Chapter 5. Integrating Point Source and Nonpoint Source Management in TMDL Watersheds

TMDL Implementation

In addition to the TMDL implementation occurring in the highest phosphorus yielding watersheds described in Chapter 4, efforts to reduce phosphorus losses are occurring in watersheds with established and developing TMDLs.

Red Cedar River Basin

A TMDL for phosphorus impairment of two impoundments of the Red Cedar River, Tainter Lake and Lake Menomin, was approved by U.S. EPA in 2012. Local water resource partners within the watershed (Red Cedar Water Quality Partnership) collaborated to develop a comprehensive water quality improvement strategy focused on implementing the TMDL that was finalized in 2015. The strategy meets the definition of a Nine Key Element plan, including in-depth analysis of phosphorus sources, control approaches and methods of tracking progress. It is a guide for the approaches and techniques that will be used over a ten-year period to reduce the levels of phosphorus entering the Red Cedar River system.

Point Sources

As a group, watershed point sources are already below their final TMDL phosphorus wasteload allocation goal. There are 19 active point sources with specific permits covered by the Red Cedar TMDL. All but one have been reissued since the TMDL was approved, and all have phosphorus limits that meet the TMDL

Nonpoint Sources

The partnership selected an interim goal for phosphorus reductions from nonpoint sources over 10 years (by 2025) based on anticipated reductions in phosphorus loads coming from multiple sources, but realizing the difficulty of achieving the full TMDL goals in only 10 years. The result is a goal for an overall reduction from all nonpoint sources of 40 percent or 186,000 lbs/yr above Tainter Lake over the next 10 years. Additional reductions would occur when similar efforts are made in the watershed area between Tainter and Menomin Lakes. An analysis was conducted of expected phosphorus load reduction from each BMP and how a combination of BMPs can be applied to conditions thought to exist in Red Cedar Basin to obtain substantial watershed phosphorus reductions.

The primary vehicle for outreach, education and implementation of this strategy is through the farmer-led council initiative, described below..

St. Croix River Basin

Point Sources

There are 24 active point sources with specific permits covered by the St Croix TMDL. Fourteen have been reissued since the TMDL was approved, all have phosphorus limits that meet the TMDL.

Nonpoint Sources

The St. Croix/Red Cedar River Basin Farmer-Led Watershed Council Project. This project began in 2013 as a collaboration between farmers, UW-Extension and state and county government agencies to improve water quality in the St. Croix and Red Cedar River Basins. Participating farmers are located in four sub-watersheds, one each in Dunn, Pierce, Polk and St. Croix counties. The watersheds (each about 20,000 acres) are all contributors to TMDL areas in northwestern Wisconsin and were selected based on an assessment that conservation practice adoption is likely and ultimately water quality improvements will follow.

Work to date has focused on data collection to create a baseline for phosphorus movement in the watersheds; education for farmers and all project partners on topics related to water quality, soil health and climate change; and conservation incentives created by the farmers to encourage greater adoption of particular conservation practices. Cost-sharing was offered in 2015 for grassed waterways, soil tests, cover crops, manure spreader calibration and no-obligation conservation "walkover'.

In 2015, an on-farm research program was developed to test no-till and cover crop scenarios. Further, the councils held dozens of meetings, seminars and field days with farmers focused on conservation, water quality and soil health. The primary purpose is to work in partnership with farmers to find effective, efficient and adoptable solutions that improve both water quality and farm performance.

In an effort to measure progress toward the goal of reducing phosphorus runoff into surface water, the councils began using the Spreadsheet Tool for Estimating Phosphorus Loads , a model developed by the Environmental Protection Agency. STEPL allow a user to input various data and then calculate the nutrient and sediment reductions from the installation of best management practices like cover crops, grassed waterway construction, reduced tillage, etc. In the Dry Run Creek watershed, the STEPL indicated that from the start of the project in 2013 through the end of 2015, BMP implementation resulted in a 496 lb/year P reduction or about 1.5 percent reduction in phosphorus loss. In the Horse Creek watershed, the model indicated a reduction of 4705 lb/year of phosphorus, equivalent to a 12 percent reduction. Models for the South Kinni and Hay River watersheds are forthcoming.

TMDL Development

Wisconsin River TMDL

Petenwell and Castle Rock Lakes, Wisconsin's second and fifth largest inland lakes, along with many reservoir lakes and tributaries in the Wisconsin River Basin are impaired as a result of excessive nutrient loading. Algal cell counts in these two lakes have measures that are several orders of magnitude in excess of the World Health Organization's guidelines for recreational waters. Overall, there are 85 waterways in the basin on the 2016 impaired waters list due to phosphorus, which feeds the excessive algal growth. Completion and EPA approval of the Wisconsin River Basin TMDL is expected in 2017.

In advance of TMDL completion, many actions to reduce phosphorus loss to water are already being implemented.

Implementation Planning

The next step following approval of the TMDL is to develop an implementation plan that specifically describes how the TMDL goals will be achieved. Wisconsin DNR has initiated an implementation planning process, which builds on past planning and implementation of practices to control or reduce nutrient and sediment pollutants in the Wisconsin River Basin. The implementation planning process will develop strategies to most effectively utilize existing federal, state, and county-based programs to achieve wasteload and load allocations outlined in the TMDL. Details of the implementation plan will include project goals, actions, costs, timelines, reporting requirements, and evaluation criteria.

Targeted Runoff Management (TRM) grant projects in the TMDL project area

Since 2005, 29 TRM grants have funded the construction and implementation of agricultural best management in the TMDL project area. More than $3.7 million in TRM grant awards have gone toward funding more than $5.3 million in agricultural management practices, including construction manure facilities storage, barnyard runoff control practices and implementation of other NR 151 runoff management standards. One recent notable TRM grant awarded in the project area was the $805,385 award received by Marathon County for the Fenwood Creek Watershed, the most significant P loading HUC-12 within the Big Eau Pleine Watershed; the Big Eau Pleine itself is the highest loading tributary upstream of Petenwell Reservoir. This grant award spans Jan. 1, 2016 to Dec. 31, 2018 and includes funding for both cropping ($25,373) and structural BMP's ($739,935), as well as local assistance ($39,825). Marathon County developed a Nine Key Element watershed plan for Fenwood Creek (HUC-12) watershed to meet Wisconsin River TMDL water quality reduction goal requirements.

Notice of Discharge (NOD) grant projects in the TMDL project area

Since 2005, 14 NOD grants have funded the construction and implementation of agricultural best management in the TMDL project area. More than $2.1 million dollars in NOD grant awards have gone toward funding more than $3 million in agricultural management practices, including constructing manure facilities storage, barnyard runoff control practices and implementation of other NR 151 runoff management standards. Currently, there are six livestock facilities located within project area that have been determined to be in violation of state agricultural performance standard and/or manure management prohibition requirements. As a result, these facilities have received NOD grants to install and implement BMPs to meet NR 151 agricultural performance standards and manure management rules.

Lake and River Planning & Protection Grants in the TMDL Project area

Since 2005, more than $2 million in lake and river planning projects and nearly $3 million in lake protection grants have funded over $7.8 in lake and river planning and projects in the TMDL project area.

DATCP Producer Led Watershed Councils Grants

Included in this first round of awards was a $20,000 award to the Farmers of Mill Creek for Water quality improvement and public outreach in Mill Creek. Specifically, through this project, the Farmers of Mill Creek Watershed Council will work with Portage County UW-Extension to perform cover crop research regarding effects on soil moisture and temperature, as well as research on agricultural drains to improve water management. The group will also offer incentives for planting cover crops and focus on outreach to farmers through educational field days. Mill Creek is the fourth highest TP loading tributary watershed upstream of Petenwell Reservoir.

Healthy Soil, Health Water Partnership

DNR staff had a lead, but “behind the scenes” role in establishing a partnership between ag producers and water quality advocates to find common ground and develop a strategy for promoting phosphorus reductions from agricultural operations that focused on healthy soil including cover crops and no-till practices. The first activity was a Healthy Soil, Healthy Water workshop for producers in the basin to learn and share stories about no-till and cover crop practices. The workshop featured a nationally known soil health expert as well as local producers who have already implemented no-till and cover crops practices, who shared their experiences about what works and what doesn’t in their specific location. More than 65 producers participated in the workshop. The partnership’s

next intended effort is to invite agronomists and the producers they work with to participate in a workshop as a group, so producers and agronomists that work with similar operation types and in similar physical settings can learn together about the locally and operation specific information they need to implement no till and cover crops and provide each other with post-workshop peer support and peer reinforcement.

Milwaukee River TMDL

The Milwaukee River Basin TMDL is comprised of four individual TMDLs: the Milwaukee River, Kinnickinnic River, Menomonee River and the Milwaukee Harbor/Estuary (which is also a Great Lakes Area of Concern). The TMDL is being developed as a third party TMDL by Milwaukee Metropolitan Sewerage District and its consultant, CDM-Smith. A major portion of the funding came from U.S. EPA via a Great Lakes Restoration Initiative grant. DNR and U.S. EPA have been on the TMDL development team providing quality assurance, policy input, regulatory guidance and independent direction to MMSD and its consultants. MMSD released the TMDL, on behalf of DNR, for preliminary public review in July 2016. DNR has conducted numerous stakeholder meetings throughout the TMDL area with all stakeholder groups including wastewater, industry, municipalities (stormwater), numerous public NGO partners and the agricultural community. DNR will conduct a public hearing and public comment period in November.

DNR is working with stakeholders to transition from TMDL development into the implementation phase. A significant proportion of pollutant loading (TSS, P, and fecal/e-coli) in the Milwaukee area comes from point sources – both municipal and industrial waste water discharges and urban stormwater. Nearly 100 percent of reductions in Kinnickinnic River (fully developed) and Menomonee River(~80 percent developed) will be required to come from point sources, while approximately 50% - >75 percent in the Milwaukee River will be required of point sources.

Point Sources

- DNR staff are conducting focused stakeholder meetings with WPDES permit holders to describe how TMDL limits will be incorporated into permits, what the permit cycle will look like and how permittees can work with DNR to address questions and best work together to facilitate smooth transition to new permits with TMDL limits.
- DNR staff are drafting TMDL-based WQBEL recommendations, in preparation for permit reissuances to begin once the TMDL has been approved by USEPA.
- DNR staff are working with community partners throughout the basin to facilitate watershed based permitting, water quality trading and adaptive management for facilities that may choose to explore these alternative permit compliance options.

Nonpoint Sources

Nonpoint contributions in the Milwaukee River Basin TMDL are primarily focused in the upper half of the Milwaukee River watershed, which includes portions of five counties. DNR has been working with county partners over the past two-plus years to prepare counties for TMDL implementation and addressing required reductions for NPS load allocations. Emphasis has been on developing partnerships to facilitate trading, development of farmer-led watershed initiatives and prioritizing potential project areas to facilitate the most effective implementation and utilization of NPS funding. DNR is encouraging the development of a nonpoint source plan that is also consistent with the Nine Key Elements of watershed-based planning. DNR has developed a "county template" to facilitate implementation planning and tracking of NPS reductions – consistent with DATCP requirements for county Land & Water Plans.

A farmer-led coalition has formed in Ozaukee County – which covers the majority of the agricultural lands in the Milwaukee River watershed.

DNR staff are working with MMSD to help facilitate implementation of two large nonpoint source reduction efforts – Green Seams (buffer and easement program) and Working Lands (soil health and agricultural wetland restoration) Initiative. MMSD has dedicated staff and allocated approximately $1.5 million to these programs over three years.

Upper Fox River & Wolf River Basins

Lake Winnebago, Wisconsin's largest inland lake and the Winnebago pool lakes account for 17 percent of the state's surface water resources. However, these lakes, along with many other lakes and tributaries within the Upper Fox and Wolf basins, are impaired due to excess phosphorus. Water leaving Lake Winnebago enters the Lower Fox basin. Because of this link, the completion of the Upper Fox-Wolf River TMDL is also important to addressing impairments in the Lower Fox. Overall, there are 69 waterways in the two basins listed on the 2016 impaired waters list due to phosphorus which feeds the excessive algal growth. Completion and EPA approval of the Upper Fox and Wolf River Basin TMDL is expected in 2017.

During the TMDL development process DNR has been engaging all stakeholders regarding development and planning for implementation.