



ENVIRONMENTAL
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State Wetland Protection

Status, Trends, & Model Approaches

*A 50-state study by the
Environmental Law Institute*

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Appendix: State Profiles

Wisconsin

I. Overview

Rich in wetland resources, Wisconsin contains roughly 5.3 million acres of diverse wetland types throughout the state. However, before statehood, Wisconsin held more than 10 million acres of wetlands. Approximately 47 percent of the state's original wetland acreage has been lost to agriculture, development, roads, and other land use changes over the past 150 years.¹ Recognizing the need to protect its remaining resources, Wisconsin has formed a comprehensive, strategic wetland protection program with active regulatory and non-regulatory components at the local, state, and federal level.

Wisconsin's state wetland conservation plan, *Reversing the Loss: A Strategy for Protecting & Restoring Wetlands in Wisconsin*, outlines a series of goals, strategies, and performance measures to guide state wetland protection and conservation.² The Wisconsin Department of Natural Resources (WDNR) regulates wetlands primarily through water quality certification. In addition to §401 certification as required under the Clean Water Act (CWA), in 2001 Wisconsin became the first state to enact a nonfederal wetlands protection law in reaction to the *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* ("SWANCC") decision that cast doubt on federal jurisdiction over some intrastate "isolated" wetlands. Wisconsin statutes also regulate wetlands below the ordinary high water mark of navigable lakes and streams. Finally, the agency conducts numerous other wetland-related activities such as mapping, monitoring and assessment, restoration, education and outreach, and research.

II. Regulatory Programs

Wetland definitions and delineation

Wisconsin statutes define "waters of the state" as "those portions of Lake Michigan and Lake Superior within the boundaries of this state, and all lakes, bays, rivers, streams, springs, ponds, wells, impounding reservoirs, marshes, watercourses, drainage systems and other surface water or groundwater, natural or artificial, public or private, within [the State of Wisconsin] or its jurisdiction."³ "Wetlands" include "[areas] where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions."⁴

State law requires the use of the U.S. Army Corps of Engineers' ("Corps") 1987 *Wetlands Delineation Manual*.^{5,6} Nonfederal wetland regulations also allow the use of additional

¹ WISCONSIN DEPARTMENT OF NATURAL RESOURCES, REVERSING THE LOSS: A STRATEGY FOR PROTECTING & RESTORING WETLANDS IN WISCONSIN 5 (2000), available at http://www.dnr.state.wi.us/org/water/fhp/wetlands/documents/Reversing_the_Loss.pdf.

² *Id.*

³ WIS. STAT. § 281.01(18); WIS. ADMIN. CODE § NR 103.02.

⁴ WIS. STAT. § 23.32(1).

⁵ Wisconsin Department of Natural Resources, *Wisconsin Wetlands: Wetland Boundary Delineation*, <http://www.dnr.state.wi.us/org/water/fhp/wetlands/boundaries.shtml> (last visited July 31, 2007).

guidance for delineation, including *Guidelines for Submitting Wetland Delineations in Wisconsin to the St. Paul District Corps of Engineers* and Corps Regulatory Guidance Letters 88-03 (Wetland Jurisdictional Determinations), 90-06 (Expiration Dates for Wetlands Jurisdictional Delineations), and 64-01 (Expirations of Geographic Jurisdictional Determinations).⁷ The state generally requires a qualified wetland professional to make determinations, which are then subject to state review. WDNR has established a professional assurance program⁸ for wetland consultants that meet certain qualifications. Under the program, delineations conducted by professionally-assured wetland professionals may receive a more cursory review, allowing for faster permitting decisions.⁹

Wetland-related law and regulation

Water quality certification. Wisconsin regulates wetlands primarily under two complementary sets of provisions. First, any actions that require a federal permit, license, or approval that result in a discharge into waters of the state, including §404 dredge and fill permits and nationwide permits, require CWA §401 certification. Wisconsin rules establish water quality standards for wetlands as well as procedures and criteria for state water quality certification application, processing, and review.¹⁰ In addition, the state legislature enacted the *2001 Wisconsin Act 6*¹¹ in response to post-SWANCC uncertainty regarding federal jurisdiction over “isolated” wetlands. The law requires water quality certification for “nonfederal wetlands,” which include wetlands that are “determined not to be subject to [federal] regulation...due to the decision in [SWANCC]” and/or wetlands that are “determined to be a nonnavigable, intrastate, and isolated wetland under the decision in [SWANCC]....”¹² The act and its corresponding statutes and regulations outline certification requirements, delineation procedures, exemptions, enforcement provisions, conditions under which water quality certifications may apply, and other various requirements.¹³

The state makes around 400 individual wetland water quality certifications each year, approving approximately 90 to 95 percent of received applications. Five to ten percent of certifications are denied, and no decisions are waived.¹⁴ Under direction of the state rules, WDNR staff must determine whether a proposed activity will result in discharges to state waters and if the activity complies with state effluent limitations for categories of discharges, water-based related effluent limitations, water quality standards, performance standards, toxic and pretreatment effluent standards, public interest and public rights standards pertaining to water quality, and any other applicable state requirements.¹⁵

⁶ Wisconsin water quality standards actually specify the use of delineation procedures outlined in the *Basic Guide to Wisconsin's Wetlands and Their Boundaries (Wisconsin Department of Administration PUBL-WZ-029-94)*, a document based on the 1987 Corps Delineation Manual. See: WIS. ADMIN. CODE § NR 103.8(1m).

⁷ WIS. ADMIN. CODE § NR 352.03.

⁸ See Wisconsin Department of Natural Resources, *Wisconsin Wetlands: Wetland Delineation Professional Assurance Initiative*, <http://www.dnr.state.wi.us/org/water/fhp/wetlands/assurance.shtml> (last visited July 31, 2007).

⁹ Wisconsin Department of Natural Resources, *supra* note 5.

¹⁰ WIS. ADMIN. CODE §§ NR 103 and NR 299.

¹¹ S.B. 1, 2001 Gen. Assem., Spec. Sess. (Wis. 2001).

¹² *Id.*

¹³ *Id.*

¹⁴ Personal communication with Tom Bernthal, Byron Simon, and Pat Trochlell, Wisconsin Department of Natural Resources (Nov. 21, 2005).

¹⁵ WIS. ADMIN. CODE § NR 299.04.

Additional laws and regulations. Wisconsin regulations also provide procedures for reviewing wetland conservation activities, such as restoration, enhancement, and the management of existing wetlands.¹⁶ Under the rules, certain conservation activities may receive a general permit for wetland conservation practices. The rules outline conditions required for eligibility, project design specifications, application requirements, general and individual permit provisions, enforcement, and maintenance.¹⁷

Wisconsin's laws on Navigable Waters Protection also apply to wetlands below the Ordinary High Water Mark. In general, regulations apply to construction and waterway alteration pertaining to navigable waters, which may include dredging and filling, as well as dam construction, water diversion, and grading.¹⁸

Finally, the state also participates in local wetland regulation. Wisconsin statutes require the WDNR to assist local governments in designing and administering zoning laws for shorelands and wetlands in the shoreland zone. Under the statute, WDNR must provide technical assistance to local zoning officials and oversee local decisions and development of shorelands standards.¹⁹

Organization of state agencies

State-level wetland activities are conducted by multiple sections in the WDNR. Within the Division of Water, the Bureau of Watershed Management conducts wetland-, lake-, and stream-related activities. Within the Division of Land, the Bureau of Wildlife Management conducts wetland acquisition, protection, and restoration projects. Within the Division of Enforcement and Science, the Integrated Science Services Bureau is responsible for the review and development of Environmental Impact Statements and Environmental Assessments that include analyses of wetland impacts; the division also coordinates with the Wisconsin Department of Transportation (WDOT) on environmental issues. Finally, the Office of Energy was recently created to centralize the review of important energy and utility projects and to help streamline the permitting process, including wetland water quality certification.

Division of Water. Prior to 2006, the Bureau of Fisheries Management and Habitat Protection housed the state's two primary wetland sections: the Lakes and Wetland Section and the Rivers and Habitat Section. However, in 2006 both sections moved to the Bureau of Watershed Management.²⁰ The Lakes and Wetland Section maintains the Wisconsin Wetland Inventory, performs research, and conducts other non-regulatory activities; the Rivers and Habitat Protection Section performs regulatory functions, although staff activities, including water quality certification, enforcement, monitoring and assessment program development, research, restoration, education and outreach, and technical assistance, do overlap between the two sections. In addition to the headquarters office in Madison, the wetland program also operates from WDNR's 31 service centers. Approximately 35 field staff work primarily on the public

¹⁶ WIS. ADMIN. CODE § NR 352.03(15).

¹⁷ WIS. ADMIN. CODE § NR 353.

¹⁸ WIS. STAT. §§ 30 (West 2003), 31.

¹⁹ WIS. STAT. §§ 59.971 *renumbered* WIS. STAT. § 59.692, 61.351, 62.231.

²⁰ Wisconsin Department of Natural Resources, Division of Water, *Fisheries Management*, <http://dnr.wi.gov/org/water/fhp/> (last visited July 31, 2007).

waters protection/navigable waters protection program and wetland water quality certification. Seven permanent staff who work on waterway and wetland projects are located in the headquarter office.²¹ Staff activities are spread among many areas of habitat protection, making difficult the calculation of funding devoted specifically to wetlands management and protection. However, a rough estimate for the Water Division's annual budget related to wetlands is \$1.278 million (FY2006).²² Funding for program activities comes from multiple sources, including state general purpose revenues, water quality certification application fees, and federal grants.^{23,24}

WDNR is also responsible for delineating and classifying wetlands for the Wisconsin Wetland Inventory (WWI). Wetlands are delineated through aerial photo interpretation and are classified according to vegetative type, hydrology, human influence, and other wetland characteristics. The interpreted photography is scanned and processed to create digital orthophotography. Wetland linework is extracted off the rectified photography using color recognition algorithms and vectorized in ArcGIS. Currently, most of the wetland data available for Wisconsin has not been digitized from digital orthophotos. The newer process will allow the Digital WWI to become a seamless GIS product.²⁵ A crosswalk between the WWI and the National Wetland Inventory classifications also is being developed.²⁶

Division of Land. The Bureau of Wildlife Management's Wildlife and Landscape Ecology Section conducts wetland restoration pertaining to waterfowl and wildlife habitat conservation and recreation.²⁷ Two staff located in the WDNR Central Office in Madison oversee the statewide wetland habitat program and are involved in funding decision-making.²⁸ Field staff assist in the implementation, monitoring, and maintenance of restoration projects in State Wildlife Areas and provide technical assistance/outreach to private landowners.²⁹ The Bureau of Wildlife Management provides between \$300,000 and \$400,000 annually for restoration of wetlands and associated uplands. Funding comes from collected waterfowl stamp fees.³⁰

Division of Enforcement and Science. The Integrated Science Services Bureau and the Office of Energy are involved in the review of larger, often linear projects related to the construction and maintenance of transportation and utility infrastructure. The size and unique nature of these

²¹ Bernthal et al., *supra* note 14.

²² This estimate includes WDNR staff salary plus fringe for 15 FTEs (after prorating the wetlands portion out of the total waterways and wetland budget), supplies, contracts, and Wisconsin Wetland Inventory-related expenses. Personal Communication with Tom Bernthal and Mary Ellen Vollbrecht, Wisconsin Department of Natural Resources (Jan. 11, 2006).

²³ Approximately half of the annual budget is funded by general purpose revenue from the state. Approximately one-third is funded by fees. The remainder comes from federal grants (e.g. U.S. Environmental Protection Agency, U.S. Army Corps of Engineers) for various types of research.

²⁴ Bernthal et al., *supra* note 14.

²⁵ Personal Communication with Tom Bernthal, Wisconsin Department of Natural Resources (Jan. 24, 2006).

²⁶ Personal Communication with Tom Bernthal, Wisconsin Department of Natural Resources (May 4, 2007).

²⁷ Multiple state-level groups conduct restoration within the state. In addition to WDNR's Bureau of Wildlife Management, the Bureau of Fisheries and Habitat and the Bureau of Endangered Resources conduct restoration and enhancement throughout the state. This narrative will focus on the work of the Bureau of Wildlife Management.

²⁸ Personal Communication with Michele Cipiti, Wisconsin Department of Natural Resources (Nov. 28, 2005).

²⁹ Personal Communication with Michele Cipiti, Wisconsin Department of Natural Resources (May, 7, 2007).

³⁰ Cipiti, *supra* note 28.

projects requires a separate review process. Transportation projects are reviewed by 19 field liaison staff and two central office staff under a cooperative agreement with WDOT. Staff time devoted to waterway and wetland project review is estimated at the equivalent of 10 FTEs.³¹ Wetland and waterway permitting for utility projects is conducted by three Office of Energy staff located in the central office.³² Review is governed by a cooperative agreement with the Public Service Commission.³³

Statewide programmatic general permit

Wisconsin re-issued a statewide programmatic general permit (SPGP) on January 1, 2004 (expiring on December 31, 2008) that covers certain activities permitted by WDNR. The SPGP outlines excluded activities, general permit conditions, and application procedures.³⁴

Mitigation

In May 2000, Wisconsin revised its wetland laws in order to improve the environmental consequences resulting from the state's wetland regulatory process.³⁵ Wetland mitigation rules outline sequencing standards, planning requirements and preferences, compensation ratios, site crediting, construction inspection and monitoring procedures, financial assurance requirements, permanent protection requirements, procedures for the establishment of wetland mitigation banks (including the role of the Mitigation Banking Review Team), and enforcement provisions.³⁶

State legislation allows WDNR to consider wetland compensatory mitigation in its wetland permitting decision process, and regulations define the circumstances under which WDNR may consider a mitigation project as part of a project proposal.³⁷ The state holds a Memorandum of Agreement with the Corps, U.S. Environmental Protection Agency (EPA), and U.S. Fish and Wildlife Service (FWS) on mitigation review procedures and coordination among agencies.³⁸

Compliance and enforcement

Wisconsin law offers multiple options for enforcement of wetland violations. General environmental statutory provisions include civil penalties of \$10 to \$5,000 per violation (per

³¹ Wisconsin Department of Natural Resources, *Science Services Support: Department of Transportation Cooperative Agreement*, at http://dnr.wi.gov/org/es/science/dot_coop.htm (last visited July 31, 2007). *See also:* Wisconsin Department of Natural Resources, *Science Services Support: Wisconsin Environmental Policy Act (WEPA) Compliance*, <http://dnr.wi.gov/org/es/science/eis/> (last visited July 31, 2007).

³² Personal Communication with Dave Siebert, Director of Office of Energy, WDNR Office of Energy (May 2006).

³³ Wisconsin Department of Natural Resources, *Office of Energy Staff Contacts*, <http://dnr.wi.gov/org/es/science/energy/oe.htm> (last visited July 31, 2007).

³⁴ The full provisions of the SPGP are outlined at: U.S. Army Corps of Engineers, St. Paul District, Department of Army Permit (GP-001-WI) (Jul. 1, 2004), *available at* <http://www.mvp.usace.army.mil/docs/regulatory/gp01wi.pdf>.

³⁵ Wisconsin Department of Natural Resources, *Wetlands Compensatory Mitigation: Introduction*, <http://www.dnr.state.wi.us/org/water/fhp/wetlands/mitigation/applicantguidance.shtml> (last visited July 31, 2007).

³⁶ WIS. STAT. § 281.37(2m); WIS. ADMIN. CODE § NR 350.

³⁷ 1999 Wis. Sess. Laws 859.

³⁸ Memorandum of Agreement Concerning the Adoption of Guidelines for Wetland Compensatory Mitigation in Wisconsin (May 29, 2002) (*available at* http://www.dnr.state.wi.us/org/water/fhp/wetlands/mitigation/documents/mitigation_moa.pdf). *See also:* Wisconsin Department of Natural Resources, U.S. Army Corps of Engineers – St. Paul District, U.S. Environmental Protection Agency – Region V, and U.S. Fish and Wildlife Service, *Guidelines for Wetland Compensatory Mitigation in Wisconsin (Feb. 2002)*, *available at* http://dnr.wi.gov/org/es/science/publications/wetland_mitig.pdf.

day), plus the cost of court expenses.³⁹ Water and sewage statutes describe investigation procedures, civil procedures, WDNR inspection powers and procedures, and enforcement mechanisms, which may include abatement orders and penalties of \$10 to \$5,000 per violation (per day), plus the cost of court expenses.^{40,41}

In practice, wetland violations are addressed at multiple levels – local, state (WDNR, Wisconsin Department of Justice), and federal (Corps, EPA, U.S. Department of Justice) agencies leverage partnerships and pool resources to most effectively address violations. Enforcement cases are typically resolved through voluntary restoration, although the full range of action may be utilized, depending on the situation.⁴²

Tracking systems

The state records all wetland permits in the Waterways and Wetlands Database. All mitigation actions are tracked in the Wetland Compensatory Mitigation Database. Aspects tracked include type of wetland impacted, type of wetland mitigated, type of mitigation, acreage impacted, acreage of mitigation, location, dates of submitted reports, and enforcement actions, and more. Data is collected via site inspection, permittee data submission, and state data.⁴³

A tracking system and GIS data layer for voluntary restoration projects conducted by state, federal, and non-profit partners is under development. This tracking data will be combined with existing data on permitted fills and compensatory mitigation data to provide an annual report on recorded wetland losses and gains. The first report will cover activities conducted in calendar year 2006. The annual report will also estimate continued needs to explore a means of identifying unpermitted fills and other wetland losses.⁴⁴

Watershed programs

The WDNR's Lakes and Wetlands Section regularly coordinates with other department programs at the local level,⁴⁵ both for regulatory and non-regulatory purposes. For example, developing wetland monitoring strategies are coordinated with the Bureau's water monitoring programs and are carried out by field staff in Geographic Management Units based on the state's 23 major water basins. Restoration and mitigation are also focused on a watershed approach.⁴⁶

III. Water Quality Standards

³⁹ WIS. STAT. §§ 299.95 and 299.97.

⁴⁰ WIS. STAT. §§ 281.91-281.98.

⁴¹ Additional, various enforcement measures are also included throughout Wisconsin's rules. For example, violations to the state's mitigation banking regulations may result in removal from the state's approved mitigation banking registry. WIS. ADMIN. CODE § NR 350.14.

⁴² Bernthal et al., *supra* note 14.

⁴³ *Id.*

⁴⁴ Bernthal, *supra* note 25.

⁴⁵ In 2006, the Lakes and Wetland Section and the Rivers and Habitat Section will be housed within the Bureau of Watershed Management (both were housed in the Bureau of Fisheries Management and Habitat Protection previously).

⁴⁶ Wisconsin Department of Natural Resources, *Bureau of Watershed Management*, <http://www.dnr.state.wi.us/org/water/wm/> (last visited July 31, 2007).

Wisconsin has established wetland-specific water quality standards that seek to “protect public rights and interest, public health and welfare, and the present and prospective uses of all waters of the state for public and private water supplies, propagation of fish and other aquatic life and wild and domestic animals, preservation of natural flora and fauna, domestic and recreational uses, and agricultural, commercial, industrial and all other uses...”⁴⁷ The standards are applicable to most state jurisdictional determinations where wetlands may be impacted.

The rules specify wetland functions to be protected, including sediment and pollution attenuation, storm and floodwater retention, hydrologic cycle maintenance, shoreline protection, biodiversity, and recreation.⁴⁸ Criteria are narrative⁴⁹ and serve as a basis for “developing and implementing strategies to achieve legislative policies and goals” and for “decisions in regulatory, permitting, planning or funding activities that impact water quality and which impact wetlands,” including water quality certifications and NPDES permitting.⁵⁰ The rules also specify circumstances under which exemptions are acceptable and procedures for WDNR’s regulatory determinations.⁵¹

IV. Monitoring and Assessment

Monitoring and assessment for wetlands

Wisconsin is developing a broader monitoring and assessment program that utilizes multiple assessment methodologies to characterize the health of the state’s wetlands and the functions they provide. New monitoring methodologies have been developed with funding from the EPA’s Wetland Program Development Grants. Wetland monitoring is being integrated with other surface water and ground water monitoring programs coordinated by the Water Monitoring Team in the WDNR’s Division of Water. The Wetland Monitoring Sub-Team is guiding the development of several pilot projects to begin implementation of methodologies. A statewide GIS layer mapping wetlands dominated by reed canary grass has been completed.⁵² This coverage will be made available to regional staff engaged in developing watershed assessment and management plans.⁵³

WDNR’s primary assessment methodology, used for water quality certification, is a site-level rapid assessment that evaluates wetland functions and values.⁵⁴ WDNR developed the Wisconsin Rapid Wetland Assessment Methodology in 1984 in conjunction with the Corps’ Rock Island and St. Paul Districts and the State of Minnesota; the methodology was revised in 1991.⁵⁵

⁴⁷ WIS. ADMIN. CODE § NR 103.01(2).

⁴⁸ WIS. ADMIN. CODE § NR 103.01(3).

⁴⁹ See WIS. ADMIN. CODE § NR 103.03.

⁵⁰ WIS. ADMIN. CODE § NR 103.01(4).

⁵¹ WIS. ADMIN. CODE §§ NR 103.06(4) and 103.08.

⁵² Bernthal, *supra* note 26.

⁵³ *Id.*

⁵⁴ Wisconsin Department of Natural Resources, *Wisconsin Wetlands: Assessment and Monitoring*, <http://www.dnr.state.wi.us/org/water/fhp/wetlands/assessment.shtml> (last visited July 31, 2007).

⁵⁵ Bernthal et al., *supra* note 14.

In recent years, WDNR has developed a biological assessment methodology, the Wisconsin Floristic Quality Assessment (WFQA), to provide an accurate measure of plant community biological integrity at the site level. A survey of 116 wetlands in southeastern Wisconsin is being used to set benchmarks for WFQA metrics for the Southeast Glacial Plains Ecoregion.⁵⁶ Multi-metric biological indices for isolated depressional wetlands have been developed based on plants, macroinvertebrates, amphibians, and zooplankton and diatoms.⁵⁷ Plant and macroinvertebrate indices have been tested successfully for use by staff or trained volunteers.

In June 2006, WDNR completed the Milwaukee River Basin Wetland Assessment Project. Through this project, the WDNR developed planning tools for wetland functional assessments using a synthesis of existing GIS data and scientific knowledge on wetland, watershed, and landscape functions. Planning tools include a Wildlife Habitat Decision Support Tool⁵⁸ and a Water Quality Decision Support Tool.⁵⁹ Another product is a GIS data layer (Potentially Restorable Wetlands) that helps users identify potential sites for restoration.⁶⁰

These assessment methods have been developed under grants from EPA.⁶¹ State matches also support the program. WDNR is currently capacity-building and planning further implementation of the bioassessment methodology as part of the state's Water Monitoring Strategy.^{62,63}

Monitoring and assessment for streams

WDNR's Water Division oversees monitoring, assessment, and reporting of stream quality. State monitoring and assessment strategies are three-tiered: first, baseline monitoring provides an overall picture of stream health; second, stream-specific sampling informs regulatory processes (e.g., 303(d)/305(b)); and third, monitoring and assessment help evaluate management actions.⁶⁴

With more than 84,000 miles of wadeable and non-wadeable streams throughout the state, WDNR sought to broaden the understanding of statewide stream health in 2004 by developing a

⁵⁶ Bernthal, *supra* note 26.

⁵⁷ Wisconsin Department of Natural Resources, *supra* note 54.

⁵⁸ The Wildlife Habitat Decision Support Tool can be used to identify how wetlands support wildlife and priority restoration sites that will provide the best wildlife habitat. *See* Wisconsin Department of Natural Resources, *supra* note 54.

⁵⁹ *Id.* The Water Quality Decision Support Tool can be used to identify how wetlands contribute to downstream water quality and priority restoration sites that will provide the most benefit for helping water quality.

⁶⁰ JOANNE KLINE ET AL., WISCONSIN DEPARTMENT OF NATURAL RESOURCES, MILWAUKEE RIVER BASIN WETLAND ASSESSMENT PROJECT: DEVELOPING DECISION SUPPORT TOOLS FOR EFFECTIVE PLANNING, FINAL REPORT TO U.S. EPA REGION V (2006), *available at* http://www.dnr.state.wi.us/org/water/fhp/wetlands/documents/Mukwonago_Version_MRPWAP_August_17.pdf.

⁶¹ THOMAS BERNTHAL, ET. AL., WISCONSIN DEPARTMENT OF NATURAL RESOURCES, DEVELOPMENT OF A FLORISTIC QUALITY ASSESSMENT METHODOLOGY FOR WISCONSIN, FINAL REPORT TO U.S. EPA REGION V (2003), *available at* <http://www.dnr.state.wi.us/org/water/fhp/wetlands/documents/FQAMethodWithAcknowledgements.pdf>.

⁶² Wisconsin operates a "State of the Basin" Program, under which the state's large river basins -- 23 Geographic Management Units in total -- are assessed every five years to provide a picture of the status and health of water-based ecological resources and to identify focal areas for WDNR efforts. The program is similar to the U.S. EPA 305(b) listing process but is not necessarily tied to regulatory requirements. Reports track a combination of criteria for wetlands. *See* Wisconsin Department of Natural Resources, *State of the Basin Reports*, <http://www.dnr.state.wi.us/org/gmu/stateofbasin.html> (last visited July 31, 2007).

⁶³ Bernthal et al., *supra* note 14.

⁶⁴ Personal Communication with Michael Miller, Wisconsin Department of Natural Resources (Dec. 2, 2005).

probabilistic sampling design for stream water quality monitoring. Under the sampling design, approximately 55 watersheds (out of 334 watersheds statewide) are selected at random. Within those selected watersheds, ten stream segments are further selected at random, resulting in about 650 assessments per year. Stream assessments are generally conducted using electrofishing methodologies, although macroinvertebrate sampling, habitat assessments, and other methodologies are also used where appropriate. The stream monitoring strategy was developed by WDNR with occasional input from other entities such as the EPA, other states, and the National Water Quality Monitoring Council. The stream monitoring program is funded under both the Bureau of Fisheries and Habitat and the Bureau of Watershed Management.⁶⁵

Citizen monitoring programs and opportunities

The state actively supports volunteer stream and wetland monitoring programs operating within the state by directing interested citizens to the appropriate organizations and providing information to the public. Recognizing the value of citizen participation, the state promotes citizen monitoring and funds a volunteer coordinator.⁶⁶ During the summer of 2006, WDNR held a pilot project where 12 volunteer groups worked with agency tools to monitor streams. The purpose of this initial project was to evaluate the willingness of volunteers to collect this type of data and to determine the quality and consistency of the volunteer-collected data. The project will be continued in the summer of 2007.⁶⁷ Another pilot project involving a citizens group, the Rock River Coalition, is actively monitoring the wetland restoration of a former muck farm completed in 2006, the Zeloski Marsh. This group is documenting the change in flora and fauna, comparing pre-restoration surveys to post-restoration. Small mammals, birds, frogs, dragonflies are being surveyed and water quality samples are being collected upstream, on-site, and downstream to assess wetland water quality function.⁶⁸

V. Restoration and Partnerships

The Bureau of Wildlife Management runs one of Wisconsin's foremost state-level wetland restoration programs.⁶⁹ Funded by waterfowl stamp revenues, the state awards between \$300,000 and \$400,000 annually for the restoration of wetlands and associated uplands on both public and private land. State, federal, and conservation groups within the State of Wisconsin are eligible for funding.⁷⁰ The program allocates funds according to criteria based on wildlife priorities identified in the *Upper Mississippi River and Great Lakes Region Joint Venture - Wisconsin Plan*. The Wisconsin Joint Venture Plan states its goal to be the involvement of "state and federal agencies and private organizations in a broad-based, unified effort to increase populations of waterfowl and other wildlife species by preserving, restoring, and enhancing wetland and upland habitat..." The plan outlines multiple, concrete objectives designed to achieve this goal, including increasing bird populations and additional habitat – specifically, "a

⁶⁵ *Id.*

⁶⁶ Bernthal et al., *supra* note 14.

⁶⁷ Personal communication with Michael Miller, Wisconsin Department of Natural Resources (Apr. 16, 2007).

⁶⁸ Bernthal, *supra* note 26.

⁶⁹ Multiple state-level groups conduct restoration within the state. In addition to WDNR's Bureau of Wildlife Management, the Bureau of Fisheries and Habitat and the Bureau of Endangered Resources conduct restoration and enhancement throughout the state. This narrative will focus on the work of the Bureau of Wildlife Management.

⁷⁰ Cipiti, *supra* note 28.

minimum of 55,500 additional acres of habitat (3,700 acres per year) in perpetuity with a 3:1 upland to wetland ratio” and “177,350 acres of habitat on public (4,340 acres per year) and private (7,500 acres per year) lands by the year 2005.”⁷¹ As of 2006, the program had accomplished more than 76 percent of the goal with a total of 220,582 acres of production habitat conserved (the goal for the Joint Venture is 288,750 acres).⁷²

Multiple other restoration programs exist at all levels of government, as well as nongovernmental conservation organizations – for example, USDA Natural Resources Conservation Service (NRCS), Ducks Unlimited (DU), Wisconsin Wetlands Association, and Wisconsin Waterfowl Association, among others. State staff participate in these programs, leverage partnerships, provide technical and financial assistance for wetland restoration where possible, and conduct education relating to wetland restoration opportunities in the state.⁷³

State-restored properties, known as Wildlife Management Areas, are maintained by Bureau of Wildlife Management staff. Stewardship activities, along with other general staff activities, are funded by grants under the Federal Aid in Wildlife Restoration Act (also known as the Pittman-Robertson Act). Funding for wetland-related maintenance and management is also available from segregated state funds from the sale of various licenses. Finally, stewardship funds are available directly from the state for wetland protection and acquisition. WDNR and conservation organizations can apply for these funds for habitat protection, including wetlands.⁷⁴

The Bureau of Wildlife Management also works with partners throughout the state to submit North American Wetlands Conservation Act (NAWCA) grants applications, which are used for wetland protection, restoration, and enhancement. WDNR provides a match for other groups who receive NAWCA grants, e.g., DU, Madison Audubon, Western Wisconsin Land Trust, and The Nature Conservancy. WDNR leverages these partnerships to submit proposals, receive grant funds, provide matches, and perform the restoration work in priority areas as identified in the *Joint Venture*. The amount received by participating partners varies annually, but since the beginning of NAWCA, over \$22 million in grant funds have been secured for the state.⁷⁵

The WDNR also published the second edition of *Wetland Restoration Handbook for Wisconsin Landowners* in 2004.⁷⁶

VI. Education and Outreach

One of the main components of the state’s wetland conservation plan, *Reversing the Loss: A Strategy for Protecting & Restoring Wetlands in Wisconsin*, specifically addresses education and

⁷¹ See Wisconsin Department of Natural Resources, Upper Mississippi River Great Lakes Region Joint Venture, Wisconsin Plan (1992) (on file with author).

⁷² Cipiti, *supra* note 28.

⁷³ Bernthal et al., *supra* note 14; Cipiti, *supra* note 28.

⁷⁴ Cipiti, *supra* note 28.

⁷⁵ Personal Communication with Michele Cipiti, Wisconsin Department of Natural Resources (Jan. 24, 2006).

⁷⁶ ALICE L. THOMPSON & CHARLES S. LUTHIN, WETLAND RESTORATION HANDBOOK FOR WISCONSIN LANDOWNERS (2nd ed. 2004), Wisconsin Department of Land and Natural Resources, *available at* http://dnr.wi.gov/org/es/science/publications/WRH_cover.pdf.

outreach goals, strategies, and performance measures.⁷⁷ Envisioning that “[p]ublic and private owners of wetlands make sound decisions to use their land in a way that sustains both wetlands and socio-economic benefits,” the plan outlines ten strategies, which include: message development and presentation by WDNR; partnerships, guidance, and education for the public, including regulated parties, youth, and landowners; citizen monitoring programs; demonstration of land use management techniques; and strong, continued communication with agricultural and transportation communities.⁷⁸

The state has begun implementing the strategies in multiple ways, for example: partnering with conservation organizations to provide education and outreach; providing technical support, seminars, courses, and workshops to various audiences; developing a Purple Loosestrife curriculum for science teachers that is designed to teach the evaluation of infestations and biocontrol practices; and conducting outdoor education programs.⁷⁹ Although the success of the program has not been recently evaluated against its performance measures,⁸⁰ prescribed wetland strategies are consistently being implemented by WDNR.⁸¹

VII. Coordination with State and Federal Agencies

Partnerships with state and federal agencies, as well as with conservation organizations, academic institutions, local governments, citizens, the regulated public, and other wetland stakeholders, guide many of the state’s regulatory and non-regulatory wetland protection efforts. Strategies for building and maintaining these relationships are outlined in the state’s wetland conservation plan, *Reversing the Loss: A Strategy for Protecting & Restoring Wetlands in Wisconsin*, and include education and outreach, streamlining regulatory processes, providing wetland stewardship incentives, acquisition and restoration strategies, and mapping and monitoring wetlands throughout the state.⁸²

The state holds multiple memoranda of agreement with federal agencies (e.g., the Corps, EPA, FWS, NRCS, etc.), tribes, and state agencies (Department of Transportation, Department of Agriculture Trade and Consumer Protection, etc.) on wetland related issues (permitting, mitigation, management and restoration, etc.) Partnerships are further exemplified by regular meetings among agencies to discuss wetland-related issues throughout the state.⁸³

VIII. Acronyms and Abbreviations

CWA – Clean Water Act

EPA – U.S. Environmental Protection Agency

FTE – Full-Time Equivalent

⁷⁷ Wisconsin Department of Natural Resources, *supra* note 1, at 8.

⁷⁸ *Id.*, at 8-9.

⁷⁹ Bernthal et al., *supra* note 14.

⁸⁰ Wisconsin Department of Natural Resources, *supra* note 1, at 10.

⁸¹ Bernthal et al., *supra* note 14.

⁸² Wisconsin Department of Natural Resources, *supra* note 1.

⁸³ Bernthal et al., *supra* note 14; Cipiti, *supra* note 28.

GIS – Geographical Information Systems

NAWCA – North American Wetlands Conservation Act

SPGP – Statewide Programmatic General Permit

SWANCC – Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers

WDNR – Wisconsin Department of Natural Resources

WDOT – Wisconsin Department of Transportation

WFQA – Wisconsin Floristic Quality Assessment

WWI – Wisconsin Wetland Inventory