

Chapter 4. Agricultural Nonpoint Nutrients

Element 4. Agricultural Areas

4.1 EPA and Gulf Hypoxia Task Force Expectations

Quoted from EPA's recommended elements:

“In partnership with Federal and State Agricultural partners, NGOs, private sector partners, landowners, and other stakeholders, develop watershed-scale plans that target the most effective practices where they are needed most. Look for opportunities to include innovative approaches, such as targeted stewardship incentives, certainty agreements, and N & P markets, to accelerate adoption of agricultural conservation practices. Also, incorporate lessons learned from other successful agricultural initiatives in other parts of the country.”

4.2 Wisconsin's Approach

For more than 30 years, an array of governmental and nongovernmental partners in Wisconsin have cooperated to implement a suite of federal, state, and local agricultural nonpoint source programs to control nutrients, sediments, and other pollutants. Collectively, these programs operate statewide using a blend of education, technical assistance, financial assistance, and compliance. Coordination occurs through a number of committees, forums, and both formal and informal working arrangements. Wisconsin's long history in this area includes many innovations, including the former Priority Watershed Program, rules specifying agricultural performance standards and prohibitions, and new approaches currently underway (described in Chapter 5 of this strategy) for reducing phosphorus through pollutant trading and the watershed adaptive management option. An expanded discussion of Wisconsin's approach including partners, statutory and administrative authority, planning framework, and implementation programs can be found in Wisconsin's Nonpoint Source Program Management Plan (<http://dnr.wi.gov/topic/nonpoint/aboutnpsprogram.html>). This chapter outlines some of Wisconsin's approach for agricultural areas by describing the agricultural performance standards and prohibitions and highlighting several agency programs and coordination forums.

4.2.1 Agricultural Performance Standards and Prohibitions

Wisconsin's agricultural performance standards and prohibitions identify requirements to control runoff from agricultural fields, pastures, and livestock facilities. All farmers in Wisconsin must comply with the requirements if cost-sharing is made available. As noted in Chapter 3, CAFOs must also follow additional requirements outlined in WPDES permits. Farmers must demonstrate compliance to participate in some state and local programs (such as the Wisconsin's Farmland Preservation Tax Credit) or to obtain local and state permits (e.g., for livestock siting and manure storage facilities). A variety of educational, technical assistance, and financial assistance programs are available to help farmers comply with the standards and prohibitions. Several are described in more detail later in this chapter. A partial list includes:

- Targeted Runoff Management Grants – DNR

- Urban Runoff Management Grants – DNR
- Notice of Discharge Grants – DNR
- Managed Forest Program – DNR
- Clean Water Fund loans and grants – DNR
- Soil and Water Management Grants – DATCP
- Clean Sweep
- Farmer Nutrient Management Plan training – UWEX
- Environmental Quality Incentives Program (EQIP) – NRCS
- Conservation Stewardship Program (CSP) – NRCS
- County grants and technical assistance

Table 4.1 Selected Federal and State Funding Programs

Program	Agency	2013 Funding (\$ million)
Environmental Quality Incentives Program	NRCS – USDA	29.0
Conservation Stewardship Program (2012)	NRCS -- USDA	3.1
Funding to Counties -- staffing	DATCP	8.6
Funding to Counties – cost sharing	DATCP	5.8
Targeted Runoff Management	DNR	4.8
Total for listed programs		51.83

Additional resources, including federal programs, are identified in the Wisconsin’s Nonpoint Source Program Management Plan (<http://dnr.wi.gov/topic/nonpoint/aboutnpsprogram.html>).

A brief description of the agricultural performance standards and manure management prohibitions from ch. NR 151, Wis. Adm. Code, is included here. The tillage setback and PI performance measure noted below became effective in 2011. The full rule can be found at: <http://legis.wisconsin.gov/rsb/code/nr/nr151.pdf>.

Wisconsin’s Agricultural Performance Standards and Prohibitions:

- Tillage setback: A setback of 5 feet from the top of a channel of a waterbody for the purpose of maintaining stream bank integrity and avoiding soil deposits into state waters. Tillage setbacks greater than 5 feet but no more than 20 feet may be required if necessary to meet the standard. Harvesting of self-sustaining vegetation within the tillage setback is allowed.
- Phosphorus Index (PI): A limit on the amount of phosphorus that may run off croplands as measured by a phosphorus index with a maximum of 6, averaged over an eight-year accounting period, and a PI cap of 12 for any individual year.
- Process wastewater handling: a prohibition against significant discharge of process wastewater from milk houses, feedlots, and other similar sources.
- Meeting TMDLs: A standard that requires crop and livestock producers to reduce discharges if necessary to meet a load allocation specified in an approved Total Maximum Daily Load (TMDL). Producers must implement targeted performance standards specified for the TMDL area using best management practices specified in ch. ATCP 50, Wis. Adm. Code. If a more stringent or additional performance standard is necessary, it must be promulgated by rule before compliance is required.

- Sheet, rill and wind erosion: All cropped fields shall meet the tolerable (T) soil erosion rate established for that soil. This provision also applies to pasture lands.
- Manure storage facilities: All new, substantially altered, or abandoned manure storage facilities shall be constructed, maintained or abandoned in accordance with accepted standards, which includes a new margin of safety. Failing and leaking existing facilities which pose an imminent threat to public health or fish and aquatic life or violate groundwater standards shall be upgraded or replaced.
- Clean water diversions: Runoff from agricultural buildings and fields shall be diverted away from contacting feedlots, manure storage areas and barnyards located within water quality management areas (300 feet from a stream or 1,000 feet from a lake or areas susceptible to groundwater contamination).
- Nutrient management: Agricultural operations applying nutrients to agricultural fields shall do so according to a nutrient management plan. This standard does not apply to applications of industrial waste, municipal sludge or septage regulated under other DNR programs provided the material is not commingled with manure prior to application.
- Manure management prohibitions include: no overflow of manure storage facilities, no unconfined manure piles in a water quality management area, no direct runoff from feedlots or stored manure into state waters, no unlimited livestock access to waters of the state in locations where high concentrations of animals prevent the maintenance of adequate or self-sustaining sod cover.

4.2.2 Best Management Practices for Nonpoint Source Pollution Control

Wisconsin has identified best management practices (BMPs) that may be used to address agricultural, urban, and other categories or sources of NPS pollution and to meet the statewide performance standards and prohibitions. BMPs are enumerated in chs. NR 154 and ATCP 50, Wis. Adm. Code. See Table 4.2. Other practices may be approved when determined necessary to meet water quality objectives.

Table 4.2 Best Management Practices Outlined in ch. NR 154 and ch. ATCP 50, Wis. Adm. Code.

Legal Authority		BMP	Primary Pollutant(s) Addressed
NR 154.04	ATCP 50.62	Manure storage systems	Nutrients
NR 154.04	ATCP 50.63	Manure storage systems closure	Nutrients
NR 154.04	ATCP 50.64	Barnyard runoff control systems	Nutrients
NR 154.04	ATCP 50.65	Access roads and cattle crossings	Sediment, Nutrients
NR 154.04	ATCP 50.66	Animal trails and walkways	Sediment, Nutrients
NR 154.04	ATCP 50.67	Contour farming	Sediment, Nutrients
NR 154.04	ATCP 50.68	Cover and green manure crop	Sediment, Nutrients
NR 154.04	ATCP 50.69	Critical area stabilization	Sediment, Nutrients
NR 154.04	ATCP 50.70	Diversions	Sediment, Nutrients
NR 154.04	ATCP 50.71	Field windbreaks	Sediment, Nutrients
NR 154.04	ATCP 50.72	Filter strips	Sediment, Nutrients
NR 154.04	ATCP 50.73	Grade stabilization	Sediment, Nutrients
NR 154.04	ATCP 50.74	Heavy use area protection	Sediment, Nutrients
NR 154.04	N/A	Lake sediment treatment	Sediment, Nutrients
NR 154.04	ATCP 50.75	Livestock fencing	Sediment, Nutrients
NR 154.04	ATCP 50.76	Livestock watering systems	Sediment, Nutrients
NR 154.04	ATCP 50.77	Milking center waste control systems	Nutrients
NR 154.04	ATCP 50.78	Nutrient management	Sediment, Nutrients
NR 154.04	ATCP 50.79	Pesticide management	Pesticides

Legal Authority		BMP	Primary Pollutant(s) Addressed
NR 154.04	ATCP 50.80	Prescribed grazing	Sediment, Nutrients
NR 154.04	ATCP 50.81	Relocating or abandoning animal feeding operations	Sediment, Nutrients
NR 154.04	ATCP 50.82	Reside management	Sediment, Nutrients
NR 154.04	ATCP 50.83	Riparian buffers	Sediment, Nutrients
NR 154.04	ATCP 50.84	Roofs for animal lot and manure storage structures	Nutrients
NR 154.04	ATCP 50.85	Roof runoff systems	Nutrients
NR 154.04	ATCP 50.86	Sediment basins	Sediment, Nutrients
NR 154.04	N/A	Shoreline habitat restoration for developed areas	Sediment, Nutrients
NR 154.04	ATCP 50.87	Sinkhole treatment	Nutrients
NR 154.04	ATCP 50.88	Streambank and shoreline protection	Sediment, Nutrients
NR 154.04	ATCP 50.89	Strip-cropping	Sediment, Nutrients
NR 154.04	ATCP 50.90	Subsurface drains	Sediment, Nutrients
NR 154.04	ATCP 50.91	Terrace systems	Sediment, Nutrients
NR 154.04	ATCP 50.92	Underground outlets	Sediment, Nutrients
NR 154.04	ATCP 50.93	Waste transfer systems	Nutrients
NR 154.04	ATCP 50.94	Wastewater treatment strips	Nutrients
NR 154.04	ATCP 50.95	Water and sediment control basins	Sediment, Nutrients
NR 154.04	ATCP 50.96	Waterway systems	Sediment, Nutrients
NR 154.04	ATCP 50.97	Well decommissioning	Nutrients
NR 154.04	ATCP 50.98	Wetland development	Sediment, Nutrients
NR 154.04	N/A	Urban best management practices	Sediment, Nutrients

Refer here for complete details about chapters NR154 and ATCP50:

(<http://legis.wisconsin.gov/rsb/code/nr/nr154.pdf>
<http://legis.wisconsin.gov/rsb/code/atcp/atcp050.pdf>)

4.2.3 Programs intended to control agricultural nitrogen and phosphorus

As noted, Wisconsin’s approach to reducing agricultural nonpoint source pollution includes many programs conducted by federal, state, and local governments, generally in cooperation with nongovernmental organizations. Many of the programs include connections to Wisconsin’s agricultural performance standards and prohibitions. Several key programs are described below. Additional programs and details are described in Chapter 4 of Wisconsin’s Nonpoint Source Program Management Plan (<http://dnr.wi.gov/topic/nonpoint/aboutnpsprogram.html>).

EPA Section 319 Grants (and TMDL implementation)

Federal funds provided to Wisconsin through EPA’s Section 319 program address agricultural watersheds through direct projects and through multiple programs. These include:

- DNR Targeted Runoff Management (TRM) grants. This program supports implementation of nutrient reduction practices in large and small watersheds of both TMDL and non-TMDL classification.
- DNR Lake Management grants. Qualified units of government are eligible for funding to collect and analyze information needed to protect and restore lakes and their watersheds, including nutrient reduction actions.
- Funds also support DNR and DATCP technical and administrative capacity to implement nonpoint source programs.

USDA-NRCS Environmental Quality Incentives Program (EQIP)

EQIP has been the core of NRCS's agricultural conservation practice incentives program since 1997. EQIP is predominantly a source of non-targeted funding that pays cost-sharing for numerous structural and non-structural nutrient and sediment reduction practices on cropland, farmsteads and stream-side sites.

Common practices funded for Wisconsin producers include grassed waterways, cover crops, nutrient management planning, contour farming and strip-cropping, stream bank management practices and manure storage structures. There are several dozen total practices. The EQIP program is a combination of technical and financial assistance in one program and is implemented by NRCS with support from county land conservation departments. For more information, see: <http://www.wi.nrcs.usda.gov/programs/eqip.html>.

NRCS Conservation Stewardship Program (CSP)

CSP was created by the 2002 Farm Bill as an alternative strategy to incentivize installation of conservation practices. For EQIP a resource concern (problem) must exist to be eligible for financial assistance. Under CSP a producer fills out a Conservation Management Tool to describe the nature of their farming operation. The tool rates the relative level of conservation protection existing on the farm and establishes an annual base level payment. Farmers accepted into the program are required to maintain their existing level of conservation protection over the 5-year contract period and must implement additional conservation activities as agreed. The annual payment is based on the initial level of conservation performance and the level of protection offered by the additional conservation activities. For more information see:

http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046181.pdf

NRCS – Great Lakes Restoration Initiative (GLRI) projects

Wisconsin NRCS participates in the GLRI, a multi-federal-agency effort to restore priority watersheds in the Great Lakes basin (Figure 4.1). Technical assistance is currently available to producers located in the Lower Fox, Manitowoc-Sheboygan, and Milwaukee watersheds to assist with conservation planning needs. Financial assistance through EQIP/GLRI is anticipated to be available in 2013 for implementation of select conservation practices. (for more information: <http://www.wi.nrcs.usda.gov/programs/eqip/GLRI/glri.html>)

NRCS – Mississippi River Basin Healthy Watersheds Initiative (MRBI) projects

To improve the health of the Mississippi River Basin, NRCS has established the Mississippi River Basin Healthy Watersheds Initiative (MRBI). Through this Initiative, NRCS and its partners help producers in selected watersheds in the Mississippi River Basin voluntarily implement conservation practices that avoid, control, and trap nutrient runoff; improve wildlife habitat; and maintain agricultural productivity.

Wisconsin NRCS currently has a MRBI-EQIP project in place in the Six-mile Creek watershed in Dane County (see <http://www.wi.nrcs.usda.gov/programs/mrbi.html>). This targeted technical and financial assistance program supports the Watershed Adaptive Management option process being led by numerous partners, including producers, Dane County Department of Land and Water Resources and Madison Metropolitan Sewerage District and its customers.

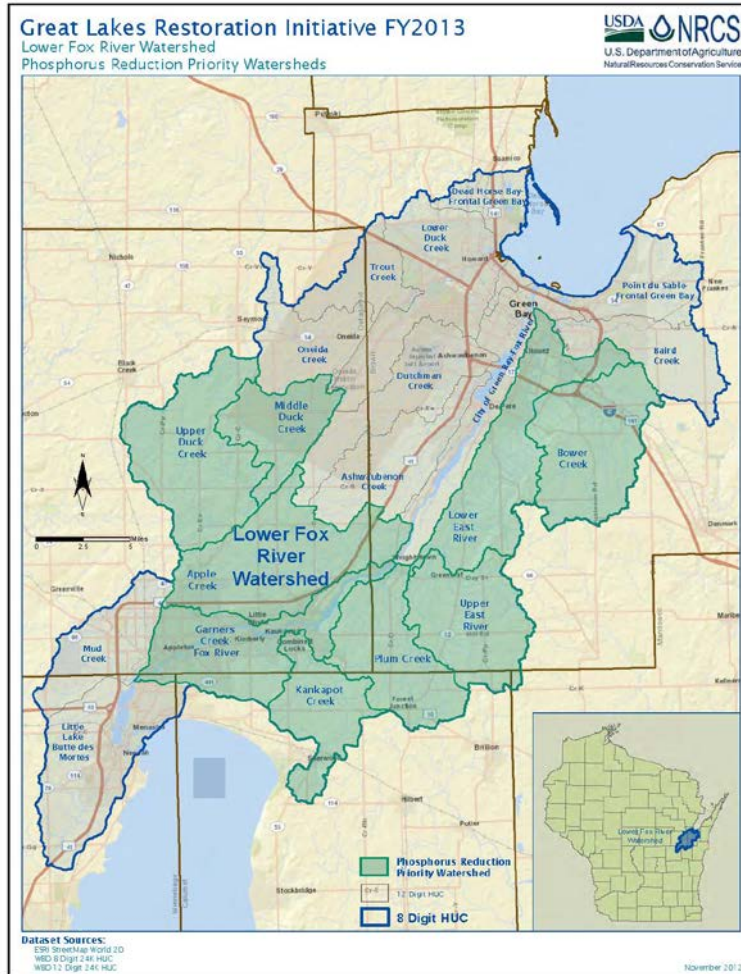


Figure 4.1 Map of NRCS-GLRI Project for the Lower Fox River Watershed

NRCS National Water Quality Initiative

This relatively new initiative by NRCS provided funding for nutrient and sediment reduction practices in watersheds selected with input from several state and local partners. These HUC 12 watersheds were selected in part because they contained water bodies included on Wisconsin's Impaired Waters list. NRCS field offices work in partnership with county land conservation departments to provide technical assistance to landowners. Funding is provided through EQIP.

Funding for FY 2012 was allocated in these locations (HUC 12 Watersheds):

- Lower Waumandee Creek – Buffalo County
- Ward Creek-Little Sugar River - Dane and Green Counties (additional funding provided by DNR through Gulf Hypoxia Project funding)
- Big Green Lake - Green Lake County

FY 2013 funding will continue in the Big Green Lake project and two additional watersheds.
<http://www.wi.nrcs.usda.gov/programs/eqip/nwqi.html>

USDA Farm Service Agency – Conservation Reserve Program (CRP)

Like many states, the CRP program in Wisconsin has played a significant role in trying to improve water quality by getting permanent cover on thousands of acres of highly erodible land. These grasslands reduce sediment and nutrient delivery to streams. In Wisconsin, this is especially true in the un-glaciated Driftless region within the Mississippi River Basin.

The program, administered by FSA, pays landowners annual rent in exchange for taking cropland out of production. NRCS, supported by county land conservation departments, provides technical assistance. Increasing market prices for commodities such as corn and soybeans—and the pressure that places on land rents—has created strong incentive for landowners to place these lands back into production once contracts expire. This trend may impact nutrient loading and related water quality conditions.

FSA also administers the Conservation Reserve Enhancement Program (CREP), through a federal-state-local partnership with NRCS, DATCP, DNR and participating county land conservation departments throughout much of the state. CREP provides an opportunity for Wisconsin landowners to voluntarily enroll agricultural lands into conservation practices, such as riparian buffers, filter strips, wetland restorations, waterways and establishment of native grasslands in the grassland project area. Wisconsin landowners have enrolled 44,000 acres of these practices in CREP with benefits for reduction of phosphorus, nitrogen, and sediment.
(http://datcp.wi.gov/Environment/Land_and_Water_Conservation/CREP/)

DATCP Farmland Preservation/Working Lands cross compliance requirements

The Wisconsin Working Lands Initiative, administered by DATCP, includes the Farmland Preservation Program, Agricultural Enterprise Area Program, and Purchase of Agricultural Conservation Easement Program. The Initiative seeks to preserve areas that are significant for current and future agricultural uses and requires cross-compliance with the ch. NR 151, Wis. Adm. Code, agricultural performance standards and prohibitions discussed above. For more information, visit (http://datcp.wi.gov/Environment/Working_Lands_Initiative/).

County Land and Water Resource Management Plan Implementation

The Land and Water Resource Management (LWRM) Planning Program, administered by DATCP, is an important vehicle for targeting and implementing conservation practices. The program requires that counties develop LWRM plans to conserve soil, water and other natural resources. The plans advance land and water conservation and attempt to reduce NPS pollution by:

- Inventorying water quality and soil erosion conditions in the county.
- Setting water quality goals, in consultation with the DNR.
- Identifying priority farm areas using a range of criteria (e.g., impaired waters, manure management, high nutrient applications).
- Identifying key water quality and soil erosion problems, and practices to address those problems.
- Identifying strategies to promote voluntary compliance with statewide performance standards and prohibitions, including information, cost-sharing, and technical assistance.
- Identifying enforcement procedures, including notice and appeal procedures.
- Including a multi-year work plan to achieve soil and water conservation objectives.
- Identifying relevant state and local regulations, and any inconsistencies between them.

County Land Conservation Department (LCD) staff are key stakeholders in the development and implementation of comprehensive watershed management plans that address water quality impairments. The knowledge, skills, and connections to local landowners and producers that local LCDs provide are a key component in the development of any comprehensive watershed plan, as well as implementation of practices and programs designed to improve water quality.

DNR Targeted Runoff Management (TRM) Grant and Notice of Discharge (NOD) grant-funded projects

TRM grants may be used to cost share the installation of best management practices and support a variety of local administrative and planning functions. Projects are selected through a competitive scoring system and generally take two to three years to complete. The TRM grant program has evolved into a three-tiered structure to provide flexibility in addressing a range of scales, from single sites to small sub-watersheds. (For more information, see Chapter 4.7a of Wisconsin's Nonpoint Source Program Management Plan at <http://dnr.wi.gov/topic/nonpoint/documents/npsprogrammngmtplan6282011.pdf>).

DNR Safe Drinking Water Protection Pilot Projects

DNR Bureau of Drinking Water and Groundwater is conducting pilot projects to target sub-watersheds with high levels of nitrate identified in public drinking water systems (greater than 5 mg/L) and potential agricultural contributions. The pilot projects seek to assess and control potential agricultural contributions through a mix of incentives.

Information and Education

Information and education programs and activities are conducted through the network of agencies and organizations involved in nutrient reduction. Efforts include statewide programs organized by state and federal agencies and nongovernmental partners (see coordination forums below), as well as local field days, farm visits, skills training, informational workshops, and development and delivery of educational materials. For more information, see section 4.6 of Wisconsin's Nonpoint Source Program Management Plan.

Wisconsin's Farmer-led Initiative

Wisconsin is exploring new approaches to engage farmers in solving water quality restoration and protection challenges related to agricultural nonpoint sources. Based on successful models in Iowa and Minnesota, conservation partners in Wisconsin are providing coordination and technical support for farmer-led watershed councils in tributary watersheds to the St Croix River basin and the Red Cedar River basin. Each farmer-led watershed councils establishes performance measures to address production and water quality issues.

UW Discovery Farms and UW Pioneer Farm

UW Discovery Farms focus on economic and environmental effects of agricultural practices through on-farm research and outreach and training programs. In cooperation with working farms, UW Discovery Farms considers a comprehensive, whole-farm approach to understanding interactions between agricultural practices, farm profitability, farm management, and water quality. (<http://uwdiscoveryfarms.org>). UW Pioneer Farm, part of UW-Platteville's School of Agriculture, conducts systems and applied research on management practices in a working farm setting and provides training and outreach for students, agencies, producers, and the public. (<http://www.uwplatt.edu/pioneerfarm/>)

University of Wisconsin System

Beyond the UW Discovery Farms and UW Pioneer Farm programs described above, many research partnerships coordinated through the University of Wisconsin System also address agricultural nutrients and water quality. In many cases, research is coordinated with agencies, local governments, agricultural associations, and other stakeholders, and encompasses research on private working farms and university research facilities. Several examples include ongoing projects led by various faculty members at UW institutions including UW-Madison through the College of Agricultural and Life Sciences (CALS), College of Engineering, and the network of UW Agricultural Research Stations. Numerous UW Extension centers and teams also address issues of agricultural nutrients. UW also has two members serving on the Wisconsin Groundwater Coordinating Council. Additional information can be found through web searches on key terms.

Runoff Risk Advisory Forecast

Wisconsin DATCP and numerous partners developed this useful online tool designed to help farmers evaluate the future risk of manure runoff due to snowmelt or rainfall. The tool consists of a map indicating day-to-day risk of manure runoff, based on National Weather Service (NWS) flood forecast model that incorporates precipitation potential, soil moisture and the physical characteristics of 242 NWS basins. The tool (<http://144.92.93.196/app/runoffrisk>) is accessible in a variety of mobile electronic formats.

SnapPlus Nutrient Management Software

SnapPlus (Soil Nutrient Application Planner) is software to prepare nutrient management plans according to the NRCS Nutrient Management Standard 590. Developed by the University of Wisconsin, SnapPlus generates the following outputs:

- Crop nutrient requirements (N-P-K) according to soil test results and nutrient credits
- Soil loss assessment based on the Revised Universal Soil Loss Equation (RUSLE-2)
- A phosphorus index for all fields across a crop rotation
- A rotational phosphorus balance for using soil test P as the criteria for phosphorus management

SnapPlus is used heavily by private crop consultants, farmers and other nutrient management planners and is regularly updated to incorporate new tools and information. For more information visit snapplus.wisc.edu.

4.2.4 Forums for coordination and engagement

A number of forums exist for coordination and engagement among agencies, NGOs, and agricultural interests that address nutrient management and reduction. These include:

- NRCS State Technical Committee – provides advice to NRCS on a variety of program and policy issues relevant for Wisconsin conservation. (<http://www.wi.nrcs.usda.gov/about/stc.html>)
- Wisconsin Land and Water Conservation Board – reviews and makes recommendations on county land and water conservation plans, makes recommendations for funding allocations, and provides a forum for land and water conservation issues. (http://datcp.wi.gov/Environment/Land_and_Water_Conservation/Land_and_Water_Conservation_Board/index.aspx)
- Biosolids Symposium -annually addressing applications on agricultural lands
- Governmental Affairs Seminar for point sources
- Standards Oversight Council (SOC) – a multi-agency council that oversees the development and maintenance of conservation technical standards for Wisconsin (<http://socwisconsin.org>)
- Wisconsin Crop Management Conference (WCMC) – a 3-day annual event drawing 1,500 attendees focused on the agronomic inputs industry. (<http://www.soils.wisc.edu/extension/wcmc/>)
- UW-Extension Soil, Water, and Nutrient Management Meetings (SWNM) – annual meetings held across the state drawing 600 attendees annually
- Many watershed-level forums and initiatives – for example, annual conference and coordination events focused on specific river basins and watersheds.
- Many ad hoc statewide workgroups such as a recent effort to improve the effectiveness of agricultural nutrient management convened by WLWCA, DATCP, and others.

4.3 Future Directions

Wisconsin is moving forward on many initiatives related to understanding and managing nutrients from agricultural areas and their impacts on surface water and groundwater. Those issues continue to be a focus for the broad set of partners discussed in this chapter. Among them are questions of reducing nitrogen losses or increasing nitrogen use efficiency, particularly in coarse soil; understanding and increasing actual implementation of nutrient management plans; understanding the dynamics of surface to subsurface flows of nitrogen and phosphorus in tile drainage; expanding development and use of 9-element watershed plans; and gaining experience with the innovative integrated approaches described in the next chapter. Two current additional activities relevant to nutrient reduction are the NRCS 590 Nutrient Management Standard revisions and a proposed Nitrogen Science Summit, both discussed below.

NRCS 590 Nutrient Management Standard Revision

Many questions are being addressed through an ongoing process to revise the NRCS 590 Nutrient Management Standard. This process, led by NRCS and coordinated through the Wisconsin Standards Oversight Council (SOC), involves a review team to provide interdisciplinary input to revise the standard. The effort includes input from farmers, researchers, water quality and agricultural agency staff and agricultural service providers. The 590 review process will address

nitrogen use efficiency and losses, along with several other significant technical issues with regard to nutrient management planning, including¹⁶:

- Creation of a Nitrogen Loss Risk Assessment Tool
- Developing a winter nutrient spreading risk assessment tool
- Soil test phosphorus criteria
- Soil test recommendation revisions from UW-Extension
- Add analysis for manure ammonium nitrogen content (consistent with the NRCS national 590 practice standard)
- Evaluate the potential for transport of nutrients to tile drainage
- Adaptive nutrient management - develop a process to establish a representative yield check strip when nutrients are applied above the rates established by the standard unanticipated crop production conditions
- Developing a manure land base estimate (for animal feeding operations) - to address requirements for addressing the remaining volume of manure or other nutrient source if an adequate land base is NOT available

Exploring these technical issues through the revision to NRCS 590 will address a number of nutrient management issues, particularly relating to nitrogen losses to both surface water and groundwater. The NRCS 590 revision work is expected to continue through 2014.

Nitrogen Science Summit

Wisconsin is considering initiating a separate long-term process for examining nitrogen management beginning with a Nitrogen Science Summit to identify what is known and what is unknown focusing both on surface water and groundwater needs.

While a major commitment has been made by agencies and universities in Wisconsin over more than two decades to develop tools and indices to manage phosphorus on agricultural lands, comparable tools and indices are likely needed to better manage nitrogen. The purpose of a Nitrogen Science Summit would be to create new tools to determine which practices are recommended on a given site and how effective they may be – especially considering the very complex nature of nitrogen use and mobility on agricultural lands. A Nitrogen Science Summit would draw from recent development from other states, including Iowa and Minnesota.

The Nitrogen Science Summit could include literature reviews and discussion of the following items:

- Definition of Wisconsin's surface water quality needs and groundwater quality needs related to nitrogen.
- Pathways of nitrogen to both surface waters and groundwater and the relative contribution of nitrogen in runoff versus nitrogen in groundwater reaching streams and lakes.
- Movement of nitrogen through the many diverse soils present in Wisconsin.
- Determination of relative nitrogen contribution of cropped fields, pastures, animal lots and other lands.
- Geographic variation across Wisconsin and the potential use of agro-ecoregion designations as a tool.

¹⁶ Standards Oversight Council 590 Nutrient Management Team Charge, November 15, 2012 (NRCS, custodian)

- Compilation of existing data and information from research projects, including Pioneer Farm and Discovery Farms, and N management/loss research currently performed by the Agricultural Research Service (ARS) and the UW Soils Department.
- Assessment of the practicality and effectiveness of N loss reduction materials such as slow release urea/urease inhibitors.
- Role of field-based targets and surrogates to guide management.
- Economic costs and benefits – both on farm and off site – related to nitrogen management.
- Role of pilot projects to test and mold implementation and education processes, as well as to measure water quality changes resulting from project implementation.
- Identify research needed to fill knowledge gaps.
- Other items identified by a Summit scoping group.

The Nitrogen Science Summit would build upon Wisconsin's long-standing practice of using partnerships and coordination forums to exchange thoughts, ideas and information. Participants would include university, state, and federal researchers; water quality experts; federal, state and local agency program managers; consulting agronomists; practicing farmers; agricultural economists; educational experts; and others identified by a Nitrogen Science Summit scoping committee.