

Chapter 2 - Land and Water Resource Management Programs

The Foundation for Setting Management Policy

Wisconsin's Natural Resources Management History

When the Northwest Ordinance of 1787 created the Wisconsin territory, it decreed that our waterways be “common highways and forever free.” Our waters are held in trust by the state government for all citizens. In the early days, the Public Trust Doctrine was important because our waterways were highways of commerce for the early explorers, then trappers and traders, and later for the lumber industry.

European settlement of Wisconsin from the mid-1800s onward drastically changed the Wisconsin landscape. Mining, logging, farming and development all contributed to a sharp decline in fisheries and wildlife, and loss of forests. Trading, logging, milling, transportation, electric power generation, irrigation, waste disposal, manufacturing, domestic water supply, and recreational uses all strained the state's lakes and rivers, and led to conflicts among water users.

Public sentiment fueled support for state government to protect and manage the state's natural resources. In 1907, the first state parks board was established, with authority to buy and manage land for park purposes. In 1919 the legislature passed Chapter 144 of the statutes, which incorporates state supervision over public water supplies. In the mid 1920's, the state appropriated money for buying, preserving and developing forests, and passed a law permitting the establishment of national forests in Wisconsin.

Beginning around the 1930's, the Public Trust Doctrine was used to preserve the cleanliness of our waters, as well as scenic beauty. In addition, a series of laws were passed to protect private wells and home water supplies, increasing the safety of drinking water. Several soil conservation programs also began at this time.

The 1937 Pittman-Robertson Federal Aid in Wildlife Restoration Act and the 1950 Federal Dingell-Johnson Bill established taxes on sales of sporting equipment and tackle to be used for fisheries and wildlife programs. The two acts have been amended over the years to include taxes on archery equipment, certain boat motors, and gas used for boats.

In 1960, the Wisconsin Legislature enacted a long-range program of acquisition and improvement of state recreational facilities, known as the Outdoor Recreation Action Program or ORAP. This prompted a wave of new park purchases, maintenance projects, and the era of rails-to-trails developments.

Department of Natural Resources Created

The legislature created the Department of Natural Resources in 1967, allowing a comprehensive approach to managing complex environmental problems. Conservation, recreation, wastewater and drinking water protection functions were merged under one agency, allowing staff to apply more cohesive, thorough strategies to reduce air pollution and hazardous wastes, protect groundwater, provide drinking water, encourage waste reduction and recycling, protect non-game and endangered species, and acquire lands for public use.

Environmental Laws of the 1970's, 1980's and 1990's

The DNR assumed further responsibilities as the federal government passed national environmental laws in the 1970s, '80s and '90s. The State Endangered Species Act was passed in 1971 to protect endangered plant and

animal species and to establish a program for conserving and restoring these species. The Federal Endangered Species Act followed in 1977. In 1972 Congress passed the Water Pollution Control Act, giving environmental protection a strong legal basis. It became a felony to discharge wastes to the waters of the United States without a permit. By 1974 the state had a working water pollution control program with penalties. Federal and state grants paid more than half of the cost of new municipal sewage treatment plants, and hundreds of millions of matching grant dollars were paid out.

Also in 1972, the Wisconsin Environmental Policy Act passed requiring state agencies to consider the environmental effects of their actions. It established the principle that broad citizen participation should be part of environmental decision making.

In 1974, Congress passed the Safe Drinking Water Act. The act set federal standards for drinking water quality and required the states to assure compliance with those standards. Wisconsin was one of the first states to have its own federally approved drinking water program, and in 1984 became the first state to pass a comprehensive groundwater law to protect the aquifers that supply three-quarters of all Wisconsin residents with their drinking water.

Wisconsin's Nonpoint Source Pollution Program was created in 1977 to protect our waters from runoff pollution by offering to share costs with landowners and communities that take steps to keep soil, fertilizer, street debris and construction site dirt from washing into streams and lakes. Nonpoint source pollution is now considered to be the state's greatest water quality concern, degrading or threatening about 40 percent of the streams, about 90 percent of inland lakes, many of the Great Lakes harbors and coastal waters, and a substantial portion of groundwater resources in the state.

In 1989 the Knowles-Nelson Stewardship Program was established and authorized to issue up to \$250 million in state bonds to buy and develop land for recreational uses, wildlife habitats, fisheries and natural areas. The Program was reauthorized in 1999 for 10 years and allowed issuing \$46 million in state bonds to buy recreational and other valuable conservation lands and pay for recreational improvements.

The Department of Natural Resources Today

The reorganization of the Department of Natural Resources in 1996 accomplished a restructuring of the agency to optimize efficiency and effectiveness, and improve integration of DNR programs to better serve customers and environmental protection.

Residents of the state have input into the agency through basin partner teams, to set local priorities for natural resource management.

Want to know more about the Department?

<http://www.dnr.state.wi.us/org/caer/ce/news/on/on991220.htm>

<http://www.wnrmag.com/supps/1997/dec97/dec97.htm>

A strategic plan for the agency was recently adopted. It emphasizes ecosystem management, increasing reliance on partnerships to accomplish natural resources goals, protecting public health and safety, and providing for outdoor recreational opportunities today and in the future.

The plan Vision states:

We share responsibility as natural resources stewards with Wisconsin's citizens, government, businesses and visitors. We recognize that air, land and water are interconnected in sustaining all life, in protecting public health and in achieving healthy ecosystems and the sustainable economies that depend on these ecosystems. We recognize that forestry, farming and nature-based recreation – like hunting, fishing and trapping – are key to the state's economy and quality of life. We value our dedicated staff and provide them with the tools and training needed to ensure that Wisconsin has the best-managed natural resources in the world.

The Department of Natural Resource's duties today reflect the laws Wisconsin citizens sought over decades to protect the state's natural resources while allowing the economy to flourish. The Department balances conflicting

uses today so quality natural resources are available tomorrow. The Department's authority comes from decisions of the Legislature, Governor's office, the Natural Resources Board, the courts and agreements with federal agencies. Tax revenue and user fees support DNR programs.

Department Presence in the Basin - Staff

About two-thirds of the Lower Chippewa River Basin is located in the Department's West Central Region, and the remainder is in the Northern Region (Map 1). Together, approximately 120 permanent employees in the Land and Water Programs have part or all of their job responsibilities within the Lower Chippewa River Basin. Of these, approximately 50 work primarily within the Lower Chippewa River Basin.

Of about 50 Water Program staff, 26 work primarily within the Lower Chippewa River Basin, and of approximately 70 Land Program staff, about 29 work primarily within the Lower Chippewa River Basin.

Table 1. DNR Land and Water Program Staff Working Primarily in the Lower Chippewa Basin.

Water Program Areas	Approximate Staff
Drinking Water and Groundwater (Water Supply)	5
Wastewater	5
Lakes Management	1
Rivers Management	1
Fisheries Management	5
Runoff Management	2
Water Resources Engineer	2
Water Regulation and Zoning	1
Supervisory	2
Other	2
Total	26
Land Program Areas	
Forestry	13
Real Estate	1
Wildlife	4
Parks & Trails	6
Forest Entomologist	1
Urban Forester	1
Supervisory	3
Total	29

The remaining Land and Water Program staffs have job responsibilities that extend beyond the boundaries of the Lower

Chippewa Basin. Sixteen provide regional leadership, or serve as regional experts in drinking water, fisheries, watersheds and wetlands, forestry, wildlife, master planning or fire management. Approximately 20 water program employees have job responsibilities in the programs listed above, but work in several basins.

Approximately 45 land program employees have job responsibilities in the programs listed above, but work in several basins. Many employees have mandated responsibilities under different Wisconsin or federal laws. For example: Drinking Water and Groundwater staff are responsible for implementing the Safe Drinking Water Act.

Want to reach WDNR staff?
<http://www.dnr.state.wi.us/aboutdnr/personnel/>

Most employees who work primarily in the Lower Chippewa Basin are located at the West Central Region Headquarters in Eau Claire. Other staff in the West Central Region are located at Chippewa Falls, Baldwin, Cornell, Durand, Ellsworth, Fairchild, Lake Wissota State Park, Brunet Island State Park and Menomonie. Offices that serve the Lower Chippewa Basin in the Northern Region include Spooner, Barron, Hayward, Park Falls, Cumberland and Rhinelander.

Water Management Programs

Fisheries Management and Habitat Protection Program

The Fisheries Management and Habitat Protection Program protects and improves lakes and rivers in the Lower Chippewa Basin and

statewide. The program manages Wisconsin's sport, commercial and non-game fisheries and aquatic habitats, monitors water quality, and provides numerous grant programs. As part of the Fisheries Management and Habitat Protection Program, the Lake Management Program protects and maintains Wisconsin's 15,000 inland lakes to provide a full complement of lake uses for all citizens. This program is a cooperative effort of the University of Wisconsin - Extension, local units of government, lake districts and associations, and lake-specific conservation and community groups. It helps coordinate action of the many WDNR programs that affect lakes. A major goal is ensuring that an adequate water quality database exists to support current and future management programs.

Want to know more about lakes and rivers?

<http://www.dnr.state.wi.us/org/water/fhp/>

<http://www.dnr.state.wi.us/org/water/fhp/rivers/index.htm>

<http://www.wnrmag.com/stories/2000/apr00/shore.htm>

Fisheries Monitoring and Management Programs

WDNR fisheries staff evaluate fish populations on lakes, flowages, rivers and streams. These evaluations include an assessment of fish community health, fish length, sex and age distributions, assessment of the impacts of stocking, habitat improvement and various regulations. This information is critical for sustaining good fishing and fish populations. Each year fisheries staff review and recommend stocking quotas and fishing regulation revisions for basin lakes and flowages, rivers and streams. They work with farmers, landowners, angling groups, lake associations and others to protect and restore aquatic and shoreline habitat, reduce bank erosion, improve trout habitat, and restore riverine environments through dam removal. Fisheries Biologists and technicians provide information to the public on a daily basis. In addition, they team up with teachers and conservation organizations to loan equipment and introduce environmental and angling educational opportunities to the students and the public.

Surface Water Monitoring Programs

Rivers and Streams: Currently, a variety of surface water monitoring approaches are implemented on streams and rivers in the basin. These include comprehensive stream surveys, surface water use classifications, complaint investigations, stream trend monitoring, toxics monitoring and special studies. The Chippewa River at Holcombe, Chippewa Falls, and Durand and the Red Cedar River at Menomonie are monitored monthly to provide information on trends in water quality. A statewide water quality trend monitoring network for large rivers will be initiated in 2001.

A new statewide "baseline" biological monitoring program was initiated in 1999. This program is intended to provide adequate water resource information to assess the current condition or status of the waterbody, whether it is meeting its potential biological use and if not, what factors are preventing the use from being attained. Baseline monitoring has been initiated in lakes, wadeable streams and nonwadeable streams. Wadeable stream monitoring includes fish surveys (game and non-game species), macroinvertebrates (aquatic insects), water chemistry, streamflow measurements and habitat assessments. During 1999, wadeable stream surveys were conducted at approximately 100 sites in the Bear Creek and Plum Creek watersheds in the Lower Chippewa Basin. During 2000, wadeable stream baseline monitoring was conducted in the Lower Chippewa River tributaries downstream of Eau Claire, the Lowes Creek watershed, and the Rush River watershed. Nonwadeable stream monitoring

includes fish surveys, macroinvertebrate and water chemistry sampling, and habitat assessments. Surveys were conducted at two sites in the St. Croix River (reference sites) below St. Croix Falls and 3 sites in the Red Cedar River below Menomonie during 1999. Additional sites were surveyed in the Lower Chippewa River below Eau Claire in 2000.

As part of the toxics monitoring program, fish samples are collected during monitoring activities on lakes, nonwadable or wadable streams, and tested for the presence of polychlorinated biphenyls (PCB's) or mercury. These samples are sent to Madison for processing.

Lakes: Lake monitoring includes several strategies to assess lake conditions in the basin. The WDNR is currently developing statewide strategies to assess the status and trends of lake ecosystem health. The goal of this effort is to assess all lakes greater than 100 acres in size that also have public access. Publicly accessible lakes that are less than 100 acres in size will also be assessed, but at a lower level of intensity.

Monitoring may include biological and physical conditions and water chemistry. Aquatic plants, fish, bottom-dwelling invertebrates, land use practices in the watershed, weather, and physical setting and historical data are collected. Within the Lower Chippewa Basin, Tainter Lake in Dunn County and Axehandle Lake in Chippewa County are monitored for long-term trends.

The WDNR also supports lake ecosystem assessment monitoring to evaluate specific lake management concerns. Several lakes and watersheds have been evaluated in the basin to assess specific management problems, including excessive nutrient inputs, winterkill conditions, aquatic plant management and shoreland development.

The Self-Help Monitoring Program allows citizens to assist the DNR with basic lake data collection, and to take an active role in lake management activities. Self-help volunteers are trained by a WDNR lake management specialist to measure water clarity, and conduct other monitoring on some lakes. Volunteer monitors are active on 65 lakes within the Lower Chippewa Basin.

Aquatic Plant Management Program

This program regulates the use of chemical treatments to abate nuisances caused by excessive aquatic plant growth. The objective of the permit procedure is to preserve the ecological benefits of lake plant communities, including fish and wildlife habitat, erosion prevention, and water quality maintenance. The program also promotes alternative methods of control and appreciation of the benefits of aquatic plants. Quantitative aquatic plant surveys provide information that is used for fish habitat improvement, protection of sensitive wildlife areas, aquatic plant management, and water resource regulations.

Rivers and Streams Planning and Protection Grant Program

In 1999, the legislature established the Rivers and Streams Planning and Protection Grant Program. Local units of government, qualified river management associations and non-profit conservation organizations can apply for state grant funds for planning, protection and restoration activities on rivers and streams. The Rivers Program assists local organizations by providing information on riverine ecosystems, improving river assessment and planning, and promoting local understanding of the causes of river problems. Activities that may receive funding include conservation easements, land acquisition, local regulations and ordinance development, pollution control practices, stream or shoreland habitat restoration, educational and monitoring activities. The new Rivers Program is an excellent opportunity for qualified groups to get assistance in helping to protect, preserve or restore river and stream systems.

Wisconsin Lakes Partnership Program

The Wisconsin Lakes Partnership Program helps ensure healthy and diverse lake ecosystems while considering the needs of society. Partnership priorities include adopt-a-lake and youth and adult education, aquatic plant management and protection, lake leadership training, lake organizational and technical assistance, lake planning and lake protection and classification grants, recreational boating aids and boating safety, self-help citizen lake monitoring, shoreland and water regulation and zoning, and wetland and watershed management.

Three groups form the core of this partnership. The Department of Natural Resources supplies technical and financial assistance and regulatory authority. The University of Wisconsin Extension builds linkages between stakeholders and provides educational materials and programs. The Wisconsin Association of Lakes (WAL) provides a united voice for lake organizations around the state and plays a vital role in all areas of partnership activities. Lake organizations, property owners, and local governments provide the political will and hard work to accomplish watershed restoration and lake protection.

The Lakes Partnership Program also acts as liaison with the U.S. Environmental Protection Agency (EPA) for the federal Clean Lake Grant Program. Cost-sharing grants support the planning and implementation of lake protection and restoration projects. Regional Water Team staffs apply to the EPA for grants on behalf of local project sponsors each year, and help administer successful grants.

Lake Planning and Protection Grants (NR 190 and NR 191)

Lake districts, lake associations, tribes, counties, cities, villages, or towns can apply for *Lake Planning Grants* to fund the collection of information on the quality of water in lakes, delineation of watershed boundaries, land use inventories, or studies of local zoning and shoreland regulations. Projects chosen may be awarded up to \$10,000 with a 25 percent local cost share. Lake Protection Grants fund implementation of lake protection and restoration projects. *Lake Protection Grants* provide 75 percent state cost-sharing assistance, up to \$200,000. Eligible projects include land acquisition, wetland restoration and local ordinance development to prevent lake ecosystem or water quality degradation. Grants of up to \$50,000 are also awarded for lakes classification and related ordinance development.

Dam and Floodplain Management

Dam Safety Program

Chapter 31 of Wisconsin's State Statutes was developed to ensure that dams are safely built, operated and maintained. In 1986, Administrative Code NR 333 was adopted to provide design and construction standards for large dams. The Water Management Engineer administers these programs in the Lower Chippewa Basin. Responsibilities include dam inspections to assure dam safety, plan approval of proposed repairs and modifications, oversight of dam construction, operation and maintenance, as well as removal.

Want to know more about dams and floodplains?

<http://www.dnr.state.wi.us/org/water/wm/dsfm/>
<http://www.ferc.fed.us/>

Since 1986, Chapter 31.19 requires the Department to inspect large dams on navigable waterways once every 10 years. Large dams are defined as having a structural height of over 6 feet and impounding more than 50 acre-feet or having a structural height of over 25 feet and impounding more than 15 acre-feet. Dams that are federally owned or regulated are exempt from state inspections [see 31.19(2)(b)]. Staffing shortages has caused this aspect of the program to be 50% below its target.

Hydropower Re-Licensing and Compliance Monitoring Program

Most dams in the United States that are used for energy production or "hydropower" are regulated by the Federal Energy Regulatory Commission (FERC) under the Federal Power Act. FERC is the primary regulatory agency responsible for issuing new licenses, monitoring compliance with existing licenses and conducting dam safety inspections on hydropower projects in the United States. Historically, hydropower licenses were primarily focused on maximizing hydropower generation. Over time, resource agencies and the general public became concerned that operating conditions under existing licenses were having adverse impacts on aquatic habitat and organisms and recreational use opportunities.

In 1986, Congress passed the Electric Consumers Protection Act (ECPA), requiring that the FERC consider power and non-power values and interests equally. As a result, FERC developed a detailed five-year consultation process between hydropower owners, resource agencies and the general public when existing facilities came up for re-licensing. Since then, the Department has been participating in licensing activities on all new and re-licensed projects.

Within the past few years many stakeholders have formed settlement groups to address the new regulatory requirements placed on hydropower operators and owners, resource agencies and the general public. This new settlement process is mainly directed at negotiating resolutions to licensing issues so that all affected parties concur with the terms and conditions of the new operational license. This process was recently completed on the lower Chippewa River and is currently underway on the lower Red Cedar River.

Dam Grant Program

Since the advent of the Dam Safety Inspection Program in 1986, funding for dam repairs and modifications has been available to eligible communities through a Dam Grant Program. Communities facing repair or modification of their dam can apply for partial coverage of the costs. Eligible costs are limited to 50% of the total project including engineering costs, up to a maximum state contribution of \$200,000. Some communities use this fund for removing their dam.

Floodplain Zoning Program

The Wisconsin Water Resources Act of 1965 directed the WDNR to develop statewide minimum standards for shoreland and floodplain areas. The goals of the floodplain management program are to prevent flooding and flood-blighted areas, to minimize the costs of flood control projects, reduce tax dollars spent on flood relief, and to protect life, health and property. Counties, cities and villages are required to administer floodplain zoning regulations, to insure that new development is protected from flooding. The Lower Chippewa River Basin has 45 counties, cities and villages that have identified floodplain areas.

Flood Hazard Mitigation Program

Many older structures that predate floodplain zoning regulations remain susceptible to floods. Flood Hazard Mitigation (FHM) is a voluntary program that assists communities in developing plans to reduce or eliminate future flood losses by removing floodplain structures, flood proofing and elevating others. Communities must have a FHM Plan to be eligible for future flood disaster aid. Following the 1993 Midwest Flood, \$10 million dollars became available to Wisconsin communities. A notable project included acquisition of 50 Mississippi River floodway properties in Pierce County. The City of Eau Claire and Eau Claire County used FHM funds to acquire many floodway and floodplain properties, some of which had received considerable damages during the 1993 floods.

Drinking Water and Groundwater

The Drinking Water and Groundwater Program enforces several state statutes and state administrative codes, many of which are mandated by the federal Safe Drinking Water Act (SDWA). The WDNR, DATCP, DOT and COM (Department of Commerce) share enforcement responsibilities for state groundwater standards.

Want to know more about drinking water and groundwater?

<http://www.dnr.state.wi.us/org/water/dwg/>

Private Water Supply

The WDNR regulates the construction of private water wells and pump installations, ranging from low capacity wells serving private homes and small businesses to high capacity wells for crop irrigation or serving large industries. Well drillers and pump installers are licensed, and WDNR field staffs perform inspections to insure that they comply with DNR codes. In most cases, qualified professionals do private well water testing. Well water complaints may be investigated by DNR if there is evidence to suggest health-threatening contamination. If

contaminants exceed state groundwater standards, a health advisory letter to the well owner will recommend actions to obtain a safe source of drinking water. Contaminants may include pesticides, solvents, petroleum products and health threatening heavy metals such as arsenic.

Wisconsin's *Well Compensation Grant Program* provides financial assistance to replace or treat private wells that deliver water that contains chemical concentrations exceeding state or federal drinking water standards. There are certain homeowner eligibility requirements. Within the basin about three to five individuals are assisted annually through this program (Tim Hanson, pers. comm.). In response to known areas of groundwater contamination, the DNR establishes "special well construction or advisory areas" to alert and advise land owners and well drillers that they need to take special precautions when drilling a well.

Public Water Supply

The DNR regulates the construction and operation of wells and water systems for municipalities, sanitary districts and smaller communities such as mobile home parks and residential subdivisions. Schools, restaurants, daycare centers, factories, motels, churches, parks and wayside wells are also regulated by the DNR. These systems are inspected and sampled regularly for compliance with safe drinking water standards, for contaminants such as fecal coliform bacteria, nitrates, lead, copper, volatile organic chemicals, pesticides, industrial chemicals and radium. When a water supply system fails to meet compliance standards, the public is informed, and the problem is corrected. The State Drinking Water Revolving Loan Fund assists communities with construction of improvements to eliminate drinking water contamination. The City of Chippewa Falls was recently awarded a loan from this fund to help pay for a nitrate removal treatment system.

Waterways and Wetlands

The Waterways and Wetlands Permit and Regulatory Program helps protect your water rights as well as public safety by ensuring adequate planning and design of projects

affecting navigable public waters, shorelands and wetlands. Permit and plan approvals may be required for individual water projects. Site visits with landowners, in conjunction with local and federal administrators if appropriate, are arranged to learn site suitability for the proposed project, identify environmental impacts, and help the landowner modify the proposal if needed. Striking a balance between landowner needs and desires, and protecting public resources is one of the greatest challenges to water regulation staff.

Department staff assists with a number of wetlands and shoreland management and protection programs, in cooperation with an array of state, federal and local agencies. In past decades, wetlands were often viewed as wastelands, useful only when drained or filled. In more recent times, wetland benefits to people and the natural world have become widely recognized. They can store and slow runoff waters and gradually release them, thereby reducing flood peaks. In some hydrologic settings groundwater discharging through wetlands can be important for stabilizing stream flows, especially during dry months. Wetlands can store or filter nutrients, such as phosphorus and nitrogen, providing water quality benefits. Wetland vegetation along a shoreline can hold soil particles and prevent shoreline erosion by reducing wave energy. Wetlands provide food and habitat for a wide variety of organisms, including fish, amphibians, reptiles, birds and insects. Many wildlife species depend upon wetlands habitat for part or all of their life cycle, for breeding, resting, escape cover, nesting and travel corridors. In recognition of these benefits, staffs provide technical assistance to landowners and cooperating agencies for wetland restoration projects.

As part of the state's effort to protect wetlands, the legislature established the Wisconsin Wetland Inventory in 1978. The WDNR was directed to inventory (map) Wisconsin's wetlands to obtain an accurate assessment of wetlands in the state. The initial inventory was completed in 1984.

Want to know more about waterways and wetlands?

<http://www.dnr.state.wi.us/org/water/fhp/>

<http://www.dnr.state.wi.us/org/water/fhp/waterway/index.htm>

<http://www.dnr.state.wi.us/org/water/wm/dsfm/>

<http://intranet.dnr.state.wi.us/int/water/fhp/wms/>

Regulatory Programs

Department of Natural Resources staff assist with or manage a number of regulatory programs on the local, state and federal levels. Under Chapters 30 and 31 of Wisconsin Statutes, the Department reviews and processes permits for activities that involve physical alterations to surface waters. Examples include construction of dams and bridges, dredging of lake and riverbeds, reconstruction of boathouses, piers and fish cribs, stream realignments, rip-rap along shorelines and activities that change water level or flow.

The U.S. Army Corps of Engineers (COE) reviews and processes permit applications for projects located in navigable waters and wetlands under the Federal Clean Water Act. The state also approves projects in non-navigable wetlands, using a procedure called water quality certification. Water quality certification assures that water quality standards that have been established for public waters will not be violated.

State law requires counties, cities and villages to adopt and administer local regulations to control development along shorelands and in floodplains. The Department provides guidance for these programs. Activities such as flooding, draining, ditching, tiling, excavating, building and road construction are regulated in wetlands. Regulations in shoreland areas govern lot size, setbacks of buildings and structures from navigable waters, tree and shrub cutting, location and size of wastewater disposal systems, filling, and the construction of structures in floodplains. Often these regulatory programs are key tools for protection of our surface water resources.

Management Programs

The Department assists with wetlands and shoreland management and protection programs, in cooperation with an array of state, federal and local agencies. Farmlands adjacent to streams, lakes, ponds, sinkholes or wetlands that meet certain crop history requirements may be eligible under the Conservation Reserve Program (CRP) for cost sharing and rental payments to establish riparian buffers and filter strips.

The Wetlands Reserve Program (WRP) protects, restores and enhances wetlands and associated uplands through restoration cost-share agreements and easement acquisition. Eligible lands must be restorable and suitable for wildlife benefits, and may include wetlands cleared or drained for farming, lands adjacent to wetlands that contribute to wetland functions and values, drained wooded wetlands and habitat corridors that connect protected wetlands. The CRP and WRP programs are administered through the Consolidated Farm Services Agency (CFSA), with technical assistance from the county offices of the Natural Resources Conservation Service (NRCS) and the WDNR.

Other programs provide a variety of cost-share opportunities to restore habitat that can benefit wetlands, shorelands and other land and water resources. Examples include the Stewardship Incentive Program (SIP), Forest Incentives Program (FIP), Wildlife Habitat Incentive Program (WHIP), and the Wisconsin Forest Landowner Grant Program (WFLGP). Many state and federal conservation agencies as well as public and private-sector partners cooperate in the administration of these programs.

Runoff Management

The Department's Runoff Management Program protects Wisconsin's surface and groundwater resources from pollutants that are carried in runoff. Nonpoint source pollution occurs when rainfall, snowmelt, or irrigation water runs over land or

through the ground, picks up pollutants, and deposits them into rivers, lakes, or ground water. Runoff pollution also causes adverse changes to the vegetation, shape, and flow of streams and other aquatic systems. Agriculture, forestry, grazing, septic systems, recreational boating, urban runoff, construction, physical changes to stream channels, and habitat degradation are potential sources of pollution.

Want to know more about runoff management?

<http://www.dnr.state.wi.us/org/water/wm/index.htm>

<http://www.epa.gov/owow/nps/index.html>

<http://www.cwp.org/>

Nonpoint Source Water Pollution Abatement Program

Wisconsin's Nonpoint Source Water Pollution Abatement Program provides grants to local governmental units, in watersheds selected for priority watershed projects. Grants can reimburse a portion of the cost of installing best management practices, which reduce the likelihood of pollutants being carried to streams, lakes or groundwater via runoff. Examples of agricultural best management practices (BMPs) include reduced tillage methods, nutrient and pesticide management, vegetated filter strips, streambank repair, and fencing to restrict cattle access. For existing urban areas best management practices may include development of construction site erosion control and stormwater management ordinances, and stormwater detention and infiltration facilities. Critical sites are those sites that are significant sources of NPS pollution. Under NR 120, BMPs are required at critical sites.

In 1978 the first priority watershed project was selected in Wisconsin and over the years the program evolved as a nationally recognized watershed based approach. Funding considerations and changes to Wisconsin's law have now changed the program to focus on smaller drainage areas. Grants are targeted towards degraded waters with funding assistance available for constructing and installing BMPs. Proposed new changes to Wisconsin law and administrative rules are now aimed at developing agricultural and urban standards of performance designed to help achieve water quality standards in these areas. The new standards will be applied statewide, but only when cost sharing dollars are available to assist landowners with the cost of compliance. Final rule revisions are expected by 2002.

The Priority Watershed (PWS) Program is a joint effort of the WDNR, Department of Agriculture, Trade and Consumer Protection (DATCP), the University of Wisconsin Extension (UWEX), counties (usually through their Land Conservation Departments), municipalities, and Lake Districts.

Want to know more about the Priority Watershed Program?
<http://www.dnr.state.wi.us/org/water/wm/nps/npsprogram.html>

In addition to the PWS Program, grants are available through the state for Targeted Runoff Management (TRM) Projects. Local units of government can apply for funds to undertake construction or implementation of best management practices to control nonpoint source pollution. These projects are generally short-term, and must be completed within one year.

Wastewater and Stormwater

Want to know more about wastewater and stormwater?
<http://www.dnr.state.wi.us/org/water/wm/ww/index.htm>
<http://www.dnr.state.wi.us/org/water/wm/glwsp/ssaplan/controls.htm>

Municipal and Industrial Facilities

The WDNR regulates municipal and industrial facilities discharging wastewater to surface water or groundwater through the Wisconsin Pollutant Discharge Elimination System (WPDES) Permit Program. Specific permits are written for many facilities, which regulate activities such as effluent discharges to surface and groundwater, biosolids disposal practices, facility upgrades, pretreatment facilities, toxic discharges, and antidegradation and compliance maintenance plans. General permits are also issued for smaller activities like pit or trench dewatering, vehicle washing, noncontact cooling water, swimming pool drainage, asphalt and concrete operations.

The state also requires all manufacturing industries, as well as transportation facilities that conduct vehicle maintenance, landfills, steam electric generating plants, auto salvage yards, and other specific operations to obtain a WPDES Stormwater Permit. These facilities must prepare and implement stormwater pollution prevention plans, which include good housekeeping practices to reduce the exposure of industrial materials to stormwater. This requirement is part of the existing federal stormwater permit program.

Waste Disposal

Municipal biosolids are the residual of the wastewater treatment process. Biosolids

Want to know more about waste disposal?
<http://www.dnr.state.wi.us/org/gmu/groundwaterfiles/wastedis.html>

generally contain substantial levels of nitrogen, phosphorus, potassium and other nutrients. Biosolids treatment, quality, final disposition and general management is regulated by Ch. NR 204, Wis. Adm. Code, which was revised effective January 1, 1996 to incorporate federal standards published in 1993. Wisconsin has been a national leader since the middle 1970s in recycling biosolids as fertilizer through application on agricultural land.

Every application site must be approved prior to use. Approval is based upon many criteria, including site characteristics, slopes, setback from surface waters, residences, wells and public areas, depth to high groundwater or bedrock and soil permeability. In addition, biosolids application cannot exceed the nutrient needs of the crop to be grown. To minimize the amount of phosphorus in biosolids that reaches surface waters, special attention is given to ensure that biosolids remains on land. Land application of biosolids is prohibited on frozen or snow-covered land.

Unlike biosolids, septage is either the solids or wastewater generated by private on-site wastewater systems and treatment. Septage can be processed through sewage treatment plants or is directly land applied on approved sites. Site approval is based on the same criteria as that for municipal sludge.

In unsewered areas, homeowners rely on septic tanks, mound systems or holding tanks to dispose of domestic wastewater. Holding tanks are very expensive to operate due to pumping frequency and high pumping costs. Proper installation and routine pumping is critical for minimizing impacts on groundwater.

WPDES permits may be site-specific or general. Specific permits are issued to individual facilities. General permits are issued statewide to cover facilities with similar discharges. The DNR makes a determination on whether a particular facility is appropriately covered by a general or specific permit. Examples of operations that would require general permits include those that discharge non-contact cooling waters, swimming pool and spa water, potable water treatment and conditioning, discharge of treated groundwater, landspreading of liquid industrial waste, biosolids and food processing by-products.

Municipal Stormwater Program

Wisconsin's Stormwater Program seeks to reduce the water quality problems that come from rainfall and snowmelt runoff in many developed areas. Roof tops and pavements collect and channel stormwater, carrying it to rivers, streams and lakes. Urban stormwater can be laden with sediment, chloride, pesticides, nutrients, bacteria, heavy metals and other toxic materials. Studies conducted in Madison, Milwaukee and Eau Claire documented levels of metals, suspended solids and nutrients in stormwater effluent that exceed some in-stream water quality standards. Stormwater flows quickly over hard surfaces, and can cause flooding, "flashy" high flows and the loss of "base" flow during dry periods.

The U.S Environmental Protection Agency (EPA) now requires cities with populations of more than 100,000 to adopt and implement a storm water management plan. Wisconsin has extended this requirement to cities with populations larger than 50,000 that are also located within a Nonpoint Source Priority Watershed project. The city of Eau Claire (also Altoona, Chippewa Falls and the Town of Washington) (Per D. Simonson) falls into this category due to the Lowes Creek Priority Watershed project.

Large Construction Sites Stormwater and Erosion Control Program

Construction sites that disturb more than five acres of soil are also required to obtain a construction site erosion control permit that includes implementation of a storm water management plan, to minimize the amount of runoff and sediment that leaves the site. Examples of construction sites that require a stormwater permit from the WDNR include subdivisions, parking lots and athletic fields that exceed five acres in size. The Department of Commerce handles stormwater permits for sites where public, industrial and commercial buildings are a part of the project. (per E. Rortvedt) Occasionally, these projects also require DNR permits for disturbing land near a waterbody (regulated under Chapter 30). In those cases, Department of Commerce sometimes refers all regulatory authority to the DNR to decrease response time and reduce overlap.

Manure Management Program

Wisconsin's Manure Management program requires very large animal operations or other operations with manure runoff, to control their polluted runoff. Handling, storage and disposal of animal manure is a widespread and common activity in Western Wisconsin. By requiring operations exceeding one thousand animal units (equivalent to 700 cows) to obtain a WPDES animal waste permit, the department can reduce the water quality impacts from runoff of manure, which contains pollutants like bacteria, oxygen demanding organic material, and nutrients. As the agricultural trend of farm abandonment and consolidation into larger farms continues, more permits will be developed to address the need for runoff management. Traditional conservation practices will be combined with nutrient management to control manure runoff from livestock yards as well as from croplands that receive landspread manure.

For both large and small livestock operations, new agricultural performance standards will prohibit direct runoff from a feedlot or stored manure from entering waters of the State. Of the 45,000 livestock operations in Wisconsin most will not require permits for the handling, storage or spreading of manure. The new agricultural performance standards along with voluntary management practices will form the basis for Wisconsin's Manure Management program for the majority of livestock farms. Newly permitted operations are required to develop and implement nutrient management plans that will meet State standards and include a manure management plan.

Sewer Service Area Plans

Sewer service area planning is required by the Federal Clean Water Act for communities within designated planning areas, or with populations larger than 10,000. Through this process, communities develop 20-year plans to guide placement of city sewer lines. The plan delineates lands that are most suitable for development and that can be serviced by a public wastewater collection and treatment system. To protect water resources, the plan designates "environmentally sensitive areas" where new sewered development is prohibited. If these protected areas were to be developed, bacteria, sediment, and other pollutants could find an easy route to lakes, streams, and groundwater. Regional staffs assist communities in developing sewer service area plans and identifying the environmentally sensitive areas, such as wetlands, shorelands, floodways, steep slopes, and highly erodible soils. These plans should be reviewed, and updated if necessary, every five years.

Land Management Programs

Forestry

The DNR Forestry program manages and protects the forest resources. Forestland and urban trees significantly contribute to our quality of life, and are used by many

citizens in the Basin. The Department's Strategic Plan for Forestry identifies important forestry issues, and guides programmatic efforts towards addressing these issues through integrated planning and management. The Division of Forestry recently completed an assessment of the Wisconsin forests (Wisconsin Forests at the Millennium-An Assessment November 2000) and will begin work on development of a Statewide Forest Plan.

Want to know more about forestry programs?

<http://www.dnr.state.wi.us/org/land/forestry/>

<http://www.wisconsincountyforests.com/index.html>

<http://www.dnr.state.wi.us/org/land/forestry/usesof/bmp/bmptoc.htm>

Forest Ecology and Silviculture programs focus on developing a better understanding of forestlands through inventory, assessment and classification efforts. This information assists in development of land management plans. The Bureau of Endangered Resources staff contributes by identifying and guiding management of unique and rare forest resources. All Department foresters assist in implementing Forestry Best Management Practices, to help reduce erosion and water pollution from forest harvest activities. Educating the public about forestry resources is another important component of the work effort of this program.

The County Forest program is a long-standing county/state partnership that includes the Chippewa County and Eau Claire County Forests. The Department provides technical assistance to county forests, and interest-free loans and grants to county forest programs. Regional staff approves annual work plans for each county, review ten-year forest plans, and approve timber sales.

Regional DNR foresters assist private, non-industrial landowners to better care for their forestlands. They encourage landowners to manage for the sustainable production, enhancement and protection of forest resources. The objectives of individual landowners and the short and long-term regional forestry management goals are considered in developing stewardship plans.

Department foresters work with private cooperating foresters, agencies and groups to implement forestry practices. They provide education programs for landowners, resource managers, local governments and the general public. They also administer the forest tax laws and the federal cost-sharing programs that help landowners invest in long-term forestry practices. Landowners may apply for Managed Forest Law designation of their private woodlands. The program allows them to receive tax benefits and they must adhere to a forest stewardship plan that is developed for their woodland.

The Urban and Community Forestry Assistance Program enables and encourages sound management of Wisconsin's urban forest ecosystems. The Urban Forester works with communities of all sizes, "green" industry professionals, businesses, schools, non-profit organizations and the public to provide technical assistance, education and training and resource development.

A Regional Forest Pest Specialist assists in minimizing insect and disease damage to forestland. Annual insect and disease surveys are conducted on state, private and county forestland and pest management recommendations are developed for DNR Property Managers. The Regional Forest Pest Specialist also provides a wide variety of programs and information on forest pests and discusses pest management principles and options with DNR staff, industrial and consulting foresters and private woodland owners.

Forest Fire Management

The Fire Management Program operates on lands outside of cities and incorporated villages. Two Ranger Station facilities are located at Cornell and Fairchild. In 2001 the Fairchild station will be replaced in Augusta to be strategically located to meet the forest fire risks associated with urban development. Fire staff work very closely with emergency fire wardens, other regional employees, federal and state agencies, fire departments, town and county officials and citizens.

Responsibilities of the Fire Management Program include fire prevention, detection, pre-suppression and suppression. Educational programs for children and adult groups promote fire prevention. Signs and permits are also used to gain cooperation in prevention efforts.

Six lookout towers, aircraft and public reporting are all used to detect forest fires as quickly as possible. A highly effective fire management staff and infrastructure work with all cooperators and partners to maximize fire management program effectiveness. When fires occur, an Incident Command System (ICS) is utilized to organize all fire suppression forces on each fire, to keep fires as small as possible in a cost-effective manner. The forest law enforcement program contributes to the Region's successful forest fire management.

Wildlife

The Bureau of Wildlife Management oversees a complex web of programs that incorporate state, federal and local initiatives primarily directed toward wildlife habitat

Want to know more about wildlife programs?
<http://www.dnr.state.wi.us/org/land/wildlife/>
<http://www.dnr.state.wi.us/org/land/wildlife/links.html>

management and enhancement. Programs include land acquisition, development and maintenance of State Wildlife Areas, and other wild land programs such as State Natural Areas. The Lower Chippewa River Basin has a very active Private Lands component that is integrally connected to county services and federal agencies.

Department wildlife biologists work with local government staff to integrate wildlife management with county-based agricultural services provided by the Farm Service Agency (FSA) and the Natural Resources Conservation Service (NRCS). The Regional Private Lands Biologist provides landowners with technical advice and information and education on wildlife and habitat management. Some state and federal cost share programs provide incentives to improve habitat on privately owned lands. For instance, wildlife biologists solicit funding for wetland restoration on private, state and federal lands.

Wildlife Management staffs conduct wildlife population and habitat surveys, prepare property needs analyses, develop area wildlife management plans and collaborate with other DNR planning efforts such as Park or Fishery Area Master Plans to assure sound habitat management. A landscape scale Habitat Restoration Area was recently established to restore a viable grassland community in a portion of the Basin that was historically prairie. Eventually it is hoped to establish 20,000 acres of permanent grassland with this project. A Citizens Advisory Committee is involved to help establish acquisition guidelines.

Wildlife biologists prepare annual game harvest recommendations for deer, bear, turkey and Canada geese. They evaluate and update hunting, trapping and property management regulations, administer permits for state licensed game farms, shooting preserves, fur farms, dog training, and wildlife rehabilitation facilities. Wildlife Management oversees many educational programs to encourage responsible land management techniques and practices.

Endangered Resources

Want to know more about endangered resources?

<http://www.dnr.state.wi.us/org/land/er/>

Endangered Resources staff (Central Office)

provide the Lower Chippewa Basin with expertise and advice on endangered resources. They manage the Natural Heritage Inventory Program (NHI), which is used to determine the existence and location of native plant and animal communities and of Endangered or Threatened Species of Special Concern. The NHI helps identify and prioritize areas suitable for State Natural Area (SNA) designation, provides information needed for feasibility studies and master plans, and maintains the list of endangered and threatened species. A landscape scale Natural Area was recently approved to protect some key areas of the Lower Chippewa for the endangered resources present (see Lower Chippewa State Natural Area in Chapter 1).

Species Recovery and Management Planning and Implementation are specifically required under the State Endangered Species Law. Examples include the Timber Wolf Management Plan, Timber Rattlesnake Management Plan and the Karner Blue Butterfly Habitat Conservation Plan. Endangered Resources staffs also collaborate with basin staff in planning and assessing projects and activities to determine effects on rare species or communities, and to assist in finding opportunities for integrated ecosystem management.

A permit for the incidental take of an Endangered or Threatened species is required under the State Endangered Species Law. The Endangered Resources Program oversees the permit process, reviews applications and makes permit decisions.

State Parks and Trails

The State Parks and Trails Program protects unique and significant natural resources and recreation opportunities. Management strives to preserve these diverse ecosystems while, at the same time, providing

Want to know more about state lands?

<http://www.dnr.state.wi.us/org/land/parks/>

<http://www.dnr.state.wi.us/org/land/er/snass.htm>

<http://www.dnr.state.wi.us/org/at/et/geo/iceage/index.htm#>

compatible recreation opportunities. The Basin's State Parks, Trails, Recreation Areas and other lands offer scenic beauty, educational and recreational opportunities for those seeking a peaceful outdoor experience.

State Parks provide areas for public recreation and education in conservation and nature study. Hiking, camping, picnicking, swimming, fishing, boating, cross country skiing and bird watching are common activities. An area may qualify to become a state park by reason of its scenery, its plants and wildlife, or its historical, archaeological or geological qualities.

State Trails provide areas for public recreation and transportation. State Trails can be classified as either State Parks or State Recreation Areas. Most State Trails are bicycle and hiking trails. Types of use are managed to avoid conflicts and provide a quality recreation experience. An area may qualify to become a state trail by reason of its scenery, its plants and wildlife, transportation capability or its historical, archaeological or geological qualities.

State Recreation Area lands and waters are environmentally adaptable to multiple recreational uses or preservation. Like State Parks, these areas provide outdoor-based public recreation, conservation education and nature study. Types of use are managed to avoid conflicts and provide a quality recreation experience.

State Natural Areas generally have escaped environmental disturbance so that recovery of natural conditions can occur. Natural Areas have educational or scientific value, or are important as a reservoir of the state's genetic or biologic diversity. They provide a reserve for native biotic communities and frequently provide habitat for endangered threatened or critical species. Natural Areas also may include significant geological or archaeological features. Basin park system personnel cooperate with the Bureau of Endangered Resources in delivering awareness, education and management guidance for these unique and rare resources.

The Ice Age National Scientific Reserve is administered by the state in cooperation with the National Park Service. These areas preserve significant geological features left by the last glacier that shaped Wisconsin's landscape. They have educational and scientific value and provide outdoor based recreation. The Ice Age National Scenic Trail and Chippewa Moraine Ice Age Unit are examples of this program within the Lower Chippewa Basin.

Want to know more about the Ice Age Trail?
<http://www.iceagetrail.org/>

Partnerships

Many county and municipal departments, conservation, civic, and youth organizations and private volunteers participate in the operations, development and management of the State Parks and Trails program. The Department cooperates with the *Ice Age Park and Trail Foundation* in administering the Ice Age National Scenic Trail program. Friends Groups are private, not-for-profit organizations that support recreation, education and interpretation programs. In the Basin there are active Friends Groups at Lake Wissota State Park and Chippewa River, Red Cedar and Old Abe State Trails. In addition there is a statewide *Friends of Wisconsin State Parks*.

Facilities and Lands

The Facilities and Lands program supports the basin with a Land Services Team within the Region. They provide support for land acquisition, facility design and planning services. Engineering staffs work with property managers to complete the goals of the development program. They design and write contracts for DNR projects including boat landings, bicycle trails and other construction jobs. Land Services also assists with feasibility studies to establish new lands projects, master planning, site planning and design.

Want to know more about facilities and lands?
<http://www.dnr.state.wi.us/org/land/facilities/>

Land Acquisition

The Department is given the authority to acquire land for various conservation projects through legislation and state statutes. Within approved project areas, property managers contact landowners that are willing to sell their

property. Department real estate agents work with DNR managers to negotiate the legal description and land rights to be purchased with the landowner. They arrange for appraisals and complete the land sale transaction process once an offer is accepted by a landowner.