However, the commissioner may reserve the right to regulate such wetlands or classes of wetlands by rule.¹⁷ The statute was amended by the legislature in April 2022 to provide successively more protective and stringent provisions taking effect in 2025, providing definitions of “unusual importance” and allowing protection of wetlands not mapped, with further provisions taking effect in 2028, including reduction of the size for required regulation to 7.4 or more acres.¹⁸

Washington state’s programs cover many waters and wetlands, including non-WOTUS waters, but in addition to the water quality law administered by the Department of Ecology,¹⁹ the state relies heavily on the state’s Growth Management Act and local regulations for coverage of non-WOTUS waters.²⁰

States that exercise broad permitting authority, covering non-WOTUS waters, may also employ other conservation strategies. It is important to note that these states are less vulnerable to changes in the scope of federal regulatory definitions.

Gap-Filling or Limited Regulation of Waters

A number of states have adopted specialized laws and regulations, or case-by-case review practices, that are expressly intended to fill identified gaps in federal Clean Water Act coverage. These states provide some regulatory protections for identified classes of non-federal waters including certain of their nontidal wetlands. Some provide regulatory authority over specific activities, such as state-funded activities, affecting these waters. The seven (7) states with limited or gap-filling regulatory coverage are: Ohio, Indiana, Wyoming, North Carolina, Arizona, Illinois, and West Virginia, plus the District of Columbia.

A number of these states adopted targeted permit programs to protect their isolated wetlands after the Supreme Court’s 2001 decision in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of*

Water Resources Control Board, State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (2019), https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/2021/procedures.pdf.

¹⁵ N.Y. Env’t Conserv. Law ch. 43B, §§24-0101 et seq.

¹⁶ *Id.* §24-0507.

¹⁷ *Id.* §24-0505.

¹⁸ *Id.* §24-0107 (2022).

¹⁹ Wash. Rev. Code chs. 90.48, 77.55 (2022); Wash. Admin. Code ch. 173-201A (2022)

²⁰ Wash. Rev. Code ch. 36.70A (2022), especially 36.70A.170 (designating critical areas) and 36.70A.172 (use of best available science); Wash. Admin. Code chs. 365-190-080, 365-190-090, 365-195-900 (2022).

Engineers (SWANCC), which found no CWA coverage over isolated ponds where the basis for federal regulation was the use of the waters by migratory birds.²¹

Other state regulatory actions addressed other types of gaps. Several states acted in anticipation of shrinkage in CWA coverage following the adoption of the Trump Administration’s “navigable waters protection rule” in 2020, which would have excluded various intrastate waters lacking continuous surface connections to traditionally navigable waters.²² This section identifies several gap-filling strategies.

Isolated Waters Permitting

Ohio enacted a permit program for its isolated wetlands to address the loss of federal protection following SWANCC. The statute defined an “isolated wetland” as a wetland that is not subject to regulation under the CWA; it prohibited filling or disposing of dredged materials in an isolated wetland without a permit from the Ohio EPA.²³ More recently, Ohio EPA attempted to extend this existing permitting scheme to other ephemeral features, in order to address the loss of protection that would have resulted from the federal navigable waters protection rule adopted in 2020. However, in 2022 the Ohio legislature rejected Ohio EPA’s regulation of the state’s non-WOTUS ephemeral streams, reverting to the federal scope for coverage of those waters.²⁴

Indiana’s Department of Environmental Management administers a state permitting program for activities in isolated wetlands under a program enacted in 2003 in response to SWANCC.²⁵ This program was intended to “promote a net gain in high quality isolated wetlands; and . . . assure that compensatory mitigation will offset the loss of isolated wetlands allowed by the permitting program.”²⁶ By law, Indiana divided its isolated wetlands into three classes: those that are disturbed and have minimal habitat and hydrologic function (Class 1); those with moderate habitat and hydrologic function but generally not habitat for rare, threatened, or endangered species (Class II); and those that are undisturbed or minimally disturbed and support more than minimal habitat or hydrologic function, or that are an ecologically important wetland type (Class III).²⁷ In 2021, the legislature amended this law to reduce the scope of state regulation. Indiana now *excludes* from state regulation and permitting all of its Class 1 wetlands, and all Class 2 wetlands that are not more than three-fourths of an acre if located within an incorporated municipality, and three-eighths of an acre if outside a municipality.²⁸

After the 2001 *SWANCC* decision, North Carolina’s Environmental Management Commission adopted rules under the state water pollution law to provide a state permitting regime for activities in “isolated”

²¹ 531 U.S. 159 (2001).

²² 85 Fed. Reg. 22250 (Apr. 21, 2020). This rule was vacated in 2021, *Pascua Yaqui Tribe v. Environmental Prot. Agency*, No. 20-00266 (D. Ariz. Aug. 30, 2021).

²³ See OHIO REV. CODE ANN. §§6111.02 to 6111.28.

²⁴ OHIO REV. CODE ANN. §§6111.01 to 6111.28.

²⁵ IND. CODE §§13-18-22-1 to 13-18-22-11; 327 IND. ADMIN. CODE 17-1-1. “Exempt isolated wetlands” are defined at IND. CODE §13-11-2-74.5 and 327 IND. ADMIN. CODE 17-1-3(7).

²⁶ IND. CODE §13-18-22-1.

²⁷ Id. §13-11-2-25.8 (definitions of Class I, Class II, and Class III wetlands)

²⁸ Indiana Legis. 2021 (Senate Enrolled Act 389); codified at IND. CODE §13-11-2-74.5(a)(5), id. §13-11-2-48.5(a)(6), (d), id. §13-18-22-11(b)(7), (c). Thus, it provides less protection to isolated wetlands within municipalities than those in rural areas.

waters not subject to §404.²⁹ More recent gap-filling developments in North Carolina are discussed below.

Several other states responded to SWANCC by adopting provisions for isolated waters. These include states, such as Wisconsin, that have broader regulatory coverage as noted in the previous section.³⁰

Wyoming by regulation adopted state requirements for “[p]oint source discharges of dredged or fill material into isolated wetlands which are . . . [n]ot subject to regulation by the Army Corps of Engineers under Section 404.”³¹

Targeted Permitting Program for Non-WOTUS Waters

North Carolina, which already has an isolated wetlands permitting program, is seeking to adopt final regulations to cover other wetlands and surface waters that may fall between its existing isolated wetlands program and redefinitions of WOTUS.³² Its temporary regulations, adopted in 2021, have required permits for activities in these waters. However, the permanent regulations are still undergoing review before the state’s Rules Review Commission, and their fate is uncertain.³³

The District of Columbia adopted emergency and final rules in response to the 2020 “navigable waters protection rule.” The rules identify the District’s wetlands and streams as “critical areas” in need of protection, and subject them to permitting under a new “wetland and stream protection permit” that applies whenever they are not WOTUS.³⁴ The definitions explicitly include numerous types of potentially non-WOTUS waters in the permitting regime, for example defining “stream” as “a channel or conveyance of surface water with perennial, intermittent, or ephemeral flow.”³⁵

²⁹ See 15A N.C. ADMIN. CODE 02H.1300 (discharges to isolated wetlands and isolated waters).

³⁰ For example, Wisconsin regulates many non-federal waters under its water quality laws. Immediately after SWANCC it adopted a permit program to protect isolated wetlands. 2001 Wisconsin Act 6, Chapters NR 300, 351 and 352, Wis Admin. Code. However, in 2018 Wisconsin enacted permit exemptions for certain of these non-federal wetlands under 1 acre in urban areas and under 3 acres in rural areas, subject to implementation of certain requirements and mitigation. Wis. Stat. Ann. 281.36, as amended. See Guidance Document at <https://dnr.wi.gov/topic/wetlands/documents/3500-2018-02FinalNonfederalWetland.pdf>. The exemptions are not available for defined classes of “rare and high quality” wetlands.

³¹ 020-2 WYO. CODE R. §2-2(a)(iii).

³² The federal “navigable waters protection rule” adopted in 2020 specifically removed CWA coverage of, among others, wetlands that are not isolated but that lack a continuous surface connection to traditionally navigable waters. North Carolina regulators realized that this federal redefinition would result in creating a class of wetlands that were covered by state water quality standards, but that would be subject neither to CWA §404 permitting (with state water quality certification) nor to the permitting requirements of North Carolina’s isolated wetlands law. Regulators adopted temporary permitting rules to address this gap, and have adopted final rules, pending regulatory review, that have not yet been approved. 15A N.C ADMIN. CODE 02H.1401(b) (2022).

³³ See James McElfish, State Protection of Non-Federal Waters: Turbidity Continues, 52 *Envtl. L. Rep.* 10679, at 10682-83 (Sept. 2022) (describing interaction of North Carolina’s latest regulatory effort with a state limitation on adopting regulations that are more “restrictive” than federal standards).

³⁴ 68 D.C. Reg. 5254 (May 14, 2021) (adopting D.C. Mun. Regs. tit. 21, §§2500-2505, 2599, 2600-2699).

³⁵ D.C. Mun. Regs. tit. 21, §2699. Its wetland definition “[i]ncludes a marsh, swamp, pond, or vernal pool.” *Id.*

Permitting for Specific Designated Non-WOTUS Waters or Activities

Arizona enacted a Surface Water Protection Program (SWPP) in 2021 to protect some of its more important non-WOTUS surface waters and wetlands using statutory criteria, primarily based on their value for drinking water, fishing, and recreation.³⁶ The SWPP applies only to the non-WOTUS waters that are named on the state's list. It directed the director of the Arizona Department of Environmental Quality (ADEQ) to apply WOTUS surface water quality standards to non-WOTUS waters until another set of regulations could be put into place to protect those water bodies. While the SWPP includes development of water quality standards and provides for approval of discharge permits for pollutants, the state program does not regulate dredge or fill activities in non-WOTUS waters or wetlands.

Illinois, for its part, has wetland laws that protect certain of its wetland resources including non-WOTUS wetlands from adverse impacts that are caused by *state-funded* activities, but not from other activities.³⁷ A separate law provides for state permitting of activities in floodways.³⁸

Case-by-Case Regulation

Some states use their water quality laws to seek permitting or other avoidance/minimization actions on a case-by-case basis. West Virginia does not routinely regulate discharges to its non-WOTUS waters. However, its wetlands are waters of the state.³⁹ The West Virginia Department of Environmental Protection asserts authority on a case-by-case basis to review and decide whether to allow or prohibit filling of isolated waters and wetlands, based on the potential of the activity to violate water quality standards.⁴⁰

The state of Washington's Department of Ecology uses a similar strategy to exercise state jurisdiction over certain non-WOTUS waters where a water quality violation is anticipated. However, the state's local governments also have substantial regulatory leverage via their protection of critical areas under the state's Growth Management Act, so we include Washington among the states with broader coverage of non-WOTUS waters.

³⁶ H.B. 2691, 55th Leg., 1st Sess. (Ariz. 2021).

³⁷ 20 Ill. Comp. Stat. 830 (state-supported activities). Otherwise, Illinois substantially relies on its §401 certifications, linked to WOTUS, for most purposes.

³⁸ 615 ILL. COMP. STAT. 5/4.9-5/35.

³⁹ W. VA. CODE §22-11-3(23).

⁴⁰ Application for West Virginia State Waters Permit for Federally Non-Jurisdictional Waters, <https://dep.wv.gov/WWE/Programs/wqs/Documents/401%20Program/Isolated%20Waters%20Application%20090315.pdf>. A similar approach is implemented by Nebraska with respect to some of its isolated wetlands. While these are subject to Nebraska's water quality standards, Nebraska has no state permitting program that covers them. The Nebraska Department of Environment and Energy (NDEE) "encourage[s] project proponents to join us in working together to conserve these valuable resources through consulting with NDEE." NDEE, Section 401 Water Quality Certification, <http://dee.ne.gov/NDEQProg.nsf/OnWeb/S401>.

II. Other Approaches - Alternative Regulatory Schemes, Conservation Measures and Priorities, Voluntary Efforts

If a state does not have a regulatory program for its non-WOTUS waters, there are alternative or supplemental approaches that may protect such waters. Many of these examples are from states that *also* have comprehensive regulatory programs but that may be adopted by states that do not.

1. *State or local regulations of activities to protect buffer areas adjacent to waters and wetlands.*

Local governments can often use their land use regulatory powers to protect waters and wetlands irrespective of federal jurisdiction by establishing zoning and environmental rules for activities on the lands adjacent to these features. Their authority to do so may derive either from state wetlands and critical areas conservation laws (e.g., Washington, New Hampshire, Massachusetts) or from the general powers granted them by state laws for regulation of land use and development (see generally, Land Use and Zoning treatise).⁴¹ The Environmental Law Institute compiled a taxonomy of wetland buffer elements and types in a widely-disseminated publication in 2008 – the Planner’s Guide to Wetland Buffers for Local Governments.⁴² This publication breaks down example ordinance language drawn from over 50 jurisdictions and provides scientific support for designing buffer sizes of sufficient size to support water quality, habitat connectivity, and other resource values. Buffer regulation can provide important water quality and resource protections that are not dependent upon federal jurisdictional definitions, because they rely on local government land use powers, which include resource protection.

Portsmouth, New Hampshire, in its zoning ordinance defines and protects a buffer of 100 feet adjacent to: all its wetlands greater than 10,000 square feet, all perennial streams, and “any vernal pool regardless of area.”⁴³ The ordinance defines what waters and wetlands are jurisdictional for purposes of the ordinance – not dependent on federal jurisdiction. New construction, ground disturbance and fill or removal of soil are prohibited within the entire buffer absent a conditional use permit issued by the city. There are also provisions dealing with vegetation management with the buffer: The ordinance defines the first 25 feet from the edge of a water or wetland as the “vegetated buffer strip.” Any removal of vegetation is not permitted within this area except for hand-removal of invasive species. The next portion of the buffer, between 25 and 50 feet, is defined as the “limited cut area.” In this portion of the buffer, landowners may harvest up to one-half the trees that measure greater than six inches in diameter. For non-tidal perennial streams, the limited cut area extends from 25 to 75 feet. Vernal pool wetlands require a 50-foot vegetated buffer strip, and the limited cut area extends from 50 to 75 feet. Use of fertilizer is prohibited in the vegetated buffer strip and limited cut areas, and only low phosphate and slow-release fertilizers are allowed in the remainder of the buffer. Pesticide and herbicide use is prohibited within the entire buffer. Although New Hampshire has comprehensive wetland regulation, the buffer ordinances indicate the kinds of measures that might be used in other states to protect wetlands and waters.

Georgia does not provide comprehensive protections for wetlands and waters apart from the scope of the Clean Water Act. However, its municipalities are authorized under state law to adopt buffer

⁴¹ See also, McElfish, J., *Nature-Friendly Ordinances* (Envtl. L. Inst. 2004).

⁴² ELI, *Planner’s Guide to Wetland Buffers for Local Governments* (Envtl. L. Inst. 2008), <https://www.eli.org/research-report/planners-guide-wetland-buffers-local-governments>.

⁴³ Portsmouth, N.H., Zoning Ordinance (2009).

protections using their land use authorities. The City of Atlanta, Georgia, prescribes buffers for wetlands and waters as defined in the city ordinance.⁴⁴ Required buffers are 75 feet of natural, undisturbed, vegetative buffer on both sides of streams, and 25 feet for wetlands.⁴⁵ These City provisions apply even though state-prescribed sediment and erosion control buffers (25 feet) were found inapplicable to certain freshwater wetlands and streams by the Georgia Supreme Court in 2015.⁴⁶

Although Colorado does not protect non-WOTUS wetlands via state regulations, local governments in Colorado have enacted buffer protections. The City of Boulder provides for protection of streams and wetlands by ordinance, requiring a 25–50-foot buffer depending on the quality of wetlands or waters.⁴⁷ Park County, Colorado, requires a 50 ft buffer for its wetlands from any new construction.⁴⁸

The North Carolina Nutrient Offset & Buffer Mitigation Program includes a subprogram called the Riparian Buffer Protection Program. The program establishes riparian buffer rules to protect “vegetated areas adjacent to intermittent and perennial streams, lakes, reservoirs, ponds, estuaries, and modified natural streams,” including wetlands.⁴⁹ The state has active protection programs in the Neuse River Basin, Tar-Pamlico River Basin, Catawba River Basin, to protect “estuaries and downstream lakes through their buffer nutrient removal function.” Additional programs have been created in the Randleman Lake Watershed, Jordan Lake Watershed, and Goose Creek Watershed.⁵⁰

2. Local regulation of wetlands/waters (as authorized by state law or by home rule)

As with buffer requirements, local governments may also have authority to prescribe wetland or riparian permit protections and limitations in their land use ordinances. A number of states with comprehensive state water and wetland regulatory programs also provide for local wetland regulations. These include, among others, New York, which authorizes local wetland regulation; New England states that authorize local wetlands regulation; and Virginia, with its provisions for tidal and non-tidal wetlands to be regulated by local government boards under the state legal framework.⁵¹ Critical areas laws in Maryland and state growth management and conservation planning laws in Washington also give local governments substantial authority.

⁴⁴ City of Atlanta, *City of Atlanta Riparian Buffer Revegetation Guidelines* (2014),

<https://www.atlantawatershed.org/wp-content/uploads/2020/09/City-of-Atlanta-Riparian-Buffer-Revegetation-Guidelines-101514.pdf>

⁴⁵ Atlanta Code of Ordinances 74-303. Buffer requirements.

⁴⁶ The state requirements only applied to waters with “wrested” vegetation. Ga. Code Ann. § 12-7-6(b)(15)(A). *Turner v. Georgia River Network, et al.*, No. S14G1780 (Ga. June 15, 2015); *Grady County Board of Commissioners v. Georgia River Network, et al.*, No. S14G1781 (Ga. June 15, 2015),

⁴⁷ <https://bouldercolorado.gov/services/wetland-permits>. See Boulder City Code., Section 9-3-9 (l)(3) - Stream, Wetlands, and Water Body Protection.

⁴⁸ Park County, Colorado Land Use Regulations, TABLE 5-301a.

⁴⁹ North Carolina Department of Environmental Quality, *Riparian Buffer Protection Program*, <https://deq.nc.gov/about/divisions/water-resources/water-quality-permitting/401-buffer-permitting/riparian-buffer-protection-program#ponds-open-waters-and-swimming-pools>

⁵⁰ North Carolina Department of Environmental Quality, *Riparian Buffer Protection Program*, <https://deq.nc.gov/about/divisions/water-resources/water-quality-permitting/401-buffer-permitting/riparian-buffer-protection-program#ponds-open-waters-and-swimming-pools>

⁵¹ Local governments are responsible for implementing buffer requirements established under Chesapeake Bay Preservation act which applies to some non-tidal wetlands as well as tidal wetlands.

However, apart from states that have fully integrated local wetlands regulation into their permitting schemes under state law, there are states in which local governments have authority to use their land use powers to advance similar protective purposes even though there is no state comprehensive regulatory program. For example, Delaware has no state law protecting its nontidal wetlands from dredge and fill activities, instead relying on the federal Clean Water Act for such purposes. But Delaware does provide technical support to its local governments to enable them to protect such features using land use authorities.⁵² Missouri's state wetlands program plan includes support for regional planning efforts and development of green infrastructure, stream setbacks, and other local government activities that can sustain these waters.

Boulder, Colorado, has enacted a permitting scheme for activities affecting Stream, Wetlands, and Water Body Protection.⁵³ DuPage County, Illinois the DuPage County Countywide Stormwater and Flood Plain Ordinance (DCSFPO) requires a stormwater permit for any development near wetlands.

A further way for local governments to protect wetlands within land use ordinances is to exclude the area of the wetland from the developable lot calculation for zoning and subdivision purposes. This results both in reduced density of development and a basis (together with setback requirements) to prevent encroachment of development activities in proximity to wetlands. Horry County, South Carolina, has used this approach, and is now considering additional measures to safeguard its waters and wetlands.⁵⁴

Local governments are also involved in the regulation of isolated waters. In Lake County, Illinois "Isolated Waters of Lake County" are defined as "All waters such as lakes, ponds, streams, farmed wetlands, and wetlands that are not under U.S. Army Corps of Engineers' (Corps) jurisdiction. The limits of the Isolated Waters of Lake County extend to the ordinary high water mark or the delineated wetland boundary" and protections are provided under the Lake County Watershed Development Ordinance.⁵⁵

3. *Regulation of particular activities rather than of specified waters*

States that do not provide for regulatory protection of specific types of freshwater wetlands, headwaters (intermittent or ephemeral) streams, or certain other waters may nevertheless have other regulatory programs that can provide some protections from *specific activities*.

These may include state regulations that prohibit, or that require specific permits for, the dewatering of aquifers.⁵⁶ Groundwater protection programs can also protect certain non-WOTUS surface waters

⁵² Delaware State Wetlands Program Plan, Objective 4.

⁵³ Boulder, Colorado, City Ordinance 9-3-9.

⁵⁴ Jennifer Roberts, *Horry County residents push for stricter regulations to protect wetlands from development*, WMBF News, (Mar. 8, 2022), <https://www.wmbfnews.com/2022/03/08/horry-county-residents-push-stricter-regulations-protect-wetlands-development/>

⁵⁵ Lake County, Ill., Watershed Development Ordinance, art. 10 (2020)

⁵⁶ See generally, Andrea K. Gerlak, Sharon B. Medgal, Robert G. Varady, and Hunter Richards, *Groundwater Governance in the U.S. Appendix B: Qualitative Survey Responses* (Udall Center for Studies in Public Policy Water Resources Research Center, The University of Arizona, May 2013) (state summaries), available at <https://wrrc.arizona.edu/sites/wrrc.arizona.edu/files/pdfs/GroundwaterGovernanceReport-FINALAppendixB.pdf>

because of the relationship between the two. Arizona requires a permit for any facility that discharges pollutants to the groundwater. The two key requirements of the Arizona Aquifer Protection Permit program are (1) to satisfy the Aquifer Water Quality Standards (AWQS) at the point of compliance, and (2) to demonstrate use of Best Available Demonstrated Control Technology (BADCT) for the activity.⁵⁷

Other state laws may regulate instream flows or regulate withdrawals of waters in specific watersheds or that exceed specific amounts.⁵⁸ These laws may require specific permits from the state environmental agency or from the state engineer (in western states). And the determination of allowable withdrawals and dewatering may relate to maintenance of downstream water quality standards in order to maintain beneficial uses including aquatic life uses. Texas A&M University has identified 30 states with instream flow requirements or permit requirements: Alaska, Arizona, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Iowa, Kansas, Maine, Maryland, Massachusetts, Minnesota, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Oklahoma, Oregon, Texas, Utah, Virginia, Washington, Wisconsin, and Wyoming.⁵⁹ These requirements may provide a basis for protection of some waters via other mechanisms. (However, many of these instream flow provisions are linked to NPDES permitting under the Clean Water Act, and so may have limited utility in protection of non-WOTUS waters.)

Numerous states have stream alteration or habitation modification permit requirements that apply to waters of the state irrespective of federal WOTUS jurisdiction. Such permit schemes may be administered by natural resource agencies, fish and wildlife agencies, or flood control agencies. Among states without broad regulatory programs, Idaho nevertheless provides for stream alteration permits.⁶⁰ South Dakota requires a permit for alteration of certain “meandered waters.”⁶¹ Hawaii has stream diversion permits.⁶² While many states have such provisions, these may be of most interest where they provide the only state oversight of activities that affect non-WOTUS waters.

4. Conservation planning

Many states have identified conservation priorities that include non-WOTUS wetlands and waters. Several states have further engaged in spatially explicit planning to identify important waters and wetlands to protect vulnerable or unique resource types or landscape matrices.⁶³ Some of these prioritization efforts are tied directly to funding prioritization schemes, while others are free-standing or

⁵⁷ Ariz. Rev. Stat. 49-241 et seq.

⁵⁸ E.g., Washington State’s instream flow rules, established by basin.

<https://apps.wa.gov/ecology/docs/WaterRights/wrwebpdf/wsisf.pdf>

⁵⁹ Texas A&M, Freshwater Inflows, United States State Laws Relating to Protection of Instream Flows for Environmental Purposes (2022), available at <https://www.freshwaterinflow.org/united-states-state-laws-relating-protection-instream-flows-environmental-purposes/>

⁶⁰ Idaho Code Ann. 42-3801 et seq.

⁶¹ S.D. Codified aw 41-2-18(5).

⁶² Haw. Rev. Stat. 174C-91 et seq.

⁶³ In 2013, ELI conducted an in-depth analysis of 30 wetland and stream conservation prioritization programs in use by states, including several in coastal watersheds ([A Handbook for Prioritizing Wetland and Stream Restoration and Protection Using Landscape Analysis Tools](#)). Overall, the tools used in these programs are highly influential in determining the location and priority of (1) governmental expenditures in restoration and protection of aquatic resources, (2) nonprofit conservation efforts, and (3) the location and parameters for compensatory mitigation.

used for multiple management and conservation purposes. Some current and recent examples of state planning and prioritization efforts follow.

Colorado's Natural Heritage Program, for example, identifies potential conservation areas (PCAs). PCAs are areas contributing to the state's biological diversity, rare species, and natural plant communities and are given a biodiversity significance rank of 1 – 5 (1 being globally outstanding and 5 being locally significant). The state has mapped over 1,800 PCAs, including many wetland-related habitats.⁶⁴ Although PCAs have no regulatory status, they are valuable for conservation planning purposes to help prioritize conservation efforts.⁶⁵ The state has created the Colorado Wetland Inventory Mapping Tool to depict the location and classification of over 1.7 million acres of wetlands and waterbodies, including PCA wetlands, in Colorado.⁶⁶ The Tool also includes Landscape Summaries of wetland acres by river basin, subbasin, and county, which makes it possible to apply other strategies and tools where conservation is needed.

Maryland's GreenPrint program informs land conservation under the state's Program Open Space, Maryland Environmental Trust, Maryland Agricultural Land Preservation Foundation, and Rural Legacy programs. The GreenPrint program identifies [Targeted Ecological Areas](#) (TEAs) - lands and watersheds of "high ecological value" in the state.⁶⁷ These lands include large blocks of forests and wetlands, streams and watersheds with aquatic biodiversity, and coastal ecosystems, among other habitat types.⁶⁸

A number of other states have similar programs. In Kansas, The Topographic Wetland Identification Process (TWIP) is a LiDAR-based methodology for wetland assessment and prioritization that can be used to identify potential areas for wetland, protection, restoration, and enhancement. The purpose is to "enhance knowledge about the state's wetland inventory and target our existing wetland programs on a watershed scale to accomplish broad wetland conservation while restoring and protecting our priority watersheds across the state."⁶⁹ As part of its State Wildlife Action Plan, the Tennessee Wildlife Resources Agency collaborated with The Nature Conservancy to develop an ArcGIS-based model that scores aquatic catchments (identified using the National Hydrography Plus datasets) in terms of the rarity and viability of important riparian aquatic species within their boundaries. Together with priorities the agency identifies for terrestrial and subterranean habitats, its aquatic habitat priorities are used primarily to guide the allocation of funding for State Wildlife Grants.⁷⁰ The Indiana High Priority Wetland

⁶⁴ *PCA Reports*, Colorado Natural Heritage Program, <https://cnhp.colostate.edu/ourdata/pca-reports/> (last visited Sept. 28, 2022).

⁶⁵ *Colorado Natural Heritage Program Potential Conservation Areas*, LandScope America, http://www.landscape.org/colorado/priorities/cnhp_pca/ (last visited Sept. 8, 2022).

⁶⁶ *Wetlands Mapper*, Colorado Wetland Information Center, <https://cnhp.colostate.edu/cwic/tools/mapper/> (last visited Sept. 8, 2022).

⁶⁷ *Maryland Focal Areas - Targeted Ecological Areas*, Maryland Department of Natural Resources, <https://maryland.maps.arcgis.com/home/item.html?id=a56174cc59914d44812184ee925b9e51> (last visited Sept. 28, 2022).

⁶⁸ *Maryland GreenPrint Targeted Ecological Areas*, LandScope America, <http://www.landscape.org/maryland/map/layers/conservation/priorities/greenprint-targeted-ecological-areas/25000/> (last visited Sept. 28, 2022).

⁶⁹ *Kansas Wetland Program Plan 2019-2023*, Kansas Water Office, available at https://www.epa.gov/sites/default/files/2019-03/documents/kansas_wpp212019.pdf

⁷⁰ Tennessee Wildlife Resources Agency, *Tennessee Wildlife Action Plan* (2015), available at <https://www.tn.gov/content/tn/twra/wildlife/action-plan/tennessee-wildlife-action-plan.html>.

Conservation Sites GIS tool was developed to improve tracking of existing high quality wetland sites and target them for protection.⁷¹ And, in Michigan, The Landscape Level Wetland Functional Assessment (LLWFA) is a tool to assess wetland functions on a watershed scale. The LLWFA is a process using spatial data to guide watershed decision-making and prioritize wetland protection and restoration based on functions the wetland provides.⁷²

These approaches can help states integrate multiple, potentially complementary aquatic resource conservation efforts in a more holistic manner and can help wetland programs to strategically leverage multiple resources for conservation projects that include - or even target - non-WOTUS waters.

5. *Water Quality Standards for certain non-WOTUS waters*

Some states have adopted water quality standards for non-WOTUS waters even though the state does not operate a formal permitting or regulatory program for such waters. Certain states have adopted wetland-specific water quality standards, but more commonly states have applied existing water quality standards to wetlands. The National Association of Wetland Managers maintains a list of those states that have water quality standards for wetlands, those states include California, Colorado, Florida, Hawaii, Maine, Massachusetts, Minnesota, Nebraska, North Carolina, Ohio, Washington, Wisconsin, and Wyoming.⁷³ While many of these states have regulatory permit programs protecting such waters, others do not. Nevertheless, the existence of water quality standards provides a basis for some state protection - either through direct enforcement of general state prohibitions on polluting “waters of the state” or through collaborative efforts to encourage avoidance and minimization of impacts to these waters. Some examples of states that have adopted wetland water quality standards, as well as some that have applied non-WOTUS water quality standards to their wetlands, are as follows:

In Hawaii, all wetlands are explicitly included within the umbrella of water quality standards.⁷⁴ “Elevated wetlands,” “low wetlands,” “coastal wetlands,” “marine waters,” “marine bottom types,” and “recreational areas” are all specifically included in the wetland definition, and the same water quality standards that apply to the rest of the state’s waters apply to wetlands.⁷⁵ These basic water quality standards ensure that waters are “free of substances attributable to domestic, industrial, or other controllable sources of pollutants” including floating debris or oil, substances that influence the taste of fish in the water, high or low temperatures, soil particulates, and more. These protections are enforced through fines for those that contaminate water, and monitoring of the waters for acute or chronic toxicity. If these waters are found to be unsafe for public health, signs will be posted to that effect.⁷⁶

⁷¹ *Wetlands Mapping*, Indiana Department of Environmental Management, <https://www.in.gov/idem/wetlands/resources/wetlands-mapping/> (last visited Sept. 8, 2022).

⁷² Michigan Department of Environmental Quality Water Resources Division, *State of Michigan Wetland Monitoring and Assessment Strategy* (2015), available at https://www.michigan.gov/documents/deq/wrd-wetlands-strategy_555457_7.pdf

⁷³ *States with Wetlands and Water Quality Standards*, National Association of Wetland Managers, <https://nawm.org/wetland-programs/water-quality-standards-for-wetlands/2780-states-with-wetlands-and-water-quality-standards> (last visited Sept. 8, 2022).

⁷⁴ Hawaii Administrative regulations § 11-54-1 Definitions

⁷⁵ Id. § 11-54-4

⁷⁶ Ibid.

There are also specific protections in place for elevated wetlands.⁷⁷ Their pH cannot be higher than 7.0 or lower than 4.5 and cannot deviate more than .5 from ambient conditions.⁷⁸

New Mexico incorporates wetlands as “surface waters of the State,”⁷⁹ offering protection under its standard water quality definitions. Also included in surface waters of the State are wet meadows, playa lakes, reservoirs, natural ponds, and more. Tributaries of these waters, including adjacent wetlands, are also explicitly included in the definition. Wetlands constructed for the explicit purpose of wastewater treatment are excluded.⁸⁰ In 2009, all naturally occurring wetlands in New Mexico within U.S. Forest System lands were designated as Outstanding National Resource Waters. Receiving this designation means that these wetlands receive special protection under New Mexico’s Standards for Interstate and Intrastate Surface Waters.⁸¹ Finally, the Surface Water Quality Bureau indicated that it is working on specific water quality standards for vulnerable wetland types like isolated and ephemeral wetlands.⁸²

West Virginia does not regulate discharges to its non-WOTUS waters via a specific permitting process. However, it uses its water quality standards to assert jurisdiction over activities affecting these waters on a case-by-case basis – including wetlands as waters of the state.⁸³ The West Virginia Department of Environmental Protection uses this authority to review and decide whether to allow or prohibit filling of isolated waters and wetlands, based on the potential of the activity to violate water quality standards.⁸⁴ The state of Washington’s Department of Ecology uses a similar strategy to exercise state jurisdiction over non-WOTUS waters where a water quality violation is anticipated.

Nebraska includes wetlands in the definition of “waters of the state,” subjecting them to the anti-degradation clause of title 117.⁸⁵ Title 117 Chapter 7 specifically establishes water quality standards for wetlands. This chapter distinguishes between two major types of wetlands in the state — surface-water overflow wetlands and isolated wetlands. The water quality standards apply to both types. The only wetlands exempt from water quality standards, as in some other states, are those artificially constructed for the purpose of wastewater management. By having specific standards for wetlands, Nebraska can set standards with a recognition that “traditional water quality parameters in wetlands such as pH, temperature, dissolved oxygen, ammonia, chloride, and conductivity may naturally vary outside accepted ranges for other surface waters.” The specific standards for wetlands focus on ensuring proper

⁷⁷ Elevated wetlands are defined by Hawaii Administrative rules § 11-54-1 Definitions as “freshwater wetlands located above 100m (300ft) elevation. They are generally found in undisturbed areas, mainly in remote uplands and forest reserves with high rainfall. Elevated wetlands include upland bogs, marshes, swamps, and associated ponds and pools.”

⁷⁸ Id. § 11-54-5.2

⁷⁹ New Mexico Standards for Interstate and Intrastate Surface Waters § 20-6-4.7 Definitions

⁸⁰ Id. § 20-6-4.7.W(4)

⁸¹ Outstanding National Resource Waters, *New Mexico Environment Department*, <https://www.env.nm.gov/surface-water-quality/onrws> (last visited Sept. 8, 2022).

⁸² *Wetlands Program Plan for New Mexico*, New Mexico Environment Department Surface Water Quality Bureau Wetlands Program (2021), available at <https://www.epa.gov/system/files/documents/2022-02/2021-new-mexico-wetlands-program-plan-2021-to-2025.pdf>

⁸³ W. VA. CODE §22-11-3(23).

⁸⁴ *Application for West Virginia State Waters Permit for Federally Non-Jurisdictional Waters*, West Virginia Department of Environmental Protection, available at <https://dep.wv.gov/WWE/Programs/wqs/Documents/401%20Program/Isolated%20Waters%20Application%20090315.pdf>.

⁸⁵ Section 401 Water Quality Certification, *Nebraska Department of Environment and Energy*, <http://dee.ne.gov/NDEQProg.nsf/OnWeb/S401> (last visited Sept. 8, 2022).

protections for endangered species particular to wetlands, lessening water pollution, freeing wetlands of toxic substances particularly harmful to aquatic life, and protecting human health.⁸⁶ While Nebraska does not have a specific permitting program for non-WOTUS wetlands, the Nebraska Department of Environment and Energy (NDEE) “encourage[s] project proponents to join us in working together to conserve these valuable resources through consulting with NDEE.”⁸⁷

6. Conservation banking with protection for wetlands/waters

Conservation banking provides a mechanism to offset unavoidable impacts to species listed as threatened or endangered under the Endangered Species Act (or state equivalent). This differs from a mitigation bank which has the explicit purpose of “protect[ing], restor[ing], creat[ing], and enhanc[ing] wetland habitats.”⁸⁸ Both use the same offset procedure, but the focus of this section is conservation banking with protection for wetlands as a byproduct, rather than explicit banking for wetland protection.

This type of conservation banking is defined by the U.S. Fish and Wildlife Service as “ a parcel of land containing natural resource values that are conserved and managed in perpetuity, through a conservation easement held by an entity responsible for enforcing the terms of the easement, for specified listed species and used to offset impacts occurring elsewhere to the same resource values on non-bank lands.”⁸⁹ A bank sponsor enters into an agreement with the USFWS (and/or state equivalent in states with species regulatory programs) to permanently protect, manage, and monitor the site.⁹⁰ In exchange, the sponsor may sell credits to permittees who need to satisfy legal requirements to offset impacts to endangered species associated with a permit.⁹¹ The number and type of credits associated with the bank depends on specific species and site specific characteristics.⁹² Conservation banks and credits are included by the U.S. Army Corps of Engineers in its Regulatory In-lieu Fee and Banking Information Tracking System (RIBITS), along with wetland mitigation banks and in-lieu fee programs.⁹³

Conservation banking may provide opportunities to also protect wetland habitats, especially in those cases where the target species are dependent on these habitats.⁹⁴ For example, various aquatic invertebrates and plants are associated with vernal pools and some wetlands support amphibians like

⁸⁶ 117 Neb. Admin. Code §7

⁸⁷ Section 401 Water Quality Certification, *Nebraska Department of Environment and Energy*, <http://dee.ne.gov/NDEQProg.nsf/OnWeb/S401> (last visited Sept. 8, 2022).

⁸⁸ Conservation and Mitigation Banking, *California Department of Fish and Wildlife*, <https://wildlife.ca.gov/Conservation/Planning/Banking>, (last visited Sept. 16, 2022)

⁸⁹ *Guidance for the Establishment, Use, and Operation of Conservation Banks*, U.S. Fish & Wildlife Service (2003), available at <https://www.fws.gov/sites/default/files/documents/conservation-banking-guidance-2003-05-02.pdf>

⁹⁰ On July 27, 2022, the U.S. Fish and Wildlife Service issued an advance notice of proposed rulemaking seeking comment on development of a rule for species conservation banking. Comments are due Sept. 26, 2022. 87 FR 45076 (July 27, 2022). <https://www.regulations.gov/document/FWS-HQ-ES-2021-0137-0001>

⁹¹ Conservation and Mitigation Banking, *California Department of Fish and Wildlife*, <https://wildlife.ca.gov/Conservation/Planning/Banking>, (last visited Sept. 16, 2022)

⁹² *Ibid.*

⁹³ Regulatory In-lieu Fee and Bank Information Tracking System, *U.S. Army Corps of Engineers*, [https://ribits.ops.usace.army.mil/ords/f?p=107:2:::":](https://ribits.ops.usace.army.mil/ords/f?p=107:2:::) (last visited Sept. 8, 2022).

⁹⁴ Michael Bean et al., *Design of U.S. Habitat Banking: Systems to Support the Conservation of Wildlife Habitat and At-Risk Species* (2008), Environmental Law Institute, available at <https://www.eli.org/research-report/design-us-habitat-banking-systems-support-conservation-wildlife-habitat-and-risk>

the California tiger salamander and California red-legged frog. States - especially those with regulatory programs that cover impacts to threatened and endangered species - may participate in the development of conservation bank agreements or may serve on inter-agency teams responsible for overseeing banks. In this way, states may influence the siting, design, and management of conservation banks.

California has a robust conservation banking program and provides some examples of the opportunities for protecting non-WOTUS waters. For example, the Daley Ranch Conservation Bank in San Diego is focused on protecting oak woodlands, chaparrals, coastal sage scrub, and non-native grasslands. There are also credits available at that site for water dependent habitats, including wetlands.⁹⁵ Some banks have been developed almost exclusively to protect vernal pool wetlands and associated buffer areas such as Van Vleck⁹⁶ and Toad Hill Ranches⁹⁷ in CA or Rogue Valley⁹⁸ in OR. There are also sites that do not offer wetland credits, but protect them, nonetheless. For example, the Elsie Gridley Multi-Species Conservation bank offers benefits in addition to species conservation (which is its primary goal) by protecting wetlands and thereby offering flood water storage.⁹⁹ It also protects burrowing owl, California tiger salamander, swainson's hawk, vernal pool conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp.¹⁰⁰

7. Voluntary conservation and restoration programs

Many states leverage the efforts of landowners, non-profits, and the public in the protection and restoration of wetlands and waters.¹⁰¹ State voluntary conservation and restoration programs take a variety of forms, ranging from engaging citizens in wetland monitoring to paying citizens to remove invasive species to funding landowners to change agricultural practices to purchasing easements on private land to providing technical assistance. These programs provide the public and private organizations with opportunities to best protect and restore wetland ecosystems and ecosystem services in their area. EPA has published a helpful worksheet on how states can establish volunteer conservation programs.¹⁰²

⁹⁵ Conservation and Mitigation Banks Established in California by CDFW, *California Department of Fish and Wildlife*, <https://wildlife.ca.gov/Conservation/Planning/Banking/Approved-Banks> (last visited Sept. 8, 2022).

⁹⁶ Van Vleck Mitigation Bank, *Westervelt Ecological Services*, <https://wesmitigation.com/projects/van-vleck-mitigation-bank/> (last visited January 30, 2023).

⁹⁷ Toad Hill Ranch Mitigation Bank, *Wildlands*, <https://www.wildlandsinc.com/banks/toad-hill-ranch-mitigation-bank-wetl/> (last visited January 30, 2023).

⁹⁸ Rogue Valley Mitigation/Conservation Bank, *Wildlands*, <https://www.wildlandsinc.com/banks/rogue-valley-mitigationconservation-bank-vpp/> (last visited January 30, 2023)

⁹⁹ Amanda Zhang & Katie Allen, *Species and Habitat Conservation Banking*, Conservation Finance Network (Sept. 30, 2020), <https://www.conservationfinancenetwork.org/2020/09/30/species-and-habitat-conservation-banking>.

¹⁰⁰ Elsie Gridley Mitigation Bank, *Resource Environmental Solutions*, <https://res.us/projects/elsie-gridley-mitigation-bank> (last visited Sept. 8, 2022).

¹⁰¹ Basic Information about Voluntary Wetland Restoration and Protection, *Environmental Protection Agency*, <https://www.epa.gov/wetlands/basic-information-about-voluntary-wetland-restoration-and-protection> (last visited Sept. 8, 2022).

¹⁰² *Core Element: Voluntary Restoration and Protection*, Environmental Protection Agency, available at https://www.epa.gov/sites/default/files/2015-09/documents/restoration_and_protection_cef_1.pdf

Community monitoring and protection programs

States have created a number of programs to engage stakeholders and the public in wetland monitoring and protection efforts. In particular, there are several efforts that allow people to act as “community scientists” in measuring pollutants and reporting data to various agencies. These participatory monitoring efforts often offer training and necessary tools to participants. In turn, the groups of volunteers monitor wetlands in their area and gather vital data for protection and restoration purposes.

Georgia created the Coastal Georgia Adopt-A-Wetland program in 2001.¹⁰³ The program - established through a partnership with University of Georgia’s Marine Extension Service and the Georgia Sea Grant - aims to “educate the public on the importance of wetlands, increase public awareness of water quality issues, train citizens to monitor and protect wetlands and collect baseline wetland health data.”¹⁰⁴ To adopt a wetland, citizens must form a “monitoring group” which can range from a school-age classroom to a subset of a company. The program provides free training workshops to these groups through the state’s Adopt-A-Stream program.¹⁰⁵ The training focuses on water quality and biological sampling methods. Any supplies needed to complete these tasks are provided (on loan) to the monitoring group. There is a 150-page training manual that can be referenced for questions about visual monitoring, watershed surveying, biological monitoring, chemical monitoring, and more.¹⁰⁶ The data collected by these monitoring groups is added to the Environmental Protection Division’s water quality database. These data help inform the state’s 305(b)/303(d) Integrated Report, establish prioritization under the 303(d) framework, and more.¹⁰⁷ Groups are also encouraged to report any emergencies (like an oil spill) to the Wetland Emergency Team.

Similarly, Minnesota’s Wetland Health Evaluation Program (MWHEP)¹⁰⁸ is a platform through which community members can volunteer to help monitor wetlands in the state. Established in 1997, the program covers Dakota County and near-by cities. The program is administered city-by-city and technical support is provided by the Minnesota Pollution Control Agency (MPCA), which also uses the data collected by these volunteers in their tracking of wetland health, specifically in the Twin Cities area. Free trainings are offered to volunteers, but they are not required. The trainings focus on Field Methods, Macroinvertebrate Identification, and Vegetation Identification. Data collected is used to calculate an

¹⁰³ In the coastal counties of Bryan, Brantley, Camden, Charlton, Chatham, Effingham, Glynn, Liberty, Long, McIntosh, and Wayne

¹⁰⁴ Adopt-A-Wetland, *University of Georgia Marine Extension and Georgia Sea Grant*, <https://gacoast.uga.edu/education/adult-education/adopt-a-wetland> (last visited Sept. 8, 2022).

¹⁰⁵ Adopt-A-Stream, <https://adoptastream.georgia.gov/> (last visited Sept. 8, 2022).

¹⁰⁶ *Adopt-A-Wetland Training Manual*, University of Georgia Marine Extension Service (2006), available at https://gacoast.uga.edu/wp-content/uploads/2016/05/AAW_Manual.pdf.

¹⁰⁷ Water Quality in Georgia, *Georgia Environmental Protection Division*, <https://epd.georgia.gov/watershed-protection-branch/watershed-planning-and-monitoring-program/water-quality-georgia> (last visited Sept. 8, 2022).

¹⁰⁸ Minnesota Wetland Health Evaluation Program, <http://www.mnwhep.org/> (last visited Sept. 8, 2022).

Index of Biological Integrity (IBI), a measure of the health of the wetland.¹⁰⁹ The data collected is useful for MPCA and participating cities to aid “city planning and water resource decision making.”¹¹⁰

The Texas Stream team¹¹¹ is a collaborative effort between Texas State University, the Texas Commission on Environmental Quality (TCEQ) and the U.S. EPA. This participatory science-based effort aides in monitoring 191,000 miles of waterways in the state, including wetlands. The team has included over 11 thousand volunteers of all ages — from school age to senior citizens. The data collected by Stream Teams is made available to the public on the Datamap,¹¹² accessible by volunteers through the Waterways Dataviewer. There are specific guidelines for monitoring E. Coli, macroinvertebrates, and riparian streams, as well as general monitoring guidelines.¹¹³

Iowa’s Fen Committee¹¹⁴ is another type of wetland volunteer conservation effort. This group is made up of people from various agencies, as well as colleges and universities. Protection of fens (typically not WOTUS waters) is undertaken without dedicated funding (meaning this is a volunteer effort even though state agencies are involved in providing technical support).¹¹⁵ The group provides essential coordination to managing fens across the state and has been in existence since 2016.

The U.S. EPA recently released a vision for the use of participatory science in the agency’s work. The guide includes a set of steps for “turning principles into practice,” including strengthening collaborative partnerships and multi-stakeholder networks, incorporating participatory science results into EPA program strategies, and developing metrics to measure and evaluate EPA participatory science projects, among others.¹¹⁶

[Landowner education programs](#)

A number of states provide information to landowners on protecting and restoring habitats on their land. Rhode Island, for example, created a toolkit on freshwater wetland restoration encouraging

¹⁰⁹ IBI is “a scoring system used to measure strong responses to human disturbance, or pollution, in wetlands... focuse[d] on two biological communities: plants and macroinvertebrates (small organisms in the water without a backbone: insects, leeches, snails, etc.)” Index of Biological Integrity, *Minnesota Wetland Health Evaluation Program*, <http://www.mnwhep.org/ibi.html> (last visited Sept. 8, 2022).

¹¹⁰ Examples of State and Local Wetland Volunteer Monitoring Programs, *Environmental Protection Agency*, <https://www.epa.gov/wetlands/examples-state-and-local-wetland-volunteer-monitoring-programs> (last visited Sept. 8, 2022).

¹¹¹ Texas Stream Team, *The Meadows Center for Water and the Environment*, <https://www.meadowscenter.txst.edu/Leadership/TexasStreamTeam.html> (last visited Sept. 8, 2022).

¹¹² Texas Stream Team Water Quality Data, *Datamap*, <https://www.arcgis.com/apps/dashboards/0dea3b21787e446e8ede35bd0977f00f> (last visited Sept. 13, 2022).

¹¹³ Citizen Scientist Forms and Resources, *The Meadows Center for Water and the Environment*, <https://www.meadowscenter.txst.edu/Leadership/TexasStreamTeam/Forms-and-Resources/Citizen-Scientist.html> (last visited Sept. 8, 2022).

¹¹⁴ Fens are a rare type of wetland, and they are the product of groundwater seeping into the surface. In Iowa, they can be home to some of the state’s oldest plants and their protection is not only a priority, but can also be complicated, as they contain plants considered endangered and threatened.

¹¹⁵ *Wetland Program Plan for Iowa*, Iowa Department of Natural Resources Environmental Services Division (2016), available at https://www.epa.gov/sites/default/files/2019-03/documents/iowa_wpp_final_1_29_16.pdf

¹¹⁶ Using Participatory Science at EPA: Vision and Principles, *Environmental Protection Agency*, [Using Participatory Science at EPA: Vision and Principles](#) (last visited Sept. 28, 2022)

landowners to “restor[e] wetlands or wetland buffers on your property [to] help to create wildlife habitat, enhance recreational opportunities, help to reduce flooding, and potentially increase the value of your land.”¹¹⁷ The toolkit web page that directs individuals to assistance, planning, funding, regulation, implementation, and background resources. Similarly, the Texas Wetlands Assistance Guide for Landowners¹¹⁸ points interested landowners to the Private Lands and Habitat Initiative, run by Texas Parks and Wildlife. While this program does not offer funding, it aims to help people enhance wildlife habitats on their properties through guidance and information. The program applies to a variety of landscapes including, “wetlands such as bottomland hardwoods, playa lakes, and riparian areas.”¹¹⁹

Funding for wetland conservation

Many states carry out wetland and aquatic resource restoration actions¹²⁰ and/or provide financial support for habitat, including wetlands, restoration and protection actions. A few examples of funding and incentive programs follow.

Minnesota has invested millions of state dollars in conservation of critical natural resources, including wetlands, across the state. The Reinvest in Minnesota (RiM) program funds the acquisition of conservation easements to “permanently protect, restore and manage critical natural resources.”¹²¹ The land remains the responsibility of the landowner, with the Minnesota Board of Water and Soil Resources (BWSR) providing program coordination and implementation in collaboration with county Soil and Water Conservation Districts (SWCDs). The program has focused on “permanent wetland restoration, adjacent native grassland wildlife habitat complexes and permanent riparian buffers.”¹²²

Recently, state funding, for certain RIM easements, has come from the state’s Clean Water, Land and Legacy funding. The Clean Water, Land and Legacy Amendment to the Minnesota Constitution was passed in 2008 to “protect drinking water sources; to protect, enhance, and restore wetlands, prairies, forests, and fish, game, and wildlife habitat; to preserve arts and cultural heritage; to support parks and trails; and to protect, enhance, and restore lakes, rivers, streams, and groundwater.”¹²³ Under the

¹¹⁷ Freshwater Wetland Restoration Kit for Landowners, *State of Rhode Island Department of Environmental Management*, <https://dem.ri.gov/programs/water/wetlands/restkit.php> (last visited Sept. 8, 2022).

¹¹⁸ *Wetlands Assistance Guide for Landowners*, Texas Parks and Wildlife (1999), available at https://www.landcan.org/pdfs/pwd_bk_r0400_0020_11_00.pdf

¹¹⁹ Private Lands and Habitat Program, *Texas Parks and Wildlife*, <https://tpwd.texas.gov/landwater/land/private/> (last visited Sept. 8, 2022).

¹²⁰ A 2008 study by The Environmental Law Institute found that thirty-six states reported the operation of a formal, state administered wetland restoration program. See State Wetland Protection: Status, Trends & Model Approaches, *Environmental Law Institute*, <https://www.eli.org/research-report/state-wetland-protection-status-trends-model-approaches> (last visited Sept. 28, 2022).

¹²¹ Reinvest in Minnesota Overview, *Minnesota Board of Water and Soil Resources*, <https://bwsr.state.mn.us/reinvest-minnesota-overview> (last visited Sept. 8, 2022).

¹²² Reinvest in Minnesota Overview, *Minnesota Board of Water and Soil Resources*, <https://bwsr.state.mn.us/reinvest-minnesota-overview> (last visited Sept. 8, 2022).

¹²³ About the Funds, *Minnesota’s Legacy: Track the Progress*, <https://www.legacy.mn.gov/about-funds> (last visited Sept. 28, 2022).

Amendment, sales tax in the state was increased by three-eighths of one percent from July 1, 2009 until 2034.¹²⁴

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.”¹²⁵ The CDOW Wetlands Program has provided almost \$40 million in direct on-the-ground wetland restoration and enhancement actions.

In Ohio, the Ohio River Basin H2Ohio Wetland Grant Program was renewed in February 2022 to “improve water quality in the Ohio River Basin through the creation or restoration of wetlands.”¹²⁶ This initiative allots \$3 million dollars in grants to improve wetlands through pollutant reduction before they cause harmful algal blooms in waterways. This program is approved annually through the state budget. In 2021, \$5 million was available for the same purpose. As of March 2022, there were eighty-three active H2Ohio wetland program projects underway.¹²⁷

Delaware has created a program that specifically targets wetlands attacked by invasive phragmites.¹²⁸ Through this initiative, Wildlife Incentive Habitat Program (WHIP) funds have been leveraged to protect wetlands that have felt the adverse impacts of this specific species in a cost-share program. Property owners with “undeveloped wetlands, such as tidal or nontidal freshwater or brackish marshes, ponds or impoundments that are being taken over by phragmites” could be eligible for monetary coverage of up to 87.5% of the cost of the restoration. Operated by Delaware’s Department of Natural Resources and Environmental Control Division of Fish and Wildlife, this program also provides logistical and technical support to eligible landowners.

[Incentive Programs](#)

Incentive programs offer a way to encourage willing landowners to manage or restore their land for environmental – or other – benefits. The Natural Resources Conservation Service (NRCS) manages a set of voluntary easement and incentive programs authorized under the Farm Bill (e.g., Agricultural Conservation Easement Program, Healthy Forests Easement Program, Environmental Quality Incentives Program, Regional Conservation and Partnership Program). In addition to financial support, the agency

¹²⁴ Four funds – Clean Water Fund, Outdoor Heritage fund, Arts and Cultural Heritage Fund, and Parks and Trails Fund – were established to distribute the additional sales tax revenue. Funding from the Clean Water and Outdoor Heritage Funds has been provided to BWSR for RIM easements. Funding from the Clean Water Fund has been provided for easements on riparian buffers adjacent to public waters, excluding wetlands, and for easements in areas where the drinking water supply management area is vulnerable. Funding from the Outdoor Heritage Fund has been provided for grassland reserve easements on critical grasslands.

¹²⁵ Wetland Wildlife Conservation Program, *Colorado Parks & Wildlife*, <https://cpw.state.co.us/aboutus/Pages/Wetlands.aspx> (last visited Sept. 28, 2022).

¹²⁶ Press Release, Governor of Ohio Mike DeWine, Governor DeWine Announces \$3 Million in H2Ohio Grants for Ohio River Basin Wetland Projects (Feb. 16, 2022).

¹²⁷ Current Projects, *H2Ohio*, <https://h2.ohio.gov/project/> (last visited Sept. 8, 2022).

¹²⁸ Private Lands Assistance, *Delaware Department of Natural Resources and Environmental Control*, <https://dnrec.alpha.delaware.gov/fish-wildlife/conservation/private-lands/> (last visited Sept. 8, 2022).

also offers technical capacity. A total of 23,000 easements have been closed covering more than 5 million acres, including 2.9 million acres of wetlands and 185,000 acres of floodplain habitats.¹²⁹

The Regional Conservation and Partnership Program (RCPP), for example, provides federal funds (matched by states, local governments, or nonprofits) to support partnerships between conservation groups and producers to enhance soil, water, and wildlife conservation, in multi-state or watershed-scale projects. Half of federal RCPP funds is allocated to multi-state projects and half to eight critical conservation areas.¹³⁰

State tax incentive programs are another way to encourage landowners to protect their lands. There are a number of state incentive programs that apply to wetlands or could be used as models for wetland-specific programs. Under Delaware's Farmland Assessment Act, for example, owners of land devoted to agriculture, horticulture, or forestry may apply to have their land valued for that use rather than at fair market value, thus resulting in a lower tax assessment and lower payments to local and county governments.¹³¹ Properties must be more than 10 acres and produce sales of agricultural, horticultural or forest products or agricultural program payments of at least \$1,000 per year.¹³² Under a separate Delaware law, land designated as a commercial forest plantation is entitled to a 30-year exemption from county property taxes.¹³³ Such land must be at least 10 acres, be under a management plan, and give reasonable assurance that a stand of merchantable timber will develop.

The state of Indiana also provides tax breaks from local property taxes for agricultural lands, which are taxed on a fraction of their "use value" based on soil and land classification. But more significantly, for wetlands purposes, Indiana also has several tax programs potentially relevant to wetlands protection, including wetlands on smaller parcels, including specific land categories such as forest lands and "wildlands." Entry into these programs requires certain commitments by the landowner and evaluation by the state. "In addition to the tax incentive, landowners receive free technical assistance from DNR foresters and wildlife biologists, [and] priority for cost share."¹³⁴ These Indiana real property tax programs show how lands that are particularly valuable for water/wetlands/riparian protection can be subject to lower real property taxes even if they are relatively small in comparison with the sizes of land eligible for tax breaks under agricultural and forest programs, and even if the land use is not primarily for production of agricultural or forest products. In 2022, the Indiana legislature is considering legislation establishing a 100 percent exemption from real property taxes for any delineated "qualified wetlands" parcels, including isolated wetlands.¹³⁵

¹²⁹ Easement Program Data, *U.S. Department of Agriculture*, <https://www.farmers.gov/data/easements/overview> (last visited Sept. 8, 2022).

¹³⁰ The Inflation Reduction Act (2022) includes an additional \$18 billion for Farm Bill conservation programs. This includes an additional \$1.4 billion for the Agricultural Conservation Easement Program and \$4.95 billion for the Regional Conservation Partnership Program. The Conservation Stewardship Program (\$3.25 billion) and Environmental Quality Incentives Program (\$8.45 billion) will also receive additional investments. Information accessible at <https://crsreports.congress.gov/product/pdf/IN/IN11978>

¹³¹ 9 DE Code § 8328 (2017)

¹³² 9 DE Code § 8333 (2017)

¹³³ 3 DE Code § 2601

¹³⁴ Classified Forests and Wildlands, *Indiana Department of Natural Resources*, <http://www.in.gov/dnr/forestry/4801.htm> (last visited Sept. 8, 2022).

¹³⁵ Indiana H.B. 1334 (2022 Legis. Session)

In Arkansas, taxpayers who “engage in the development, restoration, or conservation of wetland and riparian zones through projects approved by the Private Lands Restoration Committee” are eligible for a state income tax credit, not exceeding out-of-pocket expenses. This tax credit, of up to \$50,000, is made possible through Arkansas’s Wetland & Riparian Zones Tax Credit program.¹³⁶ The Arkansas Department of Agriculture Natural Resources Division oversees this program. Generally eligible activities include restoration and improvement of riparian zones, creation of wetlands, and conservation of riparian habitat.¹³⁷ Once approved, projects must be completed within three years of receiving the Certificate of Tax Credit Approval. Once the project is completed, a final inspection by the Arkansas Natural Resource Commission confirms that it was completed in the same way it was described. The project must be maintained for ten years after the Certificate of Project Completion is issued.

8. Hazard Mitigation/Resilience

There are opportunities to build partnerships with hazard mitigation and resilience agencies to leverage the investment in the restoration of wetlands and floodplains that provide disaster mitigation (and prevention). State agencies are beginning to build these partnerships.

The Iowa Watershed Approach (IWA) is a good example. Created through a grant from the U.S. Department of Housing and Urban Development (HUD) as part of the National Disaster Resilience Competition, the Iowa Watershed Approach is a multi-stakeholder effort to address the factors that contribute to floods at a watershed scale. The IWA seeks to “1) reduce flood risk; 2) improve water quality; 3) increase flood resilience; 4) engage stakeholders through collaboration and outreach/education; 5) improve quality of life and health, especially for susceptible populations; and 6) develop a program that is scalable and replicable throughout the Midwest and the United States.”¹³⁸ Under the IWA, Watershed Management Authorities were created in each of nine watersheds to develop hydrologic assessments, create watershed plans, and implement flood resilience projects upstream to reduce downstream flooding and improve watershed quality.¹³⁹ Flood resilience projects include wetlands, floodplain restoration, and buffer strips among other types of non-structural strategies. Landowners can receive up to 90% of the funding for a project. The remaining 10% comes from the landowner or local match.

The IWA Flood Resilience Program is working with IWA watershed communities to establish partnerships and develop tools to improve future “mitigation, preparedness, response, and recovery actions.”¹⁴⁰ The goals of the program are to “measure, visualize, and communicate flood resilience resources; enhance flood resilience content in formal watershed plans; and improve social resources of flood resilience has identified a set of strategies for how state and federal agencies can facilitate flood

¹³⁶ Wetland & Riparian Zones Tax Credit Program, *Arkansas Department of Agriculture*, <https://www.agriculture.arkansas.gov/natural-resources/divisions/water-management/wetlands-riparian-zone-tax-credit-program/> (last visited Sept. 13, 2022).

¹³⁷ Arkansas Natural Resources Commission Rules Governing the Tax Credit Program for the Creation, Restoration, and Conservation of Private Wetland and Riparian Zones, Title 13, Effective February 1, 2010, accessible at https://www.agriculture.arkansas.gov/wp-content/uploads/2020/05/title_13-rules.pdf

¹³⁸ Iowa Watershed Approach, <https://iowawatershedapproach.org/about/> (last visited Sept. 8, 2022).

¹³⁹ *Ibid.*

¹⁴⁰ Flood Resilience Program, *Iowa Watershed Approach*, <https://iowawatershedapproach.org/programs/resilience/> (last visited Sept. 28, 2022).

reduction through a watershed approach.”¹⁴¹ The IWA has published a Flood Resilience Strategies Report that examines “ways in which state, federal and nonprofit agencies can help local officials overcome these barriers so they can achieve flood reduction through a watershed approach.”¹⁴²

The U.S. Army Corps of Engineers Silver Jackets programs are “Interagency Teams that Facilitate Collaborative Solutions to State Flood Risk Priorities.”¹⁴³ Each state, and several territories, have Silver Jackets programs. The programs conduct diverse projects, many that include natural infrastructure or nature-based projects. The Kentucky Silver Jackets program, for example, has conducted a study using “national land cover data, LIDAR, wetland inventories and other GIS data to identify statewide green infrastructure and open space areas for incorporation into Kentucky’s State Hazard Mitigation Plan.”¹⁴⁴ The study prioritized areas that have the potential for green infrastructure in different ecoregions across the state.

There are a number of resources that provide guidance on developing and implementing nature-based hazard mitigation solutions and building partnerships among resource agencies and hazard mitigation planners. In its recent resources, FEMA has placed some emphasis on nature-based hazard mitigation, identifying natural systems protection actions for reducing risk to natural hazards and disasters in resources for planners¹⁴⁵ and communities.¹⁴⁶ A number of useful resources on nature-based solutions, including case studies, have also been produced by conservation non-profits.¹⁴⁷¹⁴⁸ The Environmental Law Institute has worked with partners and communities across the country to identify opportunities to expand the use of conservation, restoration, and natural infrastructure as hazard mitigation strategies and to facilitate collaboration among wetland and wildlife managers and emergency managers, hazard mitigation planners to explore how they might work more closely together to more effectively achieve their objectives.¹⁴⁹

¹⁴¹ Ibid.

¹⁴² Ibid.

¹⁴³ Silver Jackets, <https://www.iwr.usace.army.mil/Silver-Jackets/> (last visited Sept. 28, 2022).

¹⁴⁴ Kentucky Silver Jackets, *Silver Jackets*, <https://www.iwr.usace.army.mil/Silver-Jackets/State-Teams/Kentucky/> (last visited Sept. 28, 2022).

¹⁴⁵ Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards, *FEMA* (2013), available at https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas_02-13-2013.pdf.

¹⁴⁶ Building Community Resilience with Nature-Based Solutions: A Guide for Local Communities, *FEMA* (2020), available at https://www.fema.gov/sites/default/files/2020-08/fema_riskmap_nature-based-solutionsguide_2020.pdf.

¹⁴⁷ The Protective Value of Nature: A Review of the Effectiveness of Natural Infrastructure for Hazard Risk Reduction. *National Wildlife Federation* (2020), available at <https://www.nwf.org/-/media/Documents/PDFs/NWF-Reports/2020/The-Protective-Value-of-Nature.ashx?la=en&hash=A75F59611475502BEE58723F8B3C58423417E579>

¹⁴⁸ More case studies and useful citations in TNC’s Promoting Nature-Based Hazard Mitigation Through FEMA Mitigation Grants - <https://www.nature.org/content/dam/tnc/nature/en/documents/Promoting-Nature-Based-Hazard-Mitigation-Through-FEMA-Mitigation-Grants-05-10-2021-LR.pdf>; The Naturally Resilient Communities Website highlights nature-based solutions and includes a number case studies <https://nrcsolutions.org/floodplains/>

¹⁴⁹ Hazard Mitigation Planning, *Environmental Law Institute*, <https://www.eli.org/land-biodiversity/hazard-mitigation-planning> (last visited Sept. 28, 2022).

Kihlsinger, R., Avi Li, Heather Luedke. (2021). Nature-Based Mitigation Goals and Actions in State and Tribal Hazard Mitigation Plans. 2021 Environmental Law Institute®

III. Tribal Wetland Programs

The Clean Water Act authorizes EPA to treat tribes with reservations as similar to states (TAS), allowing these tribes to administer CWA regulatory programs (e.g., 401 certification, water quality standards, etc.) and receive grants under CWA authorities (e.g., Section 106 grants).¹⁵⁰ Tribes may also develop regulatory programs under Tribal law and create non-regulatory programs to protect, manage, and restore wetlands on their lands. Thus, much of the above may similarly apply to Tribes.

Many Tribes place a high value on wetland habitats for cultural reasons and the ecosystem services they provide. As described in the Nez Perce Wetland Program Plan, “Wetland plants have provided many traditional food and medicines, as well as materials for weaving and making nets. Wetlands provide spawning and rearing habitat for fish species that are traditional foods for the tribe as well as food and cover for the wildlife that are also traditional Tribal food sources. Some wetlands are also of historical cultural importance as sites used for traditional camps and sweats.”¹⁵¹

Tribes across the country have created wetland programs.¹⁵² More than 40 Tribes have submitted independent wetland program plans.¹⁵³ Tribal wetland programs, like state programs, vary widely.

Regulatory Programs

A few Tribes have established wetland regulatory programs and adopted wetland protection ordinances. For example, the Fond du Lac Wetlands Protection and Management Ordinance (WPMO) regulates development activities¹⁵⁴ in wetlands and in adjacent upland sites that may adversely affect wetlands.¹⁵⁵ A Letter-of-Permission Wetland Activity Permit is required for all impacts of less than 2 acres. All impacts to wetlands of 2 acres or greater must receive a Standard Wetland Activity Permit. Public notice is required for both types of permits (30 days for LOP and 60 days for standard).

The Blackfeet Tribe’s Ordinance 117 protects water quality and wetlands on the Tribe’s reservation.¹⁵⁶ Permits are issued by the Blackfeet Environmental Office for projects in aquatic lands on the

¹⁵⁰ 33 U.S.C. § 518

¹⁵¹ Rue Hewett Hoover, *Nez Perce Tribe Wetland Program Plan*, Nez Perce Tribe Water Resources Department (2019), accessible at https://www.epa.gov/sites/default/files/2020-09/documents/wppnez_perce_tribe_2020-2025_final_8.26.2019.pdf

¹⁵² EPA opens \$3.6M for Tribal wetland programs, Stormwater, 2022, available at <https://www.stormh2o.com/green-infrastructure/press-release/21278126/epa-opens-36m-for-tribal-wetland-programs>

¹⁵³ State and Tribal Wetland Program Plans, *Environmental Protection Agency*, <https://www.epa.gov/wetlands/state-and-tribal-wetland-program-plans#r1> (last visited Sept. 8, 2022).

¹⁵⁴ Certain activities are exempt including road, utility, and bridge maintenance and repair; forestry and some agricultural practices; oil and hazardous material clean-up; and wetland and watercourse restoration activities. See Fond Du Lac Reservation – Office of Water Protection Wetlands Protection & Management Ordinance (WPMO) Exemption Certificate Request Form, *Office of Water Protection Wetlands Protection & Management*, available at <https://www.fdlrez.com/RM/downloads/WPMO%20Exempt%20Form.pdf>

¹⁵⁵ Wetland Protection and Management Ordinance, *Fond Du Lac Band of Lake Superior Chippewa*, <https://www.fdlrez.com/RM/wetlandordinance.htm> (last visited Sept. 28, 2022).

¹⁵⁶ Blackfeet Tribe, Ordinance No. 117 (2019), accessible at [http://www.blackfeetenvironmental.com/ordinance90/ORDINANCE_117_FINAL_VERSION_\(3-21-2019\).pdf](http://www.blackfeetenvironmental.com/ordinance90/ORDINANCE_117_FINAL_VERSION_(3-21-2019).pdf)

Reservation.¹⁵⁷ Aquatic lands are defined as “all Reservation land below the ordinary high water mark or within a wetland and associated riparian lands. Aquatic Lands includes lands overlying groundwater that borders or underlies perennial and intermittent streams.”¹⁵⁸ A number of construction requirements apply to all permits, including setback distance requirements. Compensatory mitigation measures may also apply.

Mapping and Monitoring

Many programs have created programs to map and monitor wetlands on their lands. These programs facilitate Tribal efforts to map critical resources and document cultural significance while keeping protected cultural knowledge about these resources within the Tribe.

Red Lake Band of Chippewa, for example, has conducted mapping in a high priority geographic region of the Reservation that is under threat of development. The map sets a baseline for the extent of the Tribe’s wetland habitat and allows for comparisons with future wetland loss. The mapping was conducted using GIS through interpretation of high-resolution aerial photographs, LiDAR, and soil and water data layers.¹⁵⁹ A Compound Topographic Index (CTI) layer produced from LiDAR and manual digitization of the aerial photographs were used to identify possible wetland areas and form the basis of the Tribe’s wetland inventory. As of the writing of the most recent Tribal Wetland Program Plan (2019-2023), the Tribe has “processed approximately 40% of the Reservation (the priority area mentioned above) which is about 225 square miles (144,000 acres).”¹⁶⁰

Wetland monitoring is often an important part of Tribal wetland program operation. The Nez Perce adapted the Wetland Ecosystem Service Protocol (WESP), a monitoring protocol developed by Dr. Paul Adamus in 2011.¹⁶¹ The monitoring protocol will help the Tribe prioritize wetlands for restoration, evaluate and monitor the long-term effects of restoration efforts, evaluate predicted impacts of climate change, and inform the regulation and mitigation of wetland impacts. In adapting WESP, the Tribe incorporated a cultural component, “thus providing the program with a tool to evaluate and prioritize wetland in a meaningful way for the Nimiipuu people and improve the Tribe’s management of its wetlands.”¹⁶²

Restoration

The Nez Perce Tribe has also created the Tribal Wetland Restoration Toolkit for Cultural and Ecological Resilience (RTCER). The toolkit was created to inform the implementation of restoration efforts that will

¹⁵⁷ Ibid.

¹⁵⁸ Blackfeet Tribe, Ordinance No. 117 (2019), accessible at [http://www.blackfeetenvironmental.com/ordinance90/ORDINANCE_117_FINAL_VERSION_\(3-21-2019\).pdf](http://www.blackfeetenvironmental.com/ordinance90/ORDINANCE_117_FINAL_VERSION_(3-21-2019).pdf)

¹⁵⁹ *Red Lake Band of Chippewa Wetland Program Plan*, Red Lake Department of Natural Resources Office (2016), accessible at https://www.epa.gov/sites/default/files/2018-01/documents/red_lake_band_of_chippewa.pdf

¹⁶⁰ *Red Lake Band of Chippewa Wetland Program Plan*, Red Lake Department of Natural Resources Office (2016), accessible at https://www.epa.gov/sites/default/files/2018-01/documents/red_lake_band_of_chippewa.pdf

¹⁶¹ Wetland Protection and Management Ordinance, *Fond Du Lac Band of Lake Superior Chippewa*, <https://www.fdlrez.com/RM/wetlandordinance.htm> (last visited Sept. 28, 2022).

¹⁶² Rue Hewett Hoover, *Nez Perce Tribe Wetland Program Plan*, Nez Perce Tribe Water Resources Department (2019), accessible at https://www.epa.gov/sites/default/files/2020-09/documents/wppnez_perce_tribe_2020-2025_final_8.26.2019.pdf

be sustainable under future conditions and to “assist local decision makers with integrating wetland protection into watershed planning with regards to hazard mitigation/flood/drought planning and resiliency planning.”¹⁶³ RTCER also helps wetland restoration practitioners build tribal cultural values into wetland and riparian restoration planning. The Nez Perce Wetland Program Plan identifies a number of monitoring and restoration projects that the Tribe has identified for future work that will incorporate WESP assessment and monitoring and, in some cases, RTCER designs. The projects were identified in collaboration with a Wetland Working Group (WWG) formed by the Tribe. The WWG includes members from the Department of Natural Resources Divisions: Water Resources Division Wetland and Nonpoint Source Pollution (319) Programs; Wildlife, Forestry and Cultural Divisions; and the Fisheries Department Watershed Division.”¹⁶⁴

Cultural Resources

Some tribal programs created to preserve and restore cultural resources (e.g., wild rice) also offer opportunities to preserve and restore wetlands and other habitats and their associated ecosystem services. The Fond du Lac Band of Lake Superior Chippewa started managing wild rice in the 1990s, installing water control structures and managing competing vegetation and wildlife.¹⁶⁵ The Little River Band of Ottawa Indians began its Wild Rice Program in the early 2000's. Early work included restoration plantings and research studies and surveys.¹⁶⁶

Working groups

Recently, Tribes in different regions across the country have come together to form Tribal Wetland Working Groups. A Tribal Wetland Working Group can provide the opportunity for Tribes and Tribal wetland and aquatic resource program staff to learn from each other and work together to collectively address challenges specific to Tribal wetland and aquatic resource programs. Peer-to-peer technical transfer of knowledge and networking are important benefits of a Tribal working group. A Tribal Wetlands Working Group can also facilitate access to resources online-- especially contact lists for wetland/water Tribal staff in a specific geographic bioregion or EPA regional and funding sources--as well as provide training opportunities and other resources tailored to the needs of Tribes and Tribal wetlands staff.

The Pacific Northwest Tribal Wetlands Working Group (PNW TWIG) has supported development of Tribal wetland and aquatic resource programs since 2010.¹⁶⁷ The Tribal Wisconsin Wetland Working Group (TWWWG) was created in 2017 to support training, help Tribal water programs deal with continuity through staff turnover, and provide a forum for wetland Tribal staff around the State to talk and share ideas and challenges and participate in training. A group of Tribes in EPA Region 5 is currently working to create a Tribal Wetlands Working Group. Region 5 tribes collaborate and network to build tribal program capacity and staff expertise related to wetland management, monitoring, restoration,

¹⁶³ Ibid.

¹⁶⁴ Ibid.

¹⁶⁵ Wild Rice, *Fond Du Lac Band of Lake Superior Chippewa*, <https://www.fdlrez.com/RM/wildrice.htm> (last visited Sept. 28, 2022).

¹⁶⁶ [Little River Band of Ottawa Indians Manoomin Program - Smart \(miwetlands.org\)](https://miwetlands.org)

¹⁶⁷ Jeanne Christie & Rebecca Kihslinger, *Report on Lessons Learned from the Experiences of Tribal Wetlands Working Groups*, Environmental Law Institute (2021), accessible at <https://pnwtwig.files.wordpress.com/2022/01/final-report-on-lessons-learned-from-the-experiences-of-tribal-twwgs-2021-1.pdf>

and conservation. The group plans to provide training and other opportunities to learn from each other and create a collaborative network to provide a way for Tribes to connect and develop and improve skills.

Conclusion

Shifts in federal jurisdiction have operational and substantive consequences for states and tribes, which have authority and objectives relating to protection of waters within their boundaries. When federal jurisdiction expands or contracts, this means that state and tribal authorities must determine whether and how to address any resulting gaps or changes in order to achieve desired environmental outcomes. Where states are unable to fill these gaps, some resources may be at risk.

Existing authority across the country is variable. Twenty-six states and the District of Columbia have established relevant state regulatory permitting programs, but the coverage of these programs varies. Nineteen states have fairly comprehensive permitting programs applicable to their waters (including wetlands) that may fall outside the coverage of the Clean Water Act. Other states with regulatory programs have various limitations, covering only some types of waters or activities. Some states have moved to fill these gaps in response to changing federal jurisdiction, in other cases legal and practical hurdles may limit a state's ability to act.

States and tribes without regulatory protections for non-WOTUS waters will be vulnerable to any loss in federal coverage resulting from Supreme Court action if the court limits the scope of the CWA. Therefore, the 24 states relying on their 401 authorities will need to give serious attention to alternative possibilities for protection of these waters, including both regulatory and non-regulatory means.

Some non-WOTUS waters could be protected through the various other approaches identified here. Many states - including many that already have regulatory programs - have identified ways to support, fund, and implement wetland conservation and restoration efforts. However, a good deal of investment is needed at the state and local level to ensure that the critical functions provided by wetlands and other waters are not lost.