WRAPS HANDBOOK

MINNESOTA SOYBEAN
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WRAPS HANDBOOK

ACKNOWLEDGMENTS

This handbook was prepared by Houston Engineering, Inc. (HEI) on behalf of the Minnesota Soybean Research and Promotion Council. HEI is a full-service engineering firm, based in Maple Grove, MN. Since 1968, HEI has earned a reputation as a leader in water resources, water quality, and environmental work. HEI's Water Quality Team is contracted by the Minnesota Pollution Control Agency (MPCA) to perform total maximum daily loads (TMDLs) and watershed restoration and protection strategies (WRAPS) to provide the technical documentation necessary to improve water quality across the state.

Serving the agricultural industry today, HEI understands the interconnected nature of water quality in streams, lakes, and farmed lands. They have provided the technical information necessary to help farmers and organizations better understand the complex regulatory system, ultimately empowering them to engage in the process. The handbook was authored by civil engineers and scientists with more than 60 years of combined experience in the field.

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PEER REVIEW

To ensure that this handbook provides reliable and durable value to agricultural farmers and producer organizations, the document underwent an extensive peer review process. Local, state, and national experts on agriculture and clean water issues were sought to provide reviews of this document. HEI greatly acknowledges the feedback and input received from these reviewers. Their work has greatly improved this handbook.

HEI would like to thank the following individuals for their review of an earlier version of the WRAPS Handbook:

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1 LIST OF ACRONYMS

BWSR – Minnesota Board of Water and Soil Resources
DNR – Minnesota Department of Natural Resources
EPA – US Environmental Protection Agency
FSA – US Farm Service Agency
HSPF – Hydrologic Simulation Program-Fortran
IMPLNDs – Impervious land segments
IWM – Intensive watershed monitoring
LA – Load allocation
LGU – Local government units
MDA – Minnesota Department of Agriculture
MDH – Minnesota Department of Health
MOS – Margin of safety
MPCA – Minnesota Pollution Control Agency
NRCS – US Natural Resource Conservation Service
RC – Reserve capacity
RCHRES - Reaches and reservoirs
SWCD – Soil and water conservation district
TMDL – Total maximum daily load
WLA – Waste load allocation
WRAPS – watershed restoration and protection strategies

GLOSSARY OF TERMS

- **303d List:** List of impaired waters within Minnesota.
- **Impervious land segments (IMPLNDs):** impervious portions (urban developed areas) in the watershed.
- **Load Allocation:** the portion of the waterbody's diet attributed to nonpoint sources in the TMDL.
- **Load Duration Curve:** analysis of flow and water quality monitoring data to estimate the TMDL equation.
- **Natural Background:** the portion of a TMDL calculation that is allocated to background levels of pollution that would occur naturally.
- **Nonpoint Source Pollution (NPS):** any pollution that doesn't come from a point source (defined below), such as runoff from urban areas and agricultural lands. Unlike point sources like sewage treatment plants, NPS comes from many diffuse sources and is caused by rainfall or snowmelt moving over and through the ground.
- **Pollutants:** for the purpose of this document, this refers to any substance (e.g. sediment and phosphorus) that has been/are considered to be "pollutants" under the Clean Water Act.
- **Margin of Safety:** added to the TMDL equation to account for any uncertainty (or unknowns) associated with the allocations and loading capacities; think of it as a "fudge factor".
- **Pervious land segments (PERLNDs):** land segments of similar land types (e.g. cropland).
- **Point Source Pollution:** any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture. Simply put, most any pollution that comes from a pipe.
- **Protection strategies:** actions taken to maintain waters that are not impaired, or maintain high quality waterbodies that have exceptional water quality. In other words, waters on or near your property do not need to be impaired to be priorities for on-the-ground projects.
- **Reaches and reservoirs (RCHRES):** river segments and lakes.
- **Reserve Capacity:** portion of the waterbodies diet allocated to future growth in a TMDL.
- **Restoration strategies:** actions designed to improve the condition of each individual waterbody that is impaired to meet water quality standards. Developed for all impaired waters.
- **Waste Load Allocation:** the portion of a waterbody's diet allocated to permitted sources of a pollutant in a TMDL.

PREAMBLE

This handbook was created as a guide for farmers and producer organizations to constructively engage in the development, review, and implementation of total maximum daily load (TMDL) and watershed restoration and protection strategies (WRAPS) studies. Farmers are an important stakeholder group, and once equipped with a sound understanding of the process, they can help to shape the outcomes through their participation.

The handbook is designed to inform farmers and their organizations about:

- Why TMDLS/WRAPS are developed;
- Why you should care about TMDLS/WRAPS;
- Opportunities for farmers to engage in the development process;
- How to conduct a constructive review of a WRAPS or TMDL; and
- How farmers can help guide the implementation of the studies once they are complete.

You may have heard the acronyms **TMDL** or **WRAPS** before. These terms are related to federal and state water quality programs that will have an influence in your backyard. A TMDL is a regulatory term in the US Clean Water Act, describing essentially how much of a pollutant (e.g. sediment, nitrogen, phosphorus) a waterbody can receive and still meet its designated uses. WRAPS reports are completed to identify the strategies to clean up or protect streams and lakes based on TMDL reports or the data that will eventually be used to write a TMDL report. Minnesota uses a strategy, termed a "watershed approach", that considers all applicable waterbodies within a common area.

By using this handbook, you will learn how to help in local TMDL/WRAPS implementation efforts, helping ensure that conservation efforts are a good fit for agricultural operations and the community. To equip you with the tools needed to provide leadership, this handbook identifies when, where, and how you can constructively engage in the TMDL/WRAPS process. It will also provide guidance about how to stay involved once studies are complete. The handbook provides a particular focus on recognizing opportunities that are most beneficial for conservation and agricultural, allowing you to advocate for practices that fit in your operation and community.

POLICY IMPLICATIONS:

1. ***You can help lead implementation efforts -*** *Producer organizations have the opportunity to engage in WRAPS/TMDL implementation*
2. ***Learn to review WRAPS/TMDLs -*** *Deliver guidance on constructive reviews of WRAPS/TMDLs during public comment*
3. ***Understand Conservation Project Delivery -*** *Understand how WRAPS/TMDLS affect the delivery of conservation projects*
4. *Resources for implementing practices through cost-share*
5. *Participating may help to maintain voluntary conservation practices*

PRACTICAL IMPLICATIONS:

1. *Gain a better understanding of the WRAPS/TMDL process*
2. *Learn when, where, and how to constructively engage in the process*
3. *Be able to promote your preferred conservation projects*

Although this handbook is not intended to be a tool for challenging the completion of TMDL/WRAPS planning or implementation, it will empower you to influence the outcomes. Improved participation by empowered farmers and organizations will result in better outcomes, including prosperous agriculture and improved conservation. As they say, the decisions are made by those who show up. If you don't get a seat at the table, you may end up on the menu!

INTRODUCTION: MANAGING WATER IN MINNESOTA

This handbook provides farmers and producer organizations with an "insider" perspective on what federal and state TMDL/WRAPS processes are, and how they are developed, reviewed, and implemented. While this handbook focuses on the TMDL/WRAPS process, it also introduces farmers and producer organizations to Minnesota's "watershed approach" for managing water **(Figure 1**).

For example, after the TMDL/WRAPS studies are complete, they will most likely be incorporated into local water management plans, such as the emerging One Watershed, One Plan process, which will identify the local on-the-ground management that will occur in your watershed.

These plans then serve as road maps for allocating funds to voluntary conservation efforts.

It is critical that you recognize that TMDL/WRAPS studies are just part of the "watershed approach" and your ongoing involvement in managing water in Minnesota is crucial to ensure that agriculture is part of a decision-making and funding allocation process that is and remains voluntary!

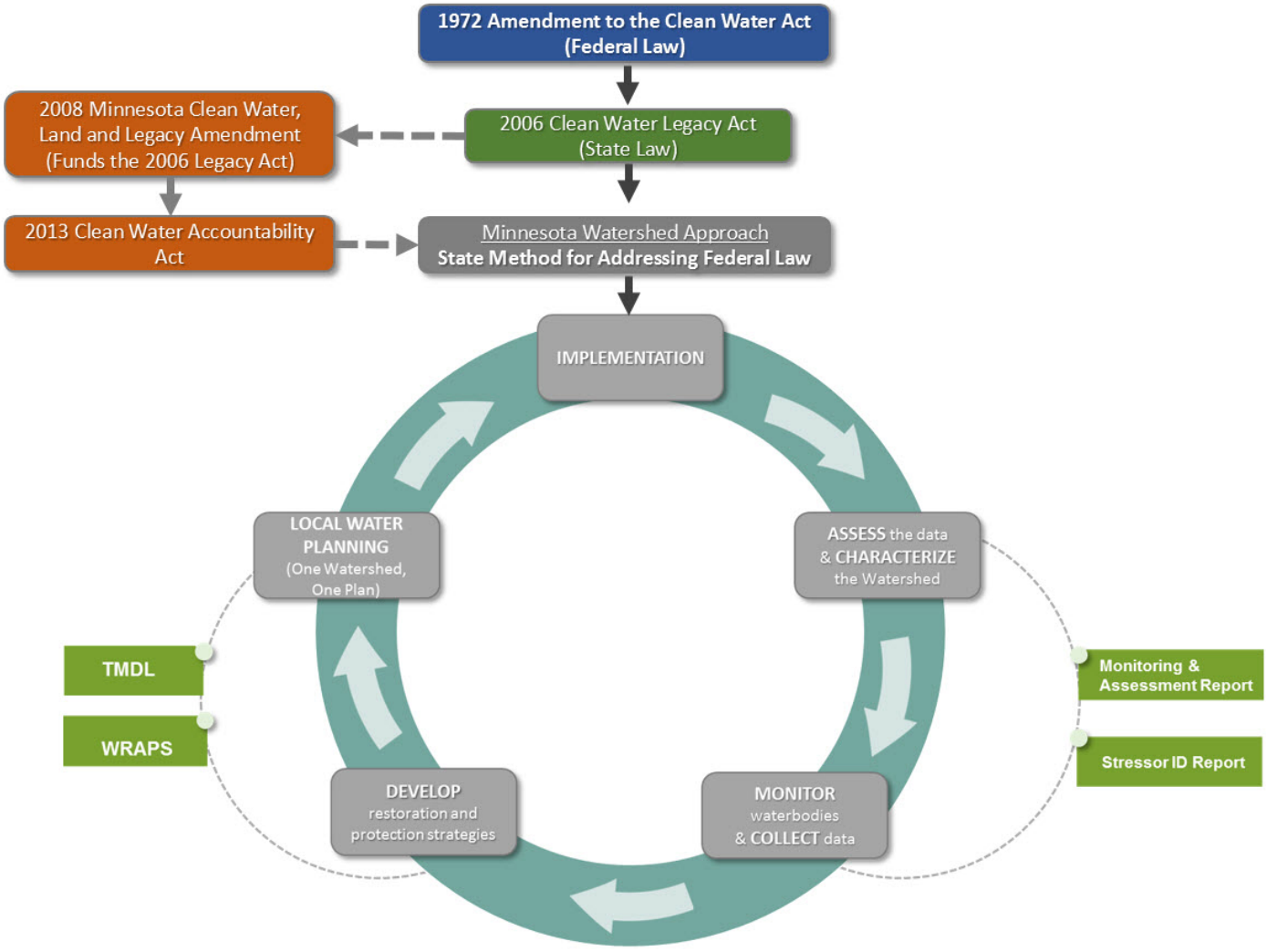


Figure 1. Minnesota's Watershed Approach, a ten-year cycle

1 TMDLS AND WRAPS OVERVIEW

This section provides an overview and background on the TMDL/WRAPS process. The purpose is to ensure that readers have a general understanding of how TMDL and WRAPS originated, why and how the studies are conducted, and what types of on-the-ground implementation strategies are developed. Essentially, this section provides you with a primer on the TMDL/WRAPS process in Minnesota.

1.1 WHAT IS A TMDL (FEDERAL)?

Fires on Cuyahoga River brought water quality issues under a national spotlight.

In the early 1970s, the water quality of the nation's surface waters was rapidly declining. As many as two-thirds of the surface waters in the United States were considered polluted. In 1969, Ohio's Cuyahoga River dramatically caught on fire because of oil slicks floating on the surface of the river. This mobilized public concern about declining water quality across the nation, ultimately leading to sweeping legislation known as the 1972 Amendment to the Clean Water Act.

The Clean Water Act establishes three primary goals for our nation's water:

1. Attaining "fishable and swimmable" waters';
2. Creating a basic structure for managing pollution discharges into the nation's surface waters; and
3. Setting standards for the water quality conditions of all surface waters.

To accomplish goals of "fishable and swimmable" waters, the Clean Water Act set several things into law. First, the Clean Water Act regulates industrial discharge into the nation's waters, addressing the primary cause of the Cuyahoga River fire. Under this regulation, the Clean Water Act prohibits any point source (e.g. pipe from a factory or sewage treatment plant or ditch) discharge of pollutants into waters without a permit.

The Clean Water Act also required states to set "water quality standards" for all surface waters in the nation. Standards are based on the water providing a designated "beneficial use". To provide this beneficial use, a water quality standard can be set in two forms:

1. **Numeric Water Quality:** designated by the amount of pollutant the waterbody can tolerate while still meeting its beneficial use designation. **Numeric values** (e.g. 60 micrograms per liter (ug/L) of total phosphorus) are one way of describing water quality.
2. **Narrative Water Quality:** describing conditions of the water that are not numeric (e.g. free from toxic chemicals or capable of supporting a Walleye sport fishery and define the conditions of the water based on their "beneficial use" classification. The term beneficial use related to what the body of water is designated for; such as fishing, swimming, or drinking water. **Narrative values** are a reflection of a body of water's ability to maintain its beneficial use.

The Clean Water Act requires states, territories, and tribes to develop a list containing any and all waterbodies that do not meet their water quality standards. Any waterbodies that do not meet their standards are referred to as "impaired". Under the Clean Water Act, these waters are required to have a TMDL developed for that waterbody. A TMDL can be considered a "pollution diet" for a waterbody, designed to reduce the amount of pollutants in a waterbody and allow it to meet standards.

1.2 WHAT ARE WRAPS (STATE)?

In 2008, Minnesota passed the Clean Water, Land, and Legacy Amendment, increasing sales taxes three-eighths of one percent for 25 years to invest in the State's clean water, parks and trails, habitat, and the arts. Of the additional sales tax revenue, 33% is dedicated to the Clean Water Fund (CWF), creating a pool of money to be invested in water management activities.

As with any increased expenditure of public dollars, there are increased expectations for recognizable benefits. As such, the 2013 Clean Water Accountability Act was passed to ensure pollution sources are properly identified, and that state funding is targeted to areas that provide the maximum water quality benefit. The legislation also defined and set WRAPS reports into law and made them the responsibility of the MPCA.

You can provide feedback during WRAPS to promote desired projects or work already completed.

The WRAPS is a document that is intended to establish the strategies used to "restore" impaired waters and "protect" waters that are not impaired. In other words, the WRAPS is the path for implementing the TMDL and protecting waters that are not impaired. In addition to implementation strategies, the WRAPS also include summaries of all the reports developed through the TMDL process. The intended outcome of the WRAPS is to guide local implementation of management practices aimed at improving water quality and eventually ensure surface waters are in compliance with the federal Clean Water Act. During the WRAPS development, you have the opportunity to provide powerful feedback. This includes promoting projects that you'd like to see built, promoting the good work already being done by farmers, identifying those conservation practices that don't fit well in your operations or local farming community, and securing additional resources for implementing conservation practices.

1.3 MN WATERSHED APPROACH (STATE)

In 2006, the Clean Water Legacy Act was passed in Minnesota. Goals of the Clean Water Legacy Act include developing TMDLs in a timely manner, taking actions to help improve impaired waters, and ultimately restoring water quality where needed. To accomplish these goals, Minnesota adopted what became known as the "Watershed Approach." With 81 major watersheds in Minnesota, the approach sets a 10-year cycle for each major watershed to first monitor and assess the impairment status for its surface waters, then establish strategies to improve or protect waterbodies. When a 10-year cycle is completed, it starts all over again.

The stated goals of the watershed approach include, in part:

- Provide advance notice to interested stakeholders, local governments, and volunteers regarding monitoring plans.
- Assist local groups in ramping up their monitoring efforts to provide data in advance or in between agency monitoring efforts.
- Provide stakeholders a heads-up as to when they can expect the TMDL study or protection strategy work to begin in their area.

- Ensure that comprehensive information on the status of water quality – and water quality management efforts – is collected, evaluated, and provided to state and local partners at least once each decade. A recurring theme in these goals is stakeholder engagement.

The first two years of the 10-year cycle are dedicated to intensive watershed monitoring (IWM). Here, many, but not all lakes and streams in the watershed are monitored and assessed for chemical and biological health.

Two reports are created as products of this step:

1. The **"Monitoring and Assessment Report"** summarizes the results of intensive water quality monitoring efforts.
2. The **"Stressor Identification Report"** summarizes the health of the watershed's aquatic life (fish and insects).

Both of these documents are an excellent resource to learn more about local water quality. Information from these documents also guides the development of the TMDL pollution diet. Typically, monitoring data for a watershed is limited to what was collected during the 2-year intensive monitoring portion of the Watershed Approach. This is rarely enough data to develop load allocations for the TMDL equation (see Section 2.7). For this reason, models are used to fill in the gaps. The Hydrologic Simulation Program - Fortran (HSPF) model has been identified by the MPCA as a model that will be used to support the development of TMDLs. The MPCA has supported the statewide expansion of the HSPF model to support the development of TMDLs/WRAPS across the state.

The Monitoring and Assessment Report and the Stressor Identification Report are both excellent resources to learn more about local water quality in your area.

Together, data that is housed in the Monitoring and Assessment Report, the Stressor Identification Report, and the watershed model (likely HSPF) combine to create the information needed to generate the TMDL and WRAPS reports. Once completed, these documents will be used as an information resource for local water management in your watershed.

1.4 RESTORATION VS. PROTECTION STRATEGIES

The WRAPS implementation table includes different strategies for water management, depending on the quality of the water. The WRAPS implementation table identifies on-the-ground management practices in two different categories:

1. **Restoration strategies:** are actions designed to improve the condition of each individual impaired waterbody to meet water quality standards. These strategies are developed for all impaired waters.
2. **Protection strategies:** are actions taken to maintain waters that are not impaired, or maintain high quality waterbodies that have exceptional water quality. In other words, all waters that are not impaired receive a protection strategy.

All waterbodies assessed through the TMDL/WRAPS process have a strategy in the WRAPS implementation table. The "strategy types" are defined in the implementation table, where types of on-the-ground management practices are identified, such as grassed waterways, controlled drainage, sediment control basins, soil nutrient testing, conservation tillage, and prescribed grazing. This implementation table drives the locations and types of practices that will be implemented to achieve TMDL/WRAPS goals.

Therefore, the WRAPS implementation table is an important tool for both state funders and local practitioners to identify types of future projects that can be implemented with the greatest chance for success. However, these projects typically are not targeted to specific fields or locations. You may have one or both of the restoration and protection strategies that apply to your property, depending on where you live.

Providing input on the types of practices included in the WRAPS implementation table and locations where they are practical is a great opportunity for you to guide the WRAPS/TMDL process.

1.5 BENEFICIAL USES AND STANDARDS IN MINNESOTA

Minnesota designates its water quality standards to ensure that surface waters support their designated beneficial uses. These standards are used as benchmarks for determining if a specific surface waterbody meets the standards. Waters that do not meet the standards are deemed "impaired," meaning they no longer support one or more of their designated beneficial uses.

Beneficial uses may include fishing, drinking, swimming for people and habitat for aquatic life.

Water quality standards vary depending on the beneficial use that's designated for the waterbody. Waterbodies are assigned a beneficial use class based on how people, aquatic life (fish, insects, and plants), and wildlife use the water. Beneficial uses include aquatic life (fishable), aquatic recreation (swimable), domestic consumption (public drinking water), and limited resource value use classes (sometimes ditches), to name a few. The strictness of water quality standards depends on the benefical use of the waterbody under question. Waters with a designated beneficial use that relates to human health, such as domestic consumption, have stricter water quality standards than waterbodies that have limited biological or human use potential, like drainage water in concrete ditches. **Appendix A** shows all of the beneficial use classes and subclasses that exist in Minnesota waters, along with their associated water quality standards.

Some designated beneficial uses also have associated subclasses. An example is the Class 2 beneficial use. Class 2 Waters of the State protect aquatic life and recreation uses of surface waters. Class 2 waters are further divided into five different subclasses (A, B, Bd, C, and D) that narrow the scope of "aquatic life and recreation". Class 2A waters protect cold water, sport, or commercial fish; because these fish are very sensitive to environmental changes, their associated water quality standards are very strict. Class 2B waters protect cool or warm water fish and aquatic life that are generally more resilient to environmental changes, making the water quality standards less strict. There are a number of additional classes associated with waters in Minnesota (see **Appendix A**; see page 18 for more details).

Water quality standards also vary by geographic regions. Water standards in the northern regions of Minnesota are generally more stringent to protect the higher water quality typically found in that part of the state. Conversely, water standards may be less strict in the southern regions of the state. State water quality standards shift to recognize these differences in expectations and conditions of the water resources for both anticipated uses and geographic significance. In addition, the state can also enforce non-degradation protections for waterbodies that have exceptional water quality (e.g. meet the standards and beneficial uses for everything). A non-degredation protection typically means that no impact can be made to the water quality of the waterbody without being granted an exception.

It is worth noting that the MPCA is currently attempting to adjust water quality standards for a subset of rivers and streams by adopting a tiered aquatic life use (TALU) framework. This framework is an emerging issue that is intended to tie the TMDL process more closely to the biology (e.g. fish and insects) of streams. This process is currently going through the state's rule making process and has not yet been officially adopted. Learn more here: https://www.pca.state.mn.us/water/tiered-aquatic-life-use-talu-framework.

1.6 MAKING THE 303(D) LIST

The state is required to submit a list of impaired waters to EPA every two years. The impaired waters list is also known as the 303(d) list, for the section of the law that requires the list to be created. Waterbodies are placed on the 303(d) list if they are do not meet the standards and are therefore designated as impaired.

There are several steps necessary for determining if a body of water has this listing, including:

1. **Monitoring data:** Data from the waterbody is evaluated against the water quality standards. For example, monitoring data to evaluate phosphorus standards involves gathering water samples following a set protocol to identify how much phosphorus is in the water. For aquatic life standards, fish, insects, and plants are gathered to evaluate if sufficient aquatic life is present within the surface water.
2. **MPCA Evaluation:** An MPCA biologist or water quality specialist then evaluates and provides a recommendation as to whether or not a waterbody is impaired.
3. **Comprehensive Watershed Assessment:** This assessment is performed to evaluate if a waterbody is providing its designated beneficial uses.
4. **Professional Review:** Finally, a Professional Judgement Group, made up primarily of MPCA staff, reviews the information and officially decides if a waterbody is impaired.
5. **Waterbody is Listed as Impaired:** Depending on the outcome of the review, impaired waterbodies are then added to the draft 303(d) Impaired Waters List. This is a statewide working list of all bodies of water that are deemed to be impaired.

1.7 TMDL FORMULA

To engage in the process of establishing the TMDL, it is important that you have a minimum understanding of what the TMDL is based on. You do not need to know how to develop the equation, but you should understand what each element means.

The TMDL formula is an equation used to calculate the maximum amount of a pollutant, like sediment or phosphorus, a waterbody can receive and still meet the State's water quality standards. Think of it as the diet of a waterbody. The TMDL is calculated as:

$$TMDL = LC = WLA + LA + MOS + RC$$

The TMDL of a waterbody is equal to its load capacity (LC), or the amount (load) of a pollutant it can digest and/or carry without exceeding its water quality standard on any given day. This loading capacity is spread amongst various types of pollution sources, called allocations. Each type of allocation is listed below with an example of the types of pollution sources for each type of allocation;

- wasteload allocation (WLA)
- loading allocation (LA)
- margin of safety (MOS)
- reserve capacity (RC)

The **wasteload allocation (WLA)** in the TMDL equation is the portion of a waterbody's diet allocated to permitted sources of a pollutant. These permitted sources are point sources (e.g. coming out of a pipe) and require National Pollution Discharge Elimination Systems (NPDES) permits[1]. Examples include municipal wastewater treatment facilities, industrial sources, construction activities, some feedlots[2] and municipalities that require a Municipal Separate Storm Sewer System (MS4) permit. All sites with permits are accounted for under TMDL WLA. In other words, permitted discharges have limits on how much pollutant they can discharge, and the TMDL equation adds those up and accounts for these sources of pollution already being allowed and allocated to the water. The CWA states that permitted dischargers are to use the best available and affordable technology. This means that permitted sources only require treatment of what is practical. For larger cities where there are many sources that are too difficult to separate, WLA allocations are assigned and managed through an MS4 permit.

*The **WLA** is the portion of the waterbody's diet allocated to permitted sources of a pollutant.*

The load allocation (LA) in the TMDL equation represents the portion of the waterbody's diet attributed to nonpoint sources. In other words, every source that does not require a permit. Typically, all nonpoint sources of a given pollutant are grouped into the LA and separate allocations are not given for specific nonpoint sources, unless available data allow for more specific allocations. This means there is no separate allocation for agricultural areas versus forested areas. These nonpoint sources include runoff from agricultural lands; groundwater flows (from springs); and any natural background source, including in-channel or in-lake processes (e.g. streambank erosion, gully and rill erosion, etc.). In most cases, this allocation will be the largest portion of a TMDL diet. There are various ways to determine the LA (various watershed models or observed data), but most likely the LA is estimated as the remaining loading capacity not accounted for by either the WLA, MOS, or RC. In other words, the LC gets set and then the WLA, MOS, and RC are subtracted from the LC to estimate what load can be allocated to LA.

*The **LA** represents the portion of the waterbody's diet attributed to nonpoint sources; or, every source that does not require a permit.*

The margin of safety (MOS) is added to the TMDL equation to account for any uncertainty (or unknowns) associated with the allocations and loading capacity; think of it as a "fudge factor", which in practice makes the standard more strict. The MOS is intended to account for natural variation in the systems and ensure preservation of the receiving waterbody's health. The uncertainty can be associated with data collection, lab analysis, data analysis, and/or modeling errors. Typically, an explicit 10% of the total loading capacity is used to estimate the MOS. Let's say, for example, a waterbody can receive 100 units of a pollutant. If a 10% explicit MOS was used, 10 units would be held making the functional 90 units the functional load the waterbody could receive from the WLA, LA, and reserve capacity (described below). If an alternative method is used, make sure the reason for use of the method is clearly described so that you know why an alternative method was used. Alternatives will typically be implicit. For example, a nearby pristine waterbody may be used to set a MOS.

*The **MOS** is added to the equation to account for any uncertainty or unknowns with pollutant loading. This gives the TMDL a "fudge factor".*

[1]For information on USEPA's NPDES Permits, go to: http://water.epa.gov/polwaste/npdes/
[2] http://www.pca.state.mn.us/index.php/view-document.html?gid=16385

The reserve capacity (RC) is a portion of the waterbody's diet allocated to future growth and changes in the watershed. If a waterbody has extra capacity (not allocated to either WLA or LA) or the watershed is expected to become more urbanized, a portion of the loading capacity is set aside to account for this growth. It is important that the reserve capacity is justified in the text. This is unused pollutant allocation that will be used at a later date, by new permitted discharges. RC is typically used in developing areas. You should consider asking about the time horizon used to calculate RC in your watershed. If an RC is not assigned, then no growth is anticipated, or any additional load increase requires an offset, such as pollutant trading.

*The **RC** is the portion of the waterbody's diet allocated to future growth or changes in the watershed.*

In streams, the TMDL formula is usually based on an analysis of flow and water quality monitoring data called a "**load duration curve (LDC)**". LDCs are used because there usually is a strong relationship between total pollutant loading and flow. This means that flow and pollutant loading vary together. In other words, with more water you can generally expect more of a pollutant. Only part of these curves are typically used for setting load allocations, however, the EPA reviews and approves the entire LDC.

*The **LDC** is an analysis of flow and monitoring data that serves as the basis of the TMDL formula.*

1.8 WHY DO A TMDL?

TMDLs are legal documents that are required by states, tribes, and territories to comply with the Clean Water Act. They are generally required for every waterbody that is listed as impaired. It is important to remember that the purpose of the TMDL is to improve, protect, and/or maintain the water quality of the state's surface water resources. At the same time there is a legal requirement that will have an effect on future permitting, on the types of activities that occur in the landscape, and on what the strategies are for implementing conservation practices.

In rural landscapes, the TMDL load allocations and WRAPS implementation strategies focus on agricultural lands in southern and western Minnesota. The methods for establishing load allocations (see Section 2.7) have been frequently debated, particularly regarding how to account for natural background of pollutants. The current methods described in this handbook are currently an accepted method for establishing TMDLs for impaired waters.

Setting pollution diets is the first step to restoring impaired waters to meet their beneficial use.

Setting pollution diets through TMDLs is the first step to restoring impaired waters so that they can meet their designated beneficial use. The TMDL diet can be compared with the actual pollutant load to deterimine how much those pollutants need to be reduced to meet water quality standards. The TMDL should also identify areas in the watershed that are sources of the identified pollutants. One of the first steps in identifying where to prioritize efforts to improve water quality is to understand where the primary sources of those pollutants are coming from. It is important to note that the TMDL does not include detailed implementation strategies that can be adopted to reduce pollutant loading to an impaired waterbody, or how to protect a body of water that is not impaired. Currently, addressing issues identified through the TMDL/WRAPS process requires volunteer adoption for most practices. This information is contained in WRAPS, which is discussed next.

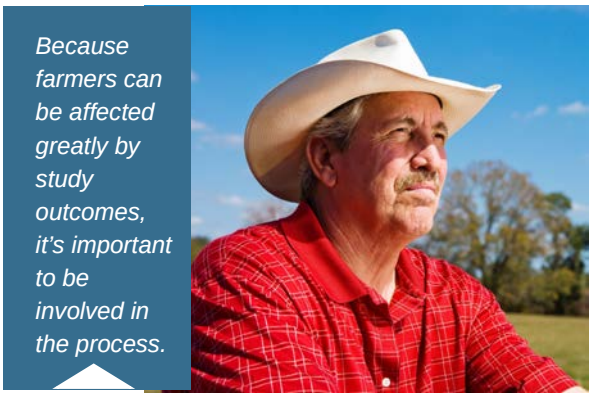
2 WHY SHOULD FARMERS CARE?

This section focuses on why farmers and their organizations should care about the development, review, and implementation of WRAPS and TMDLs. In particular, this section covers **constructive outcomes** that can be reached from engaging in the process and discusses undesired outcomes that may result if farmers **don't** engage in the process.

The TMDL/WRAPS process will proceed and be implemented with or without the input of the agricultural community. The process for collecting input will have other participants, so your participation helps to ensure that agriculture will be represented in the discussion. This process will also set the direction for many of the on-the-ground conservation practices that are available to farmers for implementation and help to secure funding to implement those practices. It also gives opportunities for the agricultural community to promote good work already underway in their watersheds. This is precisely why you should engage in the TMDL/WRAPS process, and continue to stay engaged even after it is complete.

2.1 HOW DOES THIS AFFECT FARMERS?

TMDL pollution diets define the amount of pollution (e.g. sediment, nitrogen, phosphorus) that can be delivered to waterbodies from agricultural lands and other nonpoint sources. For many watersheds, agriculture is the primary focus of pollution diets. However, current policies do not require/regulate that practices be implemented to treat nonpoint source pollution to reach TMDL/WRAPS goals. Instead, TMDL/WRAPS are used as a foundation for guiding voluntary implementation and in targeting state funding. However, if insufficient progress is made toward TMDL pollution diets, more implementation controls or regulations may be sought to reach TMDL goals. With TMDL/WRAPS informing the direction of conservation practice implementation, you will likely be affected by the outcomes of TMDLS, even with voluntary implementation programs.



While farmers may be affected by the TMDL/WRAPS processes, it also provides an opportunity for you to provide leadership including:

- Where and which types of conservation practices are prioritized for implementation in your watershed.
- Promoting the good work already being done by farmers and demonstrating to the public that Minnesota agriculture is actively engaged in conservation efforts. However, you need to participate to be heard.

With or without you, the TMDL/WRAPS will proceed to set pollution diets, influence public perception, and guide the direction for locations and types of conservation practice that are implemented and set funding priorities for implementation. Therefore, it's very important that farmers engage in the process to ensure balance.

2.2 GETTING PROJECTS DONE THAT YOU CARE ABOUT

There are two key outcomes of the TMDL/WRAPS process that have already been described in this handbook: (1) a pollution diet and (2) a management direction/strategy to reach the diet. There are literally hundreds of different conservation practices that can be implemented on agricultural lands to work towards TMDL/WRAPS goals, with new and innovative practices emerging every year. However, farmers

know better than anyone that not every practice can fit in every field, and some just aren't practical within your operation. Without your participation, these factors will likely not be considered when management directions are set to reach TMDL pollution diet goals.

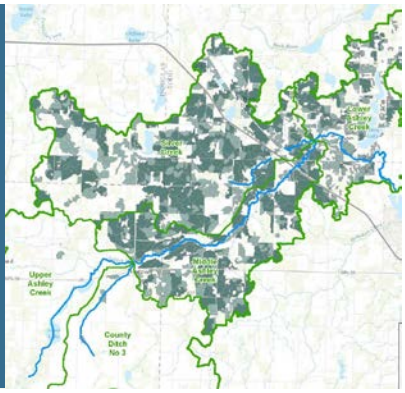
2.2.1 WHAT TYPES OF PROJECTS SHOULD I CONSIDER?

There is truly a wide range of existing and emerging conservation practices available to farmers, many of which you likely are already quite familiar with. For instance, nutrient management and conservation tillage are likely familiar terms to most farmers. However, you might also consider emerging conservation practices such as saturated buffers and two stage ditches where they fit into your operation. You are encouraged to review the Minnesota Department of Agricultures (MDA) Agricultural BMP Handbook for Minnesota (http://www.mda.state.mn.us/protecting/cleanwaterfund/research/agbmphandbook.aspx) to learn more about the types of conservation practices being adopted in Minnesota.

2.2.2 WHAT TOOLS CAN HELP ME TARGET PRACTICES?

Often times, additional dollars may be available to help offset the cost of implementing a conservation practice. However, the entities, such as federal or state agencies in charge of distributing dollars to support conservation practices, will often ask for information on the benefits of conservation practices to support allocating dollars to offset the cost, or for getting an alternative practice approved under Minnesota's "Buffer Law". There are tools that have emerged that can help provide this information such as the Prioritize, Target, and Measure Application (PTMApp), the Minnesota Agricultural Water Quality Certification Program (MAWQCP), or the Agricultural Conservation Planning Framework (ACPF).

New tools are available to help users better target and measure the impacts of proposed practices.



While you may not have the resources to use these tools, you are encouraged to contact your local soil and water conservation district (SWCD) or watershed district office to learn more about opportunities to utilize these and other tools.

You can also read up on them yourself at the links below:

- PTMApp - http://ptmapp.rrbdin.org/
- MAWQCP - http://www.mda.state.mn.us/awqcp
- ACPF - http://northcentralwater.org/acpf/

3 ENGAGING IN DEVELOPMENT

There are a number of opportunities for farmers and their organizations to actively engage in the development of TMDL studies and WRAPS documents. This section will emphasize methods of constructive engagement that will increase the chances of your voice being heard during TMDL and WRAPS development. Farmers can learn how to ensure that existing conservation efforts are documented, preferred practices are targeted for future implementation efforts, and that there is local utility in the final TMDL/WRAPS study.

Many farms may meet or exceed the conservation practice goals set in TMDL/WRAPS. In other words, it is very possible that you are already doing all that you can. The development process described in the following section will provide details on how you can engage in this process to help guide the types of practices that get applied and locations where implementation is focused.

3.1 KEY OPPORTUNITYS TO ENGAGE

Without participation of producers, there will be a gap in the information available for consideration when management directions are set to reach TMDL pollution diet goals.

By participating in the WRAPS/TMDL process, farmers and their organizations can capitalize on critical opportunities:

1. **Highlighting unutilized practices:** communicate about the practices that are not being implemented.
2. **Promoting your good work:** The process helps you promote conservation efforts already implemented and the locations where they've been applied, providing a face for agriculture at the table.
3. **Identifying practices that don't fit:** Through TMDL/WRAPS you can identify those practices that are not practical for farm operations in your area and ensure these practices are not identified as solutions.
4. **Pinpointing your preferred practices:** The TMDL/WRAPS process is an opportunity for you to guide the types and locations of conservation practices that fit your operations and make sure that they account for the solutions that are identified. Be sure to recognize that the practices that work in on your farm, might not work on your neighbors', and vice versa. This is really about developing a list of possible solutions for you and your neighbors to choose from.
5. **Cost share for conservation practices:** the process can help to identify what conservation practices provide the most public benefit (e.g. improved water quality) as opposed to private benefit (e.g. improved productivity and profitability), offering an opportunity to comment on how the percentage of cost-share offered should be proportional to public benefit vs. private benefit.
6. **Additional resources for conservation:** the process can help to secure additional resources for conservation practice implementation.

3.2 THE DO'S AND DON'TS AROUND ENGAGING

DO:

- **Do form relationships with your LGUs:** they will be involved in the process at some level.
- **Do vocalize your existing efforts:** promoting successful practices can help guide the direction of future implementation. Documenting current conservation practices can also help decision-makers provide credit for actions that have already been taken.
- **Do provide constructive guidance:** you have the opportunity to guide and possibly lead how TMDL/WRPAS shape implementation efforts. Be sure to describe your preferred practices early and often, and always provide the reason why they are preferred.

DON'T:

- **Don't be afraid to discuss problematic practices:** some conservation practices might not fit in your production systems. There are likely several suitable alternatives. Don't be afraid to have this conversation with LGUs. Be sure to explain why and what alternatives do work.
- **Don't be afraid to ask questions and test assumptions:** if it doesn't make sense to you, ask why it is done that way. When there are statements made that assume certain things about the landscape, ask how they know the assumptions are true and offer firsthand knowledge based on your experiences.

3.3 WHEN SHOULD YOU ENGAGE?

3.3.1 ENGAGING BEFORE THE STUDY STARTS

Well before the TMDL/WRAPS process begins in watersheds, your LGUs—usually SWCD or watershed districts—are actively involved in targeting and implementing conservation practices within your area. In addition, state agencies (BWSR, DNR, and MPCA) are continuously engaged with LGUs on prioritizing and implementing conservation practices.

You can serve the ag. industry as a leader in your community during the TMDL/ WRAPS process.

Engaging with your LGUs **before the start of the TMDL/WRAPS process** allows you to develop relationships that will help to guide the development, review, and implementation of TMDL/WRAPS studies. Specifically, you can become a trusted source of information for them, learn when and how the studies will proceed, and secure a role within the process. For example, MPCA staff typically partner with LGUs to execute TMDL/WRAPS studies or at the very least involve LGUs in the process. In turn, LGUs will often look to leaders from private industry, such as agriculture, to help identify where strong conservation efforts are already occurring, areas that could use more work, and what types of solutions fit within agricultural systems.

Building preliminary relationships with LGUs will also enable you to begin to promote existing conservation efforts, aid in identifying practices that are NOT practical within agricultural operations, and target those practices that farmers would prefer to see implemented on-the-ground.

3.3.2 WHAT ARE THE OPPORTUNITIES TO ENGAGE?

The WRAPS process is completed on a 10-year cycle for each watershed, and each individual WRAPS/TMDL can take up to five years to complete. Throughout this timeframe, the MPCA has civic engagement opportunities aimed at engaging private industry, governmental agencies, and the general public in the process.

There are three types of opportunities for you to engage in the process:

1. **“Coffee Shop” Discussions:** Usually occur early in the TMDL/WRAPS studies, or even before they start. MPCA staff will often start discussions around the importance of water resources within your area. This is a great time for you to learn what the MPCA will focus on, let them know what you feel is important, and increase awareness of the good work already being done in your area.
2. **Public meetings:** Public meetings are held both to kick-off the studies and report progress during the project. These are usually your best opportunity to engage in the process, as they typically:
    a. Introduce the WRAPS/TMDL concept;
    b. Describe the anticipated milestones; watershed assessments; sampling and analyses; and products/documents that will be produced as part of the process;
    c. Begin to gather stakeholders and familiarize them with each other as well as the regulatory agencies;
    d. Report project milestone results;
    e. Solicit assistance in identifying and filing data gaps;
    f. Explore options for allocating loads among pollutant sources;
    g. Provide updates on sampling and assessment; and

h. Gather public input on progress made during the process. This may include work sessions where you can help shape strategies to implement the TMDL/WRAPS.

3. **Public review meetings:** After the studies are drafted, a public review meeting is typically held to initiate the formal review of the studies. While you are still able to comment, it is best if you begin engaging earlier in the process to ensure your voice is heard. More information is provided on the public review process in Section 3.2.

In some cases, LGUs sponsoring the WRAPS/TMDL studies may hold special meetings, such as field days or bus tours. Check out this link for a list of projects: https://www.pca.state.mn.us/water/tmdl-projects. To determine if and when these meetings are being held for a particular WRAP/TMDL project, contact the following groups:

- The MPCA regional office overseeing the WRAPS/TMDL project; or
- The LGU sponsoring the WRAPS/TMDL project.

3.3.3 WHO SHOULD FARMERS CONTACT?

Multiple organizations are involved in TMDL/WRAPS studies. The following are suggestions for points of contact for different issues. You are strongly encouraged to find out who is leading efforts in your watershed!

Briefly, the key contacts that you should identify are:

1. MPCA project manager;
2. Local project sponsor; and
3. What consultant, if any, is working on the study in your watershed.

Your best point of contact to identify these individuals will typically be your local SWCD or watershed district office.

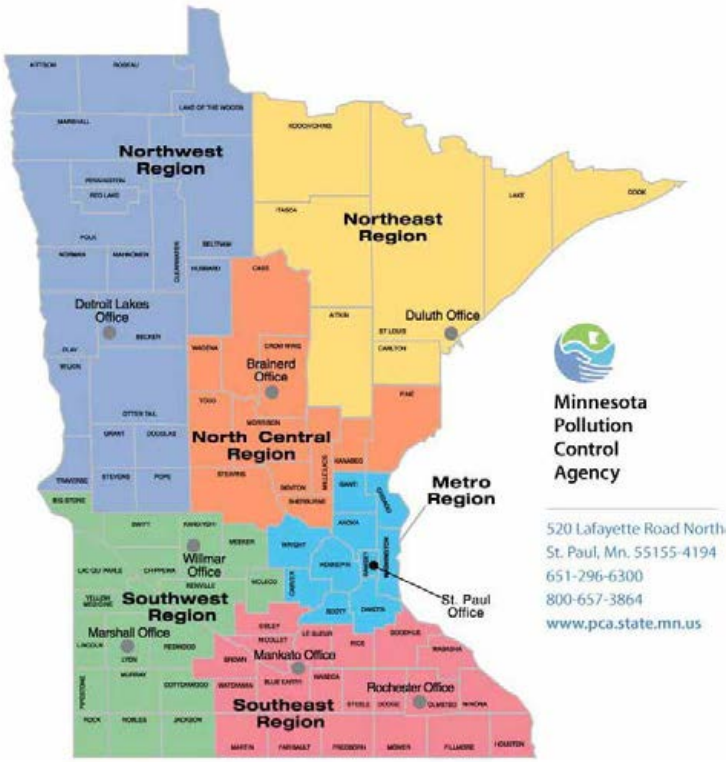


Figure 2. Location of MPCA regional offices.

3.4 PUBLIC MEETINGS

3.4.1 WHAT TO EXPECT?

There are generally two types of public meetings:

1. **statutory**[3] (required); and
2. **informational** (not required).

Informational meetings typically accompany the completion of a WRAPS or TMDL. Ideally the meetings are strategically completed at key decision points during the process and focused on obtaining input about specific topics. Examples of these topics include:

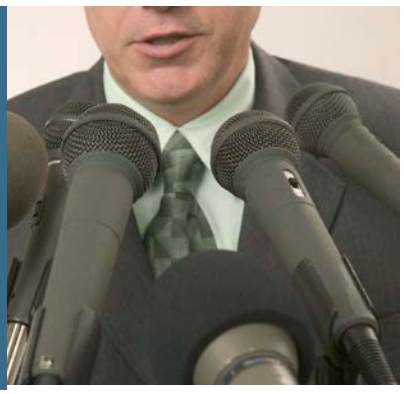
- identifying and describing the sources of pollutants causing a degradation of water quality;
- identifying the amount of reduction of a pollutant that is needed to attain the desired water quality condition;
- identifying the feasibility of attaining the amount of reduction needed;
- identifying implementation measures being considered; and
- gauging general public sentiment.

General expectations for the meeting process may include:

- An agenda being distributed in advance of the meeting;
- Facilitation by someone impartial to the outcome; and
- Meeting minutes documenting the discussion and the agreed upon outcomes.

As with any meeting, these items are not a guaranteed and the meeting structure may vary. However, expecting these items is reasonable and you should publicly request them if necessary. There are instances where a formal, or less formal approach is followed. You can contact your regional MPCA office or LGUs (see Section 4.3.3), as they may also be involved in the TMDL/WRAPS process, to inquire about the format that will be used.

Meetings create the "official record" for the WRAPS/ TMDL studies.



Informational meetings create the "official" record for the WRAPS/TMDL and provide an opportunity to affect the trajectory of the outcome. The record can be created by submitting written information, providing oral comment, or both. Informational meetings are completed specifically to provide an opportunity for public input. Failure to participate in informational meetings means you have no voice in the process. Written comments create a stronger voice and should be formally responded to in writing. You can also contact your local TMDL team to seek clarification on meeting notes or presentations. An adequate response identifies and describes the technical issues pertaining to the comment, whether or not your comment results in a change in the TMDL or WRAPS. You can discuss a range of options for constructively engaging in the TMDL/WRAPS process with your regional MPCA office or LGU staff (see Section 4.3.3), who may also be involved in the studies.

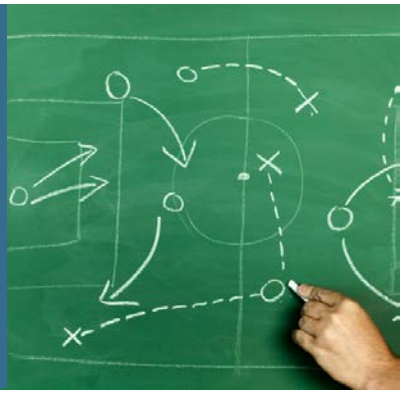
[3] Public hearings are an example of a statutorily required meetings. These meetings are required by law, and like public meetings, create a public (legal) record.

3.4.2 WHAT IMPACT DO COMMENTS HAVE ON THE PROCESS?

MPCA has placed a significant emphasis on civic engagement in the process. Farmers can influence outcomes by being engaged in the process, by participating on local committees, attending public meetings, and providing oral and written comments can influence TMDL/WRAPS outcomes. Providing well-reasoned written comments is also recommended. Written comments are important in several ways. Because they are considered a greater investment of time, they provide an opportunity for your words to be seen directly and unfiltered, and they can provide perspective that requires or asks for a specific response. The following are potential outcomes if you provide comments:

- Some comments may result in modification of the actual TMDL or WRAPS document. These comments are generally factual in nature (e.g., incorrect watershed boundary resulted in an error in the estimate loads in the TMDL equation; incorrect math in the TMDL equation; and/or correction of an assumption).
- Comments related to **scientific or technical** opinion are more often addressed by some form of verbal or written acknowledgement, but may not result in modification to the documents. Providing reference to specific scientific sources, both orally and in writing, is highly recommended to support a technical opinion. If the written comment is too lengthy or technical, an oral summary should work, with a verbal request to incorporate the full written comment into record. You should also considering copying others on your comment, such as local government representatives and local media.
- Stating your comment in the form of a question can also help to elicit a written response.
- Your comments can help establish a framework for the implementation strategy. Comments about the **feasibility** of succeeding in implementing the WRAPS will help plan writers assess the practicality of 1) achieving the TMDL/WRAPS goals of load reductions, and 2) the need to clearly define the number, types, and locations of projects that will be implemented.
- Comments on the **practicality** of conservation practice types and locations can help frame future discussions related to implementation, particularly within the WRAPS document.
- Providing comments about the **format** of the TMDL and legal language is unlikely to result in a change in the document, as these formats are a combination of federal and state standards.
- Providing input on who should be involved may lead to greater participation from a wider range of stakeholders.

Follow the game plan to submit the best possible comments to yield results.



A more specific implementation discussion and plan in the WRAPS is more valuable to those LGUs that will largely be responsible for working with you and other farmers to implement practices. Examples of helpful comments may include:

- identifying current conservation practices that fit your operation;
- explaining soil health benefit; and
- describe operational/trafficability issues when citing practices.

Basically, you need to make sure MPCA staff working in your watershed know what works on your fields!

3.4.3 WHAT QUESTIONS SHOULD FARMERS ASK?

Knowing what to ask about or review in the WRAPS and TMDL can be challenging. Some ideas about specific topics or items to look for include:

1. **Ask for the assumptions**:
   Ask that the WRAPS/TMDL clearly identify and describe the assumptions forming the basis for conclusions about the pollution diet, the maximum load that can come from nonpoint sources including fields, and the implementation strategy. Understanding these assumptions and their importance to the conclusions increases the likelihood that the implementation plan will achieve the desired outcome. The estimated cost to achieve the load reduction should be provided.

   What assumptions have been made?

2. **Check the TMDL equation:**
   It is simple math, but make sure the agency can adequately describe and explain it to your peers. Do the math yourself, the Loading Capacity on the left-hand side of the equation should equal the sum of the items on the right-hand side (load allocation, total maximum daily load, margin of safety and reserve capacity, If it doesn't add up, then there is a problem (see Section 1.7);

   Is the math used in the TMDL equation correct?

3. **Ask about your opportunities:**
   Information at public meetings is typically more general and available for larger areas (tens of square miles). However, the public meeting does present an opportunity to discuss specifics about your fields and allows you to better understand the fiscal and technical resources that may be available to implement conservation practices. If the topics you are interested in are not on the agenda for the present meeting, ask when the next opportunity will be to discuss them. Identify that you are interested in participating in these discussions. Remember, they will listen to whoever is present.

   Are there opportunities for me to build conservation practices on my land?

4. **Identify your preferred practices for the WRAPS:**
   The WRAPS includes a section about the implementation measures proposed to achieve TMDL/WRAPS goals. Farmers living in the area often have excellent local knowledge about the types, practicality, and value of conservation practices that can improve water quality and fit in farm operations. Providing information about the types and locations of projects is critical and may increase the opportunity for state funding, if included within the WRAPS. Always provide the reason why you prefer these practices. Do not let others fill in the information for you.

   Would you like to hear about the practices I think would work best for this area?

5. **WRAPS should consider benefits of all farming systems:**
   The implementation strategy in the WRAPS should include consideration and specific discussion of the water quality benefits for activities that are currently part of farming practices. The importance and value of these existing conservation practices are generally not recognized or characterized as an important implementation strategy. These considerations include the use of precision agriculture methods, residue management, nutrient management planning, and herbicide management. Ask whether they have been considered and ask how they are being considered.

   Have you considered the potential benefits for all farming systems?

6. **Make sure the sources of pollutants make common sense:**
Agricultural farmers have the most firsthand knowledge about the amount of soil being lost from fields, gully erosion, streambank failure, and the farming practices being used. Use this experience to provide constructive comments on WRAPS/TMDL documents. The WRAPS in particular contains a discussion about the sources of sediment and other pollutants, and their relative magnitude. Use your experience to assess whether sources described in the documents match with your firsthand observational knowledge.

How did you develop the sources of pollutants?

7. **Ask about water storage opportunities:**
Altered hydrology is identified within many WRAPS as the reason for excess sediment, streambank failure, and erosion. The term is generally poorly defined, but the causes described often include human modifications to the landscape (e.g. tile drainage) and climate change. Questions about water storage practices opportunities, such as detention ponds or wetlands that fit into your farming operation, will likely receive constructive feedback. Ask what specific strategies are being considered to address altered hydrology and how success will be measured.

Are there opportunities for water storage like ponds or wetlands?

Being involved and asking well-informed questions will lead to the best possible outcomes.

4 CONSTRUCTIVE REVIEWS

This section will provide industry insights into the most effective methods of reviewing a TMDL study and WRAPS document. Houston Engineering, Inc.'s own internal methods for quality control and assurance of TMDLs and WRAPS will be delivered in a manner specifically tailored for agricultural producer's use. The following items will be laid out for farmers to use.

4.1 PUBLIC REVIEW

The opportunity for public review is related to what organization prepares the WRAPS/TMDL. The WRAPS/TMDL can be prepared by one or more individuals, ranging from a consultant assigned to a MPCA Project Manager to entirely MPCA staff. LGUs like SWCDs, watershed districts, and county staff can be consulted during development of the WRAPS/TMDL. If you think that there is insufficient opportunity for public review, request that additional opportunities or time be allowed to accommodate it. Both documents are subject to public review; however, only the TMDL is submitted to EPA for review and concurrence. **Figure 3** shows the typical review process for a TMDL. The process for review of a WRAPS excludes review by EPA.

The process for preparing a TMDL/WRAPS is intended to be public and transparent. Therefore, a record of the modifications of the TMDL and WRAPS may be available upon request. If you provided oral and written comments, you should review the final TMDL and WRAPS to assess and understand the changes made relative to your comments.

Figure 3. Typical TMDL development and review process. The blue boxes represent the TMDL drafting workflows that occur prior to public access to the draft document. The grey boxes represent the steps in the TMDL development processes where you should have access to the draft or final TMDL.
In other words, the grey boxes are where you can where you can get copies of the TMDL and WRAPS!

4.2 HOW ARE THE DOCUMENTS STRUCTURED?

4.2.1 TMDL

TMDL documents can be quite lengthy. While all of the information in a TMDL is valuable, some sections are more valuable to agricultural farmers and producer organizations than others. To facilitate efficient constructive reviews of TMDLs, **Table 7-1 is provided in the *Farmer Resources* section with a section-by-section overview of how these documents are structured, and what information is included in each section.** This format may vary between different TMDL documents.

Refer to the handy table in Section 7 to learn what sections of the TMDL should be paid most attention..

However, the topics should all be covered at some point in any given TMDL. The table also groups the sections of the TMDL in two different categories:

- **Review:** sections that are important to review (read through briefly, but not study) for drawing a complete picture of the TMDL.
- **Attention:** sections that should warrant the most attention because of their importance to agricultural farmers and producer organizations.

4.2.2 WRAPS

WRAPS documents pick up where the TMDL document leaves off. They focus primarily on summarizing existing data and information from the watershed and assigning implementation strategies to accomplish water quality goals set by the TMDL. As the WRAPS identifies on-the-ground strategies for implementation, this report is especially important for you to review. This document has the most influence on future conservation practice types and locations.

To facilitate efficient and constructive reviews of WRAPS documents, **Table 7-2 in the *Farmer Resources* section walks through how these documents are structured by section**. Descriptions about information contained in each section are also provided.

WRAPS documents pick up where TMDLs leave off.

Table 7-2 also groups the sections of the WRAPS in two different categories:

- **Review:** sections that are important to review (read through briefly, but not study) for drawing a complete picture of the WRAPS document.
- **Attention:** sections that should warrant the most attention because of their importance to agricultural farmers and producer organizations.

4.3 WHAT TO LOOK FOR

4.3.1 TMDL

The EPA and MPCA require that TMDL documents provide specific information and follow certain protocols. Therefore, the MPCA provides template documents and protocol documents for those developing TMDLs. These templates and protocols can be found on the MPCA website, linked below:

- MPCA's TMDL and WRAPS information
- TMDL Guidance and Protocols

Check to see that the following major components are present (also reference **Table 7-1**):

1. A list of **impairments and identification** of the impacted waterbodies covered in the TMDL;
2. A list of the applicable **water quality standards** for the identified waterbodies;
3. **Characteristic information of the impaired waterbody** and its drainage area, including current water quality conditions and identification of pollutant sources;
4. A description of **how each TMDL type was developed**, including methodology used to develop the TMDL (including the load allocations), a summary of the TMDL, and all assumptions made for development;
5. Reasonable assurances that the allocations in the **TMDL will be implemented**;
6. **A monitoring plan** to measure and track improvements in water quality;
7. An outline of **implementation strategies** that will be used to address the impairments and achieve the TMDL;
8. A list of **public participation** that is used to communicate the findings in the TMDL; and
9. A list of **citations of publications** used in the TMDL document. Be sure that a wide range of source references were considered and are cited in the document.

When reviewing a TMDL, some important information should be checked:

1. **Are all of the impairments and waterbodies covered by the TMDL clearly listed and identified?**
   A table identifying impairments and waterbodies covered by the TMDL document should be provided.

Use these guidelines to double check the most vital information is correct in the TMDL document.

2. **Does the number of impairments covered in the document match the number of TMDL loading allocations?** Some watershedwide TMDLs will list all of the impairments in the watershed, but only some might be covered in the TMDL. The impairments covered by the TMDL document should be clearly identified.
3. **Are the sources of pollution clearly identified and is the information clearly cited?**
   Reports providing information on the sources of pollution should be referenced and those references should be cited in the "Literature Cited" section of the TMDL.
4. **Do the numbers in the TMDL table add up?**

   The TMDL tables are a load balance and all allocations should equal the loading capacity of the waterbody. Small rounding errors may exist but large addition errors should not.
5. **Does the source loading make sense?**

4.3.2 WRAPS

The WRAPS document is like an executive summary of the whole watershed. Unlike a TMDL, which covers only impaired waters in a watershed, the WRAPS document should cover all waters in a watershed. For impaired waters, a restoration strategy is developed, while all other waters receive a protection strategy. Like the TMDL document, MPCA has developed a WRAPS template[4] that all WRAPS documents should follow[5].

The WRAPS is like an executive summary for the whole watershed.

Check to see that the WRAPS document includes (also reference **Table 7-2**):

1. A description of **what a WRAPS report is** and a description of key terms used in the report.
2. A section on the **background and description** of the watershed, including designated uses for the watershed and a list and links to additional resources about the watershed. These additional resources should include the watershed's monitoring and assessment report and the biological stressor identification report. Check to make sure you can access copies of this information.
3. A section on the **conditions in the watershed**, including the condition status of each waterbody; any trends in water quality (if trend analysis was done); an overview of stressors (things causing impairments) and sources in the watershed; a summary of the TMDLs; and any protective needs in the watershed. Make sure the sources and stressors make sense.
4. A section on **prioritizing and implementing restoration and protection strategies**. This section will include discussion on targeting geographic areas for restoration and protection strategies, any civic engagement conducted or planned in the watershed, and a description and table of implementation strategies to achieve water quality goals. These descriptions should include discussion on the methodologies used to develop the implementation strategies.
5. A **monitoring plan** to track improvements in water quality.
6. **A list of references and additional information** used to develop the WRAPS document. It is important that every documented referenced in the WRAPS report is cited in the references section.

4.4 HOW TO PROVIDE CONSTRUCTIVE COMMENTS

You are in a good position to make constructive comments on TMDLs and WRAPS. Informed farmers' local knowledge of existing conditions, problem areas, and what best works on their farm is a great benefit to the TMDL and WRAPS process. Ideally, an interested farmer would get involved at the beginning of the process and help guide the MPCA, LGUs, and consultants developing the TMDL/WRAPS with that local knowledge. If not, the TMDL/WRAPS process allows for public comments after draft reports have been developed, but before reports are finalized. However, the earlier you make your voice heard, the higher the chance that your input can have an influence on the outcomes.

[4] http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/project-resources/tmdl-policy-and-guidance.html
[5] Template documents do change over time, so early WRAPS documents may have been developed under previous template versions.

Ideally, farmers should be involved in the entire TMDL/ WRAPS process.

Both the TMDL and WRAPS documents will be posted for a 30-day public review and comment period, usually at the same time as an advertised public meeting. Comments can be given orally at the public meeting and in writing during the public comment period. If possible, try to present your comment as a question. If comments are provided orally during the public meeting, you are encouraged to provide those same comments in written form during the 30-day public review period. For the TMDL process, all written comments submitted during the public review period need be addressed for final approval, as required by the EPA. As such, you should expect a written reply to your written comments. If written comments are too long to present orally, you can simply give the key points orally and request that your written testimony be included in the public record. It never hurts to bring extra copies of your written testimony to share with others. Keep in mind that agencies have limited resources, so your comment may be grouped with other similar comments and replied to with a single response.

4.4.1 SEPARATING FACT FROM OPINION

It is important when providing comments to make sure they are constructive and defendable and not opinions.

An example of non-constructive comment would be:
"I don't like it!"

or

"This is simply wrong!"

A better (or at least more constructive) approach would be:
"As found of page 37 of the TMDL, the calculation in Line 87 appears to have an error. I believe this is an error because on my farm and neighboring farms, we have implemented university-recommended best management practices for a number of years, which were likely not captured in the estimate."

or

"I found that the cover crops restoration strategies provided in the WRAPS document on page 23 are not currently being used in this area as they have yet to be proven successful. However, we frequently use sediment control basins, conservation tillage, and nutrient management plans that provide equivalent if not better water quality benefits. Please consider prioritizing the adoption of these practices until cover crops have been successfully adapted to this area."

It is important to reference the section of the TMDL or WRAPS documents you comment on, provide a sample of the text, and provide justification for your comment. Remember, your local knowledge is an asset to this process and will make the final product better.

4.5 WHAT SHOULD YOU EXPECT FROM THEIR COMMENTS

As part of the TMDL process, the EPA requires that all comments are addressed. Sometimes, comments will lead to changes in the document. Other times, the comments will not lead to changes in the document, but justification for not changing the document needs to be provided. Well justified and constructive comments are more likely to lead to change than non-constructive opinions.

When providing comments, remember that whatever the outcome may be, a better product is generated in the end because of the public review process.

All comments are important in the review process. They can:

- highlight areas in the document that might be in error;
- show areas in the document that are unclear and need clarification;
- show areas where better communication and understanding is needed in the community;
- identify cost-effective practices that fit into operations and provide the desired water quality benefits
- aid in identifying practices that are not practical for implementation; and
- help identify areas where farmers are already doing good work.

In the end, a better product is generated because of the public review process.

4.6 UNDERSTANDING AND REVIEWING HSPF MODELS

As part of the WRAPS projects, the MPCA is creating HSPF models for each of the 81 watersheds in Minnesota. HSPF is a mathematical model that covers the whole watershed, usually hundreds of square miles. It takes available data and simulates hydrology (stream flow) to view how sediment is transported throughout the area.

HSPF is a mathematical model that covers the whole watershed. It takes available data and simulates hydrology to see how sediment moves throughout the area being studied.

Data used includes:

- precipitation
- evapotranspiration
- solar radiation
- air temperature
- wind speed
- cloud cover

These models contain some of the most technical information developed through the TMDL/WRAPS process. This handbook contains an overview of the HSPF model structure as well as its strengths and limitations. This overview is intended to give you some familiarity with the model, exposure to some HSPF terms, and highlight strengths and limitations. Detailed documentation on the State's guidelines for developing HSPF models for TMDLs is available on request as supplemental material to this handbook. This detailed documentation provides the guidance that HSPF models for TMDLs in Minnesota should follow.

HSPF divides the watershed into three categories (**Figure 4**):

1. **Pervious land segments (PERLNDs):** land segments of similar land types (e.g. cropland) where pervious means surfaces that allow water to pass through;
2. **Impervious land segments (IMPLNDs):** impervious portions (urban developed areas) in the watershed where impervious means surfaces that allow very little or no water to pass through; and
3. **Reaches and reservoirs (RCHRES):** river segments and lakes.

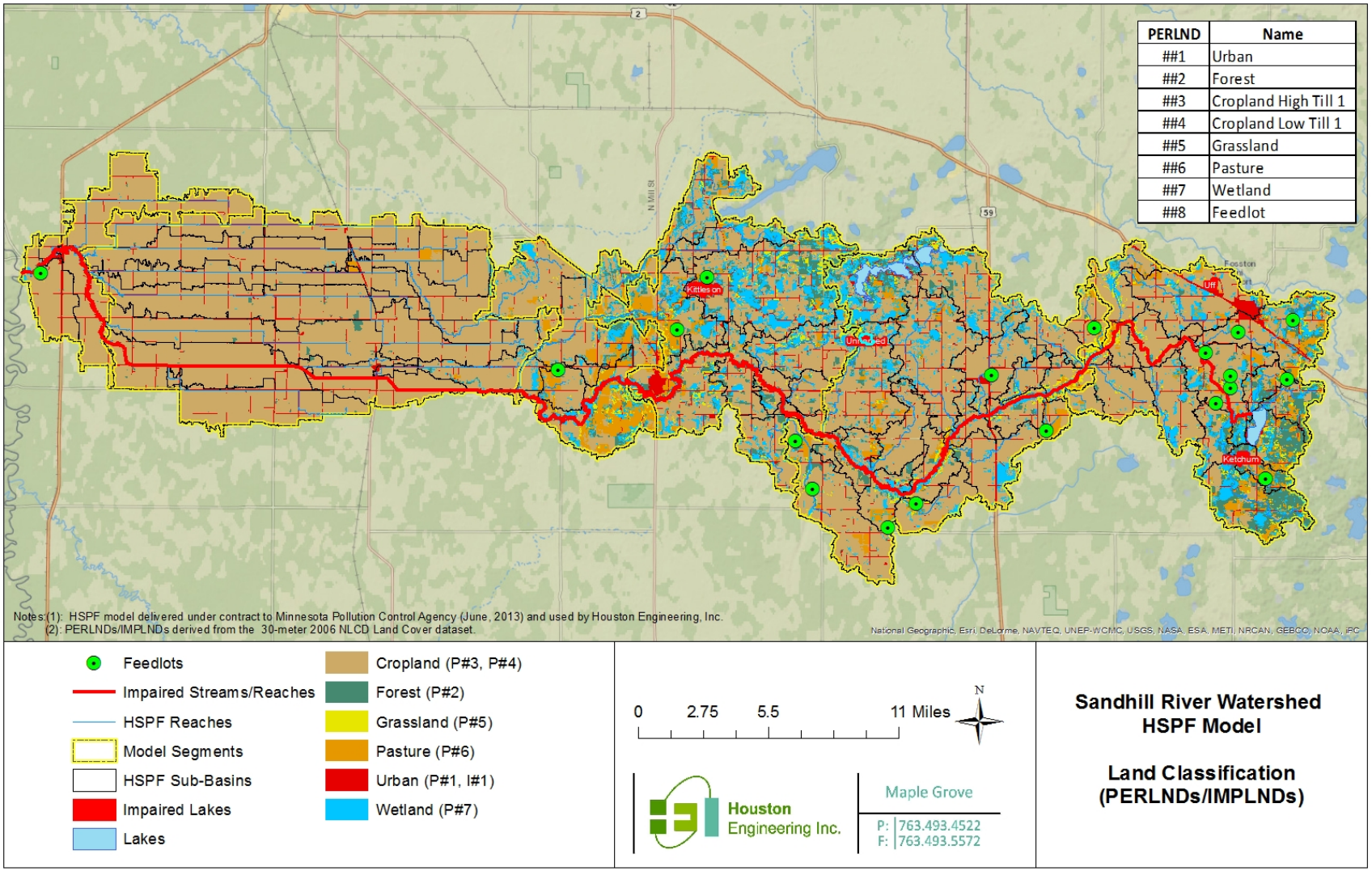


Figure 4. Example of the categories of an HSPF model.

The watershed is divided in meteorological zones based on available climate data. Each meteorological zone is divided into numerous PERLNDs and IMPLNDs (~5 to 20 combined) and numerous RCHRES representing subwatersheds. It is important to understand, the EPA model does not distinguish between similar land segments contained in the same meteorological zones. This is important when reviewing pollution sources and locations of implementation strategies. In other words, every acre of agriculture is treated the same within a given climate zone.

It is important to keep in mind that the model does not distinguish between similar land segments if they are within the same meteorological zone. Every acre of agriculture is treated the same within a given climate zone.

Your takeaway is:

- this model is not specific to your field, or your neighbors;
- data is "lumped" across areas; and
- it's difficult to target field scale conservation practices using solely HSPF.

George E. P. Box, the acclaimed statistician once said, "essentially, all models are wrong, but some are useful"; meaning, users need to recognize where a model provides useful information and where it has limitations. HSPF is a model used to simulate hydrology and water quality at a watershed scale. At large scales (hundreds of square miles), the model does a fairly good job at simulating hydrology and water quality, but at smaller scale areas of interest, the model becomes less useful. At that point, the assumptions used to develop the model become invalid. HSPF can tell you the flows in a river channel or the average runoff and overland loading from a certain type of land use in watershed, but cannot show which fields within a subwatershed provide the most or least loading.

Your knowledge can help to:

- identify those acres where farmers are already implementing great practices;
- point out locations where opportunities exist for improvements; and
- guide the types of conservation practices that will work best.

Sharing your firsthand knowledge gives a better understanding of the area, in addition to modeling.

HSPF models are typically used to

- provide water quality information where monitoring data is missing;
- identify sources of pollutants to lakes and streams; and
- evaluate the effects of implementation strategies.

5 GUIDING IMPLEMENTATION

This section gives an overarching description of how projects identified in the WRAPS have a greater range of opportunities to get support for building. This section will also describe the different avenues for getting conservation stewardship opportunities built, and provide insights for farmers to help their preferred projects get built.

5.1 GETTING PROJECTS SELECTED

Numerous funding support opportunities exist for conservation practices, such as the Regional Conservation Partnership program (RCPP), Environmental Quality Incentives Program (EQIP), Minnesota Clean Water Fund (CWF), and Conservation Reserve Program. **Table 7-3 in the *Farmer Resources* section shows the range of programs that are available for funding conservation efforts**. Each program has different priorities and presents different opportunities for implementation. This section delivers insights on how projects identified in the TMDL/WRAPS process can provide a wider range of opportunities for funding and result in a higher priority for on-the-ground implementation.

Engaging in the TMDL/WRAPS process should increase your odds of getting funding to support conservation in your watershed!

Planning documents, like the WRAPS, are becoming the primary avenue for conservation practices to be prioritized for implementation. Engaging in the process can help ensure that your preferred conservation practice types and locations are included in the plan, ultimately helping to get them implemented on the ground. Moreover, you'll also have the opportunity to bring up concerns about conservation practices that might not fit into your operations. **In other words, engaging in the TMDL/WRAPS process should increase your odds of getting funding to support conservation in your watershed!**

5.2 CONTINUING TO PARTICIPATE AFTER TMDL/WRAPS ARE DONE

The TMDL/WRAPS process does not directly result in on-the-ground conservation practices. Rather, the end products of the process are reports that can be used to guide the implementation of on-the-ground conservation efforts aimed at achieving local water quality goals. In other words, all of the on-the-ground implementation of conservation efforts from the TMDL/WRAPS occur outside of the studies' development and completion. This is one of the primary reasons it is important for you to continue to participate in water planning and management opportunities after the TMDL/WRAPS are completed.

Stay involved after the studies are finished to continue to advocate for your practices.

One of the most effective ways to stay engaged is to continue to stay in front of your local water management decision-makers such as cities, counties, SWCD, and watershed district offices. You may want to consider running for one of these elected positions! If you become engaged early, it will be easier to maintain the relationship after the process is closed. Most TMDL/WRAPS implementation efforts will occur at the local level, so you should continue to communicate with local water management leaders about your preferred opportunities for on-the-ground conservation practices. Moreover, local water planning (e.g. 1W1P and county water management plans) efforts usually will incorporate TMDL/WRAPS results. Staying engaged through this process can help to

ensure that your preferred practices are considered for local implementation.

It is also important to note that federal, state, and local water management priorities and positions on issues are constantly shifting. Case in point, the "Buffer Bill" of 2015, part of the State's special legislative session, brought perennial vegetation around public waters into the forefront of water management priorities. Shifts in priorities such as these emphasize the need for you to ***stay patient and stay engaged***. The TMDL/WRAPS process identifies only a portion of the issues that affect water management in agricultural landscapes. By staying involved, you and your organization will be positioned to continue to provide leadership on the types of conservation practices that work or don't work within agricultural systems. You can ensure that policy-makers and water management practitioners are aware of the good work already being done on Minnesota farms.

5.3 ALTERNATIVE VEHICLES FOR FUNDING

There are many dedicated and effective people who are responsible for administering and delivering programs (see **Table 1**) that provide assistance to farmers for implementing conservation practices. These individuals serve as vehicles for ensuring that funding and technical assistance is directed toward priority conservation practices. However, this current system for delivering funding and assistance to implement conservation practices is often insufficient to meet the needs of farmers. At times, farmers interested in putting a new conservation practice into place in their operation might have to wait months to receive funding to implement. This is because the current vehicles for delivering conservation practices often lack the resources (time and money) to effectively serve and communicate with farmers on opportunities, or are burdened with regulatory responsibilities that severely hamper implementation. As such, farmers and their organizations might consider alternative vehicles for delivering conservation practices.

Crop retailers and certified crop advisors may offer alternative vehicles to fund projects.

For example, crop retailers or certified crop advisors who already interact directly with farmers on a frequent basis, could provide an alternative vehicle for delivering conservation practice opportunities, while allowing traditional vehicles to continue administration of the programs. Based on the status quo, implementing TMDL/WRAPS within rural areas is going to rely heavily on the current conservation delivery system through the SWCDs and the NRCS. Many realize that this process is challenging as a means of implementing conservation practices. There are opportunities, such as TMDL/WRAPS and local water planning meetings, for you to provide input on how conservation practice delivery can be improved.

6 APPENDIX

Table 6-1: Beneficial Use Classifications

Designated Beneficial Use Classification			
Class		**Subclass**	**Description**
Domestic Consumption	1	A	Without treatment of any kind the raw waters will meet in all respects both the primary (maximum contaminant levels) and secondary drinking water standards issued by the EPA
		B	With approved disinfection, such as simple chlorination or its equivalent, the treated water will meet both the primary (maximum contaminant levels) and secondary drinking water standards issued by the EPA
		C	With treatment consisting of coagulation, sedimentation, filtration, storage, and chlorination, or other equivalent treatment processes, the treated water will meet both the primary (maximum contaminant levels) and secondary drinking water standards issued by the EPA
Aquatic Life and Recreation	2	A	Such as to permit the propagation and maintenance of a healthy community of cold water sport or commercial fish and associated aquatic life, and their habitats. These waters shall be suitable for aquatic recreation of all kinds, including bathing, for which the waters may be usable. This class of surface waters is also protected as a source of drinking water.
		B	Such as to permit the propagation and maintenance of a healthy community of cool or warm water sport or commercial fish and associated aquatic life, and their habitats. These waters shall be suitable for aquatic recreation of all kinds, including bathing, for which the waters may be usable. This class of surface water is not protected as a source of drinking water.
		Bd	Such as to permit the propagation and maintenance of a healthy community of cool or warm water sport or commercial fish and associated aquatic life and their habitats. These waters shall be suitable for aquatic recreation of all kinds, including bathing, for which the waters may be usable. This class of surface waters is also protected as a source of drinking water.
		C	Such as to permit the propagation and maintenance of a healthy community of indigenous fish and associated aquatic life and their habitats. These waters shall be suitable for boating and other forms of aquatic recreation for which the waters may be usable.
		D	Such as to permit the propagation and maintenance of a healthy community of aquatic and terrestrial species indigenous to wetlands and their habitats. Wetlands also add to the biological diversity of the landscape. These waters shall be suitable for boating and other forms of aquatic recreation for which the wetland may be usable.
Industrial Consumption	3	A	Such as to permit their use without chemical treatment, except softening for groundwater, for most industrial purposes, except food processing and related uses, for which a high quality of water is required.

Designated Beneficial Use Classification			
Class		**Subclass**	**Description**
		B	Such as to permit their use for general industrial purposes, except for food processing, with only a moderate degree of treatment.
		C	Such as to permit their use for industrial cooling and materials transport without a high degree of treatment being necessary to avoid severe fouling, corrosion, scaling, or other unsatisfactory conditions.
		D	Shall be such as to permit their use for general industrial purposes, except for food processing, with only a moderate degree of treatment.
Agriculture and Wildlife	4	A	Such as to permit their use for irrigation without significant damage or adverse effects upon any crops or vegetation usually grown in the waters or area, including truck garden crops.
		B	Such as to permit their use by livestock and wildlife without inhibition or injurious effects.
		C	Such as to permit their use for irrigation and by wildlife and livestock without inhibition or injurious effects and be suitable for erosion control, groundwater recharge, low flow augmentation, storm water retention, and stream sedimentation.
Aesthetic Enjoyment and Navigation	5		Such as to be suitable for aesthetic enjoyment of scenery, to avoid any interference with navigation or damaging effects on property.
Other Uses	6		The uses to be protected in Class 6 waters may be under other jurisdictions and in other areas to which the waters of the state are tributary, and may include any or all of the uses listed in parts 7050.0221 to 7050.0225, plus any other possible beneficial uses. The agency therefore reserves the right to impose any standards necessary for the protection of this class, consistent with legal limitations.
Limited Resource Value Waters	7		Such as to protect aesthetic qualities, secondary body contact use, and groundwater for use as a potable water supply.[4]

Water has a different classification based on what it will be used for.

Table 6-2: Water Quality Standards by Eco Region

Class	Subclass	Phosphorus ug/L										Chlorophyll-a ug/L										Secchi disk transparency m									
		NLF		NCHF		WCBP		NGP				NLF		NCHF		WCBP		NGP				NLF		NCHF		WCBP		NGP			
		Shallow	Deep	Shallow	Deep	Shallow	Deep	Shallow	Deep	Lake Trout	Non-Lake Trout	Shallow	Deep	Shallow	Deep	Shallow	Deep	Shallow	Deep	Lake Trout	Non-Lake Trout	Shallow	Deep	Shallow	Deep	Shallow	Deep	Shallow	Deep	Lake Trout	Non-Lake Trout
1	A	EPA primary (maximum contaminant levels) and secondary drinking water standards																													
	B																														
	C																														
2	A									12	20									3	6									4.8	2.5
	B	30	30	60	40	90	65	90	65			9	9	20	14	30	22	30	22			2	2	1	1.4	0.7	0.9	0.7	0.9		
	Bd	30	30	60	40	90	65	90	65			9	9	20	14	30	22	30	22			2	2	1	1.4	0.7	0.9	0.7	0.9		
	C	30	30	60	40	90	65	90	65			9	9	20	14	30	22	30	22			2	2	1	1.4	0.7	0.9	0.7	0.9		
	D	30	30	60	40	90	65	90	65			9	9	20	14	30	22	30	22			2	2	1	1.4	0.7	0.9	0.7	0.9		
3	A																														
	B																														
	C																														
	D																														
4	A																														
	B																														
	C																														
5																															
6																															
7																															

* NLF = Northern Lakes and Forest Ecoregion
* NCHF = Northern Central Hardwood Forest Ecoregion
* WCBP = Western Corn Belt Plains Ecoregion
* NGP = Northern Glaciated Plains Ecoregion

Eco Regions in Minnesota

= Northern Lakes and Forests (NLF)

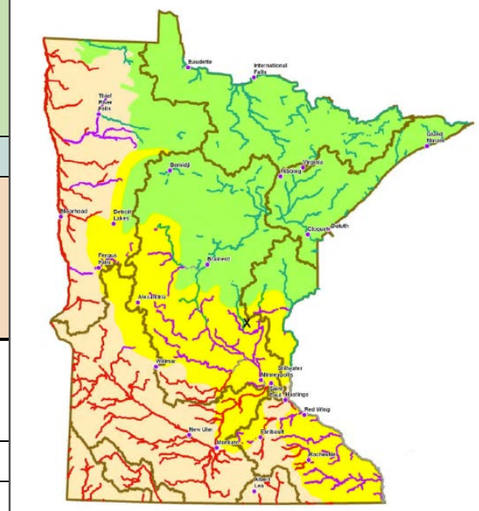
= North-Central Hardwood Forest (NCHF)

= Western Corn Belt Plains (WCBP)

= Northern Glaciated Plains (NGP)

Table 6-3: Water Quality Standards by Nutrient Region

Class	Subclass	Dissolved Oxygen (min)	pH		*E. Coli*		Total Suspended Solids (no more than 10% of the samples)[1]			Phosphorus			Chlorophyll-a			Diel dissolved oxygen			Biochemical oxygen demand		
							mg/L			ug/L			ug/L			mg/L			mg/L		
		mg/L	MIN -	MAX +	Geo- metric mean, CFU/ 100mL[2]	10% per month[3]	North	Central	South	North	Central	South	North	Central	South	North	Central	South	North	Central	South
1	A	EPA primary (maximum contaminant levels) and secondary drinking water standards																			
	B																				
	C																				
2	A	7	6.5	8.5	126	1260	10			50	100	150	7	18	35	3	3.5	4.5	1.5	2	3
	B	5	6.5	9	126	1260	15	30	65	50	100	150	7	18	40	3	3.5	5	1.5	2	3.5
	Bd	5	6.5	9	126	1260	15	30	65	50	100	150	7	18	35	3	3.5	4.5	1.5	2	3
	C		6.5	9			15	30	65	50	100	150	7	18	40	3	3.5	5	1.5	2	3.5
	D	MB	MB	MB	126	1260	15	30	65	50	100	150	7	18	40	3	3.5	5	1.5	2	3.5
3	A		6.5	8.5																	
	B		6	9																	
	C		6	9																	
	D		MB	MB																	
4	A		6	8.5																	
	B		6	9																	
	C		MB	MB																	
5			6	9																	
6																					
7		1	6	9	630	1260															



Nutrient Regions in Minnesota

= North

= Central

= South

[1]Standard applies only April 1 through Sept 30

[2]Geometric mean standard requires at least 5 samples per month, 10% standard applies to monthly samples, standard applies only April 1 through October 31

[3]May be exceeded for no more than 10% of the time, standard applies April 1 through Sept 30

[4]*E. coli* geometric mean standard requires at least 5 samples per month, 10% standard applies to monthly samples, standard applies only May 1 through October 31

North = North River Nutrient Region

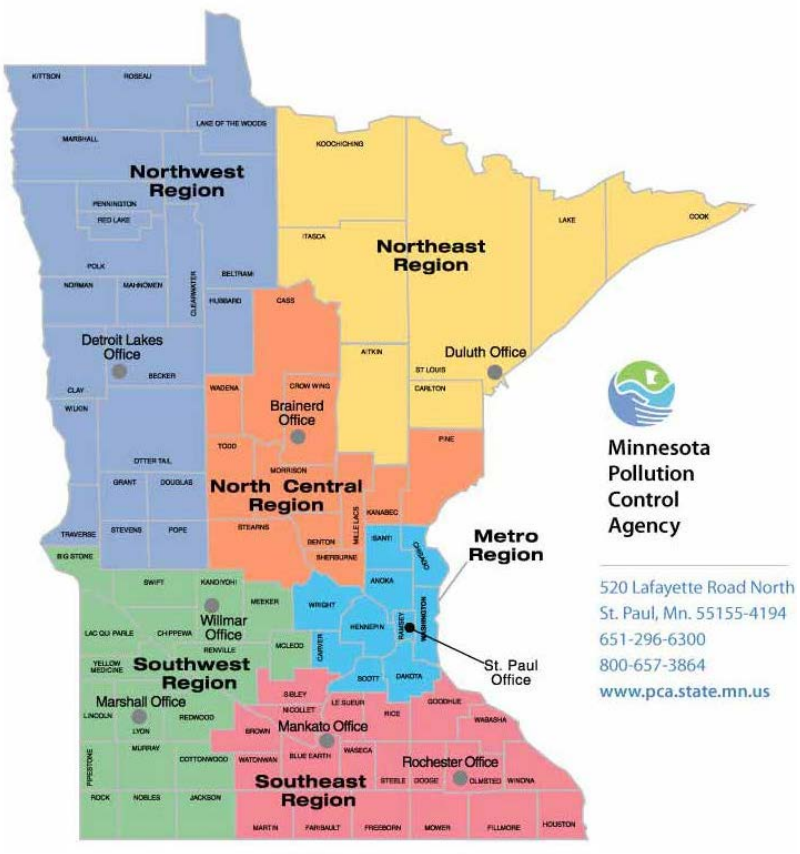
Central = Central River Nutrient Region

South = South River Nutrient Region

7 FARMER RESOURCES

7.1 IMPORTANT CONTACTS

MPCA (St. Paul, MN Office) **Contact Information:** 520 Lafayette Road N St. Paul, MN 55155-4194 Phone: 651-296-6300 Toll Free: 800-657-3864 **Reasons to contact:** • Policy questions • Timeframe for your local TMDL/WRAPS studies to begin and be completed	**Description:** The head office of the MPCA, located in St. Paul, MN, oversees all of the WRAPS and TMDL activity for the state. The St. Paul office is generally responsible for overseeing big picture portions of the WRAPS/TMDLs. This includes large-scale modeling (HSPF) and oversight of regulatory framework. The St. Paul office also acts as a regional office, handling some of the WRAPS/TMDLs within the metro directly.
MPCA (regional offices) **Contact Information:** https://www.pca.state.mn.us/about-mpca/mpca-offices **Reasons to contact:** • Status and dates of meetings • Status of the TMDL/WRAPS studies • Discuss opportunities of conservation practices • Inform them of areas where good work is already being done	**Description:** MPCA regional offices will oversee WRAPS/TMDLS contained within the region. Exceptions may include larger waterbodies (i.e. Mississippi River) that cross multiple regions. Outside of the St. Paul office, there are seven other regional offices.
Local Project Sponsor **Contact Information:** Contact your LGU offices or MPCA regional office to find out if there is a local project sponsor **Reasons to contact:** • Status and dates of meetings • Status of the TMDL/WRAPS studies • Discuss opportunities for conservation practices • Inform them of areas where good work is already being done • Inquire as to how the completed studies will be implemented	**Description:** The MPCA will sometimes partner with a local WRAPS/TMDL project sponsor. This will typically be a watershed district, watershed management organization, or SWCD. The local sponsor can also be a joint powers agreement between any combinations of these LGUs. If there isn't a local sponsor, then the MPCA regional office is likely performing the WRAPS/TMDL work internally. If there is no Local Project Sponsor, it is still worth contacting your LGUs to see how they are engaging in the process.
Consultant **Contact Information:** Ask MPCA regional office or local project sponsor if they are working with a consultant. **Reasons to contact:** • The consultant for a TMDL/WRAPS can be a great source of information on the progress and future direction of the studies	**Description:** It is also likely that the local project sponsor has hired a consultant to assist them with all or some of the WRAPS/TMDL work. Consultants will typically be involved with data analysis, report preparation, and civic engagement. To work as a consultant on the WRAPS/TMDL projects, the consultants must be on the MPCA Master Contractors list for WRAPS/TMDLS. The most up-to-date version of this list can be obtained from the St. Paul MPCA office.



Region	Office	Address	Contact Phone
Northwest	Detroit Lakes	714 Lake Ave., Suite 220 Detroit Lakes, MN 56501	218-846-8102
Northeast	Duluth	525 Lake Avenue South, Suite 400 Duluth, MN 55802	218-302-6614
North Central	Brainerd	7678 College Road, Suite 105 Baxter, MN 56425	218-316-3883
Metro	Saint Paul	520 Lafayette Road N St. Paul, MN 55155-4194,	
Southeast	Rochester	18 Wood Lake Drive SE Rochester, MN 55904	507-206-2626
Southeast	Mankato	12 Civic Center Plaza, Suite 2165 Mankato, MN 56001	507-344-5247
Southwest	Willmar	1601 East Highway 12, Suite 1 Willmar, MN 56201-6002	320-441-6966
Southwest	Marshall	504 Fairgrounds Rd Suite 200 Marshall, MN 56258	507-476-4262

7.2 TMDL AND WRAPS REVIEW GUIDE

Table 7-1: Total Maximum Daily Load structure

Section	Subsection Name	Description	Category	Justification for "Attention" Category…	
				Importance to Farmers	Importance to Producer Organizations
1. Project Overview	Purpose	Reviews purpose of TMDL.	Review		
	Identification of Waterbodies	Identifies waterbodies that are impaired, and whether or not they are addressed by the TMDL.	**Attention**	Maps where impaired waters are located, so you can see if your property is near the impairment.	Maps where impaired waters are located for identification of where future restoration projects are likely to be focused.
	Priority Ranking	Minnesota's priority ranking and ranking criteria for TMDL under consideration.	Review		
2. Applicable Water Quality Standard and Numeric Water Quality Targets	Lakes/ Streams	Reviews water quality targets for watershed or waterbody that is being addressed by the TMDL. Outlines water quality standards.	Review		
3. Watershed and Waterbody Characterization	Lakes/ Streams	Presents drainage areas for impaired waterbodies.	Review		
	Subwatersheds	Breaks a major watershed into smaller, subwatersheds. Introduces those subwatershed areas that contain an impaired waterbody.	**Attention**	If your property is within a subwatershed with an impairment, restoration strategies will be developed. Otherwise, protection strategies will be developed for your watershed.	Identifies if landowners are in protection or restoration subwatersheds, so outreach efforts can be tailored appropriately.
	Land Use	Reviews land use in watershed, and in each subwatershed.	Review		

Section	Subsection Name	Description	Category	Justification for "Attention" Category…	
				Importance to Farmers	Importance to Producer Organizations
	Current/ Historic Water Quality	Reviews how water quality monitoring was completed to assess monitoring results against water quality standards. Reviews the data which led to the impaired classification for each reach.	**Attention**	At times data conflicts may arise that could impact impairment classifications. Make sure the best data was used!	At times data conflicts may arise that could impact impairment classifications. Make sure the best data was used!
	Pollutant Source Summary	Reviews sources of the pollutant, both for permitted (point) sources and non-permitted (nonpoint) sources.	**Attention**	Identifies causes of elevated non-point source pollutants. Strategies in the WRAPS will address these sources. Make sure these sources make sense and that you identify any assumptions that were made.	Identifies causes of elevated non-point source pollutants. Make sure these source allocations make sense, and make sure you identify assumptions.
4. TMDL Development	By Impairment	Presents the TMDL equation and load reduction required to meet water quality goals of the impaired waterbody.	**Attention**	Identified load reduction required to meet water quality goals (load allocation). Make sure you check the TMDL equation and that the #s add up!	Identified load reduction required to meet water quality goals (load allocation). Make sure you check the TMDL equation and that the #s add up!
5. Future Growth Considerations	New or Expanding Permitted MS4 Transfer Process	Reviews scenarios that would transfer watershed runoff loads.	Review		
	New or Expanding Wastewater	Procedure for setting or revising wasteload allocations for new/expanding wastewater discharges to waterbodies with a TMDL.	Review		

Section	Subsection Name	Description	Category	Justification for "Attention" Category…	
				Importance to Farmers	Importance to Producer Organizations
6. Reasonable Assurance	N/A	Reviews collaborative efforts of local governmental units and agencies for implementation activities.	**Attention**	This section describes how implementation will occur and is receiving increased scrutiny from the EPA. This is a great opportunity to plug in your local knowledge	This section describes how implementation will occur and is receiving increased scrutiny from the EPA. This is a great opportunity to plug in your local knowledge
7. Monitoring Plan	N/A	Reviews existing and future monitoring efforts in the watershed/subwatershed area.	Review		
8. Implementation Strategy Summary	Permitted Sources	Reviews wasteload allocations from Construction Stormwater, Industrial Stormwater, MS4s, and Wastewater	Review		
	Non-Permitted Sources	Discusses previous and proposed future work on reducing local non-permitted sources of pollution.	**Attention**	Make sure existing good work is identified and your preferred opportunities are included.	Identifies proposed projects that may need landowner buy in, and may be prioritized in the WRAPS implementation table. Make sure these practices are practical and that existing conservation efforts are accounted for.
	Cost	Review overall cost of TMDL implementation and priority practices to be implemented.	**Attention**	Identifies primary set of practices to be implemented to meet goals of the TMDL. From your experience, do the #s make sense? Are they high, low, or in the ballpark?	Identifies primary set of practices to be implemented to meet goals of the TMDL. From your experience, do the #s make sense? Are they high, low, or in the ballpark?
	Adaptive Management	Determines process for evaluating project progress and implementation plan amendments.	Review		
9. Public Participation	N/A	Summarizes civic engagement efforts as part of the TMDL process.	Review		

Table 7-2: Watershed Restoration and Protection Strategy report structure

Section	Subsection Name	Description	Category	Justification for "Attention" Category…	
				Importance to Agricultural Farmers	Importance to Producer Organizations
1. Watershed Background and Description	N/A	Introductory description of watershed under consideration.	Review		
2. Watershed Conditions	Watershed Conditions	Reviews assessed and impaired waterbodies.	Review		
	Condition Status	Inventories assessed and not assessed streams and lakes in the watershed; identifies condition status of all waterbodies.	Review		
	Water Quality Trends	Reviews long-term water quality trend data in the watershed.	Review		
	Stressors and Sources	Identifies biological stressors, point sources of pollution, and nonpoint sources of pollution in the watershed.	Attention	Identifies causes of elevated non-point source pollutants. Make these sources make sense and correspond with information in the TMDL.	Identifies causes of elevated non-point source pollutants. Make these sources make sense and correspond with information in the TMDL.
	TMDL Summary	Presents results of the TMDL equations for all impaired waterbodies in the watershed. Identifies the load reduction required to meet water quality goals of the impaired waterbody(ies) within the watershed.	Attention	Identifies load reduction required to meet water quality goals. Make sure the #s add up and that they match the TMDL.	Identifies load reduction required to meet water quality goals. Make sure the #s add up and that they match the TMDL.
	Protection	Describes need for protection strategies of unimpaired waters, as without protection strategies, they may become impaired over time.	Review		

Section	Subsection Name	Description	Category	Justification for "Attention" Category…	
				Importance to Agricultural Farmers	Importance to Producer Organizations
3. Prioritizing and Implementing Restoration and Protection	Prioritizing and Implementing Restoration and Protection	Identifies local entities involved in the implementation of restoration and protection strategies.	Attention	Identifies local entities previously involved with successful implementation projects. Consider proposing alternative entities that might more effectively deliver conservation practices.	Identifies local entities previously involved with successful implementation projects. Consider proposing alterative entities that might more effectively deliver conservation practices.
	Targeting of Geographic Areas	Describes models used to prioritize areas in the watershed that contribute disproportionately large loads of pollutants.	Review		
	Civic Engagement	Discusses the role of civic engagement, and current and future civic engagement efforts.	Review		
	Restoration & Protection Strategies	Presents a list of current and proposed implementation practices within the watershed. Presents the watershed-wide implementation table.	Attention	Implementation table identifies a list of prioritized projects that could be locally implemented as part of the WRAPS effort. Make sure: • your preferred practices are included • practices identified are practical for implementation • that existing conservation efforts are not overlooked	WRAPS implementation table can be used to compete for funds to implement management practices. Make sure: • practices preferred by farmers are included • strategies can be practically accomplished • existing conservation is recognized
4. Monitoring Plan	N/A	Reviews existing and future monitoring efforts in the watershed/subwatershed area.	Review		

7.3 CONSERVATION PROJECT FUNDING SUPPORT

Table 7-3. List of potential state and federal funding sources for supporting conservation practices.

Who you contact	Program/ Grant Name	Fiscal Agent	Primary Assistance Type	Program Information
DNR Area Wildlife Manager	Pheasant Habitat Improvement Program (PHIP)	**DNR**	Financial	Click **here** for link
DNR Area Hydrologist	Flood Hazard Mitigation Grant Assistance	**DNR**	Financial	Click **here** for link
LGUs	Clean Water Partnership	**MPCA**	Financial	Click **here** for link
	Agriculture Best Management Practices (BMP) Loan Program	**MDA**	Financial	Click **here** for link
LGUs, regional governmental groups, lake associations, Universities, Nonprofits, Tribal governments	Surface Water Assessment Grants (SWAG)	**MPCA**	Financial	Click **here** for link
Local USDA Service Center, can be facilitated by SWCD	Conservation Stewardship Program (CSP)	**NRCS**	Financial/ Technical	Click **here** for link
	Regional Conservation Partnership Program (RCPP)	**NRCS**	Financial/ Technical	Click **here** for link
	Conservation Reserve Program (CRP)	**FSA**	Easement	Click **here** for link
	Environmental Quality Incentives Program (EQIP)	**NRCS**	Financial/ Technical	Click **here** for link
	Agricultural Conservation Easement Program (ACEP)	**NRCS**	Easement	Click **here** for link
	Conservation Reserve Enhancement Program (CREP)	**FSA**	Easement	Click **here** for link
	Farmable Wetlands Program (FWP)	**FSA**	Easement	Click **here** for link
	Grasslands Reserve Program (GRP)	**FSA**	Easement	Click **here** for link
MDH	Source Water Protection Grant Program	**MDH**	Financial	Click **here** for link
Check with your local SWCD office	Conservation Partners Legacy Grant Program	**DNR**	Financial	Click **here** for link
	Conservation Innovation Grant (CIG)	**NRCS**	Financial	Click **here** for link
State agencies and tribes.	Water Pollution Control Program Grants (Section 106)	**EPA**	Financial	Click **here** for link
SWCD/Watershed District	Clean Water Fund Grants	**BWSR**	Financial	Click **here** for link
	Erosion Control and Water Management Program	**BWSR**	Financial	Click **here** for link
SWCDs	Reinvest in Minnesota (RIM)	**DNR**	Financial/Easement	Click **here** for link
	Reinvest in Minnesota (RIM)– Critical Habitat Match	**BWSR**	Financial	Click **here** for link

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