

Priority Concern: Surface Water

Impaired Waters and Total Maximum Daily Loads (TMDLs)

PRIORITY CONCERN: Impaired Surface Waters and Total Maximum Daily Loads (TMDLs)

Water Management Plan Goal:

Reduce pollutants causing water quality impairments of surface water in watersheds within and affected by land in Blue Earth County.

Priority Concern

The Minnesota Pollution Control Agency (MPCA) is responsible for assessing surface water in Minnesota. The MPCA has found water quality impairments in virtually every watershed in Blue Earth County. The pollutants causing these impairments affect aquatic life and include mainly turbidity, nutrients, fecal bacteria, pesticides and mercury. Pollution impairments are caused by both point source and nonpoint sources. Point sources are regulated by the MPCA. Nonpoint sources are widespread and include both agricultural and urban land use. Nonpoint sources are regulated to a lesser extent than point sources and are more difficult to manage. Continuing existing programs to reduce nonpoint source pollution and working cooperatively on a watershed basis to prioritize local implementation efforts consistent with local, watershed and TMDL implementation plans are priorities of the *Water Management Plan 2008-2012*.

Priority Concern Assessment

The MPCA impaired waters assessment process and Total Maximum Daily Loads (TMDLs) are new to local water management planning. While impaired waters lists and TMDLs are relatively new, addressing pollutants causing water quality impairments has been the focus of the Comprehensive Water Planning for twenty years and local programs for decades. This has included SWCD administered programs to establish soil and water conservation practices, County and City programs and regulation, and local government construction of conservation practices. These programs are described in more detail throughout the *Water Management Plan 2008-2013*.

Nonpoint source pollution is recognized as a major source of pollution causing water quality problems. As the dominant land use in Blue Earth County, it is generally understood that runoff from agricultural land is a significant source of nonpoint source pollution related to land use. Runoff from urban areas, septic systems and natural processes such as channel and bank erosion are also nonpoint sources contributing to water quality impairments. Urban, nonpoint source pollution can be a significant source of pollution in lakes and small subwatersheds. Point sources include municipal wastewater and other industrial discharges. The MPCA regulates point sources with permitting, inspections, monitoring and reporting requirements. Pollutant discharge limits are assigned to individual facility permits.

Impaired Waters and Total Maximum Daily Loads (TMDLs)

The Federal Clean Water Act (CWA) requires States to adopt water quality standards to protect waters from pollution. These standards define how much of a pollutant can be in

the water and still meet designated use standards, such as drinking water, fishing and swimming. The standards are set on a wide range of pollutants and conditions which include bacteria, nutrients, turbidity, mercury and others. A water body is "impaired" if it fails to meet one or more water quality standards. The Clean Water Act, Section 303(d) requires States to identify and restore impaired waters.

In Minnesota, the MPCA administers the Clean Water Act and is required to:

- 1) Assess all waters of the State to determine if they meet water quality standards.
- 2) List impaired waters that do not meet standards. This list is also referred to as the 303d list or the impaired waters list.
- 3) Conduct studies in order to set pollutant reduction goals needed to restore waters. These studies are Total Maximum Daily Load studies (TMDLs).

A Total Maximum Daily Load (TMDL) is the basis for regulation of the Clean Water Act and is expressed quantitatively:

$$\text{TMDL} = \text{LC} = \text{WLA} + \text{LA} + \text{MOS}.$$

The following EPA definitions are important for understanding the regulatory part of TMDLs:

Loading capacity (LC) -- The greatest amount of loading that a water can receive without violating water quality standards.

Load allocation (LA) -- The portion of a receiving water's loading capacity that is attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources. Load allocations are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, natural and nonpoint source loads should be distinguished.

Wasteload allocation (WLA) -- The portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality-based effluent limitation.

Total maximum daily load (TMDL) -- The sum of the individual WLAs for point sources and LAs for nonpoint sources and natural background. If a receiving water has only one point source discharger, the TMDL is the sum of that point source WLA plus the LAs for any nonpoint sources of pollution and natural background sources, tributaries, or adjacent segments. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure that relate to a State's water quality standard. If Best Management Practices (BMPs) or other nonpoint source pollution control actions make more stringent load allocations practicable, then WLAs can be made less stringent. Thus, the TMDL process provides for nonpoint source control tradeoffs

Margin of Safety (MOS) -- A required component of the TMDL that accounts for the uncertainty about the relationship between the pollutant loads and the quality of the receiving water body. The MOS is normally incorporated into the conservative assumptions used to develop TMDLs (generally within the calculations or models) and approved by EPA either individually or in State/EPA agreements. If the MOS needs to be larger than that which is allowed through the conservative assumptions, additional MOS can be added as a separate component of the TMDL.

MINNESOTA IMPAIRED WATERS LIST

The MPCA is in the process of assessing surface waters. The list of impaired waters is expected to grow as the assessment process is ongoing. The impaired waters lists are revised every two years. The number of new waters on the proposed 2008 Impaired Waters List is longer than the 2006 list. The 2008 list must be approved by the

Minnesota River Basin Impaired Waters

According to the MPCA, in the Minnesota River Basin there are 36 new stream impairments and 10 new lakes added to the 2006 List. There are 99 impaired reaches in rivers and creeks, 64 lakes with impairments, and 340 individual TMDL studies are needed. (MPCA)

TMDLs

The number of TMDLs completed is relatively small but there are many TMDLs underway. Impairments from mercury make up a majority of the impairments addressed in the TMDLs completed. The MPCA summarizes the status of TMDLs on its web site and reports that in November 2007:

Draft/Public Noticed TMDLs: 2
addressing 10 impairments

Approved TMDLs: 16
addressing 95 conventional impairments and 511 impairments for Mercury

TMDL Studies (currently underway): 65
addressing 255 impairments

Inactive Projects (not underway): 234
addressing 1,113 impairments

Appendix A includes MPCA Impaired waters and TMDL fact sheets and maps.

Impaired Waters and TMDLs in Blue Earth County

There is a high density of impaired waters in Blue Earth County. The impaired waters requiring TMDLs are also affected by multiple pollutants or stressors. At least one impaired reach can be found on virtually every river and stream in the County, and more will likely be added during the planning period as the MPCA continues the assessment process. The MPCA has also just adopted water quality standards for acetochlor, a commonly used corn herbicide. There are two locations in Blue Earth County on the proposed 2008 Impaired Waters List for impairments caused by acetochlor. The most common pollutants include: Turbidity, Fecal Coliform, Acetochlor, and Mercury. MPCA maps and fact sheets displaying impaired waters are included in the Appendix A. The maps include the affected use and the pollutant causing the impairment.

Of the impaired reaches located in Blue Earth County, only one TMDL, for fecal coliform in the Greater Blue Earth River, has been completed. Downstream, the Lower Minnesota River Dissolved Oxygen Implementation Plan has been completed, but this TMDL is for low flow conditions and mainly affects regulation of point sources.

The MPCA TMDL studies currently completed or in process for impairments within Blue Earth County include:

- Greater Blue Earth River Fecal Coliform TMDL Report (approved)
- Greater Blue Earth River Fecal Coliform TMDL Implementation Plan (draft)
- Minnesota River Basin TMDL Project for Turbidity (in process)
- Greater Blue Earth River Turbidity TMDL Report (in process)
- Crystal Lake watershed (TMDL study begins 2008)

Minnesota River Basin TMDL Project for Turbidity

The following reaches of rivers in Blue Earth County are included in the Minnesota River Basin Turbidity Project:

- Blue Earth River – from the Rapidan Dam to the Le Sueur River
- Blue Earth River – from the Le Sueur River to the Minnesota River
- Le Sueur River – from the Maple River to the Blue Earth River
- Watonwan River – from Perch Creek to Blue Earth River

Others Rivers with Reaches on 2008 Impaired Waters List

- Minneopa Creek
- Maple River
- Little Cobb (also requires mercury TMDL)
- Cobb River
- Watonwan River (also requires mercury TMDL)

Lakes on the 2008 Impaired Waters List

- Crystal - Nutrient/Eutrophication
- Loon - Nutrient/Eutrophication
- Duck -Nutrient/Eutrophication
- Eagle lake - Nutrient/Eutrophication
- Lura – Nutrient/Eutrophication
- Washington - Nutrient/Eutrophication

2008 List – Acetochlor-Impaired Waters

- Unnamed Creek “Little Beauford Ditch” (also requires mercury TMDL)
- Le Sueur River – Maple River to Blue Earth River (also requires mercury TMDL)

Minneopa Creek

The State has designated Minneopa Creek as a Class 7 waters. Class 7 waters are those with “limited resource value for recreation and wildlife.” Minneopa Creek is a local and regionally significant water resource with Minneopa State Park located near the confluence of the creek with the Minnesota River. The State’s classification of Minneopa Creek should be upgraded to help improve and protect Minneopa Creek. Future NDPES and discharge permits should recognize local values and recreational and water quality needs for Minneopa Creek and this regionally significant State park.

LOCAL PROGRAMS and TMDLs

Voluntary efforts by land owners/operators are needed to reduce nonpoint source pollution from agricultural land use. Working with land owners/operators to encourage

voluntary establishment of soil and water conservation practices is mainly the role of the SWCD and NRCS. The SWCD and NRCS have been working with land owners/operators for decades. The SWCD and NRCS jointly utilize staff and financial resources to deliver programs and achieve soil and water conservation goals by using restoration methods with demonstrated effectiveness in reducing run-off, erosion, excess nutrients, fecal bacteria and other pollutants. The USDA NRCS is a significant source of financial incentives for soil and water conservation projects. The SWCD maximizes available funding for financial incentives by leveraging water quality grants from State and Federal sources and the USDA funding.

Local government regulatory authority and programs also reduce and prevent nonpoint source pollution from all types of land use. The County uses local land use controls to require land management practices that reduce run-off, excess nutrients, bacteria and other pollutants from feedlots, septic systems, rural development and other land uses. County regulations also prohibit certain land uses in sensitive areas preventing pollution and further degradation of area waters.

In addition to local programs, the County and SWCD have worked across County political boundaries to address water quality on a watershed basis, mainly with the GBERBA. This has included prioritizing areas for implementation in a watershed and working together to get watershed-based grants for establishing BMPs. Implementation of watershed projects has continued to be the role of the SWCD.

With respect to the impaired waters and TMDLs, the existing programs and service delivery structure at the County, SWCD and NRCS are effective means to accomplish TMDL, watershed, State and local goals. The ongoing programs, objectives and actions described in the *Water Management Plan 2008-2013* are well established and have produced measurable results. It is anticipated that new objectives and actions in the *Water Management Plan 2008-2013* will address water quality issues identified in future TMDL implementation plans. What has limited the ability to establish soil and water conservation practices is lack of stable project funds and local staff to work with land owners/operators to better identify local needs and respond accordingly with education and program changes.

Surface Water Quality Monitoring and Assessment

The County and SWCD have been involved with monitoring only as part of water quality projects. The County supports coordinated and centralized water quality assessment and monitoring programs and will support MPCA efforts to monitor surface waters to the extent possible. Meaningful water quality monitoring is costly and requires staff and financial resources not available at the County level.

Citizen Stream Monitoring

The Citizen Stream Monitoring program is managed and coordinated by the MPCA. The SWCD has been involved with Citizen Stream Monitoring through water quality projects and promotes citizen monitoring generally. Most of the volunteers are working in the Maple River, Watonwan River and a few of the lakes. Citizen stream monitoring data is submitted by the volunteers directly to the MPCA. The MPCA uses the data to assess conditions and has used the data for identifying turbidity related impairments.

Nonpoint source Pollution

The EPA guide *Guidance for Water Quality-Based Decisions: the TMDL Process* states that under the CWA, the only federally enforceable controls are those for point sources through the NPDES permitting process. According to the EPA, nonpoint source control measures may fail to achieve projected pollution or chemical load reductions due to inadequate selection, design or implementation of BMPs, or lack of full participation by all contributing sources of nonpoint pollution.

State and local regulations address nonpoint sources of pollution, but managing widely-distributed sources and expansive land area is challenging. Without regulation compelling generators of nonpoint sources of pollution to participate, achieving nonpoint source load reductions relies to a large extent on voluntary actions by land owners/operators and local government. TMDL plans addressing impairments related to nonpoint sources of pollution should involve relevant stakeholders early in the process to increase the likelihood of implementation.

The EPA has a list of suggested BMPs for different types of nonpoint source land use. The multi-category BMPs can be used in all areas. These BMPs are commonly used soil and water conservation practices with demonstrated effectiveness in reducing nonpoint source pollution from runoff, excess nutrients and erosion. The multi-category and agriculture BMPs are also well known soil and conservation practices that are part of USDA and State cost share programs.

Examples of Best Management Practices	
<p>MULTI-CATEGORY Buffer Strips Detention/sedimentation basins Devices to encourage infiltration Grassed waterway Interception/diversion Material ground cover Sediment traps Streamside management zones Vegetative stabilization/mulching</p> <p>CONSTRUCTION Disturbed area limits Non-vegetative soil stabilization Runoff detention/retention Surface roughening</p>	<p>AGRICULTURE Animal waste management Conservation tillage Contour farming and strip cropping Cover crops Crop rotation Fertilizer management Integrated pest management Livestock exclusion Range and pasture management Terraces</p> <p>URBAN Flood storage Porous pavements Runoff detention/retention Street cleaning</p>

Source: EPA, *Guidance for Water Quality-Based Decisions: the TMDL Process*

IMPLEMENTATION PLAN

Impaired waters and TMDLs

Water Management Plan Goal:

Reduce pollutants causing water quality impairments of surface water in watersheds within and affected by land in Blue Earth County.

GUIDING PRINCIPLES

- » The MPCA administers the Clean Water Act and is required to assess all waters of the State to determine if they meet water quality standards, list impaired waters that do not meet standards, and conduct TMDL studies in order to set pollutant reduction goals needed to restore waters.
- » The MPCA has identified river and lake water quality impairments due to multiple pollutants, stressors and indicators in every watershed in Blue Earth County.
- » Point source pollution is regulated through State administration of the Clean Water Act National Pollution Discharge Elimination (NPDES) permit process and other MPCA programs.
- » Nonpoint source pollution is a significant source of water quality impairments in Blue Earth County.
- » The County and SWCD support cooperative watershed efforts to identify and prioritize areas and water quality restoration strategies for implementation at the local level.

ONGOING ACTIVITIES

The existing program and service delivery structure at the County, SWCD and NRCS can effectively accomplish nonpoint source TMDL, watershed, State and local goals. The ongoing program activities, objectives and actions described in the *Water Management Plan 2008-2013* include soil and water conservation practices that have demonstrated effectiveness in reducing runoff, excess nutrients, fecal bacteria and other pollutants.

The County's use of its planning and regulatory authority has encouraged and required land management practices that reduce run-off, excess nutrients, bacteria and other pollutants from feedlots, septic systems, rural development and other land uses. County regulations also prohibit certain land uses in sensitive areas preventing pollution and further degradation of area waters. The County's feedlot and SSTS programs are administered in accordance with and exceed State rules.

The State has designated Minneopa Creek as a Class 7 waters. Class 7 waters are those with "limited resource value for recreation and wildlife." Minneopa Creek is a local and regionally significant water resource with Minneopa State Park located near the confluence of the creek with the Minnesota River. The State's classification of Minneopa Creek should be upgraded to help improve and protect Minneopa Creek. Future NPDES and discharge permits should recognize local values and recreational and water quality needs for Minneopa Creek and this regionally significant State park.

WATER MANGEMENT PLAN:

TMDLs are relatively new and few have been completed and approved by EPA. Only one TMDL implementation plan has been completed for impaired reaches in Blue Earth County. The MPCA's needs and expectations related to local involvement in TMDLs will be defined as MPCA completes more TMDL studies and implementation plans. The County and SWCD will work to restore impaired waters consistent with TMDL implementation plans. As the County and SWCD prepare annual plans and prioritize local programs, the prioritization process will be influenced by the availability of data, funding and other resources associated with TMDLs at varying local, watershed and basin scales. The level of involvement will depend on the availability of staff and other resources available. Additional staff is needed at the SWCD to work with land owners/operators to accomplish local, watershed and TMDL goals.

There is a high density of TMDLs in Blue Earth County with common nonpoint sources of pollution and recommended best management practices to address those pollutants. Combining TMDL implementation efforts to address as many TMDLs and pollutants as possible within the County would be the most efficient means to accomplish TMDL goals and best utilize existing programs and human resources. Combining TMDL areas also maximizes the affected land area increasing the likelihood that project funding will be available for interested land owners/operators. The County and SWCD prioritize implementation actions based on a number of factors. The availability of program and project funding can make projects timelier if funding is not available for implementation of other priority actions.

Objective 1: Support development of TMDL Implementation Plans.

Action 1: Work cooperatively on a watershed basis to identify and prioritize implementation activities.

Action 2: At the request of the MPCA or other TMDL sponsor and within the constraints of local staff time and resources, participate in preparation of TMDL studies and implementation plans

Objective 2: Implement soil and water conservation and other practices identified in TMDL implementation plans.

Action 1: Work with agricultural land owners/operators to establish best management practices to achieve TMDL implementation goals as practicable considering availability of local staff and project resources.

Action 2: Seek funding for a County-based staff person at the SWCD to work with land owners/operators in all impaired waters and TMDL Implementation Plan priority areas to establish soil and water conservation practices known to address multiple pollutants causing impairments.

Action 3: Work with other nonpoint sources identified in TMDLs to increase awareness of water quality problems, change behavior and establish best management practices where appropriate and practicable considering availability of local staff and project resources.

Objective 3: Increase participation in the MPCA Citizen Stream Monitoring Program.

Action 1: Promote Citizen Stream Monitoring in SWCD and County newsletters, web site and other information sources.