

Wisconsin Land and Water Conservation Annual Progress Report



2011 Program Highlights

This report to the Wisconsin Land and Water Conservation Board (LWCB) summarizes progress made in 2011 on programs administered by the Department of Agriculture, Trade and Consumer Protection (DATCP) and the Department of Natural Resources (DNR) to promote conservation and control polluted runoff from both rural and urban sources. This report is submitted in part to meet program requirements under § 281.65(4)(o) and § 92.14(12), Wis. Stats., for an annual report.

This report provides information on the following programs administered in 2011:

- ◆ State and Federal Conservation Funding.
- ◆ Land and Water Resource Management Planning Program, ch. 92.10.
- ◆ Soil and Water Resource Management Program, ch. 92.14.
- ◆ Priority Watersheds and Lake Projects, ch. 281.65.
- ◆ Targeted Runoff Management Grant Projects, ch. 281.65.
- ◆ Urban Nonpoint Source and Stormwater Management Grant Projects, ch. 281.66.
- ◆ Farmland Preservation Program, ch. 91.
- ◆ Special Focus: Nutrient Management
- ◆ Special Focus: Conservation Engineering

Summarized in Table 1 and detailed further in other tables, the report documents the expenditure of about \$39.5 million in 2011 for staffing, conservation practices and technical assistance to control erosion from croplands and construction sites, repair eroded streambanks and shorelines, protect waterways from livestock manure runoff, and reduce polluted stormwater runoff from city streets and parking lots. The information contained within this report also speaks to the wide range of activities funded and the progress achieved during 2011.

In addition to dollars spent, specific units of measurement are used to quantify the number, size and scope of Best Management Practices (BMPs) constructed, installed or implemented for soil and water conservation purposes. DATCP and DNR have established reporting conventions for BMPs to ensure that data is consistently tracked based on feet, acres or number of practices installed.

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PROGRAM MANAGEMENT

FUNDING FOR CONSERVATION

In 2011, state and federal investments helped support a growing range of important conservation programs even in challenging economic times. State grants remained level at \$9.3 million for county conservation staff, while federal payments provided \$416,840 in technical assistance. Staff from county land conservation departments (LCDs) and municipalities continued to deliver high levels of conservation, including the provision of about \$29.8 million in cost-sharing for Best Management Practices (BMPs) and technical assistance. Cost-share dollars are administered through individual contracts with agricultural producers, as well as contracts with governmental units such as cities, towns, villages, counties, lake districts, and tribal governments. Funds for cost-sharing came from both state (\$12.4 million) and federal (\$17.4 million) sources. Federal funding came from the Environmental Protection Agency (EPA) through s. 319 of the Clean Water Act (CWA) and from United States Department of Agriculture's (USDA) Environmental Quality Incentives Program (EQIP) and Conservation Reserve Enhancement Program (CREP). Federal funding also included special initiatives for the Great Lakes and the Mississippi River Basin. Table 1 provides a breakdown of key expenditures in the various spending categories.

LAND AND WATER RESOURCE MANAGEMENT PLANNING PROGRAM AND COUNTY IMPLEMENTATION

Wisconsin's 72 counties are the main vehicles for delivering state conservation programs and funds. Each county updates a locally-developed Land and Water Resource Management (LWRM) plan, which serves as the primary planning tool for setting priorities and identifying activities to achieve conservation goals. Each plan must describe how

Table 1: 2011 Financial data	
DATCP-SWRM Grant Program Expenditures	
\$9,318,908	DATCP funds for support of 119 local staff out of 359 total local staff statewide
\$4,226,233	DATCP funds for local BMP cost-share
\$331,419	State CREP
DNR Grant Program Expenditures	
\$5,344,838	TRM & NOD for agricultural BMP cost-share
\$1,946,915	UNPS for urban BMP cost-share
\$405,116	UNPS for stormwater planning
\$191,416	Priority Watershed Projects: BMP cost-share
Federal Grant Program Expenditures	
\$16,400,00	EQIP for BMP cost-share*
\$208,483	CREP for BMP cost-share*
\$800,000	s. 319 CWA grant for BMP cost-share
\$416,840	NRCS technical assistance* (Including \$207,894 in CRP & EQIP agreements and \$208,946 for the Great Lakes and Mississippi River Basin special initiatives.

*Based on federal FY11

the county will implement the state performance standards to control agricultural and urban runoff. Developed in consultation with the DNR, each plan must also be approved by DATCP. To ensure that counties spend less time revising their plans and more time implementing them, DATCP rules now allow counties to receive plan approvals for up to 10 years.

A county survey of 2011 activities shows that counties spend most of their staff and cost-share resources on soil erosion control, manure management and nutrient management. These three farm-related activities have been top priorities for many years, and along with shoreland management and invasive species management round out the top five activities conducted in 2011.

Consistent with these priorities, counties estimated that they worked with about 13,753 farmers in 2011. These interactions covered programs discussed in the following sections including cost-sharing, technical assistance, farmland preservation

compliance assistance, permitting, and nutrient management.

SOIL AND WATER RESOURCE MANAGEMENT PROGRAM

The Soil and Water Resource Management (SWRM) Program supports locally-led conservation efforts through county staffing grants and cost-share funding to implement LWRM plans.

Over the last few years, SWRM funding has steadily lost ground (at the rate of several hundred thousand dollars per year) in its attempt to meet the goal in s.92.14(6)(b), Stats. to fund an average of 3 staff in each county at 100, 70, and 50 percent. In 2011, state funds primarily from DATCP paid for 119 of the 359 FTEs employed by counties for conservation work. In 2007, DATCP’s share covered the costs of nearly 150 FTEs. In recent years with less state support, counties have been resourceful in finding non-state funding to maintain staffing levels but a future of continued funding reductions presents insurmountable challenges, and ultimately threatens the delivery network for state programs.

A future with fewer county conservation staff directly impacts farmers and other the beneficiaries of state conservation programs. County conservation staff are recognized as the most qualified public sector professionals to distribute federal and state cost-share funding. In 2011, they were entrusted by NRCS, DNR and DATCP to work with farmers to provide access to funds and needed technical assistance, playing a role in the expenditure of over \$32,742,467 in cost-share funds including \$2,069,388 from local sources and \$915,642 from organizations such as The Nature Conservancy and lake districts. County staff are critical to providing compliance assistance that helps farmers remain eligible for farmland preservation tax credits and voluntarily address runoff problems before they become high stakes actions involving enforcement. For every state dollar invested in county conservation staff, farmers gain access to over five dollars in state and federal cost-sharing

and other payments that set the stage of business expansions as well protect natural resources.

The wide-ranging benefits of local conservation go beyond administration of cost-share dollars, and include planning that protects the value of lake front property; technical assistance to control non-farm erosion, and service as first responders in a emergencies such as floods and droughts.

FARMLAND PRESERVATION PROGRAM

Of importance for this report, counties are responsible for monitoring conservation compliance of landowners who collect tax credits under the program. Table 2 highlights county compliance efforts in working with landowners. For more information on the program, review [Biennial Farmland Preservation Program Report 2010-2011](#), which must be submitted by DATCP to the Department of Administration and the Agriculture, Trade, & Consumer Protection Board every two years beginning on December 31, 2011.

Table 2: Farmland Preservation Quickfacts	
15,744	Farmland owners who received farmland preservation tax credits in 2011 (tax year 2010)
2,905,577	Acres for which tax credits claimed in 2011 (about 20 percent of Wisconsin’s 15.2 million acres of farmland)
3,362	Number of farm landowners in compliance with conservation standards,
4,052	Number of farm landowners with schedules to achieve compliance with conservation standards
460	Number of farm landowners issued notices of non-compliance

CONSERVATION RESERVE ENHANCEMENT PROGRAM

The Conservation Reserve Enhancement Program (CREP) is a cooperative effort with the USDA's Farm Service Agency (FSA) and the Natural Resources Conservation Service (NRCS), DATCP, DNR, LCDs, and Wisconsin landowners. The goal is to enroll 1,000,000 acres into riparian buffers, wildlife habitat buffers, filter strips, wetland restorations, grassed waterways, and grassland habitat to improve water quality and habitat for endangered grassland birds and other wildlife. As of October 1, 2011, about 3,800 landowners have enrolled 43,800 acres in CREP. The state has paid about \$12.2 million for CREP as incentive and conservation practice payments which leverages about \$85 million in federal funds over the contract period, usually 15 years. Table 3 highlights acres enrolled in CREP.

Practices	Goal (acres)	Enrolled (acres)
Grassland	15,000	11,680
Riparian buffers	80,000	29,123
Wetland restorations	5,000	2,997
All practices*	100,000	43,800

*Details are reported in the CREP 2011 Annual Report, available from DATCP

PRIORITY WATERSHED AND LAKE PROGRAM

The Priority Watershed and Lake Program (PWP) was authorized in 1978. During the ensuing years, 85 projects were conducted. Legislation passed in 1997 ended new project selections. All projects were completed by December 31, 2009, except for seven projects that requested a one-year extension to complete the installation of BMPs for specific cost-share agreements. Reimbursement requests for four of these projects carried over into CY 2011 and are included in Table 1.

TARGETED RUNOFF MANAGEMENT GRANTS

DNR awards TRM grants to local governments to address both urban and rural polluted runoff. Projects awarded funding in CY 2011 were site-specific and expected to last two years. Typical TRM projects, cost-shared at 70 percent up to \$150,000, include livestock manure management, erosion control and stream bank protection practices. A total of 41 new TRM projects were selected for funding in 2011. Conservation activities conducted in 2011 associated with active TRM projects are incorporated in the information in Table 5, Table 6, and Table 7.

Practices	2011	2004-2011
Detention systems, infiltration devices, street sweeper, other practices (no.)	95	745
Storm sewer re-routing, streambank/shoreline protection (feet)	833	31,034

URBAN NONPOINT SOURCE AND STORMWATER MANAGEMENT (UNPS) GRANTS

These DNR grants cover both planning and construction projects to address polluted urban runoff. They typically last two years. Construction grants may cover 50 percent up to \$150,000 of the cost of BMPs such as storm water detention ponds, infiltration practices, and stream bank and shoreline stabilization. Planning grants can pay for 70 percent up to \$85,000 for storm water planning, education, ordinance and utility development, and plan development. A total of 20 new urban construction projects were selected for funding in CY 2011. There were four urban planning grants selected for funding in CY 2011. Conservation activities conducted in 2011 can be found in Table 4.

2011 OUTCOMES

BEST MANAGEMENT PRACTICES

In 2011 local land conservation departments utilized nearly \$4.6 million in cost sharing to install 1,208 BMPs as part of the DATCP SWRM grant program. (see figure 2 for spending overview) In addition, nearly \$5.1 million in cost sharing was utilized by local land conservation departments, municipalities, and other local units of government to install nearly 125 agricultural and urban BMPs as part of the PWP, TRM and UNPS programs. Expenditures include projects installed with funding awarded in 2009 and extended into 2011. State and local funds are often used to leverage federal cost-share programs, such as EQIP and s. 319 of the CWA.

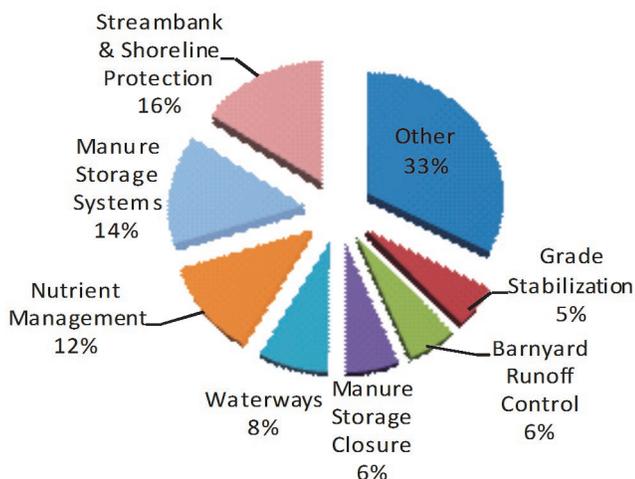


Figure 1: SWRM Funding for BMPs, by percent

CROPLAND SOIL EROSION CONTROL

Keeping productive soil on the land and out of the water is one of Wisconsin's primary conservation goals. The counties, state and federal government administer a variety of programs that work together to help landowners reduce soil erosion to tolerable ("T") levels or below.

In 2011, cost-share funds from SWRM, TRM and PWP helped pay for agricultural BMPs such as reduced tillage, residue management and cover crops to hold soil in place, grade stabilization and other structures to deflect or slow down runoff from slopes and practices to repair and prevent gullies. Table 5 shows the numbers of various best management practices installed with the help of funding from DNR, DATCP, and NRCS during CY 2011 to reduce upland erosion.

NUTRIENT MANAGEMENT

DATCP tracks the levels of nutrient management planning through reports from bulk fertilizer suppliers and the nutrient management plan checklists submitted by farmers, agronomists, and public agency staff. In 2011, 66 counties reported 3,557 plans covering 1,848,626 acres. Since last year, the percent of cropland covered by nutrient management plans increased from 21% to 23%. In 2011, 933 farmers wrote their own nutrient management plans on 266,242 acres (14% of total acres). Farmers prepared 26% of the total number of plans. The remaining 74% of plans were prepared by 300 agronomists hired by farmers to assist with nutrient management planning. Agronomists reported 1,582,383 acres (86% of total acres) from 2,624 plans. The majority of all plans are prepared

Practice Installed	DNR	DATCP	NRCS
Erosion Control			
Residue management, green manure crop, grassed waterways, buffers, waterway systems, reduced tillage, grade stabilization structure, critical area stabilization (acres)	15	173	160,641
Animal trails and walkways, critical area stabilization, diversions, windbreaks, underground outlets, waterway systems, streambank and shoreline protection* (feet)	3,172	63,070	152,847
Critical area stabilization, grade stabilization, sinkhole treatment, subsurface drains, underground outlets, water and sediment control basins (number)	5	124	260
*DATCP is reporting streambank and shoreline protection in Table 7, and not in this table.			

using the Snap Plus software. See the Special Feature on Nutrient Management for additional information.

MANURE MANAGEMENT

In 2011, landowners used state cost-share dollars to install manure management practices such as manure storage structures; practices to control runoff from barnyards, feedlots, milk houses, and pastures; livestock fencing, access roads and cattle crossings and wastewater treatment strips to reduce runoff in areas of heavy livestock activity; and nutrient management, heavy use area protection and wastewater treatment strips to keep manure out of sensitive areas. Table 6 shows the quantity of best management practices installed with funding from DNR, DATCP, and NRCS during CY 2011 to address manure management issues.

Table 6: 2011 BMP highlights			
Practice Installed	DNR	DATCP	NRCS
Manure Management			
Heavy use area protection, nutrient management, wastewater treatment strips (acres)	5,505	32,620	120,423
Access roads and cattle crossings, barnyard runoff management, livestock fenceings, wastewater treatment strips (feet)	13,804	37,631	585,636
Agricultural sediment basin, barnyard runoff control systems, livestock watering facilities, manure storage facilities, milk-house waste control, roof runoff systems, sediment basins, waste transfer systems (number)	122	192	260

COMPLEMENTARY APPROACHES

Notices of Discharge

Since the mid-1980s DNR has used Notices of Discharge (NODs) and Notices of Intent (NOIs) under ch. NR 243 of the state administrative code to address significant discharges to state waters from small (<300 animal units) and medium (300 – 999 animal units) sized livestock operations. DATCP engineers and county staff provide technical

assistance. Both DNR and DATCP provide state funding to address NOD/NOI sites and jointly administer a grant application process that uses a combination of state and federal EPA funding.

In 2011, DNR issued eleven notices under NR 243, six of which were NODs and five were NOIs. DNR and DATCP funded twelve projects (all eleven notices issued in CY 2011 plus one notice carried over from CY 2010) providing \$1,278,670 for projects in eight counties. DATCP funded two projects while DNR funded ten. Conservation activities completed during CY 2011 are included in Table 6.

Ordinances

County land conservation departments are critical players in the administration of local ordinances regulating a range of topics from manure storage to storm water management. In 2011, county staff had a hand in issuing about 2,600 different permits under various ordinances as detailed in Figure 2. Over time, the 60 counties with manure storage ordinances have issued over 3,700 permits to ensure that facilities are properly constructed and operated with nutrient management plans. For certain counties, non-

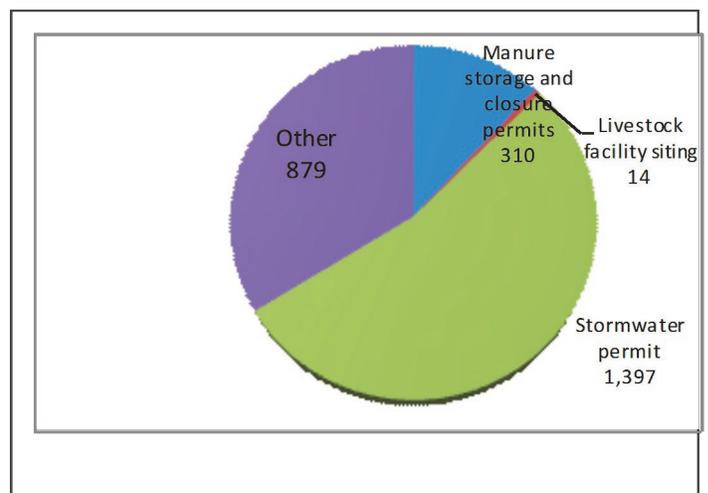


Figure 2: Number of permits issued with the help of conservation staff.

metallic mining permits have become a significant workload issue, with nine counties reporting issuing non-metallic mining permits.

STREAMBANK, SHORELINE, AND WATER QUALITY AND HABITAT PROTECTION

State Funded Conservation Practices

In 2011, many landowners used state cost-share dollars to install practices that protect and restore streambanks and shorelines, protect groundwater, and improve habitat through wetland restorations. Conservation partners such as fishing and hunting groups, environmental and conservation organizations including land trusts, “Friends of” groups, local conservation staff, U.S. Fish and Wildlife Service, and DNR staff often contribute matching funds along with expertise and labor to make these projects successful. Table 7 highlights practices associated with streambank and shoreline projects.

Other Water Quality Practices

State and federal agencies pay for a range of practices that improve water quality in different ways. Pesticide management may include payment for facilities to contain spills from mixing and loading of chemicals. Sealing unused wells prevents contaminants from reaching groundwater through direct conduits. Fencing and other grazing practices enable farmers to effectively manage vegetative cover in pastured areas to reduce sediment and nutrient runoff. When restored, wetlands provide

beneficial environmental services including flood control and filtration.

The voluntary acquisition of conservation easements along rivers, streams and lakes has been a long-standing tool used cooperatively by landowners, counties, DNR, NRCS, and nonprofit conservation organizations to protect water quality. With the end of the Priority Watershed Program, easements have been utilized less frequently by DNR. In CY 2011, only two easements located in one county were funded by DNR.. Table 8 documents a range of water quality practices installed as part of program efforts across the state.

Table 8: 2011 BMP highlights			
Practice Installed	DNR	DATCP	NRCS
Other Water Quality Practices			
Easements*, pesticide management, rotational grazing,** wetland restoration (acres)	8	15	35,934
Prescribed grazing-seeding (acres)	–	98	–
Prescribed grazing-fencing (feet)	–	94,412	–
Pesticide management, soil analysis for nutrient management, well abandonments (number)	–	198	1,776

*DATCP CREP practices are tracked separately (see Table 3).
 ** DATCP reports prescribed grazing seeding on a separate line.



Table 7: 2011 BMP highlights			
Practice Installed	DNR	DATCP	NRCS
Streambank and Shoreline*			
Shoreline habitat restoration (acres)	5	–	305
Critical area stabilization, streambank/shoreline protection, shoreline habitat restoration, stream crossing, streambank rip-rap, streambank/shoreline fencing, streambank/shoreline shaping and seeding (feet)	20,700	33,787	46,008
Residential nutrient management, stream crossing (number)	–	–	98

*No entries are reported for shoreline habitat restoration for redeveloped areas (sq. feet)



SPECIAL FEATURE: NUTRIENT MANAGEMENT

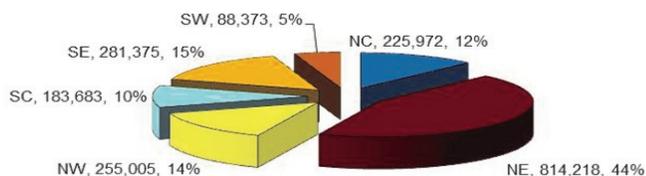
WHAT IS NUTRIENT MANAGEMENT?

Nutrient management (NM) as defined by the Natural Resources Conservation Service is the practice of using nutrients wisely for optimum economic benefit, while minimizing impact on the environment. A nutrient management plan is a record of a farm’s cropping systems that includes the conservation practices and field management decisions used by farmers to manage the amount, form, placement, and timing of the application of nutrients such as manure or commercial fertilizer, to cropland. The purpose is to supply plant nutrients for economically optimal crop yields while minimizing nutrient runoff to surface water and contamination of groundwater. In Wisconsin, farmers who implement a nutrient management plan take advantage of using one of the best tools available for saving money and reducing water quality problems like excess algae in lakes and nitrate in groundwater. These farmers reduce excess nutrient losses by controlling soil erosion, following the Natural Resources Conservation Service (NRCS) Conservation Practice Standard 590, and applying nutrients to University of Wisconsin (UW) fertilizer rate recommendations, while becoming more profitable and better stewards of our soil and water resources.

WHERE IS NM PLANNING HAPPENING?

A majority of county land conservation departments in Wisconsin, responding to an annual survey of program activities, reported that nutrient management ranked among the top three priorities for local conservation

Figure 3: 2011 NM Plan Acres by WI Region



programs. Much of the increased emphasis on nutrient management planning can be attributed to conservation compliance requirements at federal, state and local levels. Over the last ten years, nutrient management planning has increased in all regions around the state and now covers about 21% of Wisconsin crop acres.

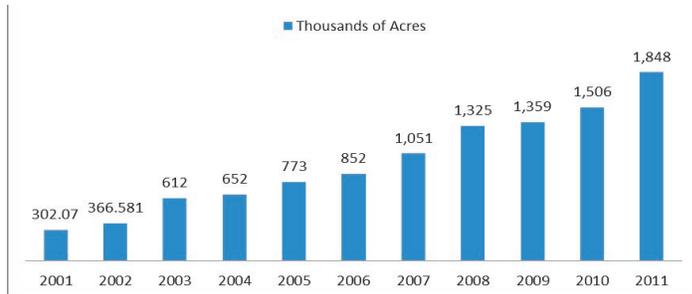


Figure 4: NM Plan Acres 2001-2011

TOOLS FOR NM PLANNING

Numerous tools exist to develop and implement nutrient management plans and practices in Wisconsin. These tools help landowners, agricultural producers, crop consultants and other agricultural professionals access the information and resources they need to develop a nutrient management plan that benefits crop production and soil condition, and minimizes environmental harm, and usually address these issues holistically.

Snap-Plus

The majority of nutrient management plans in Wisconsin are prepared using the Snap-Plus software developed by staff of the UW-Madison Department of Soil Science. Since its release in 2005, Snap-Plus v. 1 has been utilized by farmers, agronomists, and agency staff to develop nutrient management plans that can be updated each year and refined based on actual crop yields and nutrient inputs from fertilizer and manure. The goal is to produce a nutrient management plan that is easy for the farmer to implement and meets all the requirements of the NRCS 590 standard. As farmers and agronomists become more comfortable with the software, more people are utilizing it to prepare nutrient management plans. The final release of Snap-Plus v. 1 in October of 2011 has been downloaded 3,700 times at no cost from the Snap-Plus website. www.snapplus.net

Map Products

The Manure Management Advisory System (MMAS) is a project initiated by DATCP in 2008 that includes a mapping tool to help farmers and nutrient applicators identify sensitive areas on their farms and suitable fields for spreading. The MMAS also provides a daily Runoff Risk Forecasting Map to inform farmers about the day-to-day risk of runoff occurring across Wisconsin using National Weather Service forecast methods that consider precipitation, soil moisture, and individual basin characteristics. These mapping tools work in tandem to identify the short-term runoff risk due to weather and soil conditions for daily application planning, and long-term risk reduction through use of the WI 590 Nutrient Management Restriction Maps. All of these mapping tools are available at no cost at:

<http://www.manureadvisorysystem.wi.gov/>

SUPPORTING NUTRIENT MANAGEMENT PLANNING

Most Wisconsin farmers are already doing some form of nutrient management planning on their farms. Whether it's through soil testing to determine each field's fertility levels, or the type of tillage they use, farmers have an understanding of many of the practices that, once combined, lead to the development of a nutrient management plan that reduces the risk of soil erosion and nutrient losses to nearby surface or groundwater resources.

Farmer-Written NM Planning Classes

Farmers are readily equipped with the information about their farming systems that they need to write their own nutrient management plans for their farms. Each winter, numerous county land conservation departments, UW Extension offices, and DATCP lead training courses are offered to allow farmers to write their own NM plans. Interested farmers simply need to contact their local land conservation offices to ask about the opportunities available to them for writing their own NM plans.

This Nutrient Management Farmer Education curriculum (NMFE), developed by the University of Wisconsin-Extension (UWEX) and the University of Wisconsin College of Agriculture and Life Sciences

(UW-CALS) presents the basic principles of soil fertility, crop nutrition, nutrient crediting, and environmental protection to help agricultural producers begin to develop their own nutrient management plan. It serves as one of the foundational elements presented to interested landowners who participate in a series of NM planning workshops funded through the competitive NMFE Grant Program. In most cases these introductory courses serve as the first steps for farmers interested in writing their own nutrient management plans. These courses are conducted by staff from county land conservation departments (LCDs), county UWEX, UW Nutrient and Pest Management (NPM), DATCP, and technical colleges. Most information about the successes of farmer-written NM training courses can be found on the following page.

Cost-share

In addition to farmer workshops conducted through the NMFE grants, many NM plans are being developed with the assistance of cost-share dollars made available using segregated funds through county land conservation departments. In 2011, county land conservation departments reported that 1,938 nutrient management plans were developed using cost-share funds. Often these funds are used to help farmers pay for the soil tests that are the starting point of any nutrient management plan. Regular soil sampling every four years thereafter forms the baseline for fine-tuning the nutrient management plan.

WHAT'S NEXT?

Whether it is to maintain tax credits through the Farmland Preservation Program or as part of local or state permit requirements, interest in nutrient management planning continues to grow. However, some barriers to wider adoption exist such as the perception that plan development is too costly or that nutrient management plans are too complex. Improvements of planning tools such as the upcoming release of Snap-Plus v.2 should address some of those concerns. In addition, expanded farmer training opportunities and continued support of local conservation staff should ensure continued nutrient management plan development and implementation.

THE ROLE OF COUNTY LAND CONSERVATION IN FARMER NUTRIENT MANAGEMENT PLANNING

In 1982 Wisconsin's Soil Conservation District Law (Chapter 92 of the Wisconsin Statutes) was amended creating local conservation committees (LCCs) and departments (LCDs). For nearly 40 years, county conservation staff have filled a critical role of working with landowners to implement conservation practices and promote protection of our soil and water resources to benefit all citizens of the state.

On October 1, 2002 new rules addressing runoff pollution from farms and other sources went into effect in an effort to help protect Wisconsin's lakes, streams and groundwater. The DNR, through administrative rule NR 151, set performance standards and prohibitions for farms including a requirement for nutrient management planning. DATCP, through rule ATCP 50, identifies conservation practices that farmers must follow to meet the performance standards.



Effective NM planning is often a team effort.

Photo credit: Rachel Mueller, CCA

Both DNR and DATCP rely upon the county land conservation offices, their staff and the relationships they build with local farmers to implement the state agricultural runoff standards. County conservation staff assist in providing information to farmers regarding the soil and water performance standards, the options available to farms to improve their conservation practices, and providing the cost-share dollars to farmers for installing and implementing those conservation practices. Nutrient management planning activities such as soil testing, manure spreader calibration and

assistance developing nutrient management plans are also often conducted by the land conservation offices.

When it comes to the nutrient management performance standard, some landowners prefer to use the professional services of a certified crop advisor in developing a nutrient management plan for their farm while others wish to develop their own. Local conservation departments often sponsor nutrient management planning workshops where landowners learn the essentials of NM planning including proper soil sampling techniques, nutrient crediting and how to use the Snap-Plus software to develop and then annually update their own plans.

One example from Fond du Lac County illustrates how the process of building a relationship with a landowner eventually results in accomplishing conservation goals that benefit everyone:

NM Farmer Training Success in Fond du Lac County

“Some farmers are reluctant to jump into nutrient management planning with both feet right away. It sometimes takes many years of working with them on various conservation practices to build the trust and rapport necessary to get them to develop a nutrient management plan. For years we had been working with a farmer to get him to fence his cows out of the river. We had also fielded concerns about his farm over the years, so we started by updating his conservation plan to document his current management system and build the relationship. Along with the help of his Certified Crop Advisor (CCA), we convinced him that implementing a NMP would enhance his business, but he was still not willing to get the cows out of the river. However, we now were able to position nutrients differently to keep the fields adjacent to the river from building higher nutrient levels. We also worked with him on residue management to keep soil losses lower. Over time, he became a strong proponent of NM planning, was one of the first farmers to give his NMP to his manure haulers, and reviews his plan with us every year. And he finally did fence his cows out of the river, installed shoreline buffers, and added more manure storage.”

SPECIAL FEATURE: CONSERVATION ENGINEERING

DATCP's conservation engineering unit is a critical part of a statewide team consisting of state, federal, and county professionals whose technical skills make conservation a reality on modernizing farms and in rural communities.

WHO WE ARE & WHAT WE DO

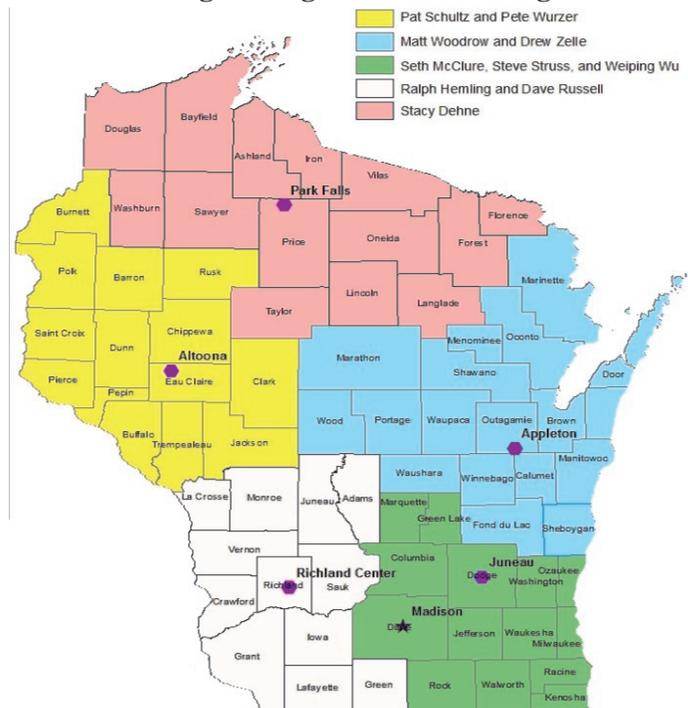
DATCP serves the state through eleven Conservation Engineers and Engineering Specialists located in six offices around the state, who work in coordination with our partners in the county land conservation departments and the NRCS. Together with NRCS, DATCP implements technical standards critical to many conservation programs, and ensures that government staffs are properly certified to design and construct conservation practices. In addition to equipping others to help landowners, the DATCP engineering team provides high level assistance that includes planning with the landowner, soil investigations, survey, design of the practices, and construction oversight. The practices employed can range from access roads and animal walkways to waste transfer and storage facilities for livestock facilities to sediment control practices and streambank and shoreline protection for croplands. DATCP staff also assist county staff with their manure storage ordinance permit review for proposed facilities. DATCP staff provide assistance to private consultants on projects where DATCP staff complete some or all of the site investigation components (i.e. soils investigation or topographic survey) and the private consultant uses that information to complete their work on the facility.

In 2011, DATCP was responsible for completing some portion of the engineering work for approximately 500 of the estimated 2,500 conservation practices installed on Wisconsin's farms. While DATCP's team is small in comparison to county and federal engineering practitioners, its reach is significant, representing 24% of the conservation engineering completed by all private and government practitioners. DATCP estimates that nearly 1 in 5 of Wisconsin's 12,259 dairy farmers use their public engineering services annually.

BENEFITS TO FARMERS

The biggest benefit that farmers receive from the current combination of state and federal standards and collaboration between private, federal, state and local conservation engineering practitioners is the common base of knowledge. Larger farm operators generally hire private engineering firms to ensure compliance with state and federal engineering standards. Smaller farm operators generally work with local or state conservation engineers. Regardless of the size of operation or who employs the engineer, the engineered practices put in place all meet the same standard; the engineers who design and supervise construction of those practices all base their decisions on the same standards; and the conservation engineers are certified for and understand the standards they use. It is a system that provides a range of engineering support for a wide range of conservation practices for a range of farm sizes that makes Wisconsin a competitive environment for dairy operations while maintaining environmental quality.

DATCP Engineering Unit Staff Coverage Areas



ECONOMIC IMPACTS

During the reporting period, the work of DATCP engineering staff on manure storage facilities and other improvements helped farmers add an estimated 52,000 cows. Using information from the Milk Marketing

Board that the average Wisconsin dairy cow generates approximately \$21,000 per year of local economic activity, the technical assistance from DATCP staff provided essential support for expansions that generated approximately \$1.09 billion in economic impact.

Equally as important, DATCP engineering ultimately benefits the citizens of the state by helping protect water quality in the rural areas.

FEED STORAGE RUNOFF MANAGEMENT

Joe Bragger is a very conservation-minded, progressive farmer who milks over 200 cows on his family's property in southeastern Buffalo County. In 2011, Joe approached the Buffalo County LCD about a feed pad leachate collection system. Joe was concerned because his one acre feed bunk was directly adjacent to a stream on the back-side of the farmstead. There was approximately 40 feet of steep bank between the bunker edge and the stream with no chance for buffering. Pete Wurzer Engineering Specialist from Altoona observes, "On my first visit, I saw a path of leachate at the lower end of the pad flowing directly to the stream and dead grass in several places along the sloped bank adjacent to the bunker walls. Leachate was flowing through the pad itself and flowed horizontally on a layer of subsoil before seeping out towards the stream."

After discussing the situation with Joe, Wurzer and the county got to work surveying the site and designing a system to address the resource concern. The first step was to remove cracked concrete at the end of the pad, then pour a new liquid tight concrete apron, visible in the photo to the right, which directs the leachate to a manhole collection tank. The concrete thickness was designed to accommodate Joe's equipment. A small wall, shown on the lower picture, directs the runoff to a screen which prevents larger solids from entering the manhole at the



Leachate flowing to the collection system

lower edge of the pad. A subsurface drainage system was also installed along the lower edge of the feed bunk to collect the leachate entering the subsoil and channel the leachate to the manhole. The manhole itself was equipped with a system to automatically pump, on a daily basis, the leachate originating from the feed and a portion of runoff from an anticipated storm event, but no more than this amount, to prevent large volumes of runoff from ending up in storage.

"The system is functioning well," Wurzer says, "and Joe is happy because the leachate is no longer polluting the stream and his farm's image has been improved." Joe was presented with the Aldo Leopold award for his conservation efforts in 2011 and also was a "Discovery Farm" as part of the UW Extension program.



Leachate collection area

MANURE STORAGE CREATES FLEXIBILITY FOR MANURE MANAGEMENT ON FARM

Rick Burkhamer, a dairy farmer from Richland County, was looking to improve his manure handling over a five year period to modernize his farm and double his herd size to 120 dairy cows. The farm was switching to a freestall and parlor to ensure that Rick's son, Shannon, could be part of the family business. Rick had always wanted manure storage but he was unable to afford it. He knew he had a problem with runoff, especially milking center waste, which ran through a rural subdivision and resulted in a few complaints. Rick also wanted to eliminate the manure "stacks" he was forced to place on his steeply sloped fields, and reduce the risk of runoff. All of his crop fields have slopes greater than 10% and some are 30%.



Concrete being poured for the floor of the storage lagoon.

In 2006, the Burkhamers added a freestall and parlor to support his expansion. Ralph Hemling, Engineering Specialist from Richland Center notes "At that time, I designed a narrow channeled reception pit on the east end of the freestall, allowing the Burkhamers to finally have 'manure storage,' but my design also anticipated that the pit would become a transfer system when a full blown storage was built later." The reception pit worked as designed, however, it started to fill with sand as the sand settled over the years. Consequently, with time the reception pit which had originally had 7 days of storage was down to 1 day of storage unless proper measures were taken and the sand cleaned out.

In 2011, with the help of federal EQIP funding and DA-



New storage in use

TCP engineering assistance, the farm finally was able to construct a 7 month manure storage facility. Hemling explains, "I designed a 10-foot high walled storage with an access ramp to fit the tight, steep site. The existing reception pit was tied together with the storage by a 24-inch transfer pipe and became part of the manure management system." Hemling says long term storage saved Rick an enormous amount of time and reduced wear and tear on equipment by not having to start the tractor every day, especially in the winter. He has virtually eliminated the need to buy commercial fertilizers by applying the manure according to his nutrient management plan. He had more time during the day to get other jobs done. Most of all, Rick's son, Shannon, stayed on the farm with his young family and is an integral part of the Burkhamer family dairy farm.



The freestall barn was built in 2006 to support the expansion.

CULVERT REPLACEMENT FIXES CHRONIC WATER QUALITY CONCERN

Started in 2009, this culvert crossing project in Iron County addresses a critical water quality concern facing northern counties. Each year, culverts wash out, and private landowners and municipalities typically do not have the expertise or the money to properly size and install new culverts that withstand the expected water-flows. Stacy Dehne, Conservation Engineer from Park Falls observes, "landowners all too often use a 'band-aid' fix to address the problem, placing additional pipes without any design efforts - or worse, simply adding yards of gravel to repair damage and get the road open. It is important to take the time and effort to understand how to fix it correctly to provide a sustainable fix." "Without a proper repair," according to Dehne, "yards of gravel may wash into streams degrading fish habitat (usually trout) and restrict stream flows and the channel capacity and storage during larger storm events."

"In Iron County, the erosion and sedimentation from problems such as these have a greater resource impact than erosion or nutrient runoff from farmland, simply due to the geography and land use." This project replaced two 18" x 35' round pipes and one 48" x 35' pipe with one 11.5' x 7.3' x 50' arch pipe. The road overtopped annually for three years prior to completion of this project. A "before" photo (above right) shows



Stream before project

phase of the project, including measures to prevent construction runoff. Approximately 50 cubic yards of sediment were also removed to restore the stream channel, shown below. The project prevents a tremendous volume of sediment from impacting this water resource.

Support from the town and county, which supplied labor and equipment, kept the costs of project under \$20,000. The Land Conservation Department (LCD) and Dehne did the planning and design work for the project, as well as construction oversight. The LCD partnered with the Bad River Watershed Association (BRWA) to obtain funding of \$9,100. The town contributed by providing \$3,000 for the culvert. About \$7,000 in cost-share dollars helped finish the project. Working together, these partners did something they could not do alone.



Arch culvert installed

the amount of road material that had washed into the stream channel from years of replacing gravel on the road that continually washed off each year during spring runoff. The photo above, shows the installation



Stream following removal of road material