BUREAU OF WATER QUALITY
PROGRAM GUIDANCE
WASTEWATER POLICY & MANAGEMENT TEAM

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Guidance for Implementing Water Quality Trading in WPDES Permits

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This document is intended solely as guidance and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

APPROVED:

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Abbreviations and Acronyms

This list contains the most common abbreviations used in this document.

AWQMP	Areawide water quality management plan
BCC	Bioaccumulative chemicals of concern
BMP	Best management practice
CAFO	Concentrated animal feeding operation
DATCP	Department of Agriculture, Trade and Consumer Protection
DMR	Discharge monitoring report
GIS	Geographic information system
HUC	Hydrologic unit code
LBS/YR	Pounds per year
LA	Load allocation
LCD	Land Conservation Department
MOU	Memorandum of understanding
MGD	Million gallons per day
mg/L	Milligrams per liter
NOI	Notice of Intent
MS4	Municipal separate storm sewer system
NPS	Nonpoint source
NRCS	Natural Resources Conservation Service
P	Phosphorus
PI	Phosphorus index
POTW	Publicly owned treatment works
PRESTO	Pollutant Load Ratio Estimation Tool
PS	Point source
SWDV	Surface Water Data Viewer
TBEL	Technology-based effluent limitation
TMDL	Total maximum daily load
TP	Total phosphorus
TRM	Targeted runoff management
TSS	Total suspended solids
µg/L	Micrograms per liter
U.S. EPA	United States Environmental Protection Agency
USGS	U.S. Geological Survey
WDNR	Wisconsin Department of Natural Resources
WLA	Waste load allocation
WPDES	Wisconsin Pollutant Discharge Elimination System
WQBEL	Water quality-based effluent limitation
WQT	Water quality trading
WWTF	Wastewater treatment facility

Chapter 1 – Introduction and Background

Last revised: March 2026

The purpose of this document is to provide guidance and protocols to stakeholders and Wisconsin Department of Natural Resources (WDNR) staff on water quality trading, with an emphasis on developing water quality trades and implementing trading in Wisconsin Pollutant Discharge Elimination System (WPDES) permits. Wisconsin's Water Quality Trading program is authorized in s. 283.84 Wis. Stats.: "Trading of water pollution credits". This document builds on the trading protocols presented in A Water Quality Trading Framework for Wisconsin (WDNR 2011), and previous publications of Guidance for Implementing Water Quality Trading in WPDES Permits (WDNR 2013 & 2020) and A Water Quality Trading How to Manual (WDNR 2013). This publication serves to supplant the above documents as a sole source of formal WDNR guidance on water quality trading.

Water Quality Trading (WQT or "trading") may be used by municipal and industrial WPDES permit holders to demonstrate compliance with water quality-based effluent limitations (WQBELs) or wasteload allocations and associated percent reductions required under total maximum daily loads (TMDLs). Generally, trading involves a WPDES wastewater or stormwater permittee facing relatively high pollutant reduction costs compensating another party to achieve less costly pollutant reductions, resulting in an overall water quality benefit while meeting regulatory requirements. In other words, trading provides WPDES permit holders with the flexibility to acquire pollutant reductions from other sources in the watershed to offset their pollutant load so that they will comply with their own permit requirements. Trading is not a mandated program or regulatory requirement, but rather a market-based tool that enables some WPDES permit holders to meet regulatory requirements more cost-effectively.

Deciding to Select Trading as a Compliance Option

Trading allows WPDES dischargers to work with other permitted dischargers and nonpoint sources to achieve compliance with WPDES permit limits and wasteload allocations. Potential benefits to trading include:

1. WPDES permit compliance through trading may be economically preferable to other compliance options.
2. New and expanding WPDES dischargers can utilize trading to develop new economic opportunities in a region, while still meeting water quality requirements.
3. Permittees cooperatively working with other WPDES permit holders and nonpoint sources can demonstrate their commitment to the community and to the environment by working together to protect and restore local water resources.

It is important for WDNR staff to promote consistency when implementing permit requirements. This guidance was created to help ensure consistency across all water quality trading efforts in Wisconsin. This guidance document will be updated as experience is gained in developing and implementing trading strategies. Individual chapters or appendices may be revised and the "last revised" date will reflect the most recent date changes were made. All changes to this document are subject to WDNR guidance protocols including a public comment period. If you wish to suggest changes to this guidance or suggest additional issues that may need to be

addressed, contact the WDNR Statewide Water Quality Trading Coordinator. Contact information for statewide and regional trading coordinators can be found on the WDNR's website searching "Water Quality Trading" or by visiting: WQT Coordinator List (https://dnr.wisconsin.gov/sites/default/files/topic/Wastewater/coordinatorlList.pdf).

1.1 Adaptive Management vs. Water Quality Trading

Adaptive management (AM) is often confused with trading, as both options allow permittees to work with nonpoint or other point sources of phosphorus in a watershed to reduce the overall phosphorus load to a given waterbody. However, these options are not the same (Figure 1). Adaptive management is typically focused on phosphorus compliance and improving water quality so that the applicable phosphorus criterion is met. Trading is not limited to phosphorus and may be used to meet limits for various compounds. Trading must result in improved water quality (according to s. 283.84(1m)(a), Wis. Stats.), which is achieved by causing a greater stream pollutant load reduction at the discharger's point of compliance than would otherwise be achieved via compliance without trading. Additionally, trading is not subject to the AM eligibility requirements specified in s. NR 217.18, Wis. Adm. Code.

In other words, trading focuses on compliance with a discharge limit (offsetting the amount of a given pollutant in the effluent); while adaptive management focuses on compliance with phosphorus criteria (meeting an acceptable in-stream phosphorus concentration). More detailed information about adaptive management has been presented in the Adaptive Management Handbook. Please refer to that document if you are interested in learning more about this option. For additional information on adaptive management, and for a comparison between trading and adaptive management, visit: Adaptive Management WDNR Webpage (https://dnr.wi.gov/topic/wastewater/adaptivemanagement.html).

Adaptive Management	Water Quality Trading
• Permittee improves water quality in a watershed by reducing in-stream phosphorus concentrations • Permit compliance is demonstrated by reducing in-stream phosphorus concentrations and eventually achieving phosphorus water quality criteria • Typically for phosphorus compliance only	• Permittee causes pollution-reducing projects in the watershed to generate credits • Permit compliance is demonstrated by comparing permittee discharge data, available credits and permit limits • Can be used to comply with a number of pollutants, not just phosphorus

FIGURE 1: ADAPTIVE MANAGEMENT VS. WATER QUALITY TRADING

Chapter 2 – Water Quality Trading Overview

Last Revised: March 2026

To ensure consistency with the Clean Water Act, United States Environmental Protection Agency (U.S. EPA) guidance (U.S. EPA 2003, 2004 and 2007), U.S. EPA Trading Memo (2019), and s. 283.84, Wis. Stats., this section of the guidance presents an overview for trading in Wisconsin.

To improve reader understanding, a few terms used throughout this document are explained here. A **pollutant reduction** is the outcome of a trading practice, whether from a point or nonpoint source. A **pollutant credit** (credit) is the amount of the traded pollutant that is made available to the **credit user**. The credit user demonstrates compliance with their WPDES permit requirements by using credits to offset all or a portion of their discharge of the pollutant of concern. Credits are made available by the **credit generator**, which may be either a point source or nonpoint source, by providing a **pollutant load reduction** (load reduction) in excess of that required of the credit generator.[1] Together, the credit generator and credit user are identified as **trading partners** and can be defined as:

> "Credit User" means a WPDES permittee who has executed an agreement through which pollutant reduction credits are obtained from another WPDES permittee or nonpoint source(s) for the purpose of offsetting an ongoing or increased discharge of the pollutant of concern in accordance with s. 283.84, Wis. Stats.
>
> "Credit Generator" means a party generating pollutant reduction credits. This can either be a WPDES permittee that agrees to reduce their discharge of the pollutant of concern below levels otherwise authorized by their WPDES discharge permit, or a party who is not required to obtain a WPDES discharge permit but reduces their loadings of the traded pollutant under a WQT agreement.

At times, a trade may be described as a "point to point" trade or a "point to nonpoint" trade. In this guidance, the classification of the credit user is stated first. For example, when the credit user is a point source and the credit generator is a nonpoint source, the trade will be described as a **point to nonpoint** trade.

What are "point sources"?

Point sources are discernible, confined, and discrete conveyances from which pollutants may be discharged into waters of the state and are regulated by Wisconsin Pollutant Discharge Elimination System permits.

What are "nonpoint sources"?

Pursuant to s. 281.65(2)(b), Wis. Stats., nonpoint sources are land management activities which contribute runoff, seepage, or percolation which adversely affects water quality and are not a "point source" under s. 283.01(12), Wis. Stats.

[1] Note that a pound per year of load reduction provided by the credit generator does not necessarily equal a pound per year of credit for the credit user, as explained in Section 3.4.

When describing trading as “upstream” or “downstream,” this guidance document uses the location of the credit user as the point of reference. That is, the credit generator is located upstream of the credit user in **upstream trades**, and the credit generator is located downstream of the credit user in **downstream trades**.

Trades may involve more than credit generators and credit users. A **credit broker** is a third party that facilitates the trade by bringing potential trading partners together. A broker performs the research necessary to match credit users and credit generators based on location, pollutant type, amount, and timing. The credit broker does not purchase and resell credits. Although brokers may assist in trading negotiations, they do not sign or regulate trade agreements. Brokers do not assume any liability for individual trades. The credit broker may be a state agency, conservation district, private entity, or other organization or person. A **credit exchange or clearinghouse**, on the other hand, is a third party that collects pollutant reduction credits from credit generators to sell to credit users. A discussion of Wisconsin’s Water Quality Trading Clearinghouse, contracted under s. 16.9685, Wis. Stats, is included below.

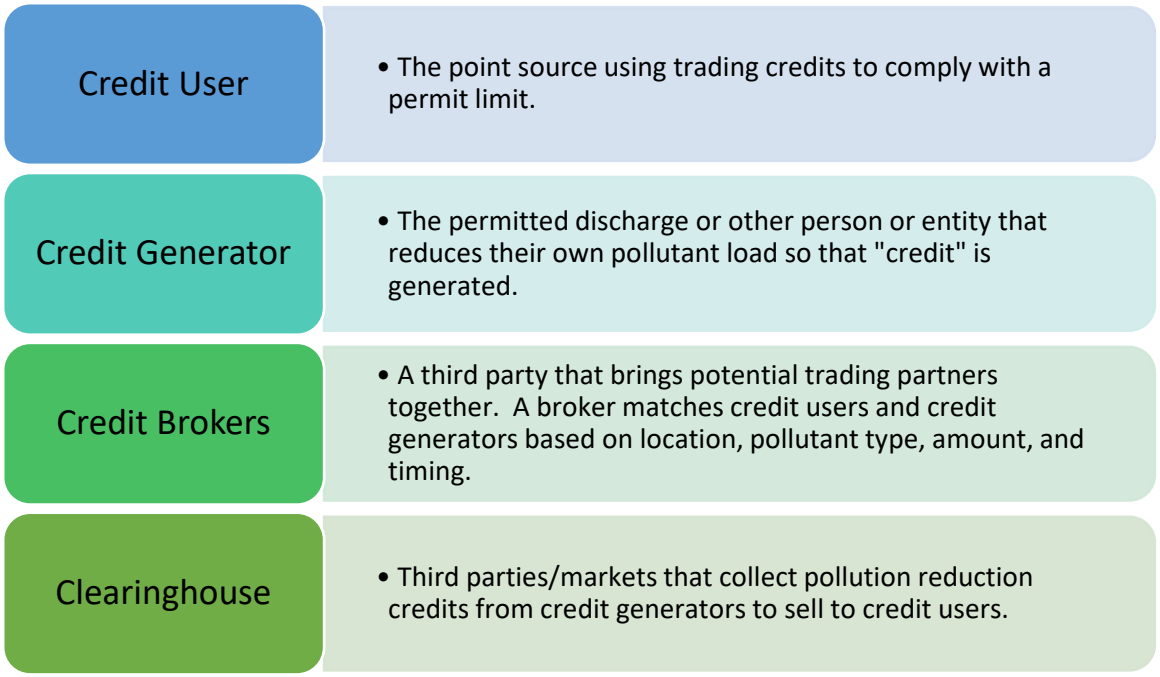

FIGURE 2: TRADING PARTICIPANTS AND ROLES

Pursuant to s. 283.84 (1)(c), Wis. Stats., the WDNR and local government units may play a somewhat modified role as a credit exchange by using money received from credit users to reduce pollutant loads or provide cost−sharing, for the purposes of ss. 281.16 (3)(e) or (4), Wis. Stats. (see Appendix A – Section 283.84, Wis. Stats., p. 74).

When to Consider a Broker or Exchange

Credit brokers or exchanges may be useful to facilitate trades between point and nonpoint sources, find potential credit generators, or bridge communication between credit user and generator when working relationships are not well established. Although some point sources, like cheesemakers, have strong connections with farmers, the majority of point sources in Wisconsin do not have a working relationship with these and

other nonpoint sources. Studies have shown that working with a broker or exchange that understands the concerns and challenges facing these entities can improve the probability that trading will be successful[2]. Trust between an agricultural credit generator and a credit bank/exchange can greatly reduce perceptions of uncertainty and fear of regulation, while increasing the sense of equity for agricultural producers. If a credit broker or exchange can bring these qualities to trading, the probability of working with agricultural nonpoint sources may be greater than if a point source tried to work with a farmer directly.

Finding a Credit Broker

Credit brokers are established throughout most of the state of Wisconsin; however, not all entities that can serve as a credit broker are readily able to take on the additional workload of an intensive broker role. If a credit broker is used, the credit user and broker may wish to enter into a Memorandum of Understanding (MOU) or contract for services, but an actual trade agreement between these entities is not required. MOUs and/or contracts are recommended between credit users and their broker to specify deliverables, milestones, and necessary compensation. Contractual agreements can help protect both the point source and the facilitator throughout the trading process. MOUs do not have to be submitted to WDNR, nor are they required. If an applicant submits an MOU to WDNR staff, it will be for informational purposes only. WDNR will not validate or comment on these documents but may consider them when evaluating the adequacy of trading strategies.

Counties: The County Land Conservation Department (LCD) may be one partner that can effectively bridge communication between point and nonpoint sources, identify potential credit generators in the watershed, and oversee trading. County LCDs have expertise in agricultural performance standards compliance and cost-share agreements, among other things. County LCDs also have ties to effectively reach out to, and work with, farmers and municipalities in their area. There is some precedence in Wisconsin for county LCDs serving as credit brokers for WPDES permittees within their county.

Partnerships with county LCDs can be mutually beneficial given the overlap in goals and experience. However, county staff are not required to assist with trading activities, and some may have limited time for trades due to multiple existing programs they administer. Point sources and county LCDs should determine their appropriate level of involvement and necessary compensation for these projects. To find county staff in your area visit: WI Land and Water Members (https://wisconsinlandwater.org/members-hub/members).

Consultants: Some environmental consultants may be interested and willing to serve as credit brokers. You may wish to seek out consultants that have experience working in your watershed, knowledge of nonpoint source runoff, and/or familiarity with outreach and education to help improve the feasibility of implementing a successful trade. Consultants and other third parties facilitating trades do not need direct ties to farmers in your watershed, but should be perceived as unbiased, so that farmers and other nonpoint sources are willing to partner with them. Trusted social relationships will likely create a more efficient marketplace for trading and may even reduce transaction costs for trading.

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[2] Example: Granovetter, Mark (Nov., 1985). Economic Action and Social Structure: The Problem of Embeddedness. *Amer. Jrnl. Of Sociology* 91(3). 481-510.

Other: Other partnerships may also be beneficial to provide technical expertise, assist with project outreach and education, provide alternative funding sources, or seek out trading credits. When determining the potential for other partners it is important to identify regional groups already active in land use/water quality issues. For example, local agricultural groups and/or environmental groups can help identify credit generators or install best management practices (BMPs). Non-governmental organizations or other partners may also be willing to serve directly as a credit broker.

Wisconsin's Water Quality Trading Clearinghouse

2019 Wisconsin Act 151, passed during the 2020 legislative session, created an additional approach for buying and selling credits through a central clearinghouse. The law requires the Department of Administration (DOA) to contract with a third party to operate as the single water quality trading clearinghouse in Wisconsin for the purpose of buying and selling water quality pollution credits. The initial clearinghouse procurement and contracting process took place from 2020 to 2023.

Wisconsin's centralized water quality trading clearinghouse is intended to offer WPDES permit holders a streamlined approach for acquiring water quality credits to comply with WQBELs. Pursuant to s. 16.9685, Wis. Stats., the clearinghouse shall do all of the following:

- Produce credits by entering into contracts with other parties to undertake water pollution reduction activities.
- Maintain a bank of credits produced or to be produced.
- Sell credits produced to any person.
- Use methods approved by the WDNR to determine the amount of credits that may be produced by various water pollution reduction activities. These methods may include tables and models based on the best available scientific protocols.
- Determine the amount of credits that may be produced by the water pollution reduction activities.

When contracting with credit generators, the clearinghouse shall:

- Seek to minimize transaction costs.
- Seek to maximize the performance of the water pollution reduction activities.
- Seek to reduce the overall amount of pollutants introduced into the applicable hydrologic area, as defined under s. 283.84 (1m) (e) 2., Wis. Stats.
- Require a maintenance schedule approved by WDNR to ensure that the credits are maintained throughout the time for which they are certified.
- Verify the credit by reporting to WDNR any pertinent information regarding the credit and the related water pollution reduction activities.
- Establish and maintain a centralized registry of all credits generated and sold in this state.

For information regarding the current water quality trading clearinghouse contract holder, including how to utilize their services, see Appendix K. This appendix is written by the entity holding the clearinghouse contract. DNR does not guarantee the accuracy or timeliness of information such as associated web links or contact information.

In accordance with s. 283.84(1)(f), Wis. Stats, WPDES permittees may purchase credits from the clearinghouse under a written agreement. The agreement must define specific pollution-reducing projects that will be utilized to generate credits for a minimum of one WPDES permit term. Other contractual provisions will include monetary compensation, annual inspection and reporting duties, notification of practice failure, and any risk mitigation mechanisms employed to provide certainty to credit buyers and sellers.

Any credits sold by the clearinghouse will be detailed via a credit verification package (CVP), which serves the same role as a water quality trading plan in trades that occur outside of the clearinghouse. Throughout this guidance document, WQT Plan and CVP can be used interchangeably. Information contained in the CVP must include the location of the activities; the type of practice or technology used; any maintenance schedule; the frequency of inspections; the duration for which the credit is valid; and the amount of credits generated by the water pollution reduction activities, and supporting documentation for the credit calculations. WDNR reviews credit verification packages and issues verification letters once the review process is complete. Credit verification packages are incorporated by reference into credit users' WPDES permits, with the full credit verification package public noticed at the time of permit reissuance or modification to include WQT credits.

WPDES Permit Requirements

Pursuant to s. 283.84 (1), Wis. Stats., a binding, written agreement (trade agreement) is required between trading partners. See section 3.5 for descriptions of each possible contract structure. Contracts between credit users and credit generators may also include a third-party broker or clearinghouse.

Pursuant to s. 283.84(1m)(a), Wis. Stats., water quality trade agreements must result in an improvement in water quality. Water quality trade agreements result in an increase in pollutant discharged (via the use of credits) as well as a decrease in pollutants discharged (via generation of credits). For WDNR to ascertain that a water quality improvement is occurring, the pollutant load reduction must be quantified using either monitoring or best-available modeling approaches. Where this guidance document conveys requirements surrounding pollutant loading quantification, these are requirements authorized under s. 283.84(1m)(a), Wis. Stats.

Pursuant to s. 283.84 (3r) and (4), Wis. Stats., the credit user's WPDES discharge permit and, if one is required, the credit generator's WPDES discharge permit must be issued, reissued or modified to enable trade agreements to be implemented. The permit must include terms and conditions related to the trade agreement before trading of credits may occur. For a point-to-point trade, this would include modifying applicable pollutant WQBELs for the credit generating facility, or modifying the nutrient management plan of a concentrated animal feeding operation (CAFO). For additional information go to Section 4.3, p 61, Incorporation of WQT in WPDES Permits.

General Conditions for Water Quality Trading

Trading should not create localized exceedances of water quality and must not result in the exceedance of WQBELs for acute toxicity as derived pursuant to ch. NR 106, Wis. Adm. Code. This includes limits for acute whole effluent toxicity and limits based on acute criteria for temperature. Further, pursuant to s. 283.84 (1m)(a), Wis. Stats., trading credits must result in improved water quality. Trading results in improvements to water quality by achieving a greater in-stream pollutant load reduction at the point source's point of standards

application than would otherwise be achieved absent trading. Trade ratios provide flexibility to consider pollutant reductions of varying certainty, location, and type while supporting the requirement that water quality standards be met.

2.1 Pollutant Parameters for Water Quality Trading

The WDNR will consider any pollutant parameter for trading except bio accumulative chemicals of concern such as those identified in ch. NR 105, Wis. Adm. Code.

Cross-pollutant trading is the use of credits for one pollutant parameter to demonstrate compliance with WQBELs for a second pollutant parameter. Cross-pollutant trading is acceptable when there is adequate information to establish and correlate impacts between the two pollutant parameters. An example is trading credits for phosphorus to allow a discharger to demonstrate compliance with WQBELs for 5-day biochemical oxygen demand (BOD_5) when the limits are based on preventing oxygen depletion in the receiving water.

2.2 Water Quality Trading Applicability

Trading may be used by holders of WPDES permits to demonstrate compliance with WQBELs. Credits may be used to offset part of the permittee's discharge with the difference between the permittee's discharge and available credits being compared to WQBELs to demonstrate compliance, as depicted in Figure 3.

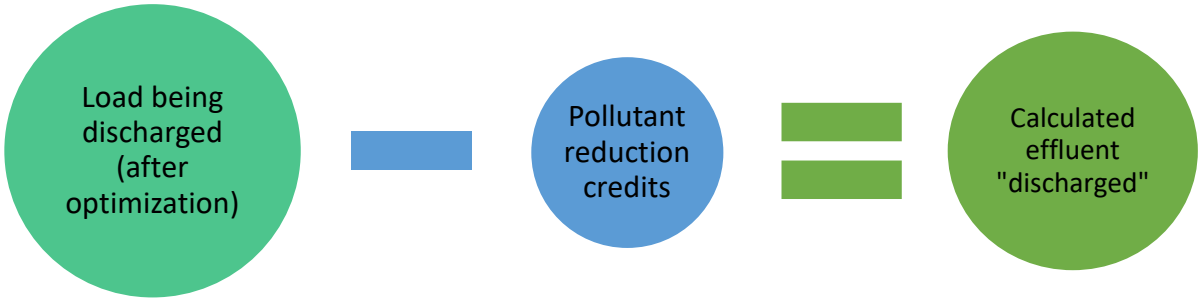

FIGURE 3: DETERMINING COMPLIANCE WITH A WQBEL USING WQT

Trading may also be used to offset an increase in pollutant load from an existing discharger or the entire load of a new discharger. For example, a finding that water quality is not being lowered, as addressed by s. NR 207.04 (1)(c), Wis. Adm. Code, may be supported by trading to offset an increasing pollutant load or a new discharge. Further, s. NR 217.13 (8), Wis. Adm. Code, identifies trading as one of three options that can be used to allow a new discharger to discharge phosphorus to phosphorus-impaired surface waters.

Trading and Technology-based Effluent Limitations

The use of trading to demonstrate compliance with technology-based effluent limitations (TBELs) established pursuant to s. 283.13(1) through (4), Wis. Stats., is not allowed unless authorized by the administrative rule that establishes the TBEL. Trading cannot be used to demonstrate compliance with a TP TBEL derived pursuant to Subchapter II of ch. NR 217, Wis. Adm. Code. Trading can only be used to demonstrate compliance with WQBELs.

Trading and Statewide Performance Standards

Nonpoint sources and permitted municipal separate storm sewer systems (permitted MS4s) are not allowed to be credit users to meet the runoff pollution performance standards contained in ch. NR 151, Wis. Adm. Code. These performance standards represent the equivalent of TBELs, and the pollutant TSS serves as a surrogate for other urban pollutants such as toxic metals and organic compounds that would not be offset through reductions in TSS from agricultural nonpoint sources. Trading may be used to meet requirements promulgated under s. NR 151.004, Wis. Adm. Code. For example, MS4s may use trading to comply with wasteload allocations from TMDLs.

Trading may not be used by CAFOs to meet phosphorus delivery minimization requirements of s. NR 243.14(5), Wis. Adm. Code. However, trading can be used to comply with effluent limits for a permitted manure treatment system.

2.3 Identifying Partners

In order to meet water quality goals, the parties to a water quality trade must discharge, either directly or indirectly, to the same water body as discussed in Section 2.4, p. 18. For example, a discharge to the East River, a tributary of the Fox River in Green Bay, would be considered an indirect discharge to the Fox River.

Pursuant to s. 283.84, Wis. Stats., trading may occur between two or more point sources and between point sources and nonpoint sources. If one permittee holds more than one WPDES permit, such as a municipality with a permit for its wastewater treatment system discharge and a permit for municipal storm water discharge, trading may occur between the point sources identified in the two permits. A permittee may generate credits for its own use by constructing a project or implementing a plan that reduces the amount of a pollutant discharged from sources other than those covered by the permittee's permit.

Successful trades between point sources and agricultural nonpoint sources may require working with persons with prior experience, skills, and relationships with agricultural producers and landowners. In Wisconsin, the following persons may be best suited to serve this role: 1) county land conservation department (LCD) staff who work to control nonpoint source pollution; 2) non-governmental organizations; 3) private consultants, including, but not limited to, certified crop advisors; and 4) the water quality trading clearinghouse. Collectively, these persons are referred to as "NPS implementers". Appendix C – Nonpoint Source (NPS) Implementation of this guidance provides additional information on NPS implementers and the roles they can play to develop and implement successful trades with agricultural nonpoint sources.

Targeting Willing Partnerships

Willing credit generators can include partners who have already identified themselves as potential credit generators, are interested in installing new practices or expanding management practices or are willing to go above and beyond their current pollutant control strategies. It is strongly encouraged to work with these willing partners to help improve the social acceptability of the trade and to mitigate administrative costs associated with finding potential trading partners in the watershed.

Point sources will likely be the most easily identifiable credit generators in the watershed. Point source credit generators may view trading as a way to offset some of their costs to upgrade their treatment technology and may, therefore, be more likely to seek out credit users. Additionally, trades between wastewater treatment

plants will be the most administratively straightforward, given that both credit user and credit generator will have a WPDES permit that will maintain the trade over time.

In some watersheds, urban storm water or nonpoint source credit generators are also easily identifiable. County LCDs, local agricultural groups, regional planning commissions, or other entities may already know of potential credit generators in the watershed or can easily develop this list. Although less likely, urban storm water and nonpoint sources can also identify themselves as potential credit generators in the watershed. Working with willing urban storm water or nonpoint source credit generators is one of the best ways to alleviate some of the complexities associated with these types of trades. If willing partners exists in a watershed, logistical concerns associated with finding partners and credits can be greatly reduced, which can have a direct impact on the economic and administrative viability of trading. Other administrative costs may exist, however, for activities such as preliminary trade negotiations, developing trading agreements, and maintaining and verifying trading practices over time. Despite these costs, trades with nonpoint sources can still be far more economical than traditional wastewater treatment facility upgrades or constructing storm water Best Management Practices (BMPs).

Local environmental groups may also know of water quality improvement projects such as wetland restoration and bank stabilization projects that can be implemented to generate credits. These groups may have third party funding sources that can help offset some of the trading costs associated with these projects or may have staff resources that can contribute to the project's viability.

Working with Significant Sources of Pollution

You may be aware of a number of significant pollution-generating sites in your watershed; while in other watersheds, you may need to actively seek out these locations. If you have several potential sites to choose from, it is recommended to work first with the most significant contributing sites in your watershed. The most significant contributors will likely be able to generate the most cost-effective credits possible.

If significant pollution-generating sites are unknown, data collected in the field can be used for decision-making purposes to help identify these locations. It is strongly recommended that sites be targeted based on their pollution load contribution, and/or the owner's willingness to partner. Targeting significant sites, also called "critical source areas," means that you will be able to capture more of the pollutant of concern with fewer trading partners. Working with these sources will help create a more efficient marketplace for trading, decrease administrative overhead, and may even reduce transaction costs. The critical source areas in your watershed may be point or nonpoint sources. Additional discussion regarding identifying critical source reduction areas can be found within the Adaptive Management Handbook found on the Adapative Management Webpage (https://dnr.wi.gov/topic/wastewater/adaptivemanagement.html).

When identifying these contributors, it is strongly recommended to work with county LCDs, Natural Resources Conservation Service (NRCS), Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP), WDNR NPS coordinators, the water quality trading clearinghouse, and/or others familiar with the nonpoint source conditions within the watershed.

2.4 Calculate Pollutant Offset Needed

The goal of this step is to calculate the pollutant offset required. To make this calculation, WPDES permittees need to know their current level of pollutant discharge and the applicable WQBEL. WDNR is able to assist WPDES permittees in determining credit need – contact your local WDNR compliance staff member or regional water quality trading coordinator (https://dnr.wisconsin.gov/sites/default/files/topic/Wastewater/coordinatorlist.pdf).

Optimization of Existing Wastewater Treatment Systems

Prior to using credits to demonstrate compliance with WQBELs, the permittee may wish to optimize existing wastewater or stormwater treatment for the pollutant addressed by the trade. Treatment optimization utilizes minor operational changes or BMPs to capture and remove as much of the traded pollutant as possible. For example, if a wastewater treatment system currently utilizes chemical phosphorus removal, adding more chemicals or adding chemicals more frequently to recover more of the pollutant of concern may constitute treatment optimization. Removal of collected solids from a lagoon represents another example of treatment optimization.

Determine Applicable WPDES Permit Limit(s)

To evaluate whether trading is a viable option for a facility or MS4, you need to know the applicable limits for the pollutant(s) of concern. WDNR will calculate and provide pollutant limits to permittees during the permit reissuance process. These may be expressed as concentration or mass limits for wastewater facilities, or a mass wasteload allocation (WLA) for MS4s. If the facility's WQBELs or WLAs are not already included in the WPDES discharge permit, or are not yet available, you may wish to estimate draft limits for planning purposes. Guidance is available to help you calculate draft limits:

- See Section 2.01 of the Phosphorus Implementation Guidance document to calculate phosphorus limits found on the Phosphorus Webpage (https://dnr.wi.gov/topic/wastewater/phosphorus).
- See Chapter 3 of the Thermal Implementation Guidance document to calculate temperature limits found on the Thermal Rule Webpage (http://dnr.wi.gov/topic/surfacewater/thermal.html).
- See TMDL Implementation Guidance for MS4 permits found on the MS4 Modeling Guidance Webpage (https://dnr.wisconsin.gov/topic/Stormwater/standards/ms4_modeling.html).

Quantify Offset Needed

To calculate the amount of offset needed to comply with a WQBEL, use the most restrictive limit for the given pollutant in the following equation:

Needed Offset = Expected Discharge (lbs./month*) – Permit Effluent Limit (lbs./month*) × 12 months/year

Where: Permit Effluent Limit = Most restrictive WQBEL for the pollutant, on a mass basis;

Expected Discharge = Pollutant loading for the duration of upcoming trading permit term

*note: TSS limits may have weekly limit averaging periods

Wastewater Facility Example:

Point Source A is a municipal wastewater treatment facility (WWTF) with an effluent discharge that averages 1.3 million gallons per day (MGD) and 0.5 mg/L total phosphorus. The facility's average annual design flow equals 1.9 MGD. The facility discharges to a waterbody with an in-stream total phosphorus concentration of 0.12 mg/L, which exceeds the water quality criterion for total phosphorus of 0.10 mg/L. Therefore, total phosphorus WQBELs equal to 0.1 mg/L as six-month averages (0.1 mg/L × 1.9 MGD × 8.34) and 0.3 mg/L as a monthly average (0.1 mg/L × 3) are applicable to the facility's discharge. Since the six-month average limit of 0.1 mg/L is the most restrictive limit, needed total phosphorus credits equal:

(0.5 mg/L – 0.1 mg/L) × 1.3 MGD × 8.34 × 365 days/year = 1,583 lbs./year

Where: 0.5 mg/L = Point Source A's current average discharge of total phosphorus;

0.1 mg/L = Total phosphorus WQBEL expressed as a six-month average concentration;

1.3 MGD = Point Source A's current average discharge flow rate;

8.34 = A factor for converting effluent concentration and flow rate to a daily mass (lbs./day); and

Point Source A currently requires 1,583 pounds per year of total phosphorus offset. Note that the effluent flow rate used in the above calculation represents current average flow and not design flow. Therefore, as influent flows to the facility increase during the facility's design life, additional phosphorus credits will be required.

MS4 Permit Example:

Point Source B is a permitted MS4 that has received a WLA of 523 lbs/year. Stormwater modeling results for the MS4 indicates that the current pollutant load, based on existing practices, is 700 lbs/year. Therefore, credit need can be calculated as:

700 lbs/yr – 523 lbs/yr = 177 lbs/yr

Planning for Variable Discharges and Limit Averaging Periods

As discussed above, the amount of credit needed to comply with a WQBEL is based on the mass of pollutant discharged in excess of the WQBEL over a given period of time. When using nonpoint source pollution reductions in a water quality trade, the resulting credits are made available for use on an annual basis. While this approach allows flexibility for using differing quantities of credits from month to month, consideration must be given to the applicable averaging period of the WQBEL at hand. In general, WQBELs with shorter averaging periods use more credits than WQBELs with longer averaging periods because there are more opportunities for the pollutant discharged to exceed the WQBEL. This effect, coupled with a variable pollutant discharge, may cause a facility to use more credits than anticipated if the shorter averaging period was not accounted for when determining credit need. Different averaging periods for phosphorus (monthly) and TSS (weekly) may be an important consideration.

Contingency Planning for Nonpoint Source Projects

Practices employed as part of a water quality trade may vary in reliability and logistical complexity. When compliance with a WQBEL or WLA is determined by availability of water quality trading credits, a trading project

may seek to establish additional credits, or reserve credits, that can be relied upon should a planned practice fail to produce credits in a given year. It is the permittee's responsibility to gauge the likelihood of success for practices to generate enough pollutant reduction and credits to offset the discharge over the permit term. For example, structural practices on permittee-owned land may have a high likelihood of success as many variables are under the permittee's control. Annual practices implemented by an agricultural producer may be influenced by a greater number of external forces (e.g., weather may not cooperate and/or cover crops or grass seeding may not become successfully established on a field). Uncertainty factors included in trade ratios, p. 26, do not account for practice failure or non-installation due to unforeseen circumstances.

2.5 Location of Water Quality Trades

This section describes the geographic requirements for the generation and use of credits. Two categories define the geographic extent of trades; the first addresses trades used to meet WQBELs that are not based on TMDLs (i.e., s. NR 217.13, Wis. Adm. Code, derived effluent limits). The second addresses trades used to meet WQBELs derived from wasteload allocations from a U.S. EPA approved TMDL (i.e., TMDL WQBELs).

The geographic extent of trading and the limitations placed on downstream trading are required to minimize the risk of local violations of water quality standards. Additional trade ratio factors, specifically the delivery factor and downstream trading factor, which are discussed in more detail in Section 3.4, may be required. The following guidance provides a general discussion of location and geographic requirements for trading. The location of the credit user with respect to the credit generator and the possible presence of impoundments, lakes or other features between the trading partners also impact the delivery of credits. See Section 3.4 for more details. Note, additional TMDLs will continue to be developed. When a new TMDL is approved in a watershed that has existing trades, the credit buyers and sellers will be required to modify existing trades to reflect TMDL requirements including credit thresholds and geographic extent. Per CWA requirements, this modification is required to be reflected in the next reissuance of the permit after the TMDL is approved by U.S. EPA.

Trading to Meet Non-TMDL WQBELs

If a credit user wants to trade to meet a non-TMDL derived WQBEL, the credit user may obtain credits generated upstream of the credit user's discharge point or from contributory upstream 12-digit hydrological unit code (HUC 12) sub-watersheds. Credits generated from upstream HUC 12 sub-watersheds may require the use of a delivery factor. The credit user may also obtain credits downstream of its discharge point, but within its HUC 12, provided the downstream trading factor is used. The delivery factor and downstream trading factor, which are discussed in more detail in Section 3.4 are trade ratio factors that minimize the risk of localized impairments due to upstream and downstream trades.

In non-TMDL scenarios, the point of standards application is typically the credit user's point of discharge. In most cases the trade will need to occur upstream of the credit user's discharge point to prevent local violations of water quality standards. However, when a discharger is a small percentage of the in-stream pollutant load at the point of discharge, or if the point of standards application location is downstream of its discharge location, credits can be purchased from within the contributory drainage area of the credit user's point of standards application. This point of standards application typically takes the form of a downstream lake or reservoir with a lower water quality standard than the waterbody the permittee directly discharges to. Another situation in

which the credit user's point of standards may be located downstream of their discharge location is when the direct receiving water is classified as a limited aquatic life water, as defined under s. NR 102.04(3)(e), Wis. Adm. Code. For a limited aquatic life water, the credit user's point of standards application for a WQBEL may be downstream of the credit user's discharge point and instead be located where the water body transitions from limited aquatic life to one of the subclassifications defined under s. NR 102.04(3)(a) through (d), Wis. Adm. Code. This is because limited aquatic life waters are subject to fewer water quality criteria compared to the other aquatic life subclassifications.

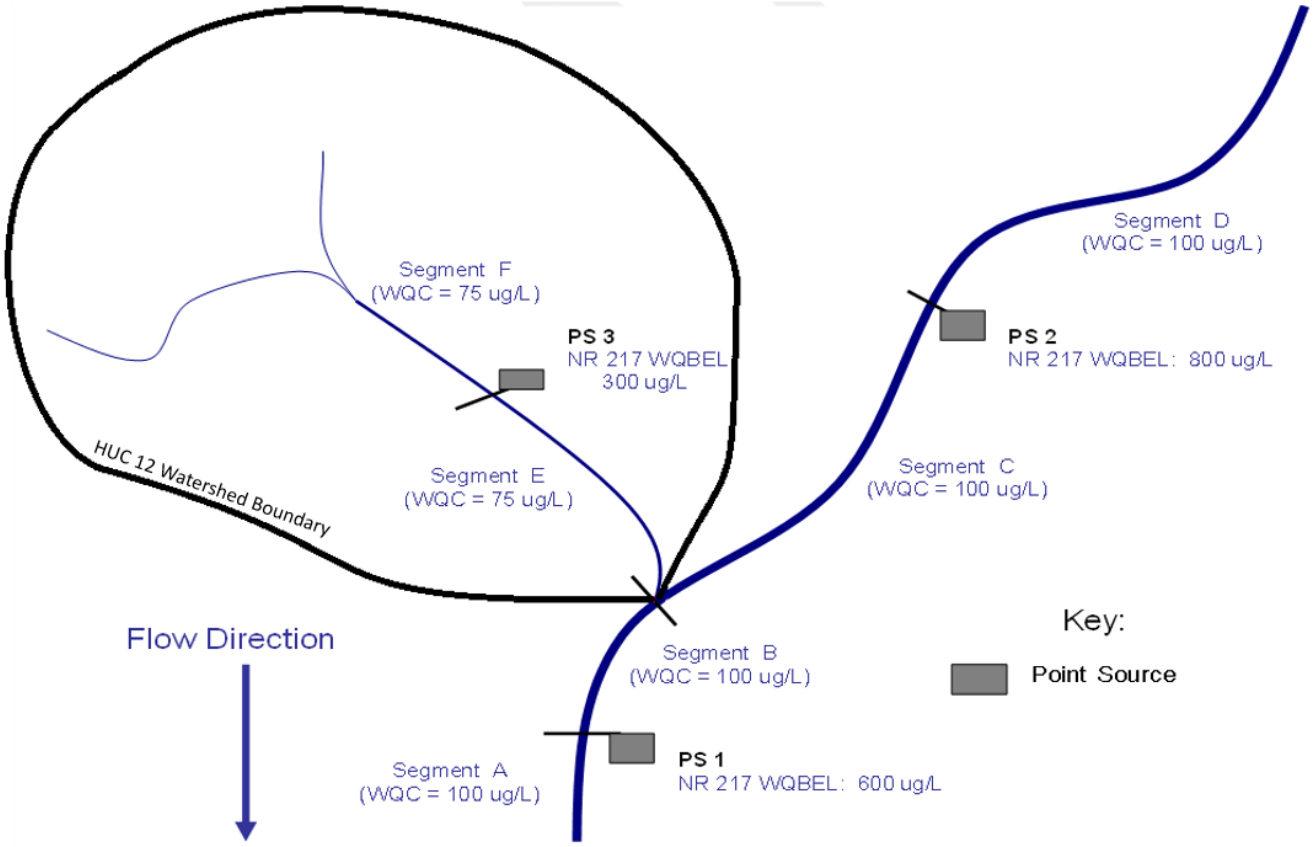

FIGURE 4: TRADING GEOGRAPHY OUTSIDE OF A U.S. EPA APPROVED TMDL

Figure 4 shows non-TMDL WQBELs based on water quality criteria for TP (according to s. NR 217.13, Wis. Adm. Code). Trades may occur as follows:

- Point Source 1 (PS 1) may trade with sources generating credits in Segments B, C, D, E, and F.
- Assuming that Point Source 2 (PS 2) is an insignificant source of the pollutant load to Segment C (calculated through a quantification of phosphorus loads), PS 2 may trade with sources in Segment D and could likely trade with downstream sources in Segment C if Segment C is within the same HUC 12 sub-watershed as PS2. See Section 3.4 for more information.

- Assuming that Point Source 3 (PS 3) is a significant source of the pollutant load for Segment E, PS 3 may trade with sources draining to Segment F, however trading with sources located downstream of its discharge point may not be appropriate due to local exceedances of water quality standards.

It is important to note that upstream trading is not limited to any extent within a watershed. A discharger may acquire credits from credit generators located many miles upstream in the headwaters of the system provided the pollutant reduction impacts the discharger's receiving water. The use of a pollutant delivery factor may be required for certain upstream areas, as described in section 3.4 of this guidance.

Trading to Meet TMDL WQBELs

Approved TMDLs assign allocations to both point sources and nonpoint sources. These allocations are assigned to pollutant sources that directly discharge to or contribute to an impaired water (or impaired segment). In this document, this contributory area is referred to as the TMDL subbasin. The TMDL subbasin boundaries may match existing HUC 12 sub-watershed boundaries in some cases but in other cases the TMDL subbasin maybe delineated larger or smaller than the HUC 12 sub-watersheds to address particular water quality related issues. In most cases, a credit buyer can obtain credits from within the TMDL subbasin that the credit buyer discharges to or from upstream contributory TMDL subbasin(s), provided the upstream TMDL subbasin(s) flows through the credit user's TMDL subbasin. Within the credit buyer's TMDL subbasin, credits may be obtained from both upstream and downstream of the credit user's discharge point. Figure 5 provides an illustration and example scenarios on the geographic extent for trades under an approved TMDL. After the figure is additional information that addresses some specific trading considerations for individual TMDLs; specifically, the Rock River TMDL, Wisconsin River Basin TMDL, and the Upper Fox and Wolf Basin TMDL.

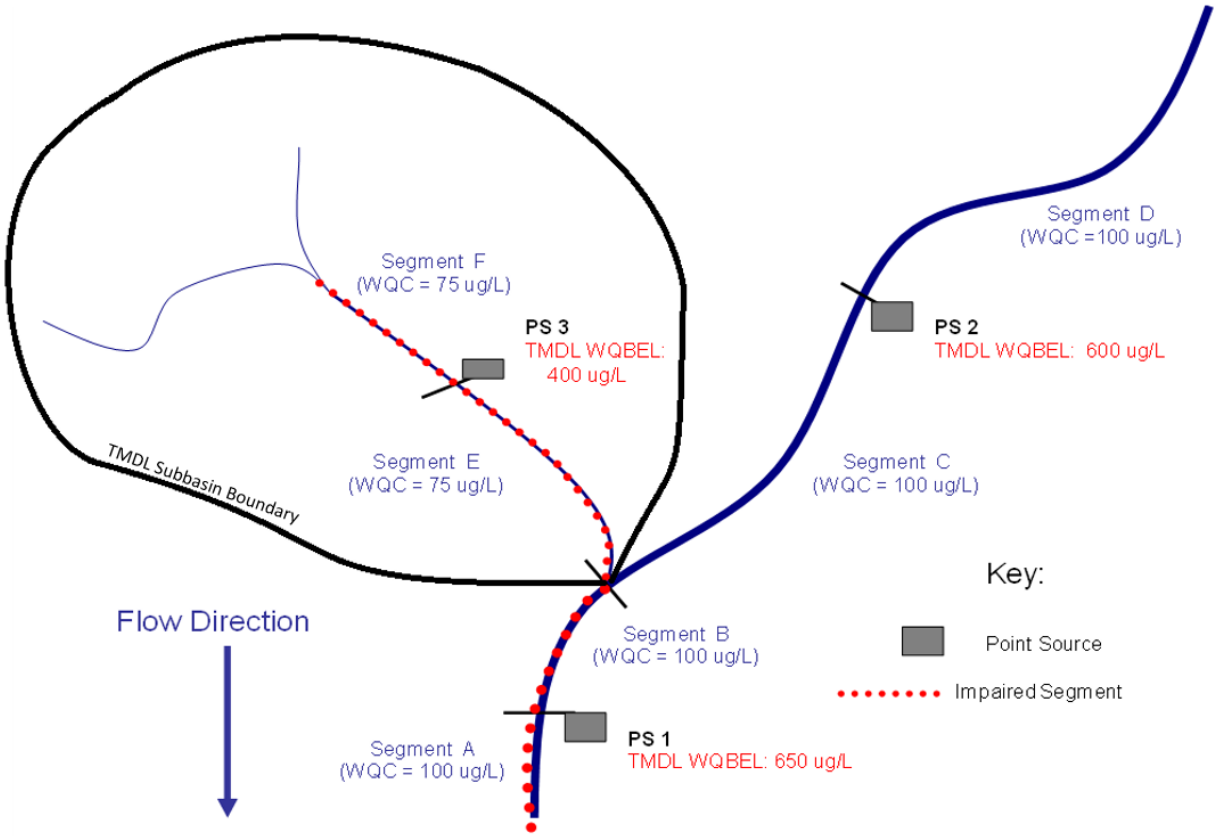

FIGURE 5: TRADING GEOGRAPHY WITHIN A U.S. EPA APPROVED TMDL

Figure 5 shows impaired segments of a river and a tributary to the river with TMDLs for Segments A, B, E, and F. Segment boundaries are depicted by lines drawn across the river and tributary. Trading may occur as follows:

- Point Source 1 (PS 1), located at the top of Segment A, received a TMDL allocation based on meeting water quality standards in Segment A and seeks credits. PS 1 may trade for credits generated by sources in the contributory drainage area for Segment A, which includes Segments A, B, C, D, E, and F.
- Point Source 2 (PS 2) received a TMDL allocation based on meeting water quality standards for Segment B. PS 2 may trade with the contributory drainage area to Segment B, which includes Segments, B, C, D, E, and F to demonstrate compliance with TMDL WQBELs provided the discharge from PS 2 does not result in a violation of water quality standards in Segment C. PS 2 may receive a non-TMDL WQBEL in addition to the TMDL WQBEL to prevent a violation of water quality standards in Segment C. Use of trading to demonstrate compliance with non-TMDL WQBELs is discussed in the next section of this guidance.
- Assuming in this example that the WLA for Point Source 3 (PS 3) is based on protecting Segment E, PS 3 may trade within the drainage area for Segment E, which includes Segments E & F.

In the Wisconsin River Basin TMDL and Upper Fox and Wolf Basin TMDL, a downstream lake or reservoir may result in two allocations being assigned to a permittee: one assigned to meet water quality criteria in the permittee's TMDL subbasin and one to meet the water quality criteria of a downstream lake or reservoir. In these TMDLs the credit user may also obtain a certain portion of credits from the contributory drainage area of the downstream lake and reservoir. This can substantially expand the geographic area available for credit

generation for allocations associated with a downstream lake or reservoir; however, there is a maximum amount of credits that can be obtained in this manner, corresponding to the allocation associated with the downstream lake or reservoir. See Appendix O of the Wisconsin River Basin TMDL Report and Appendix K of the Upper Fox and Wolf River Basin TMDL Report for more information.

In the Rock River, Red Cedar, and Lake St. Croix TMDLs, a subset of permittees received effluent limits based on s. NR 217.13, Wis. Adm. Code, in addition to TMDL allocations. For these permittees, the geographic extent of trading is based on HUC 12 sub-watersheds and not the TMDL subbasins. Credit buyers can obtain credits from within their HUC 12 sub-watershed or upstream contributory HUC 12 sub-watersheds. Credits obtained downstream of the credit user's discharge location requires the use of the downstream trading factor. Contact WDNR for additional information pertaining to individual permittees. This does not impact credit users that are permitted MS4s but rather affects wastewater treatment permittees.

Chapter 3 – Water Quality Trading Components

Last Revised: March 2026

3.1 Quantifying Pollutant Load Reductions

Credit users must quantify pollutant reductions made by the credit generator to establish compliance with their WQBEL or WLA. The following information will be needed to make this calculation: current pollution load, pollution load post-trading implementation, and credit threshold (see Section 3.2). The method for quantifying the current pollution load and the credit threshold will depend on the credit generator type. Therefore, this section of the guidance is broken up by credit generator. Credits will also need to be generated throughout the permit term to maintain compliance through a trading offset throughout the permit term. Section 283.84(1m)(a), Wis. Stats., requires that a trade result in water quality improvement.

Point Source Credit Generator

For a wastewater treatment plant to be a credit generator, the point source must accept a lower discharge limit than would otherwise be given to them in their WPDES permit. This revised limit will be set below the applicable WQBEL of the credit generator to ensure that net water quality improvements are made from the trade. The difference between the pre-trade effluent pollutant load (assuming compliance with a WQBEL) and post-trade effluent pollutant load resultant from complying with a lower WQBEL is the amount of credit that is generated for trading (Figure 6). The averaging period for this limit will be the same as the credit user's averaging period. See Section 4.3 for more details.

FIGURE 6: QUANTIFYING WASTEWATER POINT SOURCE CREDITS

Effluent monitoring will be used to verify compliance with the trading WQBEL. The frequency and sampling protocols for effluent monitoring will be specified in the WPDES permits of the credit generator and credit user. Reporting requirements will also be specified in the WPDES permit. Questions on these permit requirements may be submitted to the local wastewater engineer or specialist, or trading coordinator.

For the purpose of quantifying load reductions, MS4s and other permitted storm water sources are considered nonpoint sources because the pollutant source is diffuse and dependent on precipitation and climatic factors.

Nonpoint Source Credit Generator

Field scale modeling should be used to quantify a pollutant reduction. Currently, models are available to quantify pollutant reductions for the two most likely traded pollutants, phosphorus and sediment.

Urban Sediment and Phosphorus: To quantify load reductions for sediment and phosphorus resulting from the implementation of urban management practices, the most current version of SLAMM (https://winslamm.net/), P8 (http://www.wwwalker.net/p8/), or an equivalent methodology approved by the WDNR should be used.

Agricultural Sediment and Phosphorus: For trades involving agricultural sources, load reductions should be determined using RUSLE2 (http://fargo.nserl.purdue.edu/rusle2_dataweb/RUSLE2_Index.htm) for sediment and SnapPlus (https://snapplus.wisc.edu/) for phosphorus. SnapPlus may also be used for sediment predictions; however, the RUSLE2 model allows for the simulation of more management options to address sediment. See Appendix C – Nonpoint Source (NPS) Implementation and

Appendix D – Using SnapPlus to Quantify Phosphorus Trading Credits for additional information for using SnapPlus.

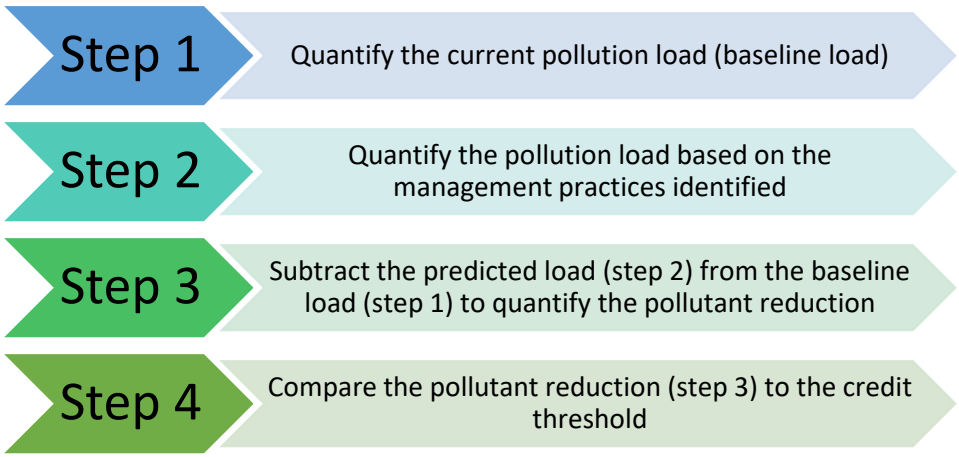

FIGURE 7: QUANTIFYING NONPOINT SOURCE CREDITS

Figure 7 illustrates the process for quantifying credits being generated from agricultural and urban management practices. Modeling will likely be used to quantify the current pollution load as well as the reductions made from agricultural and urban management practices. The following models have been applied throughout Wisconsin to help estimate phosphorus and TSS reductions through improved landscape practices:

- Program for Predicting Polluting Particle Passage thru Pits, Puddles, & Ponds (P8)
- SnapPlus (Wisconsin Phosphorus Index)
- Spreadsheet Tool for Estimating Pollutant Load (STEPL)
- Soil and Water Assessment Tool (SWAT)
- Source Loading and Management Model for Windows (WinSLAMM)
- UW Barnyard Tool APLE-LOTS WI
- NRCS Erosion Estimator Tool

The type of management practice will dictate which model(s) is appropriate for use. Recommended models by management practice are listed in Appendix H - Management Practices and Associated Information, p. 185. While the models listed in this guidance have traditionally been used to simulate phosphorus and TSS reductions from the landscape with typical BMPs, permittees are not limited to those models cited. If permittees have questions about another model's applicability, they can contact the WDNR water quality modeling group (dnrwaterqualitymodeling@wisconsin.gov) for input.

Step 1: Baseline Load

The baseline load is the existing pollution load from a given source. The baseline load for most nonpoint sources, such as barnyard loads, runoff from cropland, and streambank erosion, can be quantified for a given calendar year from the models listed above. Because field-based management practices often are implemented over a crop rotation/sequence, an averaging period for the field may be used as necessary to quantify the baseline load and account for annual variation in the field pollution load. The baseline condition should reflect the previous

full crop rotation or historical crop sequence of crops grown, tillage, nutrients and current soil nutrient levels from the fields. Nutrient management plans/records should contain these data, if available. If unavailable, landowner interviews and other reasonable field cropping data collection methods (e.g., CropScape – Cropland Data Layer) should be utilized to develop an appropriate and accurate baseline load. When working with agricultural fields modeled in SnapPlus, a minimum of two years should be used to make this calculation. Other types of pollutant reductions may require consideration of site-specific or practice-specific factors when determining a minimum baseline duration.

Modeling inputs for the baseline load should be listed in the WQT plan. DNR will review model inputs for accuracy and representativeness. Model files will need to be submitted to DNR, in most cases, to facilitate review of the modeling approach.

> Note: The generally accepted level of precision for numeric calculations for pollutant loads is tenths of pounds per year.

Steps 2 and 3: Predicted Load and Establishing Reductions

Once the baseline load is quantified, modeling can be used to predict the future pollution load once management practices are installed. The reductions from the installation of agricultural and urban management practices are converted to credits by applying applicable trade ratios. See section 3.4 - trade ratios.

The predicted pollutant load should be based on future site conditions agreed to by all parties. For example, if the predicted pollutant load model does not include nutrient applications to crop fields engaged in a trade, the WQT agreement will need to specify that no nutrient applications may occur on the fields. These modeled conditions are considered to be part of the WQT plan. In most cases, DNR will need to review model files to verify accuracy and representativeness.

> Note: In most cases previously installed BMPs cannot be counted towards “credit generating” activities because they would be counted in the baseline load (step 1), as well as the predicted load (step 2). See minimum baseline duration under Step 1. If historic practices were funded with cost-sharing dollars, these are expected to be included in the baseline condition (see “Credit for Past Practices”, p 33).

Step 4: Long-term vs. Interim Credit

Nonpoint sources can generate interim credits, long-term credits, or a combination of both. In areas without a U.S. EPA-approved Total Maximum Daily Load (TMDL), all reductions generate long-term credits. In areas with approved TMDLs, long-term credits are only generated for reductions that exceed the established load allocation. Interim credits are generated for reductions achieved while complying with TMDL load allocations or making "reasonable progress" toward agricultural edge-of-field targets, known as the "interim floor." Detailed information on these credit types is available in Section 3.3 (p. 28).

Practices Addressing Multiple Pollutants or Multiple Credit Users

In some instances, a practice installed as part of a trade will provide reductions in more than one pollutant. These pollutant reductions are eligible for generating credits of each pollutant type. The pollutant reduction should be quantified with WDNR approved methods and models for each pollutant. Trading does not allow

multiple point sources to take credit for the same pollutant reduction. Careful coordination, timing, and tracking is necessary to avoid "double counting". However, there are some circumstances where credits can be divided between point sources, so that "double counting" does not occur (Table 1). Trade agreements required under s. 283.84(1) Wis. Stats., must be executed for each point source utilizing credits.

Management practices may generate a combination of interim and long-term credits. It is possible to divide the interim and long-term credits between two credit users, provided both have a valid trade agreement consistent with s. 283.84(1), Wis. Stats. For example, one credit user may utilize the long-term credits while another credit user uses only the interim credits.

Permitted MS4s can utilize both interim and long-term credits to help achieve TMDL WLAs and reductions, however interim credits need to be replaced prior to them expiring in order to prevent backsliding. Expired interim credits may be replaced with either new interim credits or long-term credits. The replacement of interim credits could prove challenging and their usage by permitted MS4s is not required. Note, interim credits tend to have more value with wastewater dischargers that do not have the extended compliance schedules allowed under the MS4 permits.

TABLE 1: PRACTICES ADDRESSING MULTIPLE POLLUTANTS

Circumstance	Example
The credit generator produces more credit than one credit user needs and splits these credits between multiple credit users.	A point source generator produces 100 lbs./day of phosphorus credit. The point source sells 60 lbs./day to credit user A, and 40 lbs./day to credit user B.
The management practice used to generate credits controls multiple pollutants.	A buffer strip is used to capture excess phosphorus and sediment runoff. Credit user A takes credit for the phosphorus reductions generated by the buffer strip, and credit user B takes credit for the sediment reductions.
The management practice generates a combination of interim and long-term credits.	40 acres of prairie restoration generates 80 lbs/year of interim credits and 20 lbs/yr of long-term credits. Credit user A, a municipal wastewater treatment facility uses 80 lbs/yr of interim credit. Credit user B, a permitted MS4, uses 20 lbs/yr of long-term credit.

Technical Standards for Management Practices

To generate credits, urban and agricultural management practices should be constructed and maintained in accordance with applicable technical standards from NRCS or WDNR. The NRCS technical standards for Wisconsin (WI NRCS) may be found by selecting "Wisconsin" at: NRCS Field Office Technical Guide Webpage (https://efotg.sc.egov.usda.gov/) and WDNR technical standards can be found at: WDNR Stormwater Runoff Permits Webpage (http://dnr.wi.gov/topic/stormwater/). Appendix H - Management Practices and Associated Information includes a list of practices and their applicable WI NRCS standards. Water quality trading plans must provide sufficient detail for reviewers to ascertain that projects will meet technical standards. Criteria and considerations relevant to water quality and/or soil health/loss must be accounted for in WQT plans. If a WQT

plan does not reference and implement a technical standard, more detail will be needed in the WQT plan. The WQT plan will need to provide technical details and specifications for all aspects of the project relevant to water quality and/or soil health/loss. WDNR will review the WQT plan to verify that the project meets the assumptions of the pollutant model(s) used to quantify pollutant loading.

Shifting of Pollutant Loads

When activities that decrease pollutant loading at one location result in an increase in pollutant loading at another location, the pollutant load is considered "shifted." Trades that result in shifting of pollutant loads may not be protective of water quality and fail to meet requirements at s. 283.84(1m)(a), Wis. Stats. When pollutant loads are shifted, the final calculated pollution reduction must subtract the shifted pollutant load from final credits quantities. Often, the same method of pollution reduction quantification will need to be used to calculate the shift in pollutant load.

The risk of shifting varies by location and practice type. Examples of sites with a high risk for pollutant load shifting include, but are not limited to, areas where nutrients must be spread to accommodate manure, biosolids, or other waste disposal operations, switching from annual to perennial crops/crop-based sequences/rotations, and switching from frequent tillage to less frequent or no-till tillage practices. If a field has received these types of nutrient applications or cropping/tillage practices in the past, the WQT plan will need to clearly articulate where those nutrients or practices will be applied/used in the future and quantify any pollutant load increases associated with any new or increased nutrient applications or practice changes on other fields used by the same farm operator/owner. Operation of all owned/rented fields under a WI NRCS 590-approved nutrient management plan can help to document/address shifting.

3.2 Pollutant Reduction Credit Threshold

The credit threshold denotes the level of pollutant loading below which reductions need to be made to generate credits; however, there is an exception for interim credits (see Section 3.3). When trading in a watershed with U.S. EPA approved TMDLs, the credit threshold ensures that the assumptions and modeling supporting the allocations contained in the TMDL are maintained.

For nonpoint sources, the credit threshold applies in watersheds that have U.S. EPA approved TMDLs and generally corresponds with the load allocation and corresponding percent reduction assigned to the TMDL subbasin containing the credit generator's agricultural field(s) or nonpoint source. For permitted MS4s acting as credit generators, the credit threshold corresponds to the wasteload allocation and the corresponding percent reduction assigned to that permitted MS4 in a U.S. EPA approved TMDL as well as requirements contained in s. NR 151.13 (2)(b)1.b., Wis. Adm. Code. For permitted industrial and municipal wastewater dischargers that serve as credit generators, a credit threshold applies both inside and outside of watersheds with a U.S. EPA approved TMDL.

The presence or absence of a credit threshold varies based on the type of credit generator and is explained in more detail in the following sections.

Credit Threshold for Permitted Industrial and Municipal Wastewater Dischargers

For trades between two wastewater point sources, the credit threshold is set equal to the more restrictive of the point source's effluent limits for the traded pollutant or current level of discharge, whichever is lower. The effluent limit could be derived from a U.S. EPA approved TMDL or a calculated limit, for example a WQBEL for TP calculated through s. NR 217.13, Wis. Adm. Code.

> NOTE: Section 283.84(1m)(a), Wis. Stats., requires trades to result in water quality improvement. This guidance defines water quality improvement to be a greater pollutant load reduction at the credit user's point of standards application than would otherwise be achieved absent trading. A point source credit generator's pollutant load must be reduced below its current level of discharge or wasteload allocation to ensure water quality improvement.

Pursuant to s. 283.84(3r), Wis. Stats., to generate credits, the point source credit generator must accept a lower permit effluent limit to reflect the credits that the facility is generating. This effluent limit will likely be more restrictive than the existing effluent limit. The difference between the revised, more restrictive effluent limit and the previous pollutant loading (below the credit threshold) is the amount of credit that is generated.

> Example: A point source discharge has a TP WQBEL of 0.5 mg/L, expressed as a monthly average. At current effluent flows, the pollutant load, expressed as a mass value is 6 lbs./day. Through minor wastewater treatment improvements, the point source is able to achieve an average monthly TP effluent concentration of 0.3 mg/L. To serve as a credit generator, the point source accepts revised effluent limits of 0.3 mg/L and 3.6 lbs./day as monthly averages in their WPDES permit, which makes 2.4 lbs./day as a monthly average of TP available to trade.

Interim effluent limits in effect during a compliance schedule for TP pursuant to s. NR 217.17 (3)(c), Wis. Adm. Code, should not be used as the credit threshold. Only the final TP WQBEL may be used as a credit threshold.

If the WPDES permit does not contain an effluent limit for the pollutant being traded, the credit threshold should be set equal to the credit generator's current level of discharge. Statistical methods presented by U.S. EPA in its Technical Support Document for Water Quality-based Toxics Control (U.S. EPA 1991) may be used to develop effluent limitations from current discharge data to represent the credit threshold. To generate credits, the point source credit generator must accept a permit effluent limit that reflects a discharge less than the current discharge.

Credit Threshold for Permitted MS4s

For permitted MS4s, the credit threshold will depend on the presence or absence of an approved TMDL. In the absence of an approved TMDL, permitted MS4s have a credit threshold corresponding to the 20 % TSS reduction in accordance with Stage 1 requirements contained in s. NR 151.13 (2)(b)1.b., Wis. Adm. Code, and applicable WDNR guidance, MS4 Modeling Guidance Webpage (https://dnr.wisconsin.gov/topic/Stormwater/standards/ms4_modeling.html). For pollutants other than TSS, the credit threshold shall be set at the pollutant level corresponding to the 20 % TSS reduction.

The credit threshold for permitted MS4s covered by an approved TMDL is equal to either the WLA and the corresponding percent reduction or the 20 % TSS reduction, whichever is more restrictive. The credit threshold can be expressed either on a mass basis (lbs./year) or on a percent reduction basis as measured from the

baseline condition represented in the TMDL calculations. See the applicable TMDL report for details about the WLA and the corresponding percent reduction.

> Example: A permitted MS4 is required to get 20 % TSS reduction through modeling of proposed storm water practices pursuant to s. NR 151.13 (2)(b)1.b., Wis. Adm. Code. Through modeling, the permitted MS4 determines that they are complying with the 20 % TSS requirement and have accomplished a 23 % reduction. As part of a trade agreement with a wastewater treatment plant the permitted MS4 installs additional management practices that further increases their TSS reduction to 30 %. Credits would be generated between the credit threshold of 20 % and the proposed reduction of 30 %.

To generate credits, the permitted MS4 must install and document, in their approved storm water management plan, the management practices used to obtain pollutant reductions. These pollutant reductions must demonstrate lower pollutant loadings than both the TMDL WLA and the 20 % TSS reduction. The storm water management plan should be updated to reflect conditions of the trade.

Credit Threshold for Urban and Agricultural Nonpoint Sources and CAFOS

The credit threshold for a nonpoint source, which includes both agricultural sources and non-permitted urban sources, is set to reflect the load allocation from an approved TMDL. If the nonpoint source is located in a watershed without an approved TMDL, the credit threshold is set to the current pollutant load.

To generate credits, the current pollutant load must be reduced through urban or agricultural management measures and practices. For nonpoint sources the term "current pollutant load" refers to the pollutant load existing at the time that the trade agreement is reached pursuant to s. 283.84, Wis. Stats. Modeling will be required to quantify the current pollutant load as well as the reductions made from agricultural and urban management practices.

Examples of credit thresholds for nonpoint sources are provided below.

Urban Sediment and Phosphorus: The credit threshold for an agricultural area that is not addressed by an approved TMDL is set at the current pollutant load even if the current pollutant load is less than the state-wide performance standard in ch. NR 151, Wis. Adm. Code. The current pollutant load represents historical operations prior to the implementation of the measures used to generate credits. The current pollutant load for most nonpoint sources such as barnyard loads, streambank erosion, and wetland restoration can be quantified through modeling for a given calendar year by a method approved by the WDNR. For field-based management practices, the current pollutant load will be established through modeling the previous crop sequence, with a minimum of two years of cropping history and current soil nutrient levels obtained through soil testing. Cropping history should not exceed a five-year period, as historic management activities inconsistent with current management activities do not accurately represent current conditions.

For agricultural areas covered by an approved TMDL, the credit threshold is defined by using the TMDL load allocation for the applicable TMDL subbasin that the credit generator is located in. The load allocation may be expressed either as a mass over a specific period (day, month, or year) or a percent reduction from a defined baseline condition as specified in the TMDL. In rare cases, the credit threshold could be based on the modification of statewide performance standards contained in ch. NR 151, Wis. Adm. Code. The load allocation,

percent reduction, and baseline condition will vary by TMDL and are summarized in Appendix E. As WDNR develops more TMDLs over time, the TMDL baseline and credit thresholds appendix will be updated via future guidance revisions.

For some TMDLs, WDNR has defined baseline conditions for agricultural cropland nonpoint sources as edge of field values (i.e., lbs./acre/year) using SnapPlus software, referred to as TMDL edge-of-field targets in the table above. The credit threshold for a WQT project within a TMDL area can be determined by applying the TMDL percent reduction to the TMDL baseline condition. When agricultural LAs are expressed using the TMDL edge-of-targets, it is expected that pollutant load reductions in a WQT will be also be modeled using SnapPlus. To ensure a water quality improvement and generate credits pursuant to s. 283.84 (1m)(a), Wis. Stats., the nonpoint source credit generator's pollutant load must be reduced below its current level. To uphold TMDL requirements, reductions must achieve or go below the interim floor or long term TMDL credit threshold – see section 3.3 for more information pertaining to interim and long-term credits.

TABLE 2: TMDL BASELINE METHODOLOGIES

TMDL Study	Year Established	Baseline for Agricultural Fields	Other Sources/BMPs	Appendix E Table Reference
Northeast Lakeshore	2023	TMDL edge-of-field targets	Existing conditions with % reduction applied	Tables E7 & E8
Upper Fox - Wolf River	2020	TMDL edge-of-field targets	Existing conditions with % reduction applied	Tables E4 & E5
Wisconsin River Basin	2019	TMDL edge-of-field targets	Existing conditions with % reduction applied	Table E6
Milwaukee River Basin	2018	TMDL edge-of-field targets	Existing conditions with % reduction applied	Tables E9 & E10
Lake St. Croix	2013	TMDL edge-of-field targets	Existing conditions with % reduction applied	TMDL Table 19
Lower Fox River Basin	2012	TMDL edge-of-field targets	Existing conditions with % reduction applied	Tables E2 & E3
Rock River	2012	Existing conditions with % reduction applied	Existing conditions with % reduction applied	N/A

TMDL Study	Year Established	Baseline for Agricultural Fields	Other Sources/BMPs	Appendix E Table Reference
Red Cedar River (Tainter - Menomin)	2012	Contact WDNR for database	Existing conditions with % reduction applied	N/A

When working with agricultural cropland sources that are in TMDLs with TMDL edge-of-field targets, it is expected that modeling done to quantify pollutant reductions will be conducted using SnapPlus. If there are field specific factors such as tile drainage, gully erosion, or cropping practices that are unable to be accurately reflected by SnapPlus, it may be more appropriate to apply the required % reduction to current conditions to arrive at the credit threshold. Trade plans that employ this approach should provide a detailed documentation of what field specific factors are not accounted for in the TMDL baseline and what was unable to be accurately accounted for using SnapPlus.

Unless specifically assigned an allocation or reduction in a U.S. EPA approved TMDL, pollutant sources from barnyard runoff, stream bank erosion, wetland restoration and other nonpoint sources will have a credit threshold based on current conditions and the percent reduction stipulated for nonpoint sources in the TMDL.

Please consult with WDNR to determine the applicable baseline condition, percent reduction, and credit threshold for a WQT project within a TMDL area. These values can vary by sub-watershed within a TMDL area and some TMDL implementation plans have explicitly listed credit thresholds. SnapPlus was intended to evaluate agricultural field management practices and associated phosphorus and sediment loss at rates associated with WI NRCS 590, compliance with ch. NR 151, Wis. Adm. Code, performance standards, and tolerable soil loss rates. The phosphorus and sediment loss rates corresponding with many TMDL agricultural load allocation values may be on the lower end of the calibrated and validated predictive range for SnapPlus. Therefore, the TMDL load allocation values may be rounded up to the nearest 0.5 lbs./acre/year increment. See Appendix E for more details.

Concentration Animal Feeding Operations: Agricultural operations with 1,000 animal units or more are required to obtain a WPDES permit and be identified as CAFOs. The WPDES permits for CAFO facilities cover the production area, ancillary storage areas, storage areas, and land application areas. Any runoff from CAFO land application activities conducted in compliance with a permit is considered a nonpoint source and is covered in the TMDL through the load allocation. CAFOs must comply with all WPDES permit conditions which include the livestock performance standards and prohibitions in ch. NR 151, Wis. Adm. Code and nutrient management requirements in ch. NR 243, Wis. Adm. Code. Specific WPDES permit conditions for the production area specify that CAFOs may not discharge manure or process wastewater pollutants to navigable waters from the production area, including approved manure stacking sites, unless all the following apply:

- Precipitation causes an overflow of manure or process wastewater from a containment or storage structure.
- The containment or storage structure is properly designed, constructed and maintained to contain all manure and process wastewater from the operation, including the runoff and the direct precipitation from a 25-year, 24-hour rainfall event for this location.

- The production area is operated in accordance with the inspection, maintenance and record keeping requirements in s. NR 243.19, Wis. Adm. Code.
- The discharge complies with surface water quality standards.

For ancillary service and storage areas, CAFOs may discharge contaminated storm water to waters of the state provided the discharges comply with groundwater and surface water quality standards. The permittee shall take preventive maintenance actions and conduct periodic visual inspections to minimize the discharge of pollutants from these areas to surface waters. For CAFO outdoor vegetated areas, the permittee shall also implement the following practices:

- Manage stocking densities, implement management systems and manage feed sources to ensure that sufficient vegetative cover is maintained over the entire area at all times.
- Prohibit direct access of livestock or poultry to surface waters or wetlands located in or adjacent to the area unless approved by WDNR.

Consequently, because of these permit requirements, trades are not allowed for pollutant reduction activities associated with a CAFO's production area; however, trading credits can be generated associated with land application sites because land applications of manure and process wastewater associated with a CAFO are considered nonpoint sources. If the CAFO is in compliance with its nutrient management plan and WPDES permit, discharges from land application activities are considered agricultural storm water and reductions that go beyond permit requirements and required nutrient management activities are available for trades. A CAFO can use trading to off-set a discharge that occurs as the result of an installation of a permitted surface water outfall as part of a manure treatment system.

When located in an area covered by a TMDL, the credit threshold for CAFO nonpoint sources is the same as that for agricultural nonpoint sources; however, except for phosphorus for which the credit threshold is established by s. NR 243.14(5), Wis. Adm. Code.

Urban Nonpoint Sources: For urban areas not required to hold a WPDES permit (non-permitted MS4s) pursuant to ch. NR 216, Wis. Adm. Code, the current pollutant load represents existing urban controls calculated by a method approved by the WDNR. WDNR urban storm water guidance covering modeling and quantification of pollutant reductions is available at: MS4 Modeling Guidance Webpage (https://dnr.wisconsin.gov/topic/Stormwater/standards/ms4_modeling.html). In the absence of a TMDL, the credit threshold equals the current load at the time of the trading agreement.

If covered by an approved TMDL, non-permitted MS4s will have a credit threshold set equal to the LA, or to the corresponding percent reduction identified in the TMDL.

Development Projects Subject to Storm Water Permit Requirements: While it is anticipated that most water quality trading efforts will focus on installing treatment technology or management practices, some trades may seek pollutant reductions from broader land use changes, such as conversion from agricultural to residential land use or solar farms. Although these activities may be quantifiable in terms of a pollutant reduction, the entire pollutant reduction may not be eligible to generate credits. Full compliance with legal requirements, including those found in any applicable construction and storm water permits, is required before credits are generated. Pollution reductions

beyond the reductions resulting from meeting permit requirements are eligible to generate credits. Please consult with your local water quality trading coordinator when determining the credit threshold, credit calculations, and credit amounts for projects involving land use changes.

Other Potential Nonpoint Sources: If sources other than agricultural and non-permitted MS4s, such as septic field discharges, are assigned reductions in an approved TMDL, the credit threshold would be set at the load allocation or specified percent reduction in the TMDL.

3.3 Interim vs. Long-term Credits

Nonpoint source credit generators, including non-permitted MS4s located in watersheds with a U.S. EPA approved TMDLs, must adhere to the TMDL credit threshold. This threshold is derived from the load allocation and is expressed as either an edge-of-field target or a percentage reduction from the TMDL baseline. Consequently, two types of credits may be generated:

- Interim Credits: Generated by load reductions applied to achieve the credit threshold. These are only available when the current pollutant load exceeds the threshold.
- Long-Term Credits: Generated by load reductions that go beyond the credit threshold

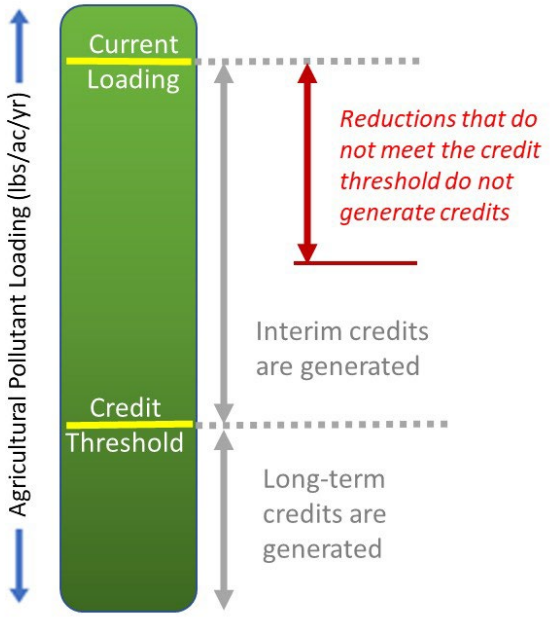

FIGURE 8: CREDIT THRESHOLD DIAGRAM

Interim Floor for Edge-of-field Targets: Pollutant reductions for agricultural cropland are generally calculated using SnapPlus. For watersheds with U.S. EPA-approved TMDLs, the WDNR developed edge-of-field targets (lbs./acre/year) based on the percent reductions required to meet TMDL load allocations. This approach enables a direct comparison between SnapPlus model outputs and TMDL credit thresholds, facilitating the distinction between long-term and interim credits.

As part of this process, the WDNR analyzed the feasibility of attaining these thresholds using typical management combinations (see Appendix E). Because some TMDL subbasin targets are unattainable with standard agricultural practices, the WDNR adopted the "interim floor" concept. Defined for each TMDL in Appendix E, the interim floor is a target achievable through management practices that improve water quality over current conditions without necessarily meeting the final TMDL target. Reductions reaching this floor are eligible for interim credits

The main purpose of the interim floor is to ensure a base level of water quality improvement and promote continued progress towards TMDL implementation, while affording increased flexibility for new partnerships.

From an agricultural producer's perspective, economic and ancillary benefits of involvement in trading may be increased by adopting multiple systems of best management practices.

When converting agricultural land to perennial vegetation, the presence of high soil test phosphorus values may prevent attainment of the interim floor value. Under this scenario, the establishment of perennial vegetation may generate interim credits without having to reach either the TMDL credit threshold or interim floor value. The quantity of interim credits can be determined by applying the applicable trade ratio to the reduction achieved between the current loading and the loading resulting from the establishment of perennial vegetation. Harvesting perennial vegetation, over time, may draw down soil phosphorus values and necessitate additional soil sampling; however, additional credits may also be generated due to the drawdown of soil phosphorus.

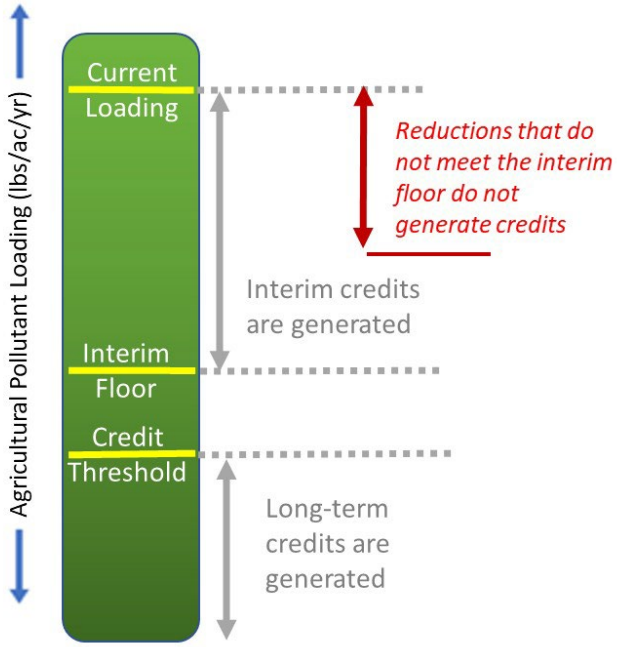

FIGURE 9: CREDIT THRESHOLD DIAGRAM WITH INTERIM FLOOR

Duration of Interim Credits: The duration of interim credits equals either the lifespan of the management practice employed, the period that the management practice is effective and functioning, or 10 years from the date of practice establishment, whichever is shortest. The 10-year interim credit duration begins when the practice is effective and functioning. In cases where permit reissuance is delayed due to administrative steps in the permit reissuance process (delays not caused by the permittee) and those delays impact a permittee's ability to use generated credits, the 10-year duration may begin when the permit is reissued to authorize credit use. Once interim credits have expired, the credit user may need to replace them with new interim credits or long-term credits to maintain compliance. If the credit user wants to avoid having to replace interim credits over time, they should collect enough long-term credits to meet their pollutant reduction requirements.

The duration of interim credits will be stated in the credit user's WPDES permit. If a TMDL is approved during the term of a credit user's WPDES permit, interim credits and their duration will be specified in the permit when it is reissued or modified. See "Transitioning Established WQT Practices Under a new TMDL" below. The duration of long-term credits is defined in Section 3.4, p. 36.

Example: Interim and Long-term Credits

> A point source credit user trades with a nonpoint source credit generator to comply with effluent limits derived from an approved TMDL. In the TMDL subbasin, the credit generator's farm fields have a TMDL edge-of-field target equivalent of a TP loss of 4 lbs./acre/year. The farm fields selected to generate credits have a current TP loss of 10 lbs./acre/year. The credit buyer pays for the installation of management practices on the farm fields to reduce TP loss down to 1 lb./acre/year.

The lifespan of the management practice is 15 years. Given the information above, 9 total credits are available, broken out as follows between interim and long-term:

Interim Credits (Limited to the first 10 years): 6 lbs./acre/year (i.e., 10 - 4 = 6)

Long-term Credits (Available beyond first 10 years): 3 lbs./acre/year (i.e., 4 - 1 = 3)

For the first 10 years, the credit user gets the full credit of 9 lbs./acre/year (i.e., 10 lbs./acre/year minus 1 lb./acre/year). With the credit threshold set equal to the TMDL edge-of-filed target of 4 lbs./acre/year, 3 lbs./acre/year of long-term credits are generated (i.e., 4 lbs./acre/year minus 1 lb./acre/year). Of the 9 lbs./acre/year,6 lbs./acre/year are interim credits and 3 lbs./acre/year of long-term credits.

After the first 10 years, all interim credits expire; however, the credit user may continue to claim 3 lbs./acre/year as long-term credits for the remaining useful life of the management practices. Lost interim credits need to be replaced prior to their expiration date if needed to maintain compliance with WPDES permit requirements.

Transitioning established WQT practices under a new TMDL

When a new TMDL is developed, practices already in place due to an existing WQT will be subject to applicable credit thresholds as defined in the new TMDL. When updating WQT plans (at time of permit reissuance or otherwise) permittees should evaluate future credit availability based on the credit threshold and any applicable interim floor values. Practices used for compliance via WQT prior to a TMDL being established are eligible to generate interim credits for up to 10 years after the approval date of the TMDL. A TMDL's approval date is defined as the date shown on the EPA document that grants final approval. WDNR will work with permittees that have pre-established trades to share expectations and answer questions regarding timing, credit availability, and ongoing compliance with WQBELs via trading.

3.4 Trade Ratios

This guidance utilizes trade ratios to ensure that the amount of reduction resulting from a trade has the same effect as the reduction that would have occurred had the credit user made reductions. For example, a trade ratio of 2:1 means two pounds of pollutant reduction is equivalent to one pound of credit. The usage of a trade ratio also allows for more flexibility in the water quality trading program while ensuring improvements in water quality occur.

The trade ratio equals the sum of separate factors including delivery, downstream, equivalency, and uncertainty. As discussed below, factors are derived independently and combined into a trade ratio using the following equation:

Trade Ratio = (Delivery + Downstream + Equivalency + Uncertainty):1

Trade ratios are designed to account for the uncertainties associated with the quantification of pollutant reductions, variability in site conditions, the transport and delivery of pollutants to and through waterbodies, the efficacy of management practices across different hydrologic and hydraulic conditions, and the relative

overall effectiveness of management practices. The types of uncertainty associated with trading and credit generation are explained below and within Appendix D.

Delivery Factor

The delivery factor3 accounts for the distance between the credit generator and the credit user and the impact that this distance has on the fate and transport of the pollutant in surface waters. To calculate the delivery factor, WDNR relies on the use of the USGS SPARROW model. In most cases, a delivery factor will not be necessary when the credit generator and credit user are both located in the same HUC 12 sub-watershed because of the negligible impacts of fate and transport at this scale. A delivery factor within a HUC 12 sub-watershed may be necessary: however, to account for lakes or impoundments between the credit user and credit generator. Methods for analyzing delivery should account for the movement of sediment bound and soluble forms of the pollutant through the system.

To account for delivery when trading partners are located in different HUC 12 sub-watersheds, two approaches are recommended depending on if the effluent limit or pollutant reduction for the traded pollutant is based on a TMDL or not.

Delivery Factors in TMDL Areas: In a TMDL, allocations are assigned to pollutant sources to ensure impaired receiving waters meet water quality standards. The TMDL report outlines the methods used to calculate the allocations including those accounting for delivery and transport of pollutants (TMDL reports can be found at: WDNR Approved TMDLs Webpage (http://dnr.wi.gov/topic/tmdls/tmdlreports.html)). When trading to meet a TMDL required pollutant reduction, any delivery fractions used in the TMDL also must be used to calculate the delivery factor of the trade. If the credit user and generator are separated by multiple waterbodies with individual delivery fractions assigned to them, the delivery factions are multiplicative.

TMDL Delivery Factor with One Waterbody:

$$\text{Delivery Factor} = (1/\text{TMDL delivery fraction}) - 1$$

TMDL Delivery Factor with Multiple Waterbodies (note: equation shows three waterbodies, each with a unique delivery fraction):

$$\text{Delivery Factor} = (1/(\text{TMDL delivery fraction}*\text{TMDL delivery fraction}*\text{TMDL delivery fraction})) - 1$$

Note, that the TMDL may have its own specified delivery fraction for a waterbody or may reference SPARROW delivery fractions. Refer to the appropriate TMDL to determine which to use. If the TMDL does not account for delivery or does not simulate fate and transport, the trade does not have to account for delivery because the delivery factor is implicit in the allocations and, therefore, is reflected in the credit threshold (i.e., the delivery factor equals 0). When TMDLs do not include fate and transport, pollutant loads are assumed to move through the system in a conservative fashion with no losses due to settling of other processes. This results in

[3] In this section of the guidance, delivery factor refers to the in-stream transport of the pollutant between credit user and credit generator, not delivery from pollutant source (such as field edge) to the receiving water.

downstream allocations being lower with an implicit margin of safety because there are no pollutant losses assumed to have occurred in the system.

The following list identifies general delivery methods for each TMDL:

- Northeast Lakeshore (2023): No delivery factors are required.
- Upper Fox and Wolf Rivers (2020): Use SPARROW (described below) when a lake or reservoir separates the credit user or generator. Delivery through rivers and streams is already accounted for in allocations.
- Wisconsin River (2019): When the credit user and credit generator are separated by a mainstem reservoir, a delivery factor must be applied (see list in TMDL appendix O). When trading partners are not separated by a listed waterbody, no delivery factor is required.
- Milwaukee River Basin (2018): No delivery factors are required.
- Lake St. Croix (2013): For permittees using WQT to comply with TMDL-derived limits, no delivery factor is needed. For permittees using WQT to comply with s. NR 217.13, Wis. Adm. Code, concentration-based WQBELs, use SPARROW methodology (described below).
- Rock River (2012): For permittees using WQT to comply with TMDL-derived limits, a delivery factor is needed to account for transport through Beaver Dam Lake only. When trading partners are not separated by Beaver Dam Lake, no delivery factor is required when trading to meet TMDL-derived limits. For permittees using WQT to comply with s. NR 217.13, Wis. Adm. Code, concentration-based WQBELs, use SPARROW methodology (described below).
- Red Cedar River (Tainter/Menomin TMDL) (2012): For permittees using WQT to comply with TMDL-derived limits, no delivery factor is needed. For permittees using WQT to comply with s. NR 217.13, Wis. Adm. Code, concentration-based WQBELs, use SPARROW methodology (described below).
- Lower Fox River Basin (2012): No delivery factors are required.

Delivery Factors without a TMDL: In the absence of an approved TMDL, the SPARROW model may be used to derive delivery fractions for phosphorus, nitrogen, and sediment when fate and transport need to be addressed. The SPARROW model was developed by the United States Geological Survey (USGS) and relies on regression equations from monitoring data to create a delivery fraction between two points in a watershed.

The SPARROW model produces a delivery fraction (0 to 1) which represents the fraction of the load leaving a reach that arrives at the end of a selected downstream target reach or outfall after accounting for the mass of the constituent of interest that is removed by natural attenuation processes. The delivery factor that should be used in the trade ratio equation equals:

Delivery Factor = (1/SPARROW delivery fraction) - 1.

See Appendix G – SPARROW How-To Guide for instructions on calculating delivery factors using the SPARROW model in WDNR's Surface Water Data Viewer website application.

Downstream Trading Factor

A downstream trading factor is needed when the credit generator is located downstream from the credit user's point of standards application. The downstream trading factor is used to minimize the likelihood of a violation of water quality criteria in the receiving water between the point of standards application and where the credits are being generated. The point of standards application is typically the point of discharge in non-TMDL scenarios, or the bottom of the reach that generated the credit user's TMDL allocation. For some pollutants (such as TP), however, the point of standards application in the absence of a TMDL may be downstream of the credit user's discharge point when the direct receiving water is classified as a limited aquatic life water, as defined under s. NR 102.04(3)(e), Wis. Adm. Code. For a limited aquatic life water, the credit users point of standards application may be downstream of the credit user's discharge point and instead be located where the water body transitions from limited aquatic life to one of the subclassifications defined under s. NR 102.04(3)(a) through (d), Wis. Adm. Code. This is because limited aquatic life waters are subject to fewer or less restrictive water quality criteria.

A downstream trading factor is not needed for trades that occur when the credit generator is upstream of the point of standards application (i.e., Downstream Trading Factor = 0).

The downstream trading factor, as provided in Table 3, is a function of the average annual pollutant load discharged by the credit user when compared to the overall total pollutant load at the credit user's point of standards application. For phosphorus and TSS this difference can be calculated using WDNR's pollutant load ratio estimation tool (PRESTO) (http://dnr.wi.gov/topic/surfacewater/presto.html).

TABLE 3: DOWNSTREAM TRADING FACTOR

Credit User's Load as a Percentage of Total In-Stream Load	Downstream Trading Factor
<25%	0.1
<50%	0.2
<75%	0.4
≥75%	0.8

Greater Geographic Flexibility in TMDL Watersheds

Downstream trading is limited to trading partners within the same HUC 12 sub-watershed; however, downstream trading may be allowed beyond local reach boundaries when TMDL limits are driven by a point of standards application located downstream of the discharge point. For example, a facility discharges to a stream that then flows into a reservoir. The reservoir has more stringent water quality criterion than the stream, requiring a lower effluent limit at the facility. In this case, the trading area is expanded to the entire contributing drainage of the reservoir. A portion of the pollutant reduction may still need to occur locally (within the drainage of the stream) as the stream itself also needs to meet water quality criterion. This concept is covered in greater detail in appendices of TMDL documents.

Equivalency Factor

The equivalency factor accounts for trading partners discharging different forms of the pollutant that is being traded. An equivalency factor is appropriate when water quality criteria are established for different forms of a

pollutant or a TMDL differentiates between various forms of a pollutant. Equivalency factors are provided in Table 4. As such, equivalency factors will vary based on the pollutant, as discussed below:

Total Phosphorus: An equivalency factor is not necessary (i.e., equals 0) for trading of TP credits. Chapters NR 102 and NR 217, Wis. Adm. Code, establish water quality criteria and WQBELs for TP and do not differentiate between forms of phosphorus. While soluble and sediment bound phosphorus have different transport capacities, these differences are accounted for in the calculation of the delivery factor.

Total Suspended Solids (TSS): Unless explicitly stated in a TMDL report, an equivalency factor is not necessary (i.e., equals 0) for trading TSS credits. To date, water quality standards and approved TMDLs for sediment, solids, or TSS have not differentiated between sedimentation and TSS but rather have lumped them together as one parameter. Once explicit water quality criteria have been established for TSS, an equivalency factor may be needed to translate between point source TSS and sources of TSS and sediment from agricultural and urban runoff.

Nitrogen: If numeric water quality criteria are developed for nitrogen, equivalency factors may be warranted for nitrogen trades given the speciation of nitrogen and the identification of the different forms in effluent limits.

TABLE 4: DEFAULT EQUIVALENCY FACTORS

Pollutant Parameter	Equivalency Factor
Total Phosphorus	0
Total Suspended Solids (TSS)	0
Thermal	Not Applicable

Contact local or statewide trading coordinators for help when determining the equivalency factor for pollutants other than TP or TSS.

Uncertainty Factor

The uncertainty factor compensates for the multiple sources of uncertainty that occur in the generation of nonpoint credits. Uncertainties originate from climatic and weather variability, potential inaccuracies in field testing or modeling of the amount of pollutant controlled by a management practice, inability to always synchronize credit generation and use and the episodic nature of nonpoint pollution, and the reliability of a management practice to perform under different hydrologic conditions.

Point Source Credit Generator Uncertainty Factor: When a point source generates credits, such as in a trade between two wastewater treatment plants, the uncertainty factor for the trade is set equal to 1 when the credit generator performs effluent monitoring in accordance with the terms of its WPDES discharge permit.

Due to the nature of storm water discharges, nonpoint source uncertainty factors are applied to credits generated by a permitted MS4.

Nonpoint Source Credit Generator Uncertainty Factor: This uncertainty factor addresses trades where credits are generated by a nonpoint source, MS4s, and other permitted storm water sources accounting for pollutant sources that are often diffuse, episodic, and dependent on climatic and weather factors.

Generally, the nonpoint source uncertainty factor will be calculated based on the effectiveness of management practices employed over various flow or precipitation regimes, the general effectiveness of the

practice, the distance/topography between the practice location and the receiving water, and the ease of verification that the management practice is in place and operating effectively. Individual practices that are effective over a wider range of flow regimes and management practices that can be accurately modeled have lower uncertainty factors. As concluded by the Wisconsin Buffer Initiative (http:/faculty.nelson.wisc.edu/nowak/), a systems-based approach involving complementary management practices addressing the application of nutrients, detachment of sediment and nutrients, and transport of sediment and nutrients affords the best reduction in the delivery to receiving waters. In cases where management practices address pollutant loads through the full range of hydrologic conditions and effectively mitigate the main mechanisms of pollutant delivery the uncertainty factor can be set to 1. Practices include whole field management, companion crops, and conservation easements. In these cases, the overall trade ratio generally simplifies to 1.2:1, assuming the credit user is downstream of the credit generator in the same HUC 12 sub-watershed. For practices that are implemented without supporting practices the uncertainty factor is set higher and those practices that have limited success in reducing pollutant loads or quantification limitations have higher uncertainty factors of 3 or 4. This approach allows the use of such practices but appropriately sets credits at an equal level with more reliable and sound management approaches.

Appendix H - Management Practices and Associated Information provides a list of nonpoint source management practices with default uncertainty factors that may be used to translate pollutant reductions to credits for trading. However, credit generators are not restricted to the management practices listed and may request site-specific uncertainty factors. Requests to use uncertainty factors other than the default values or to use practices currently not listed in Appendix H should be made in writing to local or state trading coordinators. Requestors should explain why alternative uncertainty factors or new practices are warranted and why the proposed ratios provide adequate levels of protection. The WDNR will determine the adequacy of the trade ratios and if new practices are applicable and update guidance materials as appropriate.

The following categories convey the amount of uncertainty associated with various agricultural and other pollutant reduction practices. It is recommended this information be used in tandem with appendix H to calculate the appropriate uncertainty factor that applies to credits generated by nonpoint pollutant sources that are often diffuse, episodic, and dependent on climatic and weather factors. The categories listed below discuss practice reliability only and do not account for climactic variability or modeling accuracy, which may need to be considered and result in uncertainty factors that differ from those listed.

Very High-certainty Practices: Multiple systems of agricultural best management practices have been shown to perform better at reducing nutrient and sediment losses from agricultural fields under a wide variety of climactic conditions. A system of agricultural practices that address both the source and delivery component of nonpoint source pollution help to better reduce or prevent nutrient-laden runoff during extreme weather events, snowmelt, and other runoff generating conditions. Practices such as whole field management and native prairie establishment are examples of very high certainty practices and commonly receive an uncertainty factor of 1.

High-certainty Practices: One or more practices that generally function well to limit either the source and/or delivery component of nonpoint source pollution but may be susceptible to localized failure during

extreme weather, are assigned an uncertainty factor of 2. There may be more flexibility for types of practices under different scenarios within this category.

Moderate-certainty Practices: Single practices that address only one aspect of nonpoint source pollution (source or delivery) are assigned an uncertainty factor of 3. These practices may be more attainable for certain producers or may be implemented at lower cost across larger areas. SnapPlus results have greater variability associated with a single practice under average annual rainfall and climatic conditions. For example, a field with heavy tillage, nutrient applications, and steep slopes may be greatly benefitted by establishment of a vegetative buffer around the riparian down-slope field margins. Under most conditions, the buffer may intercept sediment and nutrients in runoff. However, without addressing the source of the runoff, the buffer may become saturated or overwhelmed to reduce runoff during repeated high rainfall or during extreme weather events. Risks include concentrated flow, gully formation, vegetation damage, and excessive sedimentation. For a higher-certainty pollutant reduction, practices that address soil loss on the field, such as conservation tillage and farming on the contour, could be established.

Aquatic Habitat Adjustment

Many of Wisconsin's listed surface waters are impaired due to a combination of chemical, biological, and aquatic habitat impairments. In many cases, habitat restoration may be necessary for the listed surface water to achieve its full designated use. Therefore, activities that generate credits and include an aquatic habitat restoration element may qualify for an aquatic habitat adjustment to the trade ratio. To qualify, the surface water must exceed the applicable criterion for the traded pollutant or exhibit sediment-related habitat impairments (i.e. high degree of embeddedness in riffles, limited coarse substrate). The management measure or practice must address the impacts of the traded pollutant. Habitat restoration efforts are expected to meet applicable WDNR and WI NRCS standards. Suggested adjustments to the uncertainty factor are provided in Appendix H.

In-stream Habitat Adjustment

Streambank stabilization projects may employ in-stream habitat measures to help mitigate the impacts of excess phosphorus and sediment in the system. By implementing a habitat adjustment as part of a stream restoration project, the uncertainty factor may be reduced from 3 to 2.

What structures qualify as stream habitat?

The following habitat structures, authorized under the Stream Habitat General Permit, are eligible as in-stream habitat.

- Boulder or log placement
- Weirs
- Lunkers structures
- Cross-logs
- Rock and rock deflectors
- Brush bundles
- Coconut fiber rolls
- Spawning material placement
- Log deflectors

- Skyhook structures
- Similar habitat structures

Plans for habitat projects should be submitted as part of the trading plan. Eligible habitat structures are found in the Stream Habitat General Permit and should conform to the WI NRCS 395 technical standard. Habitat projects should result in a substantial gain in habitat elements that have been compromised by the pollutant at hand. For example, a stream habitat project may focus on adding structure such as woody debris to a stream segment. In the water quality trading plan, an assessment of the stream reach should indicate a deficiency in woody structure. These assessments should be made by qualified professionals such as WDNR fisheries biologists, county LCD staff, or other individuals with experience installing in-stream habitat. Alternative protocols for assessment are outlined in WI NRCS 395 technical standard.

Minimum Trade Ratio

Section 283.84(1m)(a), Wis. Stats., requires that a trade result in water quality improvement. This guidance defines improvement in water quality to be a greater load reduction than would otherwise be achieved absent trading. To accomplish this, the final trade ratio for trades involving credits generated by a nonpoint source should never be less than 1.2:1 (1.2 pounds of load reduction generated for every pound of load reduction credit made available). Trade ratios for trades with credits generated by a point source should not be less than 1.1:1. Once a trade ratio is calculated, it should be compared to the minimum trade ratio and the greater of the two values should be used as the applicable trade ratio.

Minimum trade ratio examples are provided below:

The trade ratio equation is:

Trade Ratio = (Delivery + Downstream + Equivalency + Uncertainty):1

Point Source Example: A credit user is working with an upstream WPDES permit holder within the same HUC 12 sub-watershed to trade TP. Both the credit user and credit generator are subject to non-TMDL WQBELs derived from s. NR 217.13, Wis. Adm. Code. Given this, the trade ratio equation simplifies to:

Trade Ratio= (Uncertainty):1

With an uncertainty factor of 1 for point to point trades (see Appendix H - Management Practices and Associated Information, p. 185), the calculated trade ratio equals 1:1, which is less than the minimum trade ratio of 1.1:1. Therefore, the applicable trade ratio for the example trade is set equal to the minimum trade ratio.

Point Source Example: Why does the trade ratio simplify?

- Delivery Factor equals 0 because trade is within same HUC-12.
- Downstream Trading Factor equals 0 because trades are upstream of the point of discharge.
- Equivalency Factor equals 0 because the trade is for TP.

Nonpoint Source Example: A credit user is working with an upstream nonpoint source credit generator to trade for TSS. No delivery factors were used in the TMDL upon which the TSS WQBELs are based. The credit generator

is using a no-till management practice to generate credits. Given this information, the trade ratio equation simplifies to:

Trade Ratio= (Uncertainty):1

With an uncertainty factor equal to 2 (see Appendix H, p. 185), the calculated trade ratio equals 2:1. Since it is greater than the minimum trade ratio of 1.2:1, the calculated trade ratio is applicable for this example trade.

Nonpoint Source Example: Why does the trade ratio simplify?

- Delivery Factor equals 0 because delivery factors were not used in the TMDL.
- Downstream Trading Factor equals 0 because trades are upstream of the point of discharge.
- Equivalency Factor equals 0 because the trade is for TSS.

3.5 Timing of Credits

Timing of Pollutant Reduction Credit Generation

Credits are not available for use before they are generated. For point source credit generators, wastewater treatment, production process modifications, or other controls necessary to generate the credits must be in place and reductions in pollutant loads must be measurable before credits are available for trading. That is, the point source credit generator must first comply with the more restrictive WPDES limits that it accepts as part of the water quality trade (see Section 2, p. 23). Modification of the credit generator's WPDES permit will likely be required to incorporate the lower limits. Please contact WDNR to discuss timing of permit modifications.

For nonpoint source credit generators, the management practice must be in place and effective before credits become available for trading. All structural measures must be installed and functioning prior to generating credits. Practices that generate credits through the conversion of land (i.e., wetland restoration) or involve the establishment of vegetation (i.e., riparian buffer strips) must be installed, established, and functioning (meeting any applicable technical standard) prior to generating credits. WQT plans should identify a target date for full establishment of practices. For some management practices, the reduction of pollutant load may not occur immediately after implementation of a management practice, credits may not be immediately available. In some cases, such as no-till and nutrient management, credit generation can also increase over time as the impacts of the management practices are fully realized on the landscape in subsequent years. Cropping practices (e.g., tillage, cover crops, etc.) must be implemented over the period that credits are needed, often the permit term, and can be calculated using an averaging period not to exceed the length of the permit term. Reductions that occur during the permit term can be averaged annually across the permit term; however, reductions that may be attributed to the impacts of a crop sequence/rotation that extends beyond the permit term should not be counted. For example, the impacts of years six and seven of a proposed 8-year crop rotation should not be counted when quantifying the reductions that occur within the permit term. Failure of management practices such as cover crops may require making adjustments in future years of a planned crop sequence/rotation to ensure that the average used to calculate credits is met over the permit term. For example, over a 5-year permit term, an average reduction in TP is achieved through the implementation of cover crops in years three and four of the permit term. In year three, the cover crop fails to germinate and provide sufficient cover across a field as

predicted by SNAP model, requiring a modification of the crop sequence or rotation with the planting of a cover crop in years four and five or the implementation of other management practices to generate enough pollutant reduction and credits to offset the discharge over the permit term. See Appendix D for details on quantifying reductions that occur over a crop sequence or rotation.

When credits are generated by a point source, both the credit user and credit generator must have permit language for trading specified in their WDPES permit. Credits are not available to the credit user prior to the credit generator's permit being modified or reissued and the more restrictive effluent limit accepted by the credit generator as part of the trade becoming effective.

Credit for Past Practices

When credits are generated by a nonpoint source, only load reductions that occur after the trade agreement is reached are available to generate credits pursuant to s. 283.84(1)(b), Wis. Stats. Credit users and generators should ensure that trade agreements are in place prior to establishment of a practice that will be used for credit generation. Section 283.84(1m)(a), Wis. Stats., requires that a trade result in water quality improvement. Water quality trade proposals that maintain existing/previously installed practices, in most cases, will not improve water quality, they will only maintain current water quality, and should not be used to generate credits.

If practices require maintenance or re-establishment (e.g., edge of field filter strips, grassed waterways, prairie/permanent grassland or riparian buffers), those activities are not eligible for credits because they will only maintain, not improve, current water quality. For agricultural fields or operations that were documented in compliance prior to a WQT agreement and then have fallen out of compliance with ch. NR 151, Wis. Adm. Code, installation and maintenance of practices needed to re-establish compliance are not eligible to generate credits.

Further, if a nonpoint source previously installed management practices through cost-share agreements funded by state cost-share dollars, for example the Targeted Runoff Management (TRM) or Notice of Discharge grant programs, credits generated through those practices should not be used for trading purposes pursuant to s. NR 153.15(2)(f), Wis. Adm. Code. Point sources should review the conditions of other cost-share grants to determine if credits may be used from practices installed using those funds.

Can I take credit for practices recently installed?

In some situations, point source discharges may be able take credit for practices that the point source has previously installed or previously funded, if expressly approved by WDNR and are part of binding written agreement at the time of practice installation. Ineligible historical practices include practices that are being used to comply with permit requirements or state performance standards or were funded through Targeted Runoff Management grants or other grants with similar restrictions. Other restrictions may also apply. Contact your local trading coordinator to discuss specific practices of interest.

Pursuant to s. 283.84(1m)(a), Wis. Stats., water quality trade agreements must be the causal factor under which the pollution reduction occurs. Pollution reductions caused by efforts outside of the trade agreement are not eligible to generate credits. This requirement does not preclude partnerships in which multiple parties may contribute resources to a single credit-generating project. The test to verify additionality is based on timing: the trade agreement must be executed prior to a partner's written commitment to fund or undertake a project. Put

differently, if a contract or incentive payment requires installation of a practice prior to establishment of a trade agreement, then installation of that practice is not eligible to generate credits. WDNR may inquire with funding agencies to verify that this requirement has been met when reviewing WQT plans.

Furthermore, practices required to meet enforcement action mandates, current or pending, may not be used to generate WQT credits. For example, if the owner of a feedlot receives a notice of discharge (NOD) letter or intent to issue notice of discharge letter, practices installed to remedy the pollution source(s) specified in the letter are not eligible for generating WQT credits. If a trade agreement is established with the feedlot owner prior to receipt of a notice of intent or NOD letter, practices installed to reduce pollution would be considered valid for trading, because the water quality trade agreement resulted in a pollution reduction and subsequent water quality improvement.

Timing of Pollutant Reduction Credit Use

When credits are available, the timing of credit use will depend on the source of the credits. When a wastewater facility generates credits, only those credits generated during the compliance period of the credit user's WQBELs may be used. For example, the demonstration of compliance with a monthly average WQBEL for a specific month and year may take into consideration only those credits that are generated during that month and year. Credits generated during a given month may not be carried forward to the next month.

When a nonpoint source generates credits, it is much more difficult to establish the timing of credit generation since many of the management practices employed produce credits only during periods of runoff. Further, management practice modeling is limited in its ability to predict the periods when credit generation occurs and normally provides load reductions in annual time periods (e.g., pounds of TP per acre per year). This is because many models rely on average annual data sets rather than actual recorded daily values. Therefore, the credit user may bank the credits generated by a nonpoint source management practice for the calendar year they are functioning and use a portion of the banked credits to demonstrate compliance with WQBELs expressed in averaging periods less than one year, at any time during that calendar year. Exceptions to the banking concept may have to be made on a case-by-case basis for seasonal discharges which would require prorating the use of credits over the entire year. For structural practices, credit availability will be based on the portion of the year for which the practice is installed and operating.

> **Example:** A streambank stabilization project will generate 80 lb./year of total phosphorus credits. The project is complete as of October 1, 2024. If the WPDES permit is reissued in 2024, there will be a total of 20 lb./year of credits available to demonstrate compliance with WQBELs in October, November, and December (25% of the credits, since it will be in place for 25% of the calendar year). The full 80 lb./year would be available during 2025, provided the practice continues functioning as designed.

Trade Duration

Pollutant reduction credits, with the exception of nonpoint source interim credits (see Section 3.3, p. 34), remain available for trading as long as the generator and user agree to continue trading credits and the measure or management practice remains effective. For nonpoint sources that generate credits, credits remain available for trading through the design life of the management practice provided the practice remains in place and is

properly maintained[4]. This will require periodic maintenance or in some cases, the reinstallation of management practices. For point sources that generate credits, credits remain available if the credit generator complies with the more restrictive effluent limit that it accepted as part of the trade agreement.

The duration or term of a trade is limited by either trading partner ending the agreement, by the conclusion of the design life of the pollutant reduction measure or practice that generates the credits, or by the WDNR's withdrawal of its approval of the trade, whichever results in the shorter duration. Expiration of interim nonpoint source credits may occur during the term of a trade agreement without ending the entire agreement. Should a point source cease discharge, any credits generated by that point source are no longer available for trading. Point sources no longer requiring a permit cannot generate credits pursuant to s. 283.84(1)(a), Wis. Stats.

3.6 Water Quality Trading Agreement

Section 283.84, Wis. Stats., requires a binding, written agreement before trading may be employed. A copy of s. 283.84, Wis. Stats, is provided in Appendix A – Section 283.84, Wis. Stats., p. 74 and the seven different trade agreements identified by the statute are discussed below:

Trading Between Two WPDES Permittees: Pursuant to s. 283.84(1)(a), Wis. Stats., a trade agreement is required between two permittees who wish to trade credits. One of the permittees, the credit generator, agrees to reduce their discharge of the traded pollutant below levels otherwise authorized by their WPDES discharge permit to allow the second permittee, the credit user, to increase their discharge of the traded pollutant above levels otherwise authorized by their WPDES discharge permit.

Trading Between a WPDES Permittee and a Second Party: Pursuant to s. 283.84(1)(b), Wis. Stats., a trade agreement is required between a permittee who wishes to use credits to demonstrate compliance with their permit effluent limitations and a person who wishes to generate load reductions but is not required to obtain a WPDES discharge permit for the discharge of the traded pollutant. An example of a credit generator without a WPDES discharge permit is a nonpoint source, such as a field of row crops, where the owner/operator installs a management practice to reduce the loss of phosphorus.

Section 283.84(1)(b), Wis. Stats., also states that only load reductions generated after the trade agreement is completed are available for trading as credits.

Trades as part of an Exchange by the WDNR or Local Government Unit: When the WDNR or a local governmental unit acts as a credit exchange, a trade agreement is required between the credit user and WDNR or local governmental unit pursuant to s. 283.84(1)(c), Wis. Stats. Acting as an exchange, the WDNR or local government unit uses money paid by the credit user to reduce loadings of the traded pollutant or to provide cost-sharing for purposes of ss. 281.16(3)(e) or (4), Wis. Stats.

[4] The amount of credit generated may change over time as additional site-specific information or new modeling tools become available and are reflected in an updated WQT plan. This guidance will be updated and/or permit conditions may change as experience is gained. These changes will be made upon permit reissuance or modification as appropriate.

Trading Between WPDES Permits Held by the Same Permittee: Pursuant to s. 283.84(1)(d), Wis. Stats., a trade agreement is required between the permittee and the WDNR when the permittee holds two WPDES discharge permits and through the use of credits wishes to reduce their discharge of the traded pollutant below levels otherwise authorized in one permit and increase their discharge of the traded pollutant above levels otherwise authorized in the second permit.

Pollutant Load Reductions Implemented by the Credit User: Pursuant to s. 283.84(1)(e), Wis. Stats., a trade agreement is required between the credit user and the WDNR when the credit user constructs a project or implements a plan that results in load reductions from sources other than that covered by the credit user's WPDES permit.

Credits Purchased Through a State-contracted Clearinghouse: Pursuant to s. 283.84(1)(f), Wis. Stats., a WPDES permittee may enter into a WQT agreement with a clearinghouse that holds a valid contract under s. 16.9685 Wis. Stats. The clearinghouse is required to consult with WDNR regarding contract provisions.

Trading via a Third-Party Exchange: Pursuant to s. 283.84(1)(g), Wis. Stats., a binding, written agreement may be established between a WPDES permit holder and a third party who will work with one or more credit generators to implement pollutant load reductions to generate credits. WDNR must approve of the contract between the WPDES permittee and third party. When this trade agreement structure is employed, details regarding the trade must be sent to the state-contracted clearinghouse. Section 283.84(1)(g), Wis. Stats., also states that only load reductions generated after the trade agreement is completed are available for trading as credits.

When WDNR is not a partner in the agreement, the permittee/credit user may either submit the entire trade agreement, submit part of the agreement (e.g., financial terms excluded), or certify that a trade agreement has been reached. Should permittees not wish to submit trade agreements to WDNR, the trading plan must have sufficient information to make permitting decisions including determining compliance. The trading plan will be available for public comment and review. Trade agreements established under s. 283.84(1)(g), Wis. Stats., must be submitted, in their entirety, to WDNR for review and approval.

Consequently, WDNR staff will not make specific recommendations for individual trade agreements in most cases, however, they will review all trading plans. Trading plans should contain sufficient information to ensure that trade agreements have been completed, and that trade agreements conform to the regulatory requirements and this guidance for trading. Review of the trading plan and checklist is discussed in Section 3.1.5.

Suggested trade agreement content is provided in Figure 10 and an example trade agreement can be found in Appendix I – Example Trade Agreements.

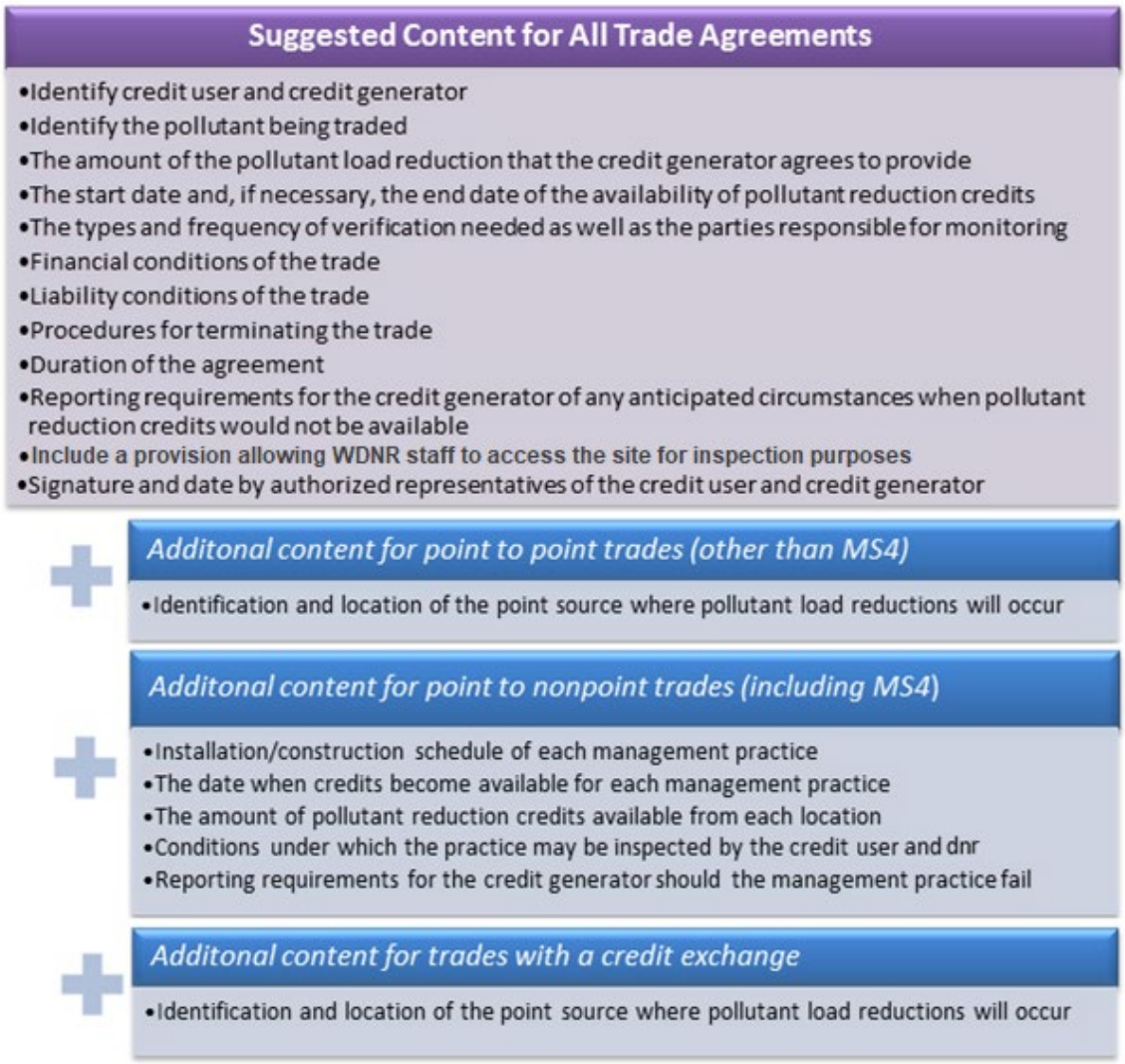

FIGURE 10: SUGGESTED CONTENT OF TRADE AGREEMENTS

Chapter 4 – Implementation of WQT in Permits

Last Revised: March 2026

This section of the guidance document addresses the roles and responsibilities of WDNR staff as well as WPDES Permittees and their agents with respect to implementing trading.

Generally, the permittee who wishes to use credits is responsible for:

- Evaluating trading as a compliance option;
- Submitting a trading plan;
- Finding trading partners and completing one or more trade agreements pursuant to s. 283.84, Wis. Stats.;
- Applying for permit reissuance or modification to allow trading; and
- Complying with WQBELs for the traded pollutant.

The WDNR is responsible for:

- Providing the permittee with WQBELs;
- Aiding the permittee in evaluating trading as a compliance option;
- Reviewing the trading plan;
- Issuing, reissuing or modifying the WPDES permit to allow trading;
- Evaluating compliance with WQBELs;
- Tracking the use of credits;
- Addressing noncompliance; and
- On occasion, inspecting sites that generate credits and auditing third parties - such as counties - that serve as site inspectors.

The guidance in this section is intended to apply in most situations, but there may be circumstances where deviation from the guidance may be necessary. Decisions inconsistent with the guidance should be discussed with local and statewide trading coordinators. This section of the guidance will be updated as the WDNR gains experience in trading implementation and permit drafting. Any changes to this guidance are subject to WDNR guidance procedures which include a public comment period. Contact information for statewide and local trading coordinators is available on the WDNR website searching “water quality trading tools” or by visiting the following link: WQT Coordinator List (https://dnr.wisconsin.gov/sites/default/files/topic/Wastewater/coordinatorlList.pdf)

4.1 Selecting Trading as a Compliance Option

Compliance options should be reviewed prior to permit renewal to allow enough time to make informed compliance decisions. The timeline for establishing a trade varies widely across different trading efforts. Time is needed to find credit generators, develop contracts, select and implement management practices, and begin generating credits with those practices. In WDNR's experience, the factors most heavily influencing the timeline are a) partnerships with brokers, exchanges, or clearinghouse and b) the permittee's flexibility to consider different practice types at varied levels of costs.

Compliance options that are evaluated generally include treatment optimization, traditional facility upgrades, adaptive management, and trading. A permittee should review these options to determine which will achieve compliance in the most economically efficient way possible. See Section 3 of the Adaptive Management Handbook for a more detailed comparison between trading and adaptive management: WDNR Adapative Management Webpage (http://dnr.wi.gov/topic/wastewater/adaptivemanagement.html).

Chapter 2 of this guidance is designed to help a permittee evaluate the water quality trading option and determine its feasibility. Once a facility chooses trading as its preferred compliance option, the permittee should submit a Notice of Intent (see Section 4.3, p. 55) to the local WDNR wastewater engineer, specialist, or trading coordinator. Submittal of the Notice of Intent to Conduct Water Quality Trading (Form 3400-206) (NOI) serves as notification to the WDNR that trading is being pursued.

Upon submittal of the NOI, a permittee should begin developing a trading plan (see Section 4.2, p. 52 for more details on developing and implementing a trading plan). The completed plan should be submitted to WDNR for review and approval along with a checklist summarizing the plan (see Section 4.3, p. 55). The plan and checklist should be submitted to WDNR with the permit application, or with the Final Compliance Alternative Plan step in the phosphorus compliance schedule, if a compliance schedule extending beyond the term of the permit is granted. A permit modification request must also be submitted with the plan, if a permittee was granted a traditional compliance schedule (less than 5 years). Permit modification is required in this scenario to allow for public notice and comment opportunities on the trading plan and to incorporate trading conditions into the permit.

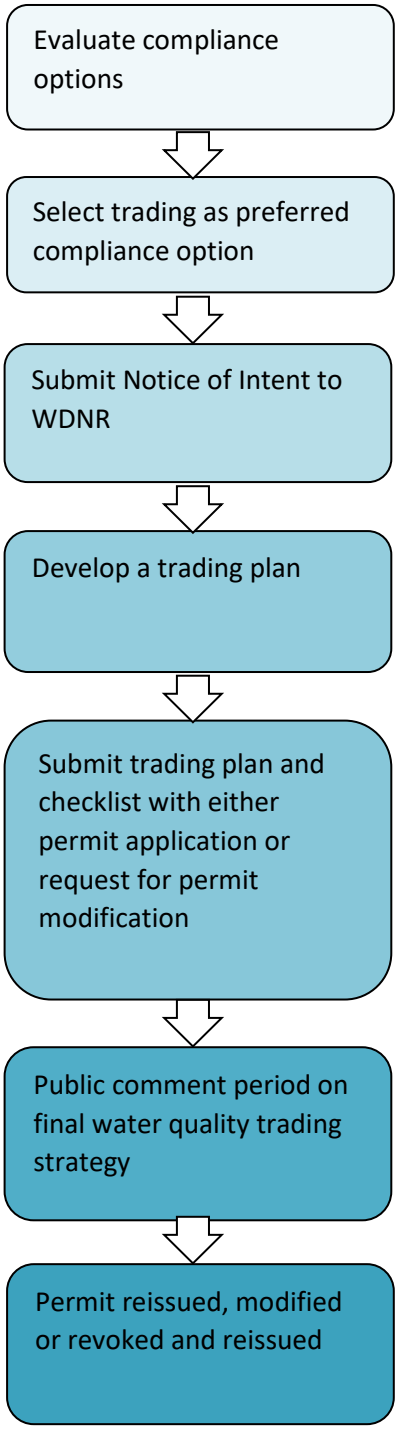

FIGURE 11: WQT SELECTION PROCESS

If the permittee engaging in trading is a permitted MS4, talk to your local WDNR contact about the best permit option, whether that be incorporating trading into the General Permit or an Individual Permit. Some considerations would include timing of the trade, and which permit type the MS4 is currently covered by.

Some permittees may be granted an extended compliance schedule (5-7 years from the date a given WQBEL is first included in the permit) for phosphorus. In these scenarios, the permittee is not required to submit a permit modification request. Rather, WDNR will use the permit reissuance process to allow public comment on the trading plan and incorporate trading requirements into the reissued permit (permit term 2).

Public notification of the trading plan will occur along with and as part of the package for permit reissuance/modification. Public noticed permits can be found on the WDNR website and by searching "public notice permits." Additional information regarding public notification of trading plans can be found in Section 4.3, p. 61.

Trading for Lagoons and Other Small Discharges

Municipal and industrial dischargers, no matter their size, should review all applicable compliance options, including trading, to determine which compliance option is best for them. There are no special eligibility requirements for small discharges like municipal lagoon systems. These dischargers must meet the same requirements and expectations as other discharges. Given this, trading may or may not be a viable compliance option for all discharges. For some, the costs associated with trading may not be economically feasible. For others, credit generators may not be available within their watershed.

In many cases, however, trading may be the preferable compliance option given the small amount of mass discharged from these facilities, and the small amount of credit that needs to be generated to offset this amount. To make trading more economically desirable, facilities should try to avoid trades that require high trade ratios.

If all available compliance options, including trading and adaptive management, are economically infeasible, the permittee may request a water quality standards variance. Requests for water quality standards variances are generally addressed in ss. 283.15 or 283.16 Wis. Stats., and Subchapter III in ch. NR 200, Wis. Adm. Code. See Section 3.03 of the Phosphorus Implementation Guidance for details: Wisconsin's Phosphorus Rul Webpage (http://dnr.wi.gov/topic/wastewater/phosphorus.html).

4.2 Initial Development

"Initial development and implementation" refers to the period beginning with the permittee considering trading as a compliance option and ending just prior to WPDES permit reissuance or modification to allow trading. Two or more years may be needed for the permittee to evaluate the trading option and develop a trading strategy. Figure 12 provides an example timeline and process flow diagram for the permittee as the credit user and for WDNR staff.

There are several documents that the permittee should prepare and, in most cases, submit to the WDNR before beginning trading: "Notice of Intent to Conduct Water Quality Trading" (notice of intent), trade agreement, trading plan and "Water Quality Trading Checklist" (trading checklist), and "Water Quality Trading Management

Practice Registration." Table 5 briefly describes the purposes of these trading forms. These forms are available on the WDNR website, search "water quality trading."

Providing WQBELs to the Permittee

To allow a permittee adequate time to evaluate trading as a method for complying with WQBELs and to locate sources of credits, WDNR staff should provide the permittee with WQBELs well in advance of the limits becoming effective. For permittees that have not yet submitted applications for permit reissuance, the WQBELs may be included in the cover letter for the application or by a separate letter that predates the application cover letter. If the permittee wishes to receive limits prior to permit application or reissuance, permittees are being advised to request them from their local wastewater engineer/specialist.

Aid Permittee in Evaluating Water Quality Trading

WDNR staff are available to help answer technical trading questions as they arise and provide feedback and information on potential trading areas as well as input on trade ratios; however, WDNR staff are not responsible for seeking out credits, establishing practices, or verifying practices.

Overall, permittee questions on trading should be addressed by the local wastewater engineer/specialist and local trading coordinator. These staff are primarily responsible for answering general trading questions. Refer to the regional and statewide water quality trading coordinators list at the following URL:
WQT Coordinator List (https://dnr.wisconsin.gov/sites/default/files/topic/Wastewater/coordinatorlList.pdf)

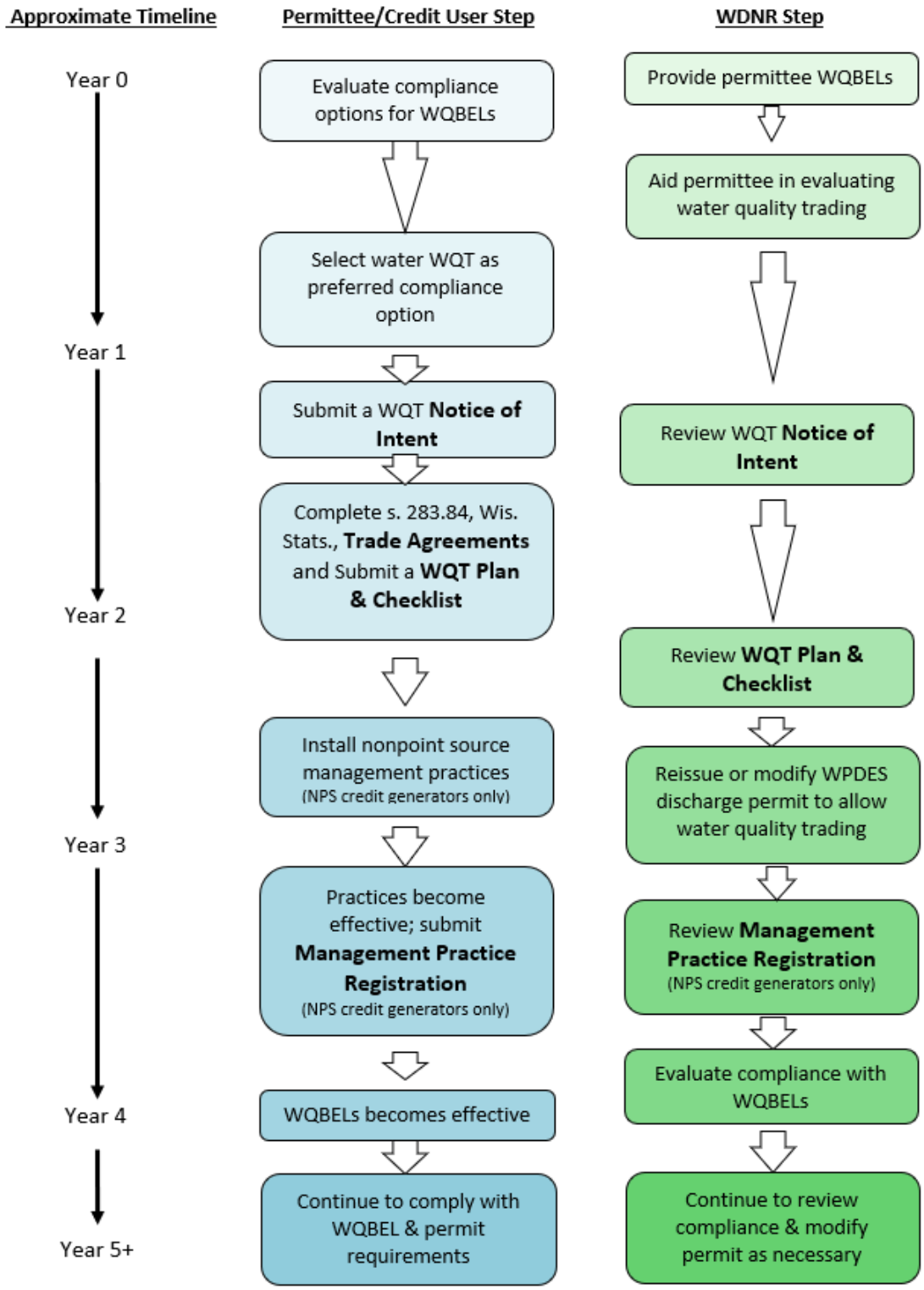

FIGURE 12: WQT TIMELINE FOR CREDIT USER AND DNR STEPS

4.3 Documentation and Appropriate Forms

Included in Table 5 is a list and explanation of the applicable trading forms and documents. Forms can be found on the WDNR website searching "water quality trading implementation." The following section provides additional guidance on the content and purpose for the various forms and documents.

TABLE 5: WQT DOCUMENTATION

Trading Document	Purpose	Parties Involved
Notice of Intent Form #: 3400-206	• Credit user submits to WDNR for review and approval • Allows permittee to confirm trading eligibility prior to plan development • Typically submitted no later than the preliminary facility plan step of the compliance schedule for TP WQBELs or at least 24 months prior to permit expiration[2]	• Permittee/credit user • WDNR wastewater engineer/local trading coordinator
Trade Agreement	• Document required of permittee/credit user by s. 283.84, Wis. Stats. to formalize the trade • Typically completed prior to submittal of the WQT plan or at least 9 months prior to permit expiration[2]	• Permittee/credit user • Credit generator • WDNR or local governmental unit (if applicable)
WQT Checklist & Plan Form #: 3400-208	• Credit user submits to WDNR for review and approval • Documents will be public noticed with permit reissuance • Outlines the content of the WQT strategy • Typically submitted with the final facility plan step of the compliance schedule or with the permit application for reissuance at least 6 months prior to permit reissuance[2]	• Permittee/credit user • WDNR basin engineer/local trading coordinator • Statewide trading coordinator, if necessary
Management Practice Registration[1] Form #: 3400-207	• Submitted to WDNR to verify that the management practice has been properly installed in accordance with the WQT plan, or, if a management practice is adopted prior to submittal of trading plan, to document intent to be used within a trading plan • WDNR reviews and tracks registration using docket numbering system • Information can be reviewed later for trade verification and auditing	• Permittee/credit user • WDNR wastewater engineer/local trading coordinator • Statewide trading coordinator, if necessary
Annual Report Summary[1]	• Submitted to WDNR to verify management practices identified in the WQT plan are maintained • Informs WDNR of any changes made to the Trade Agreement or WQT plan • WDNR reviews, tracks, and modifies permit as necessary	• Permittee/credit user • WDNR wastewater engineer/local trading coordinator • Statewide trading coordinator
Notice of Termination[1] Form #: 3400-209	• Submitted to WDNR prior to practice termination or as soon as the permittee becomes aware of the failure of a practice • Should be submitted no later than the annual report submittal date	• Permittee/credit user • WDNR wastewater engineer/local trading coordinator

[1]-Only required if the credit generator is a nonpoint source.

[2]- Assumes that the permit contains a compliance schedule that is consistent with the P implementation guidance and is longer than five years.

Notice of Intent

As stated in Section 3, p. 51, a "Notification that Water Quality Trading Will Be Used to Comply with WQBELs" form (also called "Notice of Intent") should be submitted prior to developing the full trading plan. Such a submittal notifies WDNR staff of the intent to trade and will allow WDNR to confirm trading eligibility, suggest possible sources of pollutant reduction credits, and provide preliminary feedback in the drafting of the final plan submittal. The WDNR recommends that the credit user include the following information in the WQT Notice of Intent:

- An indication whether WQT will be used exclusively or in conjunction with other methods to comply with WQBELs for the traded pollutant;
- PRESTO results verifying nonpoint source loading to the receiving water when trading with nonpoint source credit generators is contemplated;
- A general identification of area(s) where pollutant load reductions may be implemented to generate credits;
- Likely management practice(s) to be used to generate credits; and
- The identification of any broker(s), credit exchanges or other third parties likely to be involved in establishing the trade.

To maximize the effective use of this document, the notice of intent should be submitted prior to trading plan development. If the permittee holds a permit with a five-year plus compliance schedule for TP WQBELs as outlined in the phosphorus implementation guidance, the notice of intent should be submitted no later than the due date for Preliminary Compliance Alternative Plan, 48 months prior to WQBELs becoming effective.

Section 283.84, Wis. Stat., Trade Agreement

Before a permittee may use trading to help demonstrate compliance with WQBELs, s. 283.84(1), Wis. Stats., requires the permittee to enter into a written trade agreement with the credit generator, WDNR, or local governmental unit, depending on the source of credits (see Section 3.6, p. 47). This guidance document identifies the written agreement as the trade agreement.

The WDNR may be a partner to a trade agreement if it uses money paid by the permittee to reduce pollutant loads or provide cost-sharing, or the permittee is serving as both the credit user and generator.

When the WDNR is not a partner in the agreement or required per statute to approve the agreement, the permittee/credit user may either submit the entire trade agreement, submit part of the agreement (e.g. financial terms excluded), or certify that a trade agreement has been reached. Should permittees not wish to submit trade agreements to the WDNR, the trading plan must have sufficient information to make permitting decisions including determining compliance. The trading plan will be available for public comment and review.

Consequently, WDNR staff will not review individual trade agreements in most cases but will review all trading plans. Trading plans should contain sufficient information to ensure that trade agreements have been completed, and that trade agreements conform to the regulatory requirements and this guidance for trading. Review of the trading plan and checklist is discussed below. Suggested content of trade agreements is provided in

Figure 10: Suggested Content of Trade Agreements above.

Suggested Roles and Responsibilities for WDNR Staff: If the permittee submits a trade agreement, the wastewater engineer/specialist should copy the agreement to SWAMP and inform the local trading coordinator. The local trading coordinator is responsible for reviewing these documents to ensure that they meet the protocols for trading and that information contained in the agreement supports the water quality trading plan. When WDNR is a party on the agreement, local trading coordinators should work with the statewide trading coordinator to obtain WDNR Bureau of Legal Services review and approval prior to any party signing the agreement.

Water Quality Trading Plan and Checklist

Before the WDNR can modify or reissue a WPDES permit that allows trading, the permittee must submit a trading plan and checklist for review and approval. The information in the trading plan will serve as the basis for permitting decisions. The plan must contain sufficient detail to allow WDNR to conclude that proposed trading will comply with s. 283.84, Wis. Stats., that credits are generated in an acceptable manner and correctly calculated; and that the permittee will comply with their WQBELs. The trading checklist provides an outline for the plan's content to guide the permittee and streamlines the WDNR's review. The trading plan should be submitted to WDNR no later than the permit reissuance application due date. Ideally, the WQT plan would be submitted with the final compliance alternatives plan to allow adequate time for WDNR review and approval.

Suggested content for the trading plan is provided in Table 6. The trading checklist is available online. As part of the trading plan, the permittee must either submit the trade agreement (all or parts of it) as required by s. 283.84 (1), Wis. Stats., or provide written documentation that such an agreement has been reached, as discussed in Section 3.6, p. 47.

TABLE 6: CONTENT OF A WATER QUALITY TRADING PLAN

(a)	(b)	(c)	(d)	(e)	Content of Water Quality Trading Plan
X	X	X	X	X	Permittee's/credit user's WPDES permit number
X	X	X	X	X	Permittee's/credit user's contact information
X	X	X	X	X	Pollutant(s) for which credits will be generated
X	X	X	X	X	Amount of credits available from each location/management practice/local governmental unit when acting as a broker
X	X	X	X	X	Certification that the content of the trading application is accurate and correct
X	X	X	X	X	Signature and date of signature of permittee's/credit user's authorized representative
X	X	X	X	X	Location(s) where credits will be generated (e.g., map of field or site where management practice will be applied including major drainage way(s) from the project)
X	X	X	X	X	Identification of method(s) including management practice(s) that will be used to generate credits at each location
X	X	X	X	X	Duration of agreement (e.g., the design life of the management practice) with each credit generator
	X	X	X	X	Schedule for installation/construction of each management practice
	X	X	X	X	Operation, maintenance, and inspection plan for each management practice used to generate credits
X	X	X			Verification either by certification or submittal that a trade agreement has been completed
	X	X	X	X	Date when credits become available for each management practice (i.e., when practice is established and effective)
	X	X	X	X	Model(s) used to derive the amount of credits and verification of correct modeling inputs.
	X	X		X	The applicable trade ratio for each management practice including supporting technical basis.
	X	X		X	Other documentation as discussed in the appendices of this WQT guidance.
X					Identification of credit generator(s) WPDES permit(s)
X					Signature and date of signature of credit generator's authorized representative
		X			Identification of the local government unit when acting as the a credit broker
		X			Signature and date of signature of an authorized representative for the local governmental unit when acting as a credit broker

Types of Credit Source:

(a) Credits are generated by a WPDES permittee other than the credit user or a permitted MS4.

(b) Credits are generated by a person who isn't required to obtain a WPDES permit and isn't an urban nonpoint source.

(c) Credits are obtained from either the WDNR or a local governmental unit acting as a credit broker.

(d) Credits are obtained from a second point source with a WPDES permit, other than a permitted MS4, that is held by the credit user.

(e) Credits are obtained from a constructed project or implementation of a plan undertaken by the credit user for sources other than that covered by the credit user's WPDES permit.

Management Practice Registration

The purpose of the "Water Quality Trading Management Practice Registration" form (registration form) is to report to WDNR that a management practice identified in the trading plan has been properly installed and is established and effective or, if the management practice was adopted prior to submittal of trading plan, to document intent of its use within a trading plan. This information will be used to track implementation progress, verify compliance, and perform audits, as necessary. A registration form should be submitted for every management practice that has been identified in the trading plan. This documentation is only required for point to nonpoint trades; point to point trades will be demonstrated via effluent monitoring and have documentation and effective date requirements specified in WPDES permits. If multiple practices are installed on one parcel of land, a single practice registration form may contain multiple records reflecting multiple practices.

If management practices are established prior to trading plan submittal, registration forms need to be submitted to WDNR at time of adoption to demonstrate clear intent for using the management practices within a trading plan. Failure to submit registration form for practices established prior to trading plan submittal may result in WDNR rejecting use of those management practices within the trading plan. See the past practices discussion in Section 3.4, p. 36. When completing the management practice registration form prior to developing a water quality trading plan, some information, such as the quantity of credits generated, will be a preliminary estimate. The water quality trading plan will contain the formal credit value used for permitting purposes.

Registration forms for management practices can also be submitted with the trading plan when the management practice is adopted during the same year the trading plan is submitted. Otherwise, registration forms should be submitted during the permit term as management practices become effective or with the annual report.

Reviewing Management Practice Registration Forms

As described above the purpose of management practice registration is to let the WDNR know that a management practice identified in the trading plan has been properly installed and is established and effective or, if a management practice is adopted prior to submittal of trading plan, to document intent to be used within a trading plan. Registration forms may be submitted throughout the permit term, so long as they are submitted before the credits generated by that practice are used to determine compliance with a WQBEL. If significant changes are made to the management practices identified in the trading plan, registration forms should be submitted to cover these new practices.

Banking Practices Over Time

There are a number of timing approaches that may be employed by a permittee seeking compliance via water quality trading. A management practice may be installed prior to trading plan development. A credit user may use this practice for future WQT compliance, provided appropriate paperwork has been submitted to the WDNR. The paperwork to be submitted should be a NOI (Form 3400-206) and a Water Quality Trading Management Practice Registration Form (Form 3400-207). The practice should have a valid trade agreement and maintenance plan to ensure the pollutant reduction is continued throughout the next permit term. Documentation of preexisting conditions is a critical step and is still a required component of a trading plan, even if the practices are installed before trade plan development. Only practices can be banked overtime, not

credits. Annual reductions do not "roll-over" from year to year if they are unused. Additionally, as stated in Section 3.3, p. 34, the duration of interim credits is measured from the date of practice establishment and not from when a credit user begins using the credits for compliance.

Third Party Verification

The permittee may designate a qualified third party to conduct inspections and provide documentation that a management practice is functioning and maintained as outlined in the trading plan. County LCD staff, crop consultants, or other qualified individuals may conduct site inspections. The details surrounding inspections are management practice-specific and should be agreed to ahead of time. The applicable WI NRCS technical standard may provide guidelines or parameters for inspections to verify. Photographic documentation should be, in most cases, a component of inspection and reporting. Regardless of who is designated to make these inspections, it is the permittee's responsibility to ensure that inspections occur, and that proper reporting protocol is adhered too.

Annual Report

Permittees will need to submit annual reports as part of their permit requirements. The purpose of the annual report is to inform WDNR of the status of management practices, provide WDNR with an update of the trading project overall, and submit any needed changes to the plan to WDNR. Practice registration forms and Notices of Termination should be submitted to WDNR prior to or with the annual report submittal. The following should be included in the annual report:

- Verification that site inspections have occurred;
- Summary of site inspection findings;
- Identification of noncompliance or failure to implement any terms or conditions of the permit or trading plan that have not been reported in discharge monitoring reports;
- Any applicable notices of termination or practice registration;
- Amount of credit used each month over the calendar year; and
- Other requirements as stated in the WPDES permit.

When identifying noncompliance in the annual report, the permittee should describe the noncompliance and its cause; identify the period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, specify the anticipated time that compliance will be attained, and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

When credits are reduced or eliminated for any reason, the permittee is still required to meet their WQBELs. To prevent noncompliance with WQBELs, changes to trading plans including changes in management practices, changes in trade agreements, and even changes in the location of management practice application must be addressed before credits are lost. Modifying the permit/trading plan will require at least 90 days.

Termination of a Water Quality Trade Agreement

If a trade agreement or the trading plan needs to be terminated during the permit term, the permittee should submit a Notice of Termination to the wastewater engineer/specialist to inform the WDNR of the termination. WDNR staff should use this information to determine if a permit modification is required due to the termination, whether the termination will result in non-compliance, or whether other permit actions are required due to the

termination. When credits are reduced or eliminated for any reason, the permittee is still required to meet their WQBELs without any grace period.

Termination of a Water Quality Trade Agreement by the Permittee: A permittee who wishes to use an alternative compliance option and chooses to discontinue trading should submit a "Notification of Trade Agreement Termination" form (Notice of Termination) to the WDNR with their application for permit reissuance or as part of a permit modification request. A reissued or modified permit will reflect the new compliance option requested by the permittee.

If WQBELs for the traded parameter are already in effect, the effluent limits will remain in effect, the permittee is required to remain in compliance with the limits, and a compliance schedule to implement alternative compliance options will not be available. If WQBELs for the traded parameter are not yet in effect, the WDNR will not be able to extend the compliance schedule beyond the maximum period allowed by Wisconsin Administrative Code.

Termination of a Water Quality Trading Plan by the WDNR: The WDNR will evaluate the appropriateness for the permittee to continue trading upon permit reissuance. If the WDNR determines that the permittee has failed to comply with the actions specified in the trading plan or WPDES permit, then the permittee is in violation of their WPDES permit, and the permit may not be reissued until this violation has been resolved. To address this violation, a permittee may need to select an alternative compliance option other than trading. The WDNR may also modify the requirements of trading upon permit reissuance to reflect new information and to assure compliance with water quality standards and trading requirements.

The WDNR may terminate a trading plan based on any of the following reasons:

- The permittee's failure to implement the trading plan as approved; or
- New information becomes available that changes the WDNR's determinations that trading is an acceptable option.

4.3 Incorporation of WQT in WPDES Permits

Sections 283.84 (3r) and (4), Wis. Stats., require terms and conditions related to the trade agreement to be included in a WPDES permit. Therefore, the credit user's WPDES discharge permit and, in point to point trades, the credit generator's WPDES discharge permit, must be issued, reissued or modified to include trading terms and conditions before the credit user may use credits to demonstrate compliance with their WQBELs.

Subsequent revisions to the trading plan require a public notice of the WDNR's decision but not a permit modification unless a permit term or condition is changed. For example, an increase or decrease in the number of credits listed in the permit (e.g., TP credits are reduced from 1,200 lbs./year to 1,000 lbs./year and TSS credits are increased from 30,000 lbs./year to 35,000 lbs./year) requires a permit modification.

Selecting a Minimum Control Level

When trading is to be used to demonstrate compliance with a WQBEL, the permit may need to include a limit that ensures previously achieved effluent quality will be maintained during future permit terms. Increasing discharges of pollution are subject to antidegradation and anti-backsliding requirements, which may prohibit

authorizing a relaxed effluent limit if a more restrictive limit has previously become effective. To avoid lowering of effluent quality, WQT permits may need to include the following concentration-based limits that represent a minimum level of control:

Technology Based Limits: Trading cannot be used to demonstrate compliance with TBELs, therefore any applicable TBEL should be included in the permit in addition to the WQBEL. See s. NR 207.12(3), Wis. Adm. Code, for antibacksliding requirements pertaining to relaxing technology-based limitations. Pursuant to s. NR 207.12(3)(a)2.a., Wis. Adm. Code, water quality trading may be used to demonstrate no increased loading to an impaired water will occur through relaxing a limit.

Interim limits previously effective under a NR 217 compliance schedule: For many dischargers that were not subject to TBELs, interim phosphorus limits were assigned after promulgation of the 2010 phosphorus rule per s. NR 217.17 (3)(c), Wis. Adm. Code. These interim limits often reflected a concentration of effluent phosphorus that was achievable with treatment processes in place at that time. See s. NR 207.12(4), Wis. Adm. Code, for antibacksliding requirements pertaining to relaxing interim effluent limitations.

Interim limits previously effective under adaptive management: Permittees engaged in adaptive management are required to meet interim limits for total phosphorus. The limits must become effective during the first permit term, and may not exceed 0.6 mg/L (six-month average) and 1.0 mg/L (monthly average) pursuant to s. NR 217.18(3)(e)2., Wis. Adm. Code. See s. NR 207.12(4), Wis. Adm. Code, for antibacksliding requirements pertaining to relaxing interim effluent limitations.

Interim limit previously effective under a variance: A permit which contains a variance to a water quality standard may require an interim limit be maintained or achieved during the permit term. These interim limits often work to demonstrate attainment of highest attainable condition per 40 CFR 131.14(b)(ii). See s. NR 207.12(4), Wis. Adm. Code, for anti-backsliding requirements pertaining to relaxing interim effluent limitations.

To remove or relax an interim limit or TBEL that has taken effect, an antidegradation and antibacksliding analysis may be required. Please contact your regional water quality trading coordinator or WQBEL calculator when determining whether or not a minimum control level will be required in future permit terms.

WPDES Compliance Schedules

This section provides guidance on accommodating trading in a compliance schedule for TP WQBELs since it is likely that most trades, especially in the near future, will be for this pollutant. Similar steps may be appropriate for compliance schedules for other pollutants as well. This guidance supplements but does not replace earlier guidance on compliance schedules for total TP WQBELs. All compliance schedules must be developed on a case-by-case basis and result in compliance with the WQBELs as soon as practicable (40 CFR 122.47).

Compliance schedules and permit language for stringent TP WQBELs address trading in the Preliminary Compliance Alternatives Plan and Final Compliance Alternative Plan submittal requirements. A simple statement by the permittee that trading will be pursued as a compliance option is adequate for the Preliminary Compliance Alternatives Plan submittal. WDNR staff should encourage the permittee to include the NOI as part of the Preliminary Compliance Alternative Plan submittal.

The permittee should complete all trade agreements and submit a trading plan and checklist at least six months prior to permit expiration. WDNR staff should encourage the permittee to include the WQT Plan and Checklist as part of the Final Compliance Alternative Plan submittal. The permittee's submittal allows the WDNR to adjust that part of the compliance schedule that extends beyond the permit's term during permit reissuance. For permits issued without a compliance schedule for stringent TP WQBELs, the trading checklist and plan submittal requirement will have to be made part of the permit reissuance application.

Upon approval of the trading plan, WDNR staff should adjust the compliance schedule as part of the proposed permit reissuance to allow adequate time for nonpoint source management practices, when applicable, to be installed and become established and effective. For example, the compliance schedule could allow one growing season for the installation of practices and a second growing season for the practices to become effective before WQBELs take effect. Figure 12, above, illustrates such a timeline.

Maximum Compliance Schedule Length

While the effective date of TP WQBELs may be adjusted in the proposed permit reissuance, the effective date cannot be extended beyond the maximum period specified in s. NR 217.17 (2), Wis. Adm. Code. If trading is used exclusively or in conjunction with a treatment system upgrade that does not include filtration or a similar process, the entire compliance schedule cannot exceed seven years from the date the permit was first modified or reissued to include TP WQBELs. A compliance schedule up to nine years is allowed only when trading is used in conjunction with a treatment system upgrade that includes filtration or a similar process.

Unless the permittee submits a trading plan and checklist at least six months prior to permit reissuance, permits should continue to be drafted with compliance schedules consistent with the phosphorus implementation guidance. If, however, the permittee makes a timely and complete submittal for trading, the compliance schedule in the reissued permit should be developed on a case-by-case basis. It is unlikely, however, that a compliance schedule longer than three years will be necessary when trading will be used exclusively to comply with WQBELs. If the trade is point to nonpoint and management practices are installed and effective, a very brief or no compliance schedule is warranted. If the trade is point to point, a compliance schedule to accommodate the modification of the credit generator's permit may be necessary.

Fact Sheet

Permit drafters and wastewater engineers/specialists are responsible for explaining trading details in the fact sheet. Suggested fact sheet content includes:

- A statement that the permit authorizes the use of trading as a tool to demonstrate compliance with WQBELs;
- Identification of the WQBELs for which trading may be used to demonstrate compliance;
- A brief description of the practices being implemented as part of the trade;
- Identification of all approved trading plans;
- The total credits available, after application of trade ratios, from the approved trading plan;
- Identification of interim and long-term credits with expiration dates for interim credits; and
- For the credit user's permit, the minimum control level and its basis (see Section 4.3, p. 61);

If any of the fact sheet content listed above is provided in the WQBELs recommendation memo, it need not be repeated in the fact sheet.

U.S. EPA Review

U.S. EPA's Region 5 requests that the WDNR provide for review of public noticed WDPES permits that include conditions for trading. In addition to the draft permit, the statewide trading coordinator should submit the trading plan to U.S. EPA Region 5.

Public Notice of Water Quality Trading Plans

The initial implementation of trading in a WPDES permit should be part of a permit issuance, reissuance or modification to allow public participation and input. The WDNR will state in the public notice that it will finalize its review of the trading plan upon consideration of comments received during the 30-day public comment period. Final WQT Plan approval occurs with the reissuance of the WPDES permit.

Once a WPDES permit implementing trading is issued, any future changes to the trading plan require public notice of the WDNR's decision. Permit modification will be necessary if proposed changes affect permit terms or conditions such as a change in the number of credits.

Permit drafters are responsible for preparing the public notice for permits that include conditions allowing trading, for permits including reduced limits for a point source credit generator, and for changes to the trading plan.

Renewing Water Quality Trades (Second and Third Permit Terms)

Most permittees that engage in water quality trading do so with the goal of achieving long-term compliance with WQBELs. Depending on the type and location of practices used to generate credits, a trading solution could fully address WQBELs for the traded pollutant over two, three, or more permit terms. Permittees that wish to continue to use trading for compliance in a future permit term should submit an updated water quality trading plan with the permit application, due six months prior to the current permit's expiration date.

Many components of the initial water quality trading plan can be carried over, unchanged, into subsequent updated plans, assuming the credit-generating practices remain the same. The baseline pollution load that was documented during initial WQT plan development can, in most cases, remain the baseline that subsequent years will be compared to. Plan updates will focus on verifying that current pollutant loading of nonpoint sources is accurately accounted for, and that the WQT plan accounts for any programmatic updates due to changes in applicable state statutes or policy. To that end, WDNR will be reviewing updated water quality trading plans to verify the following components are included:

- Effluent Limit Compliance History
    - Show credit use over prior permit term and discuss effluent quality/flows as needed
    - Describe any expected changes in effluent quality / flows during next permit term
    - Project credit needs for the upcoming permit term
- Nonpoint practice track record
    - Attach past annual inspection reports
    - Adjust inspection strategy if deficiencies were identified during the prior permit term

    - For cropping practices, document that cropping types/practices implemented during the prior permit term align with the initial WQT plan. If deviations occurred, the SnapPlus model may need to be modified accordingly.
- Verify that updated SPARROW calculations are used when calculating the trade ratio
- Incorporate any new guidance, policies, or TMDLs
    - Averaging of the field pollutant load ,using the crop sequence, is now authorized when using SnapPlus
    - Account for new TMDL credit threshold flexibilities (rounding, interim floor)
    - If a TMDL was recently established, calculate the credit threshold and delineate interim and long term credits
- Account for maximum interim credit duration, if applicable, by removing any interim credits 10 years after practice installation
    - Update available credit quantities for each year of next WPDES permit term accordingly
- Update nonpoint modeling as needed
    - SnapPlus should be rerun and updated with new soil samples when fields are being cropped under a trade (soil samples no more than 4 years old)
    - For perennial vegetation (with no nutrient applications occurring), updated soil samples and modeling is not required
    - Be sure to update annual credit availability by year within WQT plan document
    - Structural practices – verify that post-trade scenario modeling inputs are still accurate
        - Consider updating precipitation data every 10 years
- Miscellaneous
    - Update roles for partner organizations as needed.
    - Discuss and incorporate any modifications to the water quality trade agreement

Continuation of Water Quality Trading through Multiple Permit Terms

Water quality trading plans are approved for a single five-year permit term. The process through which plans are reapproved takes into account updated modeling methods, TMDL requirements, and any changes to applicable WQBELs. Water quality trade agreements are not limited to a single permit term and may extend beyond the duration of WQT plan approval.

Due to a potential mix of interim and long-term credits when the credit generator is a nonpoint source covered by an approved TMDL, the availability of credits may change during the term of a permit. For example, since interim credits are available for only ten years, the credits could expire during the permit term if the practices were installed prior to the term of the previous permit. Also, long-term credits could expire at the end of the design life of the management practices that were installed to generate the credits.

For example, Figure 13, below, provides a timeline that depicts the use of trading over three terms of a hypothetical WPDES discharge permit. Assumptions used to construct the timeline include:

- The first permit term depicted in the figure contains a two-year compliance schedule for TP WQBELs. The compliance schedule represents, with some modifications, the last two years of the seven-year compliance schedule that was included in the previous permit. Modifications were made to the

compliance schedule during the permit reissuance process to accommodate the use of nonpoint source management practices to generate credits.

- The first permit term depicted in the timeline contains a TP WQBEL with an effective date two years after issuance of the permit. The TP WQBEL remains unchanged over the three terms of the permit depicted in the timeline.
- The permittee will undertake a treatment system upgrade in addition to implementing trading to comply with the TP WQBELs.
- The first permit term depicted contains terms and conditions for trading since the permittee submitted a trading plan and checklist prior to issuance of the permit. The public notice for the permit indicates that the permittee will use trading to help meet the TP WQBEL and that the WDNR will consider public comments prior to reissuing the permit.
- The first trading plan and checklist, as submitted by the permittee prior to permit issuance, identifies management practices to generate phosphorus load reductions that have design lives of ten years.

NOTE: The examples depicted by Figure 12 and Figure 13 are different. Figure 13 is not a continuation of Figure 12.

From Figure 13, it can be seen that new sources of credits will be needed each permit term to replace interim and, eventually, long-term credits.

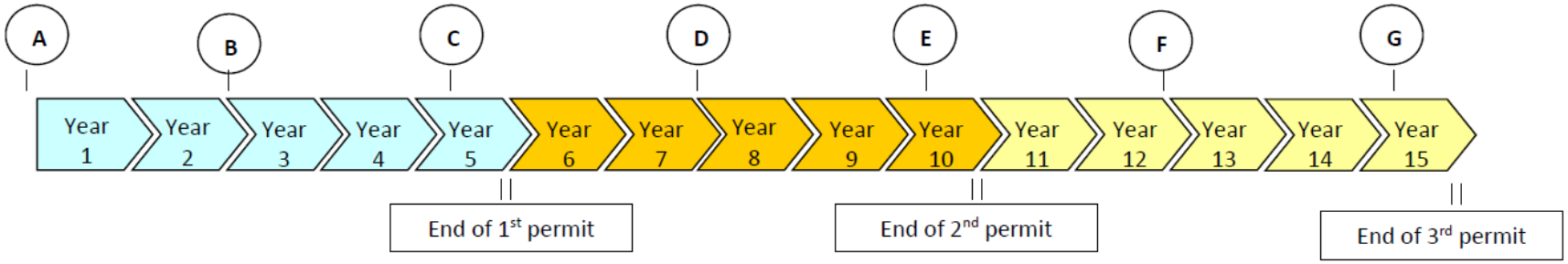

FIGURE 13: WPDES PERMIT TIMELINE

Key:

Prior to Issuance of First Permit:

A. In anticipation of TP WQBELs becoming effective, the permittee submits a trading plan and checklist. The public notice for the first permit term depicted in the figure includes a statement that the WDNR will consider public comments prior to reissuing a permit that contains water quality trading provisions.

First Permit Term (years 1 through 5):

B. When the schedule of compliance ends, the TP WQBELs become effective. The permittee may use credits including interim credits as addressed by the initial trading plan to demonstrate compliance with the WQBELs. Since credits are being generated by a nonpoint source, management practices must be in place and effective before traded credits may be used to demonstrate compliance with WQBELs. A management practice registration form should be submitted to register management practices with WDNR.
C. Approximately six months prior to permit expiration, the permittee submits a permit reissuance application. The permittee must include a new trading plan and checklist to replace any interim credits from the first trading plan that expire during the term of the second permit. Expiration of interim credits from the first trading plan occurs ten years after practices are installed. The second trading plan and checklist may also include new interim credits. The public notice for permit reissuance includes a statement that the WDNR will consider public comments prior reissuing the second permit that utilizes trading.

Second Permit Term (years 6 through 10):

D. Interim credits from the first trading plan expire ten years following practice installation. The expired credits are replaced with those from the second trading plan.
E. Approximately six months prior to permit expiration, the permittee submits a permit reissuance application. The permittee must include a new trading plan and checklist, the third plan, for replacement of interim credits from the second trading plan for interim credits that expire during the permit term (i.e., ten years after the practices were installed) and for long-term credits from the first trading plan that are no longer available after the management practice's ten-year design life. The third trading plan may also include new interim credits. Updated pollutant load reduction modeling will recalculate credits based on current approved versions of the models. The public notice for permit reissuance includes a statement that the WDNR will consider public comments prior to approving the third trading permit.

Third Permit Term (years 11 through 15):

F. Interim credits from the second trading plan expire. The expired credits are replaced with those from the third trading plan.
G. Approximately six months prior to permit expiration, the permittee submits a permit reissuance application. The permittee must include a new trading plan and checklist, the fourth plan, for replacement of interim credits from the third trading plan that expire during the permit term and long-term credits from the second trading plan that are no longer available after management practice's ten-year design life. The fourth trading plan may also include new interim credits.

4.4 Water Quality Trading Implementation

As part of trading implementation once WQBELs become effective, WDNR staff should track the use of credits, enforce when noncompliance occurs, and, on occasion, inspect sites that generate credits. The permittee will be responsible for submitting annual reports, management practice registration forms, and Notices of Termination to WDNR to aid in these decisions, as described in Section 4.3, p. 55. Additional guidance will be developed as more experience is gained with trading implementation.

Management Practice Failure and Enforcement

There are several factors the WDNR should consider when determining the appropriateness of trading enforcement actions, such as:

- Cause of the violation;
- Number of times that the discharger has not complied with permit requirements;
- Number of instances that the management practice in question has been damaged/ineffective;
- Whether the violation was self-reported;
- The significance of the violation (e.g., a violation that results in a 75% loss of credits is more significant than one the results in a 25% loss); and
- Time necessary to regain compliance

Compliance Inspections and Water Quality Trading Auditing

WDNR staff may request an audit of the trading program when performing a compliance inspection. Site visits may occur to ensure approved nonpoint source management practices are constructed as planned and fully functioning.

Tracking Water Quality Trading

WDNR will track the location of all installed practices in order to prevent duplication of credit use, to ensure that the capacity of a subwatershed to generate credits is not exceeded by the number of credits being used within the watershed, and to gauge the progress of TMDL implementation.

Maintaining List of Management Practices

The list of acceptable management practices, found in Appendix H - Management Practices and Associated Information may be updated with additional items as more approaches are identified for trading and the generation of credits through new management measures and/or practices.

Glossary

Bioaccumulative Chemical of Concern (BCC): Any substance that has the potential to cause adverse effects which, upon entering the surface waters, accumulates in aquatic organisms by a human health or wildlife bioaccumulation factor greater than 1000, as defined by s. NR 105.03 (9), Wis. Adm. Code.

Calendar Year: The time period from January 1 through December 31 inclusive for a given year.

Certification: An authorized representative of the permittee has attested in writing that a statement is true.

Concentrated Animal Feeding Operation (CAFO): An animal feeding operation to which any of the following apply: the operation has 1,000 animal units or more at any time and stores manure or process wastewater in a below or at grade level storage structure or land applies manure or process wastewater; the operation has 300 to 999 animal units and has a Category I unacceptable practice under s. NR 243.24 (1) (a), Wis. Adm. Code; or under s. NR 243.26 (2), Wis., Adm. Code, the operation is designated by the WDNR as having a significant discharge of pollutants to navigable waters or has caused the fecal contamination of water in a well.

Credit Generator: The person generating pollutant reduction credits. This can either be a permittee that agrees to reduce their discharge of the traded pollutant below levels otherwise authorized by their WPDES discharge permit, or a person who is not required to obtain a WPDES discharge permit but wishes to reduce their loadings of the traded pollutant.

Credit Threshold: The pollutant loading level below which reductions must be made to generate pollutant reduction credits.

Credit User: A permittee who wishes to use pollutant reduction credits to allow a discharge of the traded pollutant above levels otherwise authorized by their WPDES discharge permit.

Current Pollutant Load: For nonpoint sources, the pollutant load existing at the time that the trade agreement is reached pursuant to s. 283.84, Wis. Stats.

Crop Rotation: A regular pattern of crops, tillage and nutrient applications planned or used on a field.

Crop Sequence: The chronological order of crops, tillage and nutrient applications implemented on a field, over time. A crop sequence may differ from a crop rotation and reflects the cropping history for a field

Crop Cross-pollutant Trading: The use of discharge or load reductions generated for one pollutant to be used to compensate for an increase in the discharge or loading of a different pollutant.

Hydrologic Unit Code (HUC): A national standard hierarchical system based on surface hydrologic features to delineate s in the United States by the U.S. Geological Survey. Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to twelve digits based on the six levels of classification. For example, a 12-digit HUC (HUC 12) represents the sixth-level (sub-watershed) of classification.

Impaired Water: A water body that the WDNR has identified to EPA under 33 USC 1313 (d)(1)(A).

Local Governmental Unit: A political subdivision of this state, a special purpose district in this state, an instrumentality or corporation of such a political subdivision or special purpose district, a combination or

subunit of any of the foregoing or an instrumentality of the state and any of the foregoing as defined by s. 16.97 (7), Wis. Stats.

Load Allocation (LA): The portion of a receiving water's loading capacity that is allocated to a nonpoint source or group of nonpoint sources under a TMDL.

Management Practices: Structural or non-structural measures, practices, techniques or devices employed to avoid or minimize soil, sediment or pollutants carried in runoff to waters of the state, as defined by s. NR 151.002 (4), Wis. Adm. Code.

Municipal Separate Storm Sewer System (MS4): A conveyance or system of conveyances including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, constructed channels or storm drains, which meets all the following criteria: Owned or operated by a municipality; designed or used for collecting or conveying storm water; which is not a combined sewer conveying both sanitary and storm water; and which is not part of a publicly owned wastewater treatment works that provides secondary or more stringent treatment; as defined in s. NR 216.002 (17), Wis. Adm. Code.

Nonpoint Source (NPS): A land management activity which contributes to runoff, seepage or percolation which adversely affects or threatens the quality of waters of this state and which is not a point source as defined under s. 283.01 (12) Wis. Stats. as defined in s. 281.65(2)(b), Wis. Stats.

Nonpoint Source Implementers: Persons with experience and relationships with agricultural producers and landowners necessary to implement nonpoint source control measures. These persons may include: 1) county land conservation department (LCD) staff who work to control nonpoint source pollution; 2) non-governmental organizations and 3) private consultants.

Performance Standard: A narrative or measurable number specifying the minimum acceptable outcome for a facility or practice, as defined by s. NR 151.002 (33), Wis. Adm. Code.

Phosphorus Impaired Water: A surface water listed on the 303 (d) list that is impaired for phosphorus, nutrients, or diurnal swings of dissolved oxygen, as defined in s. NR 217.11 (4), Wis. Adm. Code.

Phosphorus Index (PI): Wisconsin's agricultural land management planning tool for assessing the potential of a cropped or grazed field to contribute phosphorus to the surface water, as defined by s. NR 151.015 (15s), Wis. Adm. Code.

Point Source (PS): A discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel or tunnel from which pollutants may be discharged into waters of the State. A discernible, confined and discrete conveyance of storm water for which a permit is required under s. 283.33 (1), Wis. Stats., is also defined as a point source.

Pollutant Load Reduction: The amount (mass) of a given pollutant over a specified period (day, month, year) that is made available by a credit generator for a trade. When divided by the trade ratio, the pollutant load reduction becomes the pollutant reduction credit.

Pollutant Reduction Credit or **Credit:** The amount (mass) of a given pollutant over a specified period (day, month or year) that is available to the credit user in a trade. The pollutant reduction credit equals the pollutant load reduction divided by the trade ratio.

Surface Waters: All natural and artificial named and unnamed lakes and all naturally flowing streams within the boundaries of the state, but not including cooling lakes, farm ponds and facilities constructed for the treatment of wastewaters.

Technology-based Effluent Limitation(s) (**TBEL):** An effluent limitation or limitations established pursuant to ss. 283.13 (1) through (4), Wis. Stats., and, with respect to total phosphorus, effluent limitations established pursuant to Subchapter II of ch. NR 217, Wis. Adm. Code.

Total Maximum Daily Load (TMDL): The maximum amount of a pollutant a waterbody can receive and still meet applicable water quality standards. In this guidance document, TMDL is also used when referring not only to the derivation of the total assimilative capacity of a waterbody, but also to the allocation of capacity to point and nonpoint sources. Only TMDLs that have been approved by U.S. EPA and are included in an areawide water quality management plan may be used to derive WPDES permit effluent limits.

Wasteload Allocation (WLA): Pollutant-specific allocation for an individual point source, which ensures that the level of water quality to be achieved by the point source complies with all applicable water quality standards.

Water Quality-based Effluent Limitation(s) (WQBEL): An effluent limitation or limitations determined by using applicable water quality criteria (e.g., aquatic life, human health, wildlife, translation of narrative criteria) for a specific point source to a specific receiving water for a given pollutant or based on the facility's wasteload allocation from a TMDL.

Water Quality Standards: Standards established by the WDNR pursuant to s. 281.15, Wis. Stats., for the physical, chemical and biological characteristics of a water which must be maintained to make it suitable for specified uses. Water quality standards consist of the designated uses of the waters or portions thereof and the water quality criteria for those waters based upon the designated use.

Watershed Adaptive Management Option: A strategy to achieve the total phosphorus water quality criteria in s. NR 102.06, Wis. Adm. Code, in the most economically efficient manner, and as soon as possible, taking into consideration the contributions of phosphorus from point and nonpoint sources in a watershed as specified by s. NR 217.18, Wis. Adm. Code.

Watershed: An area of the land that drains to a common lake, pond, river, stream, or other surface waters of the State that is delineated for the purpose of instituting water quality management activities.

WPDES Permit: A Wisconsin Pollution Discharge Elimination System discharge permit issued under ch. 283, Wis. Stats.

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