



BUREAU OF WATER QUALITY
PROGRAM GUIDANCE

WASTEWATER POLICY & MANAGEMENT TEAM

TMDL Implementation Guidance for Wastewater 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.

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1 Introduction

Section 303(d) of the Clean Water Act (33 USC 1313(d)) and 40 CFR §§ 130.6 through 130.10 requires states to determine on a biennial basis whether waterbodies are impaired (not meeting water quality standards). One of the underlying goals of the Clean Water Act is to restore all impaired waters so they meet applicable water quality standards. One of the key tools to meet this goal is the development of a total maximum daily load (TMDL). A TMDL is developed after consideration of all sources of pollution to an impaired waterbody and is stated as the amount of a pollutant that the waterbody can assimilate and not exceed water quality standards. Water quality targets used during TMDL development may be promulgated numeric water quality criteria or calculated based on promulgated narrative water quality criteria in consideration of local data and/or nearby reference sites.

TMDLs are established by allocating the allowable load between the point sources and nonpoint sources (NPS), with a small amount of the total load set aside as a margin of safety.

- The wasteload allocation (WLA) is the total allowable pollutant load from all point sources - municipal and industrial wastewater, concentrated animal feeding operations (CAFOs), and municipal separate storm sewer systems (MS4s).
- The load allocation (LA) is the allowable pollutant load from nonpoint sources (NPS) (agricultural, CAFO off-site landspreading, residential runoff, etc.). Natural sources are typically covered under the load allocation, and whenever possible NPS loads and natural background loads should be distinguished.
- The margin of safety (MOS) accounts for uncertainty in modeling and calculating WLAs and LAs.
- Reserve capacity may also be set aside in a TMDL and either be built into the WLA or be a separate component of the total loading capacity to allow for future growth in the watershed.

These three primary components make up a TMDL: WLA + LA + MOS. A TMDL may include monthly, annual, and seasonal loads needed to meet applicable water quality standards. For more information related to TMDL development, including a list of USEPA approved TMDLs, visit:

<http://dnr.wi.gov/topic/tmdls/>. See also section 4.3.

Federal and state regulations require implementation of TMDLs to meet water quality standards where there are implementation mechanisms in place and supported by law. For wastewater discharges, TMDL WLAs must be expressed in individual Wisconsin Pollutant Discharge Elimination System (WPDES) permits as water quality-based effluent limits (WQBELs) (Wis. Stat. § 283.31(3)(d)3. and Wis. Adm. Code §§ NR 212.76 and NR 217.16). The guidance in this document is intended to address issues related to implementing TMDLs in wastewater permits.

The Department has developed documents that provide guidance on other topics related to TMDL implementation including watershed permitting, adaptive management, water quality trading, TMDL implementation in MS4 and CAFO permits, and others. Go to <http://dnr.wi.gov/topic/tmdls/implementation.html> for the latest TMDL implementation resources.

This 5th edition guidance document replaces earlier versions of this guidance (previously titled “TMDL Development and Implementation Guidance: Integrating the WPDES and Impaired Waters Programs”), and it will be updated in the future, as additional TMDLs are completed or as other program needs dictate.

TMDL Implementation Guidance for Wastewater Permits

This document is consistent with the requirements in Wis. Stat. ch. 283, ch. NR 212, Wis. Adm. Code, and federal regulations. Department staff and others that use this document should contact the Point Source TMDL Implementation Coordinator (Kari Fleming: 608-267-7663 or kari.fleming@wisconsin.gov), if they have questions related to TMDL implementation in the Wastewater Program or if they wish to suggest issues that may need to be addressed in future revisions or additions to this document.

2 Overarching Issues

Section 2 addresses topics that are related to both the development and implementation of TMDLs in WPDES permits. Subjects such as regulatory authority, processes for implementation, and public input opportunities are covered.

2.1 DNR Authority for Development & Implementation of TMDLs

Section 303(d) of the Clean Water Act (33 USC 1313(d)) and 40 CFR §§ 130.6 and 130.7 requires three steps:

1. Identify waters that are impaired.
2. Prioritize these waters, taking into consideration the severity of their pollution.
3. Establish TMDLs (or equivalent watershed plans) for these waters at levels necessary to meet applicable water quality standards, accounting for seasonal variations and with a margin of safety to reflect lack of certainty about dischargers and water quality.

Under s. 303(e) of the Clean Water Act and 40 CFR §§ 130.5 and 130.6, states are required to develop plans for all impaired waters. The plans should include, among other things, (1) discharge limits as stringent as the requirements of its water quality standards and (2) TMDLs. Once USEPA approves a TMDL, WPDES permits that are issued or reissued must be consistent with the TMDL WLA. Wis. Stat. §§ 281.12, 281.13 -281.145, 281.31 and 283.83 provide state statutory authority for impaired waters listings and TMDLs. Subchapter III of ch. NR 212 contains rules for establishing TMDLs.

A compiled list of state regulations that apply to the development and implementation of TMDLs is provided in Appendix C. Specifically, Wis. Stat. § 283.83(3), and chs. NR 212 and NR 121, Wis. Adm. Code, establish the procedure to formally approve a TMDL as an amendment to the Areawide Water Quality Management Plan (AWQMP). Wis. Stat. §283.83(1)(c) requires that TMDLs be included in AWQMPs. Wis. Stat. § 283.31(3) and Wis. Adm. Code §§. NR 212.76 and NR 217.16 require that permits include effluent limitations necessary to avoid exceeding TMDLs. Wis. Adm. Code § NR 121.05(1)(e), Wis. Adm. Code, requires TMDLs in AWQMPs for each water quality limited segment.

Chapter NR 212, subchapter III, Wis. Adm. Code, establishes the procedures, methodologies, and requirements for determining TMDL pollutant loadings and corresponding WQBELs, in accordance with ss. 283.13(5), 283.31(3)(d)3, and 283.83(1)(c), Stats. These TMDL procedures and limitations are established to protect the water quality standards specified in chs. NR 102, 103, and 104, Wis. Adm. Code. Subchapter II of NR 212, Wis. Adm. Code, provides BOD limits based on WLAs developed for the Lower Fox, Upper Wisconsin, and Peshtigo Rivers. Other administrative codes include procedures for TMDL implementation such as Wis. Adm. Code ch. NR 217 for phosphorus. Also, ch. NR 151, Wis. Adm. Code, contains a TMDL nonpoint standard which must be promulgated as a rule and Wis. Adm. Code ch. NR 216 addresses stormwater discharges.

2.2 TMDLs & Areawide Water Quality Management Plans

Areawide Water Quality Management Plans (a.k.a. Basin Plans) are a required part of the Clean Water Act and federal regulations (40 CFR §§ 130.5 through 130.10) , which is reflected in ch. NR 121, Wis. Adm. Code. The Department updates AWQMPs using the Waterbody Assessment, Tracking, and Electronic Reporting System (WATERS) database. Separate from the plan update process is the plan amendment process. Historically, plan amendments have been used for key management actions with significant regulatory or grant implications. A plan amendment is a specific document that is officially added to the AWQMP plan through public review and approval by the DNR and USEPA. As noted above,

the federally approved TMDL automatically becomes an amendment to the AWQMP (Wis. Adm. Code § NR 212.77(2)). Other examples of documents handled this way historically are Priority Watershed Plans and Sewer Service Area Plans. For more details on watershed planning, staff may consult <http://intranet.dnr.state.wi.us/int/water/wm/wadrs/planning/>. TMDL development and implementation may also occur on a smaller scale than the AWQMP for a basin (e.g., HUC-10 or HUC-12 watersheds). The smaller scale watershed TMDLs would also be amended to the original AWQMP.

Once a draft TMDL is reviewed by DNR staff and USEPA, a public informational hearing must be held as part of the AWQMP amendment process and s. NR 212.77, Wis. Adm. Code. The DNR provides a public comment period of at least 30 days and holds a public informational hearing. DNR staff review all comments received during the comment period and at the hearing. If significant changes are made to the TMDL in response to these comments, the TMDL will go through the initial steps of the process again and re-submit for public comment. However, if no significant changes are made, the TMDL (including written responses to comments received) is officially approved by the state with the Water Quality Bureau Director's signature, and then submitted to USEPA for their approval.

With the USEPA's approval, the TMDL is considered final and automatically updated to the AWQMP pursuant to chs. NR 121 and s. NR 212.77(2), Wis. Adm. Code, as shown in the flow diagram. Section NR 212.77(2), Wis. Adm. Code, says that when a TMDL is approved by USEPA, the AWQMP are considered automatically updated and approved. The WLAs contained in the TMDL are also incorporated into the federally approved AWQMP. As stated above, once the TMDL is approved, all permits must contain requirements that are consistent with the TMDL when they are reissued.

The steps for developing a TMDL are as follows (and reflected in the flow diagram):

Step 1. Prepare Draft TMDL

Step 2. Internal & USEPA Review; revise TMDL

Step 3. Schedule public informational hearing, prepare Public Notice and Press Release on proposed TMDL and proposed revision to AWQMP.

Step 4. Post TMDL on web, start formal comment period (minimum of 30 days) and hold public informational hearing(s)

Step 5. Receive and respond to public comments. If significant changes needed to TMDL return to Step 2. If no significant changes move to Step 6.

Step 6. Bureau Director signs TMDL; TMDL is sent to USEPA for approval. ¹

Step 7. USEPA reviews the TMDL.² Under 40 CFR 130.7(d)2., USEPA must either approve or disapprove the TMDL. If it is approved, the water quality management plan must be incorporated. If the TMDL is disapproved, USEPA must propose a revised TMDL.

Step 8. Once DNR receives signed approval from USEPA, TMDL is automatically updated as amendment to the AWQMP.

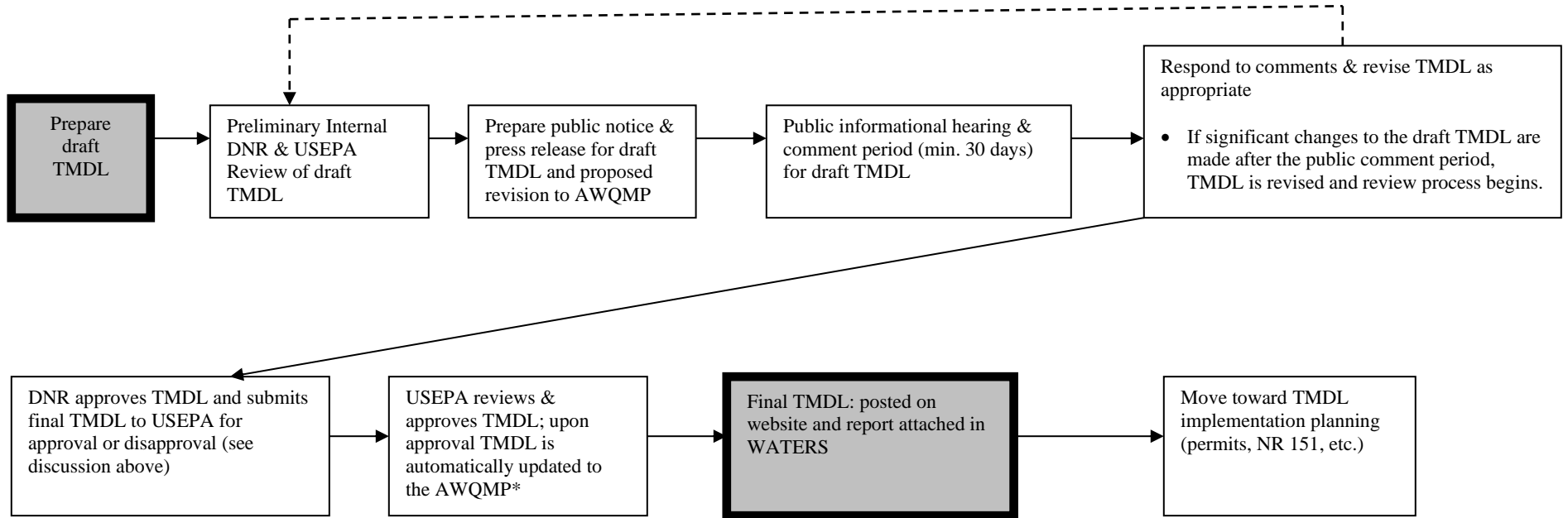
Step 9. TMDL is posted on DNR website as state and federally approved, and updated to the WATERS database.

Step 10. Implementation planning continues.

¹ Members of the public questioning when to challenge the state approved TMDL should consult with outside legal counsel or refer the inquiry to DNR legal staff. See also p. 10 for more discussion of this topic.

² Affected party may challenge USEPA decision in federal court (5 USC s. 702). If challenge is successful, TMDL comes back to USEPA. USEPA may request state's assistance to help address issues outlined in the court decision.

Process for Approval of a TMDL and amending the Areawide Water Quality Management Plan



The process for amending TMDLs to AWQMPs will be the same for designated and nondesignated areas of the state as outlined in the flow diagram. In designated areas, AWQMPs are prepared by a designated planning agency, such as a regional planning commission, rather than DNR. Ideally, the planning agency for designated areas of the state will be involved in the development of TMDLs in its area. At a minimum, designated planning agencies will be solicited for consultation in creating the draft TMDL and proposed revision to the AWQMP.

As mentioned previously, according to federal regulations USEPA must either approve or disapprove the TMDL. If it is disapproved, USEPA must propose a revised TMDL. Should this happen, and it is not possible to coordinate AWQMP plan update into USEPA's process, a separate AWQMP process might be necessary.

2.3 TMDLs & the Wisconsin Environmental Policy Act (WEPA)

Chapter NR 150, Wis. Adm. Code, specifies the level of Environmental Analysis and Review for various Department actions. Section NR 150.20 (2) (a) 3, addresses Areawide Water Quality Management Planning. This section states that areawide planning is considered an "integrated analysis action", an action that already provides for public disclosure and sufficient information to establish that an environmental impact statement is not required, and therefore does not require a separate environmental analysis.

2.4 Including TMDL-derived Limits in WPDES Permits

Once a TMDL has been approved by USEPA, all WPDES permits issued from that point forward must be consistent with the TMDL. See Section 4.6 for more detailed discussions regarding the expression of TMDL-derived limits in WPDES permits.

2.5 Administrative Review of TMDL Provisions

Opportunities for administrative and judicial review of TMDLs and implementation plans are available.

- *State Approval of TMDL & Areawide Water Quality Management Plan Amendment:* Affected or interested entities should consult with their own legal counsel regarding the appropriate time and forum for seeking review of a TMDL. It should be noted that a TMDL is not final until USEPA approves it. Once DNR submits its proposed TMDL to USEPA, USEPA must approve or disapprove the TMDL within 30 days (see 40 CFR 130.7(d)2). Refer to the diagram that outlines the process for developing TMDLs and incorporating TMDLs into an AWQMP.
- *Federal Approval of TMDL:* The parts of a TMDL that are reviewed and acted on by USEPA may be challenged at the federal level (5 U.S.C. § 702). Provisions that appear in the TMDL but are not mandatory from a federal perspective (e.g. some implementation issues) are not part of USEPA's review and therefore are not subject to federal appeal because, in essence, the federal government will render no opinion on them. USEPA typically reviews the following when reviewing a TMDL:
 - Submittal Letter
 - Identification of watershed, pollutants of concern, pollutant sources and ranking
 - Applicable water quality standards/ numeric targets
 - Loading Capacity
 - Load Allocations, Wasteload Allocations and Margin of Safety

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- Seasonal Variation
 - Reasonable Assurances
 - Public Participation
 - Technical Analyses and Supporting Documentation
-
- *WPDES Permit Issuance/Reissuance*: The permittee or a third party may adjudicate the terms and conditions of a WPDES permit pursuant to Wis. Stat. § 283.63, including the translation or calculation and expression of WLA-based limits. However, the TMDL decisions included in the AWQMP amendment, including WLAs specified in the TMDL, may not be challenged under Wis. Stat. § 283.63, when they are incorporated into a WPDES permit because the opportunity to challenge the TMDL decisions occurred when the TMDL was approved and the AWQMP was amended. The opportunity to seek judicial review under Wis. Stat. ch. 227 of a final WLA occurs when the USEPA approves the TMDL. Other determinations that were not included in the AWQMP amendment (e.g., the translation of a WLA into an effluent limitation) may be challenged at the time of permit reissuance or modification pursuant to Wis. Stat. § 283.63.

3 TMDL Development

Section 3 addresses topics associated with the development of TMDLs, as they relate to the implementation of TMDL requirements in wastewater WPDES permits. This section is not intended to be a comprehensive guide to TMDL development. Subjects such as methods for determining wasteload allocations and expressing them in the TMDL are covered here.

3.1 The “Daily” in Total Maximum Daily Load

TMDLs must include allocations expressed in terms of daily time increments, because of a federal court decision¹. However, the TMDL may also include load allocations expressed in alternative time increments. If consistent with the applicable water quality standard (WQS), allocations may also be expressed as minimum, maximum, or average daily loads. For example, a TMDL for pH may include both minimum and maximum values, which is consistent with how the applicable WQS for the parameter pH is commonly expressed (as a range). Further, allocations may be expressed in terms of differing maximum daily values depending on the season, stream flow (e.g., wet vs. dry weather conditions) or other factors. In certain circumstances, or where the applicable water quality criteria are expressed as a long-term average, it may be appropriate for the TMDL to also include WLAs expressed as weekly, monthly, seasonal, annual, or other appropriate time increments. It is often helpful to express WLAs in ways (in addition to daily) that will be incorporated into WPDES permits. See Section 4.6 for guidance on how to express WLAs as WQBELs in wastewater permits.

¹ “Establishing TMDL “Daily” Loads in Light of the Decision by the US Court of Appeals for the D.C. Circuit in *Friends of the Earth, Inc. vs. USEPA, et al.*, No. 05-5015, April 25, 2006, and Implications for NPDES Permits.” USEPA Memo, Benjamin H. Grumbles, Assistant Administrator, November 15, 2006.

3.2 Determining Allocations for a TMDL

Allocations are based on water quality standards and appropriate flow conditions determined for that waterbody or watershed (see Wis. Adm. Code § NR 212.73). If numeric water quality standards do not exist for the pollutant of concern, water quality targets may be based on narrative standards found in ch. NR 102, Wis. Adm. Code. TMDL developers will select allocation methods from those identified by USEPA in the development of draft TMDLs. The chosen procedures should be shared with DNR program staff and technical teams internally and externally, as appropriate.

3.3 Methods Available for Developing WLAs

Methods used for deriving WLAs in TMDLs depend on the scale of the project, size of the watershed, number of permitted entities, and other factors. USEPA's [Technical Support Document for Water Quality-based Toxics Control](http://www.epa.gov/npdes/pubs/owm0264.pdf) (EPA/505/2-90-001, 3/91; <http://www.epa.gov/npdes/pubs/owm0264.pdf>) lists 19 different allocation schemes for developing WLAs. Wisconsin TMDLs typically use the proportional allocation method, which divides the reduction needed to meet the total assimilative capacity of the TMDL reach proportional to the baseline contribution of the sources in that reach (s. NR 212.73(3)(d), Wis. Adm. Code). A TMDL “reach” is a length of a stream or river or lake, the beginning and ending points of which may be based on geography or landmarks such as gauging stations, river miles, point source discharges, natural features, or topography. TMDL developers typically calculate separate load allocations for each individual reach in the TMDL area.

3.4 Wastewater Baseline in Phosphorus and TSS TMDLS

When starting the TMDL calculation process, the department assesses the amount of the pollutant(s) being discharged from existing sources to surface waters in the TMDL area. This relative contribution of pollutant loads from existing sources is referred to as the baseline load. Pollutant sources assessed during the initial phases of the TMDL modeling process include evaluations of existing point sources, nonpoint sources, and natural background sources. For WPDES permitted facilities, baseline loads are calculated based on permit limitations and restrictions. For nonpoint sources, baseline loads are modeled based on information regarding land use practices that discharge pollutants to surface waters in the TMDL area.

This section describes the process most often used for setting the baseline condition for wastewater discharges at the beginning of the TMDL allocation process. This guidance does not address every potential unique situation or discharge but rather lays out the general process that is often used when determining the baseline condition for TMDL allocations. The procedures outlined below are usually applied only to individual permit holders, however, in some cases these procedures have been used to assign individual WLAs to discharges that are covered by general permits.

In general, TMDLs developed in Wisconsin have used the proportional allocation method which divides the reduction needed to meet the total assimilative capacity of a reach or waterbody proportional to the baseline contribution of the sources in that reach. For phosphorus, this analysis has typically been performed on a monthly basis to ensure compliance such that the median of monthly samples between May and October meet the appropriate criterion. Longer averaging periods may be used in situations where the TMDL is addressing impaired lakes or water bodies with longer residence times.

When setting the baseline, two key variables need to be defined: the appropriate effluent flow volume and the appropriate effluent concentration to use for the pollutant of concern. Other things that may need to be considered include the frequency of discharge (continuous vs. episodic), the need for separate or shared WLAs when more than one permittee shares an outfall pipe, and the potential need for reserve capacity.

It is important to note that just because a facility is not monitoring for or reporting a pollutant on their discharge monitoring reports (DMRs), does not necessarily mean that the facility is not discharging that pollutant. A baseline and WLA set equal to zero, unless explicitly stated as otherwise in the TMDL report, means that the facility cannot discharge the pollutant of concern. Therefore, before setting a baseline at zero and/or assigning a WLA of zero for a facility, it is important to determine whether the pollutant of concern is actually being discharged and to adequately characterize a facility's discharge.

It is also important to verify that all individually permitted wastewater facilities that discharge in the TMDL area are included in the baseline analysis. In a TMDL, all individually permitted point sources must be assigned an individual WLA or, similar to receiving a WLA equal to zero, the facility will not be allowed to discharge the pollutant of concern.

Facility names and permit numbers, effluent flows, and outfall locations should be quality checked by the DNR compliance staff most familiar with the facility during the baseline setting stage. This information should be shared with permittees for review, as well. Permittees or their assigned compliance staff should alert TMDL development staff immediately if information seems incorrect. If facility-specific information (e.g., design flow) is expected to change before the TMDL is final, this should be shared with the TMDL development team as soon as possible. If new information is shared too late in

the development process, (i.e., after WLAs have been calculated for point sources in the TMDL area), it may be too late to incorporate that information into TMDL calculations.

The baseline concentrations for permitted dischargers are usually set using the limit that is in effect in the permit. For phosphorus TMDLs, the baseline concentration for municipal dischargers has often been based on the technology-based effluent limit (TBEL) established under ch. NR 217 Subchapter II, Wis. Adm. Code in effect in a permit. If a permitted facility had an alternative TBEL higher than 1.0 mg/l or did not qualify for a phosphorus TBEL because the amount of phosphorus discharged was below the mass threshold levels set in s. NR 217. 04(1)(a)1 or 2., then a preliminary modeling evaluation was conducted to project whether phosphorus water quality standards would be met in the receiving waters if all permitted dischargers continued to discharge levels consistent with current permit requirements. If the preliminary modeling evaluation concluded that water quality standards still wouldn't be attained in the surface water under those conditions, then additional reductions were modeled as if everyone had achieved the 1.0 mg/L TBEL. If this modeling evaluation concluded that water quality standards still wouldn't be attained in the surface water, then additional reductions were modeled until water quality standards were predicted to be attained in each impaired segment. A last check was then performed to make sure that no one was assigned a WLA that would be more restrictive than local water quality standards (i.e., the applicable numeric water quality criteria or numeric targets based on narrative criteria).

Municipal Permits

For municipal facilities (i.e., those subject to NR 210 Wis. Adm. Code) with continuous discharges, the baseline flow is usually set as the average annual design flow established in their most recent facility plan. Exceptions may be made, in some cases, for those already discharging above their design flow. If no average annual design flow value is available, another flow may be used.

While setting baselines and WLAs for municipal wastewater discharges, it may also be desirable to consider factors that may impact the amount of reserve capacity that is appropriate for a given reach. For example, facilities that have a permitted groundwater discharge (e.g., septic fields or holding tanks) will not get a baseline or WLA during TMDL development since they don't discharge to the surface water, but a check should be made to ensure that any planned expansions or changes in operation that would result in a surface water discharge is accounted for in the WLA. Methods used for setting aside reserve capacity are discussed in more detail in Section 4.11.

Industrial Permits

The baseline flows for industrial discharges covered by an individual permit are usually calculated using the maximum annual average flow for the baseline years used for TMDL development. Adjustments may be made for facilities that discharge only part of the year.

For facilities that intake surface water, the phosphorus baseline may be determined in one of the ways described below, depending on their operations:

1. For pass-through systems (e.g. single pass non-contact cooling water) where phosphorus is not added or concentrated, and 100 percent of the water is withdrawn from and discharged to the same waterbody, the baseline condition for the allocation process may utilize actual discharge rates with TP concentrations set to zero to reflect that no net addition of phosphorus has occurred. This would result in an allocation of zero but allows the facility to discharge the pass-through phosphorus.

2. For facilities that decrease the P concentration of the intake water prior to discharge, they may be treated similar to the pass-through systems, with no net discharge of phosphorus resulting in an allocation of zero.
3. For facilities that evaporate water, thus increasing the phosphorus concentration, if the net mass of phosphorus is less than or equal to zero, then they may also have no net discharge. If the net mass of phosphorus is increased, their baseline concentration should be equal to the increase in concentration over their intake water.
4. For facilities that add phosphorus to their discharge, their baseline concentration should be set equal to the difference in concentration between the intake and their discharge.

Episodic/Seasonal Dischargers

For episodic discharges, such as those from fill and draw lagoon systems or seasonal canning operations, several allocation approaches may need to be evaluated. The permitted discharge amount should be evaluated on both a monthly basis and by distributing the discharge flows in a uniform manner across the 12-months. This is to provide the opportunity for facilities to go from an episodic to continuous discharge, which typically occurs when lagoon systems upgrade. In addition, the discharge from the lagoon can be spread over just a couple of months to reflect the episodic nature of the discharge with the remainder of the months given a WLA of zero. In any case, it is important to demonstrate that water quality standards can be attained throughout the year, with whichever discharge, continuous or episodic, that the facility employs. It may be necessary to specify in the TMDL when fill and draw or other episodic discharges can discharge to ensure that WQS are attained throughout the year.

Low Strength Dischargers

Low strength dischargers are defined as facilities that have individual permits and low strength effluent concentrations that are at or below the applicable water quality criteria for the TMDL reach or point of standards application. Allocations for low strength dischargers typically do not require reductions in the existing effluent and WLAs should be set high enough to account for the variability in effluent quality. For phosphorus, this could mean either setting the baseline concentration to the applicable water quality criteria or if the actual discharge concentration is well below the criteria, selecting a representative concentration such that the allocations will not result in additional reductions.

3.5 Wastewater Staff Responsibilities During TMDL Development

When an internal TMDL Project Team is formed, it is typically led by a TMDL Project Manager and includes staff from all programs affected by the TMDL (Wastewater, Stormwater, CAFO, Nonpoint, etc.). The project team is made up of so-called "Sector Leads", staff with expertise in their respective programs, if it is determined that these programs need to be involved in TMDL activities. Staff assigned as Sector Leads are responsible for providing the needed data from their program to the TMDL development team, assisting with creation of TMDL documents, and communication from the project team to their program and external stakeholders. The level of involvement of each individual Sector Lead may change, depending on their program's needs as the TMDL progresses from development through implementation.

Anytime that a TMDL project team is deemed necessary (usually for large scale TMDLs), a Wastewater Sector Lead should be assigned and involved in TMDL activities from development through implementation. TMDL development involves the collection, analysis, and use of wastewater effluent and facility information and Wastewater staff will have to assist with these activities. TMDL

implementation will involve permit reissuance, policy implementation, compliance activities, and other related steps. Staff assigned as the WW Sector Lead can refer to the Wastewater Program's intranet site (<http://intranet.dnr.state.wi.us/water/wq/ww/SectorLead.html>) for more information and resources related to the performance of this role.

The Statewide Point Source TMDL Implementation Coordinator ([Kari Fleming](#)) is responsible for leading statewide TMDL efforts that impact the Wastewater Program, including developing TMDL implementation guidance, providing tools to improve and integrate processes, and developing and reviewing TMDL documents. Part of the role of this statewide coordinator position is to assist and support WW Sector Leaders, as needed.

The Wastewater Sector Lead is responsible for coordinating the review of wastewater data and insuring that a thorough review of the draft TMDL is conducted by appropriate regional staff. At a minimum, the staff listed below should review baseline information, draft WLAs, and draft TMDL documents. Other staff may be called upon to review TMDL information, as well.

- Statewide Point Source TMDL Implementation Coordinator ([Kari Fleming](#)). This person reviews draft baseline information, WLAs, and TMDL documents with an eye towards statewide implementation, cross program, and consistency-related issues.
- WW Sector Lead. This person reviews draft baseline information, WLAs, and TMDL documents with an eye towards implementation-related issues specific to the TMDL area.
- The WQBEL Calculator(s) assigned to the TMDL area should review draft WLAs. For large scale or complicated TMDLs, the statewide WQBEL coordinator ([Diane Figiel](#)) may also be consulted.
- Compliance staff assigned to facilities in the TMDL area should review draft baseline and WLA information.
- Central office Wastewater Section staff assigned to complex industrial permits in the TMDL area should review draft baseline and WLA information.

When reviewing information to be used for TMDL development, the staff listed above should consider the following:

1. Are all individually permitted municipal and industrial discharges in the TMDL area given appropriate WLAs? Be sure that the following types are accounted for:
 - a. Every facility that has an individual permit should have an individual WLA that covers all active surface water outfalls from their facility (or separate WLAs for each outfall). Pay special attention to facilities that could be missed because they:
 - i. Are individually permitted non-contact cooling waters;
 - ii. Are permittees with no historical monitoring data for the TMDL pollutant; or
 - iii. Have a mass limit rather than a concentration limit.
 - b. Insure that permittee information is accurate:
 - i. Permittee name and permit number
 - ii. Outfall locations (appropriate TMDL reach)
 - iii. Effluent flow (design or actual flow) used in baseline calculations
 - iv. Effluent data (permit limits, effluent concentration data) used in baseline calculations
 - c. If a WLA = 0 is given, make sure it is appropriate (i.e., is the amount discharged truly zero?).
 - d. Inactive surface water outfalls. Outfalls that have not been used for an extended period should not be given WLAs. Permits should be terminated for inactive facilities, or modified to remove inactive outfalls, when TMDLs are under development in order to avoid assigning

WLA to an inactive discharge and thereby limiting the amount available to other wastewater discharges in the area. Questions about permit or outfall termination should be directed to the Wastewater Section Chief in the Central Office.

- e. Have any dischargers/outfalls closed or otherwise ceased discharging since baselines or WLAs were initially set? (If so, it may be appropriate to recalculate WLAs or set them aside as reserve capacity.)
 - f. Have any facilities changed names or owners since baselines or WLAs were set?
2. Are shared or combined outfalls adequately accounted for? Effluents from different permittees discharging from the same outfall pipe should be given separate WLAs, in most cases.
 3. Are fill and draw type or seasonal dischargers adequately accounted for?
 4. Were proper municipal & industrial design flows used to calculate WLAs? Have there been WWTP upgrades or other changes (e.g., water conservation or reuse) since the baseline was established that would change the flow values that should be used to calculate the WLA?
 5. Is there sufficient individual WLAs or a shared WLA set aside to account for wastewater general permittees? Consult with appropriate general permit drafters if individual WLAs are being calculated for GP holders. Does the shared set aside amount seem appropriate, given the size of the TMDL area and the potential number of GP holders?
 6. When TMDL-based WQBELs are calculated, do any problems appear, such as:
 - a. WQBELs below criteria
 - b. Inadequate/unfair WLA distribution
 - c. Do WLAs protect local and downstream water quality?
 7. Was reserve capacity set aside appropriately to account for future growth? Does the TMDL document address when/how reserve capacity will be distributed?
 8. Will an impracticability agreement be needed to include WQBELs differently than specified in 40 CFR 122.45 (d)?
 - a. Contact statewide Phosphorus Implementation Coordinator, if phosphorus
 - b. Contact statewide WQBEL coordinator for other pollutants

3.6 Fact Sheet & WQBEL Memo Language for Use During TMDL Development

The following language are example fact sheet and WQBEL template that staff may use in areas where TMDLs are under development. This or similar language may be used in areas where a TMDL is under development, to alert dischargers to the potential for future changes in limits driven by the TMDL.

TMDL Language for WQBELs:

A Total Maximum Daily Load (TMDL) is being developed for the [*name basin or waterbody covered by TMDL*] to address [*list pollutant(s) addressed by TMDL*] water quality impairments within the TMDL area. This TMDL will likely result in limitations for [*pollutant(s)*] that must be included in WPDES permits, which may be different than those calculated for this reissuance. TMDL-derived limits may be included in lieu of or in addition to the calculated limits upon permit reissuance or modification once the TMDL has been approved by U.S. EPA, according to ss. NR 217.16 and NR 212.76, Wis. Adm. Code.

TMDL Language for Fact Sheets:

There is an effort underway to improve water quality in the *[name basin or waterbody covered by TMDL]*. The framework for this effort is a Total Maximum Daily Load (TMDL), which is the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. The *[name]* TMDL project area includes *[describe area within TMDL]*. The TMDL will set *[list pollutant(s) addressed by TMDL]* wasteload allocations (WLAs) for dischargers throughout the project area. WLA-derived limits must be included in future reissued WPDES permits once the TMDL has been approved by USEPA, which may result in limits different than those calculated in the WQBEL memo used for this reissuance. TMDL-based limits may be included in lieu of or in addition to the calculated limits upon permit reissuance or modification, according to ss. NR 217.16 and NR 212.76, Wis. Adm. Code. For more information see the Department's web site *[include TMDL website address, where available]*.

4 TMDL Implementation

Section 4 addresses topics related to TMDL implementation in wastewater permits. Subjects such as expressing WLAs as permit limits, compliance schedules, variances & adjudications, and others are covered.

4.1 Permits Must Be Consistent With The TMDL

All wastewater permits must be consistent with point source WLAs included in state and USEPA approved TMDLs. The Department may modify a permit to include TMDL-derived limits or include TMDL-derived limits when the permit is reissued. Department staff should consult the amended Areawide Water Quality Management Plan (AWQMP), the TMDL implementation plan, and s. NR 203.136, Wis. Adm. Code, to determine which permit action is appropriate. Once a TMDL has been approved, however, effluent limits or other requirements consistent with the TMDL must be included in reissued permits of those point sources addressed by the TMDL. See Section 4.6 for guidance on how to express WLAs as permit limits.

Alternatively, different permitting alternatives (e.g., watershed permitting) could be considered for TMDL implementation. For more information on watershed permitting, see:

<http://dnr.wi.gov/water/wsSWIMSDocument.ashx?documentSeqNo=102211149>.

4.2 General Permits

Wastewater general permits (GP) are issued to classes of industries that are similar in nature, such as non-contact cooling water and non-metallic mining operations (quarries). (See <http://dnr.wi.gov/topic/wastewater/generalpermits.html> for more information and types of wastewater GPs.) In most cases, discharges from GP holders are addressed through a WLA set aside for the GP category as a whole – that is, one WLA amount is set aside for all wastewater and stormwater GPs in the TMDL area - if the GP category is believed to discharge the pollutant(s) covered in the TMDL. Typically, GPs located within a municipal boundary covered by a stormwater permit (MS4) are covered by/included in the WLA for that MS4; GPs located outside of MS4 areas are covered by a calculated set-aside that is believed to equal or exceed the total mass of the pollutant(s) that will be discharged from those GP holders. The set aside amount is based on the number and typical types of facilities present within the TMDL area and the best professional judgment of the TMDL developers (in past TMDLs, GPs have been allocated 5% or 10% of the non-permitted urban baseline load).

The amount that is set-aside for GPs is intended to cover all GP activities, including conveying coverage to new facilities and facilities that close or cease to discharge (discontinuing GP coverage). This recommendation for GP allocations is based on the premise that, over time, the numbers of facilities being added or subtracted from the total number covered by GPs should be about equal and that the amount set aside is enough to cover these changes in permittee numbers. Therefore, new GP holders should not need reserve capacity or offsets to discharge; facilities that are no longer discharging do not require WLA reassignment or cause additions to reserve capacity.

Wastewater facilities covered by a GP should be required to submit effluent monitoring results so that Department staff can evaluate compliance with the amount of WLA that has been set aside. The sampling should be used to track the total mass allocation used by GP facilities in each watershed. If through monitoring and tracking it is determined that sufficient allocation has not been set aside for GP

facilities, it may be necessary to switch some GP holders to individual permits with discharge requirements placed in the permit sufficient to meet TMDL allocations. Alternatively, reserve capacity, if available, could be used to cover GP discharges if it is determined that the WLA set aside for GPs does not adequately cover existing, new, or expanding discharges from general permits. (See Section 4.11, reserve capacity).

If individual facilities or a group of dischargers covered by a GP are thought to contribute significantly to the impairment being addressed by the TMDL, discharges from those facilities may be evaluated during TMDL development, independent of other GP sources, to determine whether individual WLAs are needed to meet TMDL goals. Conversely, if a pollutant being addressed in the TMDL is not expected to be discharged from a facility or general permit category, then no WLA will be assigned.

For pass through systems (i.e., facilities with surface water intake structures) where the TMDL pollutant is not added and the water is withdrawn from and discharged to the same waterbody, the WLA may be set to zero to reflect that no net addition of the pollutant is occurring. (See pass through discussion in Section 3.4 Wastewater Baseline).

4.3 Finding Information About Approved TMDLs

There are four ways to determine if a TMDL has been approved for a waterbody:

- DNR web site
- WATERS (Water Assessment, Tracking & Electronic Reporting System)
- WT Webviewer (Intranet Surface Water Data Viewer)
- EPA's Assessment TMDL Tracking and Implementation System (ATTAINS) web site.

Instructions on how to access TMDL information using these sources are included in Appendix A.

WLAs from approved TMDLs can be obtained by downloading the TMDL reports from the DNR web site, WATERS, or USEPA's Assessment TMDL Tracking and Implementation System (ATTAINS) web site. Instructions on how to access WLAs using these data sources are included in Appendix A.

4.4 Finding Information About Impaired Waters

Impaired waters information may be accessed in three ways:

- DNR web site
- WATERS (Water Assessment, Tracking & Electronic Reporting System)
- WT Webviewer (Intranet Surface Water Data Viewer)

Instructions on how to access impaired waters information using these sources are given in Appendix B.

4.5 Finding Information About Implementation of a TMDL

Information pertaining to TMDL implementation may appear in any of 4 locations:

- The TMDL itself,
- NR 217.16 for phosphorus
- The amended AWQMP, or
- The implementation guidance.

Generally, TMDL implementation information will be organized as follows:

- Those issues which require USEPA approval will appear in the TMDL.
- Additional implementation detail may be included in the amended AWQMP when implementation affects multiple permits.
- Guidance on implementation issues where flexibility is needed to adjust to site-specific or changing conditions should be established in DNR guidance (such as this document). TMDL implementation guidance documents and other implementation resources can be found on the intranet (<http://intranet.dnr.state.wi.us/water/wq/ww/policy/tmdl.html>) and internet (<http://dnr.wi.gov/topic/tmdls/implementation.html>).

4.6 Expression of TMDL-derived Effluent Limits in Wastewater Permits

Wasteload allocations specified in approved TMDLs must be expressed in wastewater permits as water quality-based effluent limits (WQBELs) [40 CFR 122.44 (d)(1)(vii)(B) and Wis. Stat. § 283.31(3)(d)]. TMDL-based limits are calculated consistent with the conditions in s. NR 212.76, Wis. Adm. Code. Sections NR 212.76 (6) and NR 217.16, Wis. Adm. Code, state that the Department may include WQBELs derived from TMDL WLAs in a permit in addition to, or in lieu of, other WQBELs. Limit calculators should include applicable TMDL-derived WQBELs in their recommendation memos for wastewater permit issuance/reissuance and facility planning. In cases where local water quality standards are not addressed by a TMDL-derived WQBEL, more stringent limitations based on other WQBEL procedures, such as those for phosphorus in NR 217.13, Wis. Adm. Code, may be included in the permit (see Section 4.7 for more information). In most cases, TMDL-derived WQBELs will be expressed as a mass limit. Concentration limits already in effect in the permit (TBEL or WQBEL) should be maintained, when necessary to protect against backsliding.

Permit limits must be consistent with the assumptions and requirements of the TMDL but need not be identical to TMDL WLAs [40 CFR 122.44(d)(1)(vii)(B) and s. NR 212.76, Wis. Adm. Code]. Typically, TMDL WLAs are not used directly as permit limits for the reasons explained below.

Section 40 CFR 122.45 (d), s. NR 212.76 (4), and s. NR 205.065 (7), Wis. Adm. Code, specify that unless impracticable, permit effluent limits must be expressed as weekly and monthly averages for publicly owned treatment works and as daily maximums and monthly averages for all other continuous discharges. A continuous discharge is one that occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities (40 CFR 122.2). Expression of TMDL-derived effluent limits for non-continuous discharges are discussed in section 4.6.8.

For continuous discharges, unless determined to be impracticable, permit limits derived from TMDL WLAs need to be expressed as specified by 40 CFR 122.45 (d), s. NR 212.76 (4), and s. NR 205.065 (7), Wis. Adm. Code. Justifications of impracticability may be made case-by-case and included in the permit's fact sheet or may be made for a category of discharges, but may require approval from USEPA. As an example of the latter, the Department has demonstrated the impracticability of expressing WQBELs for total phosphorus (TP) as specified by 40 CFR 122.45 (d), s. NR 212.76 (4), and s. NR 205.065 (7), Wis. Adm. Code. The impracticability agreement was approved by USEPA (see NPDES MOA Addendum dated July 12, 2012 at <https://prodoasint.dnr.wi.gov/swims/downloadDocument.do?id=167886175>). The following table is taken from that phosphorus limit impracticability agreement and indicates how WQBELs for TP should be expressed in wastewater permits, according to that demonstration.

Table 1. Expression of WQBELs for Total Phosphorus in Wastewater Permits

Total Phosphorus WQBEL	Rivers and streams, and impoundments, lakes and reservoirs with average water residence times of less than one year	Impoundments, lakes and reservoirs with average water residence times of greater than or equal to one year
Greater than 0.3 mg/L	Express WQBELs as a monthly average	Express WQBELs as a monthly average
Less than or equal to 0.3 mg/L	With the exceptions addressed below ^{1,2} , express WQBELs as a six-month average (May 1 – Oct 31 and Nov 1 –April 30) and a monthly average limit of 3 times the calculated concentration limit in ss. NR 217.13 and NR 217.14.	With the exceptions addressed below ^{1,2} , express WQBELs as a six-month average (May 1 – Oct 31 and Nov 1 –April 30) <u>or</u> as an annual average, and a monthly average limit of 3 times the calculated concentration limit in ss. NR 217.13 and NR 217.14

¹ Atypical or uncommon situations will be addressed on a case-by-case basis. These include discharges to small inland lakes with water residence times of less than one year where it is possible that a six-month averaging period may not be appropriate and a monthly average limit calculated under ss. NR 217.13 and NR 217.14 may instead be necessary.

² For approved TMDLs, the expression of limits must be consistent with the assumptions and requirements of the TMDL, but not greater than the periods expressed above.

Different TMDLs may express WLAs for point sources differently, depending on the characteristics of the impaired waterbodies and pollutants being addressed. For example, in addition to the required daily loads, the Lower Fox, Red Cedar, Wisconsin, and Upper Fox-Wolf River Basin TMDLs, which address phosphorus impairments in large downstream lakes or reservoirs, include WLAs expressed as annual loads. On the other hand, the Rock and Milwaukee River Basin TMDLs, designed primarily to address impairments in river mainstems and tributaries, include WLAs expressed as monthly loads. In another example, the Lake St. Croix TMDL WLAs include a combination of individual and aggregate WLAs.

In some TMDLs, individual WLAs are assigned to each facility covered by an individual permit in the TMDL area. In other TMDLs, individual WLAs are given to every outfall that a facility is permitted to use. As noted in section 4.10, permittees that were assigned individual WLAs for each of their outfalls may choose to redistribute their total WLA (the sum of their individual WLAs) across their outfalls. This can be done as long as the permittee’s total WLA is not exceeded and as long as the total WLA for applicable TMDL reaches is not exceeded (e.g., the outfalls are in the same or a downstream TMDL reach from where the original WLA was assigned). A portion of the facility’s total WLA could also be used to cover a new discharge from that facility, as long as the total WLA is not exceeded for the facility. A permittee would need to apply for reserve capacity or find WLA elsewhere, if their assigned WLA was not enough to cover the new discharge. See Section 4.11 for more information about requesting reserve capacity.

Guidance applicable to previously approved TMDLs is included below as examples of how staff may derive permit effluent limits from TMDL WLAs. Staff could also follow relevant examples for converting WLAs into permit limits for other future TMDLs that have WLAs expressed in a similar manner (i.e., as either annual or monthly loads). WQBEL staff should consult TMDL reports, as some reports may include language that addresses limit expression for specific discharge situations and that may be necessary to be consistent with the assumptions in the TMDL. The guidance that follows describes methods that are recommended for use to calculate WQBELs from WLAs in each of the listed TMDLs. The methods presented include using site-specific monitoring frequencies, coefficients of variation (CV, calculated as described in s. NR 106.07 (5m), Wis. Adm. Code), and multipliers taken from tables in USEPA guidance to convert WLAs into permit limits.

It is important to note that site-specific information (e.g., CV, monitoring frequencies) used to derive limits should be representative of what is expected after the TMDL-derived permit limit takes effect. If information on future effluent variability is available, staff should base the CV on that information. For example, when the variability of measurements of the regulated pollutant is not likely to change once the permittee complies with the limit, current effluent data may be used to estimate the CV. Lacking information on future effluent variability, a default CV of 0.6 is recommended.

Staff should use only those effluent sample results greater than the limit of detection when calculating the CV. If effluent monitoring has been performed for less than one year or there are fewer than 24 effluent sample results greater than the limit of detection, a default CV of 0.6 is recommended. Only data that is representative of normal conditions should be included in the CV calculation. Any outliers or measurements taken during abnormal conditions (e.g., WWTP upsets, large storm events, etc.) should be removed from the dataset before calculating the CV.

TMDL-derived permit limits should be revisited at each permit reissuance. Limits calculators should evaluate whether site-specific factors or default information that was used at the last reissuance are still appropriate for use in the next reissuance. If conditions have changed, WLA-derived limits may need to be recalculated. An effective limit can only be increased if antidegradation and antibacksliding requirements are satisfied.

There may be methods other than those described in this guidance that are more appropriate for use in specific situations when deriving effluent limits based on TMDL WLAs. If staff decide that alternate methods are more appropriate, they should contact the Point Source TMDL Implementation Coordinator ([Kari Fleming](#)), so that these alternate approaches can be documented for future reference. Decisions that are made that vary from the recommendations in the guidance suggested here should also be clearly documented in WQBEL memos and/or permit fact sheets, so others can tell why decisions were made.

4.6.1 Lower Fox River TMDL

The TMDL for the Lower Fox River Basin and Lower Green Bay (LFR TMDL, approved in 2012; <https://dnr.wi.gov/topic/TMDLs/documents/lowerfox/LowerFoxRiverTMDLReport2012.pdf>) addresses waters impaired by excessive sediment and/or high phosphorus concentrations in Green Bay and the mainstem of the Lower Fox River and its tributaries. The LFR TMDL expresses total phosphorus (TP) and total suspended solids (TSS) WLAs as maximum annual loads (pounds per year) and maximum daily loads (pounds per day). The daily WLA for a point source equals the annual WLA divided by the number of days in the year, so the daily WLA is actually an annual average. Since the derivation of daily WLAs from annual WLAs does not take effluent and monitoring variability into consideration, effluent limits set equal to annual and daily WLAs, when the latter is expressed as a daily maximum, are not consistent. That is, if the daily WLA is expressed as a daily maximum effluent limit, the permittee would have to maintain an annual effluent load two to three times less than (more restrictive than) the annual WLA, which is inconsistent with the assumptions and requirements of the TMDL. Therefore, maximum daily TP and TSS WLAs from the Lower Fox River TMDL should not be used directly as permit effluent limits. Neither should maximum annual TP and TSS WLAs from the LFR TMDL be used directly as permit effluent limits, since these limits would be inconsistent with 40 CFR 122.45 (d) and the phosphorus limit impracticability agreement discussed above.

Total Phosphorus Limits

The Lower Fox River TMDL establishes TP WLAs to reduce the loading in the entire watershed including WLAs to meet water quality standards for tributaries to the Lower Fox River. Therefore, implementing the TMDL provides WQBELs to protect immediate receiving waters and limit calculators do not need to evaluate the need for additional TP WQBELs according to s. NR 217.13, Wis. Adm. Code.

For TP, the impracticability agreement for phosphorus specifies monthly average permit effluent limits when WLAs equate to a TP effluent concentration greater than 0.3 mg/L, and six-month average limits and monthly average limits equal to 3 times the six-month average limits when WLAs equate to a TP effluent concentration equal to or less than 0.3 mg/L. Staff should use the effluent flow specified by s. NR 217.13 (1)(c), Wis. Adm. Code, and the annual WLA for a point source to determine the equivalent effluent concentration. To calculate monthly average and six-month average permit limits, it is recommended that the limit calculator convert the annual WLA to an annual average and multiply the annual average by the multipliers specified in Table 2 and the footnotes and information following the table.

For example, Facility X has an annual average design flow of 49.2 MGD and a maximum annual WLA of 17,349 pounds TP per year.

$$\text{TP Equivalent Effluent Concentration} = 17,349 \text{ lbs/yr} \div (365 \text{ days/yr} * 49.2 \text{ MGD} * 8.34) = 0.12 \text{ mg/L}$$

Since the equivalent effluent concentration is less than 0.3 mg/L, a six-month average and monthly average permit limit should be derived from the annual WLA. To do so, divide the annual WLA by 365 days per year and multiply the result by 1.11.

$$\text{TP 6-Month Average Permit Limit} = (17,349 \text{ lbs/yr} \div 365 \text{ days/yr}) * 1.11 = 52.8 \text{ lbs/day}$$

The six-month average effluent limit should be expressed in pounds per day and applied to the periods of May 1 through October 31 and November 1 through April 30. A monthly average effluent limit of three times the six-month average effluent limit, or 158 pounds TP per day, should accompany the six-month average effluent limit in the permit.

The multiplier of 1.11 used above was taken from Table 2 below. The effluent monitoring frequency that will be required when the TMDL-derived permit limit is in effect should be used to select the multiplier. A monitoring frequency for TP of daily is specified in Facility X's current permit and is not anticipated to change when the TMDL-derived TP permit limit becomes effective. Therefore, daily monitoring is used to select the multiplier.

To derive permit limits from TMDL WLAs, an estimate of the coefficient of variation (CV) for the regulated parameter once the permittee complies with the limit is necessary. If information on the future effluent variability is available, staff should base the CV on that information. For example, when the variability of measurements of the regulated parameter in the effluent is not likely to change once the permittee complies with the limit, current effluent data may be used to estimate the CV. Lacking information on future effluent variability, the default CV of 0.6 should be used. It is recommended that the following formula be used to calculate the CV for each effluent parameter:

$$\text{CV} = \text{standard deviation of mass effluent data} \div \text{mean of mass effluent data}$$

Staff should use only those effluent sample results greater than the limit of detection when calculating the CV. If effluent monitoring has been performed for less than one year or there are fewer than 24 effluent sample results greater than the limit of detection, a CV of 0.6 is recommended.

To calculate permit limits using a CV other than 0.6, it is recommended that staff use the equations provided in Table 5-2 of USEPA's TSD (<https://www3.epa.gov/npdes/pubs/owm0264.pdf>). An Excel spreadsheet is also available to staff for use when deriving multipliers for CVs other than 0.6.

As noted above, the CV anticipated to be present when the TMDL-derived TP permit limit is in effect should be used to select the multiplier. Based on the information in the example above, the CV for Facility X's TP discharge currently equals approximately 0.8 but it should not be used to select the multiplier. The Department anticipates that the addition of wastewater treatment to achieve the TMDL-derived permit limit would reduce effluent variability with respect to TP. While the Department anticipates that the CV will decrease, it may not have a good estimate of the future CV and, therefore, the default CV of 0.6 is used to select the multiplier. Note that the multiplier from Table 2 for a 6-month average limit with daily monitoring equals 1.11, as used in the above example.

For a second example, the Facility Y has an annual average design flow of 0.259 MGD and a maximum annual WLA of 295 pounds TP per year.

$$\text{TP Equivalent Effluent Concentration} = 295 \text{ lbs/yr} \div (365 \text{ days/yr} * 0.259 \text{ MGD} * 8.34) = 0.37 \text{ mg/L}$$

Since the equivalent effluent concentration is greater than 0.3 mg/L, the WLA should be expressed as a monthly average effluent limit as specified in the phosphorus impracticability agreement. To calculate a monthly average effluent limit for TP, first divide the annual WLA by 365 days per year and then multiply the result by 1.59. Express the monthly average limit in pounds per day.

$$\text{TP Monthly Average Permit Limit} = (295 \text{ lbs/yr} \div 365 \text{ days/yr}) * 1.59 = 1.29 \text{ lbs/day}$$

The multiplier of 1.59 was taken from Table 2 below. The CV of Facility Y's mass discharge of TP is approximately 1.0 but is anticipated to decrease with the addition of wastewater treatment necessary to meet the TMDL-derived permit limit. Lacking a better estimate of the future CV, the default CV of 0.6 is recommended as the multiplier.

A TP monitoring frequency of twice weekly is specified in Facility Y's current permit and is not anticipated to change when the TP permit limit becomes effective. Therefore, twice weekly monitoring is used to select the multiplier to calculate the monthly average permit limit.

Total Suspended Solids Limits

Since the Department has not demonstrated that the application of 40 CFR 122.45 (d) is impracticable with respect to TSS permit effluent limits, in accordance with s. 212.76, Wis. Adm. Code, limits for TSS should be expressed in permits for continuous discharges as weekly and monthly averages for publicly owned treatment works and as daily maximums and monthly averages for all other point sources.

To calculate monthly average, weekly average, and daily maximum TSS limits for dischargers covered by the LFR TMDL, staff should first divide the maximum annual WLA by 365 days per year and then multiply the result by the multiplier from the Table 2. Express all limits in pounds per day.

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For example, the Facility X has an annual WLA of 354,861 pounds TSS per year, a CV for the mass discharge of TSS equal to 0.5, and a permit-required monitoring frequency of daily for TSS.

$$\text{TSS Monthly Average Permit Limit} = (354,861 \text{ lbs/yr} \div 365 \text{ days/yr}) * 1.23 = 1,196 \text{ lbs/day}$$

$$\text{TSS Weekly Average Permit Limit} = (354,861 \text{ lbs/yr} \div 365 \text{ days/yr}) * 1.52 = 1,478 \text{ lbs/day}$$

The current monitoring frequency and CV were used to select the multipliers used above. In this example, the daily monitoring frequency is not likely to change once the TMDL-derived permit limits are effective. Similarly, the current CV of 0.5 is not likely to increase when treatment is provided to reduce the discharge of either TP or TSS. Lacking a better estimate of the CV once the TMDL-derived permit limits are in effect, the current value is used. The equations provided in Table 5-2 of USEPA's TSD (<https://www3.epa.gov/npdes/pubs/owm0264.pdf>) were used to calculate the multipliers. Note that if Facility X should demonstrate that the CV will change when additional treatment for either TP or TSS is provided, TSS limits may be recalculated.

For a second example, Industry X has an annual WLA of 105,698 pounds TSS per year, a CV for the mass discharge of TSS equal to 0.6, and a permit-required monitoring frequency for TSS of five times per week.

$$\text{TSS Monthly Average Permit Limit} = (105,698 \text{ lbs/yr} \div 365 \text{ days/yr}) * 1.35 = 391 \text{ lbs/day}$$

$$\text{TSS daily Maximum Permit Limit} = (105,698 \text{ lbs/yr} \div 365 \text{ days/yr}) * 3.11 = 901 \text{ lbs/day}$$

The current monitoring frequency and CV were used to derive the multipliers used above. While a monitoring frequency of daily should be considered when the permit is reissued, the monitoring frequency is not changed for this example. The current CV of 0.6 equals the default CV of 0.6. An estimate of the CV once TMDL-derived permit limits are in effect is not available. The multipliers are taken from Table 2.

The above guidance for expressing LFR TMDL WLAs as permit limits is based on USEPA's statistical method for deriving water quality-based effluent limits as presented in 5.4 and 5.5 of the *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001). Other methods may be used, if deemed appropriate by the Department. Staff should contact the Point Source TMDL Implementation Coordinator ([Kari Fleming](#)) when discussing other approaches.

USEPA's statistical method for permit limit derivation is summarized below in a table of WLA multipliers. Select the appropriate multiplier from the following table using the effluent monitoring frequency for the regulated pollutant that will be in effect once the permit limit for the pollutant becomes effective.

Table 2. Multipliers for Permit Effluent Limits Derived from Annual WLAs Using a Coefficient of Variation (CV) of 0.6

Effluent Monitoring Frequency	6-Month Average Permit Limits	Monthly Average Permit Limits	Weekly Average Permit Limits	Daily Maximum Permit Limits
Daily	1.11	1.28	1.64	3.11
6 Times per Week	1.12	1.32	1.70	3.11
5 Times per Week	1.13	1.35	1.78	3.11
4 Times per Week	1.14	1.40	1.90	3.11
3 Times per Week	1.17	1.47	2.07	3.11
Twice per Week	1.21	1.59	2.37	3.11
Weekly or Less	1.30	1.90	3.11	3.11

Assumptions used in the derivation of the multipliers in the above table include use of the log-normal distribution, equating the long-term average equal to the maximum annual WLA divided by the number of days in the year, a coefficient of variation (CV) of 0.6, and a 99th percentile level (0.01 probability basis). For the Lower Fox River TMDL, annual WLAs are calculated from a five-year average of effluent flow for each point source (2003 through 2007), which makes the annual WLA divided by the number of days in a year a good estimate of the long-term average.

EPA’s TSD recommends that permit limits be derived using an effluent monitoring frequency of no less than four times per month. Consequently, the above table does not provide multipliers for monitoring frequencies less than weekly. If the permit-required monitoring frequency once the TMDL-derived permit limit is in effect is less than weekly, a multiplier for weekly monitoring should be used to derive the permit limit.

Monitoring should not be reduced to a frequency less than that specified in the Department’s 2003 draft guidance (<http://dnr.wi.gov/water/wsSWIMSDocument.ashx?documentSeqNo=73704359>). The 2003 monitoring frequency guidance document has been used for both municipal and industrial permits. NOTE: At the time this guidance document was developed, the monitoring frequency guidance document was not finalized. It may be updated or revised prior to adoption under the guidance procedures in Wis. Stat. s. 227.112 . USEPA’s guidance for reducing monitoring frequencies may be used to determine whether a monitoring frequency reduction is appropriate (<https://www3.epa.gov/npdes/pubs/perf-red.pdf>), but reductions should be consistent with Department guidance.

Although LFR TMDL limits aren’t being expressed as annual limits in the permits, it is recommended that permits require permittees to calculate and report rolling 12-month sums of total monthly loads for TP and TSS. Total monthly loads should be calculated by multiplying the monthly average discharge concentration (mg/L) by the total flow for the month (MG/month) and by the conversion factor of 8.34. Sum the total monthly loads from the most recent twelve months. Rolling 12-month sums may be compared directly to the annual WLA.

During each permit reissuance process subsequent to the effective date of the TMDL-derived permit limit, limit calculators should evaluate whether or not the annual WLA is being achieved. For example, review the rolling 12-month sums reported by the permittee and compare them to the annual WLA. If the annual WLA is not being met, the limit calculator should consider recalculating permit limits in order to make them more restrictive, because calculated limits must be consistent with the WLA in the approved TMDL, according to Wis. Stat. § 283.31(3)(d), and s. NR 212.76, Wis. Adm. Code. Calculating a CV from effluent data collected following the effective date of the TMDL-derived permit limit, increasing the monitoring frequency, or using a different probability basis should be considered.

4.6.2 Rock River TMDL

The Rock River TMDL (approved in 2011; <https://dnr.wi.gov/topic/TMDLs/RockRiver/index.html>) establishes TP WLAs to meet water quality standards for segments of the watershed that were listed as impaired during TMDL development. The WLAs do not address WQS for tributaries to the segments that were not listed as impaired prior to approval of the TMDL. Therefore, in addition to implementing the TMDL, limit calculators should evaluate the need for additional TP WQBELs according to s. NR 217.13, Wis. Adm. Code, to protect immediate receiving waters.

The Rock River (RR) TMDL expresses TP and TSS WLAs as maximum monthly loads in pounds per month for each calendar month and maximum daily loads in pounds per day for each calendar month. The federally approved phosphorus limit impracticability agreement suggests that permit effluent limits for TP should be expressed as monthly average effluent limits when WLAs equate to a TP effluent concentration greater than 0.3 mg/L, and as 6-month average limits and monthly average limits equal to 3 times the 6-month average limits when WLAs equate to a TP effluent concentration equal to or less than 0.3 mg/L. However, in accordance with s. NR 212.76(1) and (4), Wis. Adm. Code, the impracticability agreement also states that the expression of limits be consistent with the assumptions and requirements of the TMDL. Since the RR TMDL expresses TP WLAs as a monthly load for each month of the year, monthly phosphorus limits should be included in permits. Converting monthly WLAs to six-month average permit limits is inconsistent with the assumptions and requirements of the TMDL. Therefore, TP permit limits derived from RR TMDL WLAs for point sources should be expressed only as monthly average limits.

To convert a maximum monthly WLA for phosphorus to a monthly average permit limit, simply divide the WLA by the number of days in the month and express the resulting limit in units of pounds per day. Repeat the calculation for each month of the year since the RR TMDL provides a different WLA for each month.

For example, the August TP WLA for Wastewater Treatment Plant A equals 76.27 pounds per month. The August permit limit is calculated below. Remember that monthly average permit limits must be calculated for all twelve months.

$$\text{TP Monthly Average Permit Limit for August} = (76.27 \text{ lbs/Aug.} \div 31 \text{ days/Aug.}) = 2.46 \text{ lbs/day}$$

No exceptions to the above procedures are recommended when the permit contains concentration limits for TP based on s. NR 217.13 to protect the immediate receiving water as well as mass limits for TP based on RR TMDL WLAs. Concentration limits calculated pursuant to s. NR 217.13 must comply with ch. NR 217 and the federally approved phosphorus impracticability agreement. Mass limits from the TMDL should follow the above guidance.

Since the Department has not demonstrated that weekly and monthly average limits are impracticable with respect to TSS, effluent limits for TSS should be expressed in permits as weekly and monthly averages for publicly owned treatment works and as daily maximums and monthly averages for all other point sources.

To derive a monthly average TSS permit limit from a monthly WLA, divide the TSS WLA by the number of days in the month and multiply the result by 2,000 pounds per ton to convert the WLA from tons per day to pounds per day. Express the monthly average effluent limit in units of pounds per day. Repeat the calculation for each month of the year since the Rock River TMDL provides a different WLA for each month.

When a daily maximum TSS effluent limit is necessary, the daily WLA from the RR TMDL is used as the permit limit, after converting from tons per day to pounds per day. TMDL developers included monthly and daily WLAs that were consistent with respect to effluent and monitoring variability using USEPA's statistical method. Therefore, meeting either limit should result in compliance with the other, and neither limit is more restrictive than the other.

When a weekly average permit effluent limit is required for TSS, the limit is derived from the RR TMDL monthly WLA and the appropriate multiplier from Table 3. For example, the January TSS WLA for Wastewater Treatment Facility B equals 0.29 tons. Facility B's permit requires TSS monitoring twice weekly and the current coefficient of variation (CV) of Facility B's mass discharge of TSS is approximately 1.2. The January monthly average permit limit is calculated below.

TSS Monthly Average Permit Limit for January =

$$(0.29 \text{ tons/Jan.} * 2,000 \text{ lbs/ton}) \div 31 \text{ days/Jan.} = 19 \text{ lbs/day}$$

To derive a weekly average TSS permit limit, multiply the monthly average TSS effluent limit as calculated above by 1.48, the multiplier specified by Table 3. for twice weekly monitoring, and express the limit in units of pounds per day. Repeat the calculation for each month of the year.

For example, using Facility B's January TSS monthly average permit limit of 19 lbs/day as calculated above, the weekly average permit limit for January is calculated below.

$$\text{TSS Weekly Average Permit Limit for January} = 19 \text{ lbs/day} * 1.48 = 28 \text{ lbs/day}$$

The effluent monitoring frequency that will be required when the TMDL-derived TSS permit limit is in effect should be used to select the multiplier. While a more frequent monitoring frequency may be considered when the permit is reissued with TMDL-derived TSS limits, the monitoring frequency is not changed for this example. That is, the multiplier in the above calculation was selected using a monitoring frequency of twice weekly.

The CV anticipated to be present when the TMDL-derived TSS permit limit is being met should be used to select the multiplier. Facility B's current CV of 1.2 should not be used to select the multiplier, because the addition of treatment to achieve the TMDL-derived permit limit for TP or TSS is expected to reduce effluent variability with respect to TSS. While the Department anticipates that the CV for TSS will decrease, it does not have a good estimate of the future CV and, therefore, it is recommended that a CV of 0.6 is used to select the multiplier.

For a second example, the May TSS WLA for Cheese Factory J equals 0.97 tons per month. Factory J's current permit requires TSS monitoring twice per week. Factory J's monthly average and daily maximum TSS permit limits for May are calculated below.

$$\text{TSS Monthly Average Permit Limit for May} = (0.97 \text{ tons/May} \cdot 2,000 \text{ lbs/ton}) \div 31 \text{ days/May} = 63 \text{ lbs/day}$$

$$\text{TSS Daily Maximum Permit Limit for May} = 0.07 \text{ tons/day} \cdot 2,000 \text{ lbs/ton} = 140 \text{ lbs/day}$$

EPA's statistical method for deriving water quality-based effluent limits as presented in 5.4 and 5.5 of the [Technical Support Document for Water Quality-based Toxics Control](#) (EPA/505/2-90-001) should be used to convert RR TMDL WLAs for TSS to weekly average permit limits. In this document, USEPA's statistical method for permit limit derivation from monthly WLAs is summarized in the following table of multipliers. Select the appropriate multiplier from the following table using the effluent monitoring frequency for TSS that will be in effect once the TMDL-derived TSS permit limit becomes effective. A default CV of 0.6 was used to construct the table since the TSS CV that will occur during compliance with TMDL-derived TSS permit limits will not be known in most cases. Multiply the TMDL-derived monthly average limit times the multiplier from the table to calculate week average and daily maximum permit limits.

Table 3. Multipliers for Permit Effluent Limits Derived from Monthly WLAs Using a Coefficient of Variation (CV) of 0.6

Effluent Monitoring Frequency	Weekly Average Permit Limits
Daily	1.28
6 Times per Week	1.29
5 Times per Week	1.32
4 Times per Week	1.36
3 Times per Week	1.41
Twice per Week	1.48
Weekly or Less	1.64

Assumptions used in the derivation of the multipliers in the above table include use of the log-normal distribution, a coefficient of variation (CV) of 0.6, and a 99th percentile level (0.01 probability basis).

To derive weekly TSS permit limits from TMDL monthly WLAs, an estimate of the CV for the regulated parameter or pollutant once the permittee complies with the limit is necessary. If information on future effluent variability is available, staff should base the CV on that information. For example, if the variability of measurements of the regulated parameter or pollutant in the effluent is not likely to change once the permittee complies with the limit, current effluent data may be used to estimate the CV. Lacking information on future effluent variability, the default CV of 0.6 should be used. Use the following formula to calculate the CV:

CV = standard deviation of mass effluent data ÷ mean of mass effluent data

Staff should use only those effluent sample results greater than the limit of detection when calculating the CV. If effluent monitoring has been performed for less than one year or there are fewer than 24 effluent sample results greater than the limit of detection, assume a CV of 0.6.

To calculate multipliers using a CV other than 0.6, it is recommended that staff use the equations provided in Table 5-3 of USEPA's TSD. An Excel spreadsheet is also available to perform the calculations.

In the TSD, USEPA recommends that permit limits should be derived using an effluent monitoring frequency of no less than four times per month. Consequently, the above table does not provide multipliers for monitoring frequencies less than weekly.

Monitoring should not be reduced to a frequency less than that specified in the Department's 2003 draft guidance (<http://dnr.wi.gov/water/wsSWIMSDocument.ashx?documentSeqNo=73704359>). The 2003 monitoring frequency guidance document has been used for both municipal and industrial permits. NOTE: At the time this guidance document was developed, the monitoring frequency guidance document was not finalized. It may be updated or revised prior to adoption under the guidance procedures in Wis. Stat. s. 227.112. USEPA's guidance for reducing monitoring frequencies may be used to determine whether a monitoring frequency reduction is appropriate (<https://www3.epa.gov/npdes/pubs/perf-red.pdf>), but reductions should be consistent with Department guidance.

The above guidance for expressing RR TMDL WLAs as permit limits is based on USEPA's statistical method for deriving water quality-based effluent limits as presented in 5.4 and 5.5 of the [Technical Support Document for Water Quality-based Toxics Control](#) (EPA/505/2-90-001; <https://www3.epa.gov/npdes/pubs/owm0264.pdf>). Other methods may be used, if deemed appropriate by the Department. Staff should contact the Point Source TMDL Implementation Coordinator ([Kari Fleming](#)) when discussing other approaches. Decisions that don't follow the general recommendations in this guidance should also be clearly documented in WQBEL memos and/or permit fact sheets, so others can understand why decisions were made.

4.6.3 Lake St. Croix TMDL

The Lake St. Croix TMDL was prepared in partnership with the Minnesota Pollution Control Agency, St. Croix Basin Water Resources Planning Team, and Wisconsin Department of Natural Resources. USEPA approved the TMDL on August 8, 2012. A copy of the final TMDL report is available at <http://www.pca.state.mn.us/index.php/view-document.html?gid=18417>.

The Lake St. Croix TMDL establishes TP WLAs to meet an in-lake water quality standard of 40 µg/L. The WLAs do not address WQS for tributaries to Lake St. Croix, however. Therefore, in addition to implementing the TMDL, limit calculators should evaluate the need for TP WQBELs according to s. NR 217.13, Wis. Adm. Code, to protect the immediate receiving water, for discharges to a tributary of Lake St. Croix (similar to the Rock River TMDL)

The Lake St. Croix TMDL establishes WLAs for 12 point sources in Wisconsin (see Table 4) and an aggregate loading cap for 12 additional Wisconsin point sources (see Table 5). The TMDL states that point sources covered by the aggregate loading cap will be deemed as meeting the aggregate WLA as long as the sum of effluent loads from all 12 point sources remains under the aggregate load cap. According to the TMDL's implementation recommendations, when the total loading from all 12 point

sources equals or exceeds 85 percent of the aggregate loading cap, permittees exceeding their individual share of the aggregate loading cap should receive individual WLAs.

Therefore, individual WLAs will not be included initially in the permits of those facilities covered by the TMDL's aggregate loading cap. However, the first permit reissuance after August 8, 2012, should contain requirements for monitoring effluent TP and calculating and reporting monthly TP loads and 12-month rolling sums of monthly TP loads. Monthly loads are calculated using the monthly average TP concentration and the total flow for the month.

Reissued permits for those facilities covered by the TMDL's aggregate loading cap should also include the following reopener clause, which uses the Village of Clayton as an example:

The Village of Clayton is included in a group of permitted facilities subject to an aggregate phosphorus wasteload allocation of 6932 pounds per year (3151 kg/year) under the Lake St. Croix Total Maximum Daily Load (TMDL) report. Compliance with the wasteload allocation is required upon reissuance. The Village will be considered in compliance with its Lake St. Croix TMDL allocation if the phosphorus discharged from the facility is less than the permittee's individual allocation (528 pounds per year (240 kg/year)) OR the total annual loading from all permittees in the aggregate category is less than the aggregate allocation. For example, if the Village exceeds its individual allocation but the aggregate allocation is not exceeded, the Village is still in compliance with this permit.

Total Monthly Discharge: = monthly average concentration (mg/L) x total flow for the month (MG/month) x 8.34.

Total Annual Discharge = sum of total monthly discharges for the calendar year.

The Department will total 12-month rolling sums from all 12 facilities covered by the aggregate loading cap. Should the total of 12-month sums exceed 5,904 lbs (i.e., 85 percent of 3,151 kg/yr from Table 5), the Department will modify or reissue the permits of those permittees exceeding their individual share of the aggregate loading cap to include TMDL-derived permit limits. (See the guidance below for converting WLAs to permit limits.) After permit modification or reissuance to include individual WLAs, the Department will reduce the aggregate loading cap by an amount equal to the sum of WLAs included in the modified or reissued permits, and continue to track the total of 12-month rolling sums from the remaining permittees covered by the aggregate loading cap.

Table 4. Lake St. Croix TMDL WLAs for Point Sources

Facility	Permit Number	Concentration Assumption (mg/L)	Design Flow (MGD)	WLA (kg/yr)	WLA (lbs/day)
Hudson WWTF	0024279	0.6	3.25	2,694	16.3
River Falls WWTP	0029394	0.6	3.17	2,628	15.9
New Richmond WWTF	0021245	0.6	1.73	1,434	8.7
Osceola, Village of	0025020	1.0	0.750	1,036	6.3
Amery, City of	0020125	1.0	0.535	739	4.5
St. Croix Falls, City of	0020796	1.0	0.496	685	4.1
Hammond	0024171	1.0	0.450	622	3.8
Clear Lake, Village of	0023639	1.0	0.404	558	3.4
Grantsburg, Village of	0060429	1.0	0.380	525	3.2
Somerset WWTF	0030252	1.0	0.375	518	3.1
Luck, Village of	0021482	1.0	0.364	503	3.0
Burnett Dairy Cooperative	0039039	1.0	0.250	345	2.1

Table 5. Facilities Eligible for Lake St. Croix TMDL Aggregate Loading Cap

Facility	Permit Number	Concentration Assumption (mg/L)	Design Flow (MGD)	WLA (kg/yr)	WLA (lbs/day)
Frederic	0029254	3.5	0.185	895	5.4
Star Prairie WWTF	0060984	3.5	0.154	745	4.5
T. Thompson Hatchery	0049191	0.1	2.208	305	1.8
Deer Park WWTF	0025356	3.5	0.051	247	1.5
WI DNR Osceola Fish Hatchery	0004197	0.1	1.77	245	1.5
Clayton, Village of	0036706	2.0	0.087	240	8.7*
Webster, Village of	0028843	2.0	0.085	235	8.5*
Amani Sanitary District	0031861	2.0	0.032	88	3.2*
Advanced Food Products	0039781	0.1	0.401	55	0.3
W DNR St. Croix Falls Hatchery	0004201	0.1	0.344	48	0.3
Lakeside Foods, INC.	0002836	0.1	0.316	44	0.3
Emerald Dairy	0059315	Load estimate		4	0.02
Aggregate Loading Cap				3,151	18.9

*WLAs for these intermittent dischargers are 6 times greater than WLAs for a continuous discharger. Consequently, the median number of days per year these facilities may discharge TP at a rate equal to the total daily WLA is 61 days.

The Lake St. Croix TMDL expresses WLAs for TP as maximum annual loads (kilograms per year) and maximum daily loads (pounds per day), which equal the maximum annual loads divided by the number of days in the year. Total phosphorus WQBELs for point sources covered by the Lake St. Croix TMDL should be derived in a similar manner as permit limits for point sources covered by the Lower Fox River TMDL. That is, consistent with the WI/USEPA impracticability agreement, TP limits should be expressed as a monthly average when WLAs equate to a TP effluent concentration greater than 0.3 mg/L, and as a

six-month average and monthly average equal to 3 times the six-month average limit when WLAs equate to a TP effluent concentration equal to or less than 0.3 mg/L.

To calculate monthly average and six-month average permit limits, multiply the daily WLA from the Lake St. Croix TMDL by the multipliers specified in Table 2 and the footnotes and information following the table. Compare the concentration assumption for the point source, as provided by the Lake St. Croix TMDL and presented in Table 4 to 0.3 mg/L to determine the appropriate form of the limits.

For example, Table 4 provides a concentration assumption of 0.6 mg/L and a daily WLA of 16.3 lbs/day for the Hudson WWTF. Hudson's current permit requires TP effluent monitoring 5 times per week. The coefficient of variation (CV) for TP effluent data (lbs/day) collected by Hudson during the period from January 1, 2009 through July 31, 2012 equals 0.69.

Since the concentration assumption exceeds 0.3 mg/L, only a monthly average permit limit is calculated. Lacking an estimate of the CV for the period when Hudson complies with the TMDL-derived permit limit, the default CV of 0.6 is recommended to select the multiplier. To calculate a monthly average effluent limit for TP, multiply Hudson's daily WLA of 16.3 lbs/day by 1.35. (Remember that the daily WLA is the Annual WLA divided by the number of days in the year.) Express the monthly average limit in pounds per day. That is,

$$\text{TP Monthly Average Permit Limit} = 16.3\text{lbs/day} * 1.35 = 22.0 \text{ lbs/day}$$

For a second example, assume that the total load for all 12 permittees eligible for the aggregate loading cap exceeds 5,904 lbs/year and that Star Prairie WWTF's TP load exceeds the facility's WLA of 745 kg/yr. Table 5 provides a concentration assumption of 3.5 mg/L and a daily WLA of 4.5 lbs/day. The current permit requires monthly TP effluent monitoring. The CV for TP effluent data (lbs/day) collected by Star Prairie during 2010 equals 0.78.

Since the concentration assumption exceeds 0.3 mg/L, only a monthly average permit limit is calculated. Lacking an estimate of the CV for the period when Star Prairie complies with the TMDL-derived permit limit, the default CV of 0.6 is recommended to select the multiplier. To calculate a monthly average effluent limit for TP, multiply Star Prairie's daily WLA of 4.5 lbs/day by 1.90. Express the monthly average limit in pounds per day. That is,

$$\text{TP Monthly Average Permit Limit} = 4.5 \text{ lbs/day} * 1.90 = 8.55 \text{ lbs/day}$$

Since WLAs are expressed as annual loads (kg/yr), permits with TMDL-derived monthly average permit limits should require the permittee to calculate and report rolling 12-month sums of total monthly loads for TP. Total monthly loads should be calculated by multiplying the monthly average discharge concentration (mg/L) by the total flow for the month (MG/month) and by the conversion factor of 8.34. Sum the total monthly loads from the most recent twelve months. Rolling 12-month sums may be compared directly to the annual WLA.

During the permit reissuance process subsequent to the effective date of the TMDL-derived permit limit, limits calculators should evaluate whether or not the annual WLA is being achieved. For example, review the rolling 12-month sums reported by the permittee. If the annual WLA is not being met, the limits calculator should consider recalculating permit limits, because calculated limits must be consistent with the WLA in the approved TMDL, according to Wis. Stat. § 283.31(3)(d), and s. NR 212.76, Wis. Adm. Code. Calculating a CV from effluent data collected following the effective date of the TMDL-derived

permit limit, increasing the monitoring frequency, or using a probability basis of 95 percent should be considered.

Should TMDL-derived permit limits for any of the three intermittent discharges listed in Table 5 become necessary, follow the instructions provided in section 4.6.8 for non-continuous discharges.

The above guidance for expressing Lake St. Croix TMDL WLAs as permit limits is based on USEPA's statistical method for deriving water quality-based effluent limits as presented in 5.4 and 5.5 of the [Technical Support Document for Water Quality-based Toxics Control](#) (EPA/505/2-90-001). Other methods may be used, if deemed appropriate by the Department. Staff should contact the Point Source TMDL Implementation Coordinator ([Kari Fleming](#)) when discussing other approaches. Decisions that don't follow the general recommendations in this guidance should also be clearly documented in WQBEL memos and/or permit fact sheets, so others can understand why decisions were made.

4.6.4 Tainter Lake and Lake Menomin (Red Cedar River) TMDL

USEPA approved the Tainter Lake/Lake Menomin TMDL in Sept 2012. The TMDL report is located at: http://naturalresources.uwex.edu/redcedar/pdf/Final_Tainter_TMDL_May29_2012.pdf.

The Tainter Lake and Lake Menomin (TL/LM) TMDL establishes TP WLAs to reduce the loading to the Lakes by 65 percent. The WLAs do not address water quality standards for tributaries to the Lakes including the Red Cedar River. Therefore, in addition to implementing the TMDL, limit calculators should evaluate the need for TP WQBELs according to s. NR 217.13, Wis. Adm. Code, to protect immediate receiving waters.

The TL/LM TMDL expresses WLAs for TP as maximum annual loads (pounds per year) and maximum daily loads (pounds per day), which equal the maximum annual loads divided by the number of days in the year. Total phosphorus WQBELs for point sources covered by the TL/LM TMDL should be derived in a similar manner as permit limits for point sources covered by the Lower Fox River TMDL. That is, consistent with the WI/USEPA impracticability agreement, TP limits should be expressed as a monthly average since the TL/LM TMDL WLAs are derived on an effluent concentration of 1 mg/L or greater.

To calculate monthly average permit limits, multiply the daily WLA from the TL/LM TMDL by the multipliers specified in Table 2 and the footnotes and information following the table (Remember that the daily WLA equals the annual WLA divided by the number of days in the year.)

For example, the daily WLA for the Town B WWTF equals 1.83 lbs/day. Town B's current permit requires weekly TP effluent monitoring. The CV for TP effluent data (lbs/day) collected by Town B during the period from October 1, 2009 through September 30, 2012 equals 0.45.

On the assumption that Town B is currently complying with the TMDL-derived permit effluent limit, the current CV should be used to select the multiplier. The monthly average effluent limit for TP equals Town B's daily WLA of 1.83 lbs/day multiplied by 1.64. This multiplier was derived using the spreadsheet for calculating multipliers with CV's other than 0.6. Express the monthly average limit in pounds per day. That is,

$$\text{TP Monthly Average Permit Limit in lbs/day} = 1.83\text{lbs/day} * 1.64 = 3.00 \text{ lbs/day}$$

Since the 4-day P_{99} of Town B's TP discharge equals 1.72 lbs/day, which is less than the TMDL-derived limit of 3.00 lbs/day, the assumption that Town B is complying with the WLA-derived effluent limit is correct and use of a CV of 0.45 is appropriate.

Since WLAs are expressed as annual loads (lbs/yr), permits should require permittees to calculate and report rolling 12-month sums of total monthly loads for TP. Total monthly loads should be calculated by multiplying the monthly average discharge concentration (mg/L) by the total flow for the month (MG/month) and by the conversion factor of 8.34. Sum the total monthly loads from the most recent twelve months. Rolling 12-month sums may be compared directly to the annual WLA.

During the permit reissuance process subsequent to the effective date of the TMDL-derived permit limit, limits calculators should evaluate whether or not the annual WLA is being achieved. For example, review the rolling 12-month sums reported by the permittee. If the annual WLA is not being met, the limits calculator should consider recalculating permit limits, because calculated limits must be consistent with the WLA in the approved TMDL, according to Wis. Stat. § 283.31(3)(d), and s. NR 212.76, Wis. Adm. Code. Calculating a CV from effluent data collected following the effective date of the TMDL-derived permit limit, increasing the monitoring frequency, or using a probability basis of 95 percent should be considered.

The above guidance for expressing TL/LM TMDL WLAs as permit limits is based on USEPA's statistical method for deriving water quality-based effluent limits as presented in 5.4 and 5.5 of the [Technical Support Document for Water Quality-based Toxics Control](#) (EPA/505/2-90-001). Other methods may be used, if deemed appropriate by the Department. Staff should contact the Point Source TMDL Implementation Coordinator ([Kari Fleming](#)) when discussing other approaches. Decisions that don't follow the general recommendations in this guidance should also be clearly documented in WQBEL memos and/or permit fact sheets, so others can understand why decisions were made.

4.6.5 Milwaukee River Basin TMDL

The Milwaukee River Basin (MRB, approved 2018) TMDL (<https://dnr.wi.gov/topic/TMDLs/Milwaukee/>) includes monthly allocations for fecal coliform bacteria as an indicator organism to address pathogen impairments in the basin, in conformance with water quality standards and 303(d) list impairments. However, since municipal wastewater treatment plants that already employ disinfection are expected to be meeting bacteria standards, no additional reductions are required for those facilities by the TMDL. Limits for fecal coliform should continue to be expressed as 400 cfu/100 mL from May through September, in order to provide protection from human health impacts during the recreation season. Industrial-only wastewater discharges are not expected to contain these types of bacteria, so no WLAs were assigned to these facilities and no limits are needed in these permits.

The Milwaukee River TMDL establishes total phosphorus ("TP") WLAs to reduce the loading in the entire watershed including WLAs to meet water quality standards for tributaries to the Milwaukee River. Therefore, implementing the TMDL provides WQBELs to protect immediate receiving waters and limit calculators do not need to evaluate the need for additional TP WQBELs according to s. NR 217.13, Wis. Adm. Code.

The MRB TMDL includes TP WLAs as maximum monthly loads in pounds per month for each calendar month and maximum daily loads in pounds per day for each calendar month. Total phosphorus WQBELs for point sources covered by the MRB TMDL should be derived in a similar manner as permit limits for point sources covered by the Rock River TMDL. That is, consistent with the intent of the TMDL, monthly average phosphorus mass limits should be included in permits. Converting monthly WLAs to six-month

average permit limits (as suggested in the TP impracticability agreement) is inconsistent with the assumptions and requirements of the TMDL. Therefore, TP permit limits derived from MRB TMDL WLAs for point sources should be expressed only as monthly average mass limits.

To convert a maximum monthly WLA for P to a monthly average permit limit, simply divide the WLA by the number of days in the month and express the resulting limit in units of pounds per day. Repeat the calculation for each month of the year since the MRB TMDL provides a different WLA for each month.

The MRB TMDL also includes TSS WLAs as maximum monthly loads in pounds per month for each calendar month and maximum daily loads in pounds per day for each calendar month. Since the Department has not demonstrated that daily, weekly and monthly average limits are impracticable with respect to TSS, effluent limits for TSS must be expressed in permits as weekly and monthly averages for publicly owned treatment works with continuous discharges and as daily maximums and monthly averages for all other continuous discharges, in order to satisfy 40 CFR Part 122.45 (d), Wis. Stat. § 283.31(3)(d), and s. NR 106.07, Wis. Adm. Code. In this TMDL, those limits could be expressed as either a concentration or a mass.

A water quality target of 12 mg/L TSS, expressed as the median of monthly samples collected between May and October, was established for this TMDL to address impacts caused by sedimentation and turbidity, to comply with narrative criteria in s. NR 102.04(1). (See Section 3.2.2 of the MRB TMDL for additional information related to how the TSS target was set.) Since standard wastewater treatment processes such as grit removal and clarification, necessary to reduce TSS levels to 12 mg/L, will have removed settleable material that would contribute to sedimentation, wastewater discharges at or below 12 mg/L are not expected to contribute to sediment impairments. Wastewater discharges at ≤ 12 mg/L TSS are also not expected to contribute to turbidity, a condition which is related to concentration and not mass. Therefore, the TMDL states that wastewater dischargers are not required to meet effluent limits lower than 12 mg/L (including equivalent mass limits) to satisfy TMDL requirements.

To derive a monthly average TSS permit mass limit from a monthly WLA, divide the TSS WLA by the number of days in the month. Express the monthly average effluent limit in units of pounds per day. Repeat the calculation for each month of the year since the MRB TMDL provides a different WLA for each month. Calculate the concentration equivalent for each of these mass limits using the effluent flow specified by s. NR 217.13 (1)(c), Wis. Adm. Code, and the monthly WLA for each month, to determine if any are below 12 mg/L. In months where the monthly mass limit is equivalent to a concentration that is less than 12 mg/L, the 12 mg/L concentration limit should be used in the permit in place of the mass limit.

When a daily maximum TSS effluent limit is necessary, the daily WLA from the MRB TMDL is used as the permit limit. Calculate the concentration equivalent for each of these mass limits, to determine if any are below 12 mg/L. In months where the daily mass limit is equivalent to a concentration that is less than 12 mg/L, the 12 mg/L concentration limit should be used in the permit in place of the mass limit.

When a weekly average permit effluent limit is required for TSS, the limit is derived from the monthly average and the appropriate multiplier from Table 3. To derive a weekly average TSS mass permit limit, multiply the monthly average TSS effluent limit by the multiplier specified in Table 3 for the appropriate monitoring frequency. Express the limit in units of pounds per day. Repeat the calculation for each month of the year. Calculate the concentration equivalent for each of these mass limits, to determine if any are below 12 mg/L. In months where the weekly mass limit is equivalent to a concentration that is less than 12 mg/L, the 12 mg/L concentration limit should be used in the permit in place of the mass limit.

The effluent monitoring frequency that will be required when the TMDL-derived TSS permit limit is in effect should be used to select the multiplier. The CV anticipated to be present when the TMDL-derived TSS permit limit is being met should be used to select the multiplier. The permittee's current CV should not be used to select the multiplier. (Refer to the RR TMDL section for a discussion of how to calculate the CV.) The Department anticipates that the addition of treatment to achieve the TMDL-derived permit limit for TSS would reduce effluent variability with respect to TSS. While the Department anticipates that the CV for TSS will decrease, it does not have a good estimate of the future CV and, therefore, the default CV of 0.6 is recommended as the multiplier.

EPA's statistical method for deriving water quality-based effluent limits as presented in 5.4 and 5.5 of the [Technical Support Document for Water Quality-based Toxics Control](#) (EPA/505/2-90-001) should be used to convert MRB TMDL WLAs for TSS to weekly average permit limits. In this guidance, USEPA's statistical method for permit limit derivation from monthly WLAs is summarized in Table 3. Select the appropriate multiplier from Table 3 using the effluent monitoring frequency for TSS that will be in effect once the TMDL-derived TSS permit limit becomes effective. A default CV of 0.6 was used to construct the table since the TSS CV that will occur during compliance with TMDL-derived TSS permit limits will not be known in most cases. Multiply the TMDL-derived monthly average limit times the multiplier from the table to calculate weekly average and daily maximum permit limits. Assumptions used in the derivation of the multipliers in Table 3 include use of the log-normal distribution, a coefficient of variation (CV) of 0.6, and a 99th percentile level (0.01 probability basis).

To derive weekly TSS permit limits from TMDL monthly WLAs, an estimate of the CV for the regulated parameter or pollutant once the permittee complies with the limit is necessary. If information on future effluent variability is available, staff should base the CV on that information. For example, if the variability of measurements of the regulated parameter or pollutant in the effluent is not likely to change once the permittee complies with the limit, current effluent data may be used to estimate the CV. Lacking information on future effluent variability, the default CV of 0.6 should be used.

The above guidance for expressing MRB TMDL WLAs as permit limits is based on USEPA's statistical method for deriving water quality-based effluent limits as presented in 5.4 and 5.5 of the [Technical Support Document for Water Quality-based Toxics Control](#) (EPA/505/2-90-001). Other methods may be used, if deemed appropriate by the Department. Staff should contact the Point Source TMDL Implementation Coordinator ([Kari Fleming](#)) when discussing other approaches. Decisions that don't follow the general recommendations in this guidance should also be clearly documented in WQBEL memos and/or permit fact sheets, so others can understand why decisions were made.

Examples of calculations to convert WLA to permit limits are included in the Rock River TMDL section of this guidance with one difference being that the TSS limits are expressed in units of tons/month for the RR TMDL and are expressed in lbs/month for the MRB TMDL.

4.6.6 Wisconsin River Basin TMDL

The Wisconsin River Basin (WRB) TMDL (approved April 2019, <https://dnr.wi.gov/topic/tmdls/wisconsinriver/>) expresses WLAs for TP as maximum annual loads (pounds per year) and maximum daily loads (pounds per day), which equal the maximum annual loads divided by the number of days in the year. Total phosphorus WQBELs for point sources covered by the WRB TMDL should be derived in a similar manner as permit limits for point sources covered by the LFR TMDL. That is, consistent with the phosphorus impracticability agreement, TP mass limits in permits should be expressed as a monthly average when WLAs equate to a TP effluent concentration greater

than 0.3 mg/L, and as a six-month average and monthly average equal to 3 times the six-month average mass limit when WLAs equate to a TP effluent concentration equal to or less than 0.3 mg/L.

The WRB TMDL establishes TP WLAs to reduce the loading in the entire watershed including WLAs to meet water quality standards for tributaries to the Wisconsin River. Therefore, implementing the TMDL provides WQBELs to protect immediate receiving waters and limit calculators do not need to evaluate the need for additional TP WQBELs according to s. NR 217.13, Wis. Adm. Code.

To calculate monthly average and six-month average mass limits, multiply the daily WLA from the WRB TMDL by the multipliers specified in Table 2. and the footnotes and information following the table. Staff should use the effluent flow specified by s. NR 217.13 (1)(c), Wis. Adm. Code, and the annual WLA for a point source to determine the equivalent effluent concentration. Compare the equivalent concentration for the point source to 0.3 mg/L to determine the appropriate time period for expression of the limits.

Since WLAs are expressed as annual loads (lbs/yr), permits with TMDL-derived monthly average mass limits should require the permittee to calculate and report rolling 12-month sums of total monthly loads for TP. Total monthly loads should be calculated by multiplying the monthly average discharge concentration (mg/L) by the total flow for the month (MG/month) and by the conversion factor of 8.34. Sum the total monthly loads from the most recent twelve months. Rolling 12-month sums may be compared directly to the annual WLA.

During permit reissuance after the effective date of the TMDL-derived permit limit, limits calculators should evaluate whether or not the annual WLA is being achieved. For example, review the rolling 12-month sums reported by the permittee. If the annual WLA is not being met, the limits calculator should consider recalculating permit limits using updated effluent data, because calculated limits must be consistent with the WLA in the approved TMDL, according to Wis. Stat. § 283.31(3)(d), and s. NR 212.76, Wis. Adm. Code. When recalculating limits, staff should consider recalculating the CV from effluent data collected following the effective date of the TMDL-derived permit limit, increasing the monitoring frequency, or using a probability basis of 95 percent should be considered.

The above guidance for expressing WRB TMDL WLAs as permit limits is based on USEPA's statistical method for deriving water quality-based effluent limits as presented in 5.4 and 5.5 of the [Technical Support Document for Water Quality-based Toxics Control](#) (EPA/505/2-90-001). Other methods may be used, if deemed appropriate by the Department. Staff should contact the Point Source TMDL Implementation Coordinator ([Kari Fleming](#)) when discussing other approaches. Decisions that don't follow the general recommendations in this guidance should also be clearly documented in WQBEL memos and/or permit fact sheets, so others can understand why decisions were made.

Examples of calculations to convert WLA to permit limits are included in the Lower Fox River TMDL section of this guidance.

4.6.7 Upper Fox and Wolf River Basins TMDL

The Upper Fox and Wolf River Basins (UFW) TMDL (approved February 2020, <https://dnr.wi.gov/topic/TMDLs/FoxWolf/>) expresses WLAs for TP and TSS as maximum annual loads (pounds per year) and maximum daily loads (pounds per day), which equal the maximum annual loads divided by the number of days in the year.

Total phosphorus WQBELs for point sources covered by the UFW TMDL should be derived in a similar manner as permit limits for point sources covered by the Lower Fox and Wisconsin River Basin TMDLs. That is, consistent with the impracticability agreement, TP mass limits should be expressed as a monthly average when WLAs equate to a TP effluent concentration greater than 0.3 mg/L, and as a six-month average and monthly average equal to 3 times the six-month average mass limit when WLAs equate to a TP effluent concentration equal to or less than 0.3 mg/L.

The UFW TMDL establishes TP WLAs to reduce the loading in the entire watershed including WLAs to meet water quality standards for tributaries. Therefore, implementing the TMDL provides WQBELs to protect immediate receiving waters and limit calculators do not need to evaluate the need for additional TP WQBELs according to s. NR 217.13, Wis. Adm. Code.

To calculate monthly average and six-month average mass limits, multiply the daily WLA from the UFW TMDL by the multipliers specified in Table 2 and the footnotes and information following the table. Staff should use the effluent flow specified by s. NR 217.13 (1)(c), Wis. Adm. Code, and the annual WLA for a point source to determine the equivalent effluent concentration. Compare the equivalent concentration for the point source to 0.3 mg/L to determine the appropriate time period for expression limits. Examples of calculations to convert annual WLAs into permit limits are included in the Lower Fox River TMDL section of this guidance.

Since the Department has not demonstrated that daily, weekly and monthly average limits are impracticable with respect to TSS, effluent limits for TSS must be expressed in permits as weekly and monthly average mass limits for publicly owned treatment works and as daily maximums and monthly average mass for all other continuous discharges, in order to satisfy 40 CFR Part 122.45 (d) and s. NR 205.065, Wis. Adm. Code. To calculate monthly average, weekly average, and daily maximum TSS mass limits, staff should multiply the daily WLA by the multiplier from the Table 2. Express all limits in pounds per day.

Since WLAs are expressed as annual loads (lbs/yr), permits with TMDL-derived monthly average permit limits should require the permittee to calculate and report rolling 12-month sums of total monthly loads. Total monthly loads should be calculated by multiplying the monthly average discharge concentration (mg/L) by the total flow for the month (MG/month) and by the conversion factor of 8.34. Sum the total monthly loads from the most recent twelve months. Rolling 12-month sums may be compared directly to the annual WLA.

During the permit reissuance process subsequent to the effective date of the TMDL-derived permit limit, limits calculators should evaluate whether or not the annual WLA is being achieved by reviewing the rolling 12-month sums reported by the permittee. If the annual WLA is not being met, the limits calculator should consider recalculating existing permit limits using updated data. A recalculation may include calculating a CV from effluent data collected following the effective date of the TMDL-derived permit limit, increasing the monitoring frequency, or using a probability basis of 95 percent should be considered.

The above guidance for expressing UFW TMDL WLAs as permit limits is based on USEPA's statistical method for deriving water quality-based effluent limits as presented in 5.4 and 5.5 of the *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001). Other methods may be used, if deemed appropriate by the Department. Staff should contact the Point Source TMDL Implementation Coordinator ([Kari Fleming](#)) when discussing other approaches. Decisions that don't

follow the general recommendations in this guidance should also be clearly documented in WQBEL memos and/or permit fact sheets, so others can understand why decisions were made.

4.6.8 Non-continuous Discharges

As stated in section 4.6, a continuous discharge is one that occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities (s. 40 CFR 122.2 and s. NR 205.03, Wis. Adm. Code). Conversely then, non-continuous discharges are those that do not meet this definition of a continuous discharge. Methods for converting TMDL WLAs into permit limits for non-continuous discharges should be determined on a case-by-case basis and consistent with the assumptions in the TMDL. In practice the most common types of non-continuous discharges that will be encountered fall into these basic categories:

1. Discharges from stabilization ponds and cannery operations which routinely discharge during a limited period of the year.
2. Discharges from industries where interrupted production on weekends results routinely in no discharge for one or two days per week.
3. Discharges from municipal lagoon systems where effluent is held for short periods of time (usually 1-2 months) to avoid non-compliance with BOD₅ or NH₃ limitations.
4. Discharges where market forces dictate whether production occurs (e.g. dairies may choose to landspread whey rather than processing it further and discharging to surface water).

In all cases the most practical manner of expressing TMDL based limits would be in terms of total mass per discharge period which is consistent with 40 CFR 122.45 (e). For those TMDLs where the WLAs are given monthly, those would be directly translated into the permit as monthly total mass limits.

In TMDLs where WLAs are given on an annual basis, there should be flexibility in determining whether it is practical to have monthly limits in addition to annual limits. For example, facilities where discharge does not occur on weekends but occurs routinely throughout the year, the statistical methods outlined earlier for continuous discharges could be used to translate the annual WLA into a monthly limit. This method could also be considered for seasonal discharges such as can cooling waters where once seasonal production starts, effluent flow rates are continuous until shutdown. In the end, methods for converting TMDL WLAs into permit limits must be consistent with the assumptions in the TMDL.

For controlled discharges and other discharges where there is no valid statistical basis for transforming annual WLAs into shorter term limits, limits should be expressed as total annual discharge. Using shorter term limits would have the effect of unduly limiting operational flexibility. In the case of phosphorus, if there are local conditions that are not adequately addressed with the WLA-based limit, more stringent limitations based on the procedures in NR 217.13 should be included in the permit.

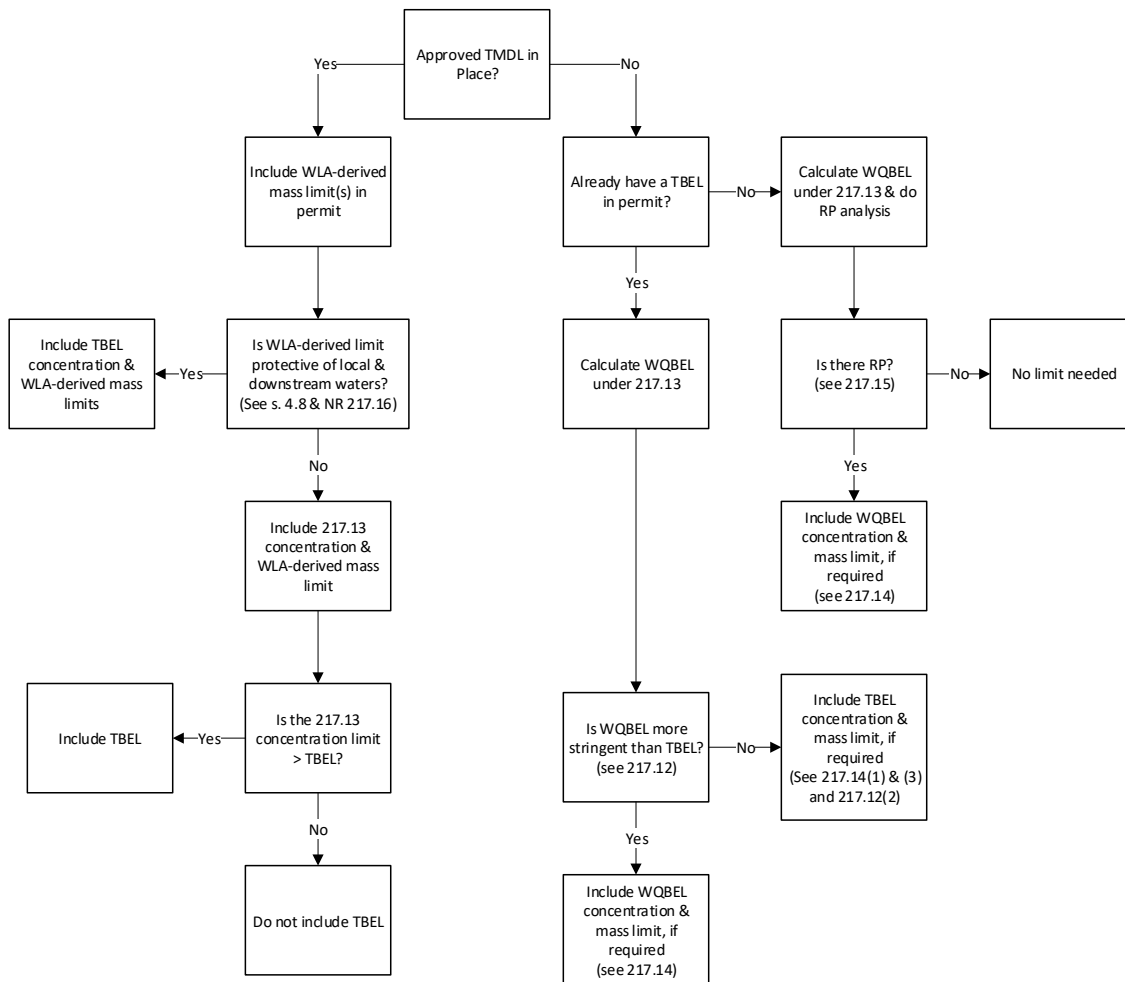
4.7 Relationship of TMDL-derived & other WQBELs and TBELs

TMDL-derived effluent limits, usually expressed as a mass, must be included in a wastewater permit whenever a facility is given a WLA in a USEPA approved TMDL, to be consistent with the goals of that TMDL. Sections NR 212.76 (6) and 217.16, Wis. Adm. Code, state that the Department may include WQBELs derived from TMDL WLAs in a permit in addition to, or in lieu of, other WQBELs. In addition to TMDL-derived mass limits, other WQBELs and/or TBELs, usually expressed as a concentration, may also need to be included in wastewater permits to ensure protection of local and downstream water quality, and to conform to regulatory requirements for specific pollutants.

If the same parameter is regulated by a TMDL-derived limit and a TBEL, both limits should be included in the permit. When a TMDL-derived limit is given, the permittee must continue to comply with applicable TBELs even if the permittee acquires additional load or wasteload allocation through trades. Conversely, the permittee must also continue to comply with applicable TMDL-derived limits should the TBEL increase due to increased production or expansion of the facility.

A TMDL-derived limit may replace another WQBEL in a permit. A TMDL-derived limit replaces the non-TMDL WQBEL in the permit if the same parameter is regulated by both limits and the TMDL-derived limit is more restrictive than the non-TMDL WQBEL. If the TMDL-derived WQBEL is less restrictive than the non-TMDL WQBEL already in effect, the less restrictive TMDL-derived limit may replace the non-TMDL WQBEL if the TMDL-derived WQBEL is protective of immediate and downstream receiving waters and then only after antidegradation requirements are met (antidegradation would apply if the WQBEL had taken effect). Specific administrative rule provisions must also be in place to allow this replacement. For example, s. NR 217.16, Wis. Adm. Code, allows the WLA-derived phosphorus limit to replace the non-TMDL WQBEL under certain circumstances, as shown in Figure 1 below.

Figure 1. Determining Which Phosphorus Limits Are Needed



Note: Interim limits may be needed (or already in effect) if the permit includes an extended compliance schedule (s. NR 217.17, Wis. Adm. Code), adaptive management (s. 217.18, Wis. Adm. Code), or multi-discharger variance (Wis. Stat. § 283.16). If interim limits are already in effect in the permit,

antidegradation and antibacksliding would have to be considered before replacing those limits. Likewise, if WLA-derived and/or 217.13-derived WQBELs are already in effect in the permit at the time of reissuance, antidegradation and antibacksliding would have to be addressed before replacing those limits (see section 4.13).

4.8 Demonstrating Compliance with TMDL-derived Effluent Limits

The following terms are included in permits and administrative codes and are relevant when evaluating compliance with TMDL-derived effluent limits.

Daily discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limits expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limits expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.

Daily maximum effluent limit means the highest allowable daily discharge.

6-Month average effluent limit means the highest allowable average of daily discharges over a specified 6-month period, calculated as the sum of all daily discharges measured during the 6-month period divided by the number of daily discharges measured during that 6-month period. For total phosphorus, 6-month periods are specified as May through October and November through April.

Monthly average effluent limit means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Weekly average effluent limit means the highest allowable average of daily discharges over a specified 7-day period, calculated as the sum of all daily discharges measured during the 7-day period divided by the number of daily discharges measured during that 7-day period. For total suspended solid effluent limits derived from TMDL WLAs, the 7-day periods are specified as the first of the month through the seventh, the eighth of the month through the fourteenth, and so on.

The following examples show how compliance with TMDL-derived effluent limits may be demonstrated. In an earlier example (page 23), effluent limits of 52.8 lbs/day 6-month average and 158 lbs/day monthly average were derived from total phosphorus (TP) WLAs for Facility X. From Table 6 it can be seen that had the effluent limits been in effect during 2011, Facility X would have been in compliance with the monthly average effluent limit every month depicted except July. Note that the average mass discharge of TP for a calendar month is compared to the monthly average effluent limit of 158 lbs/day. Since the average of all 184 daily discharge values collected during the 6-month period equals 90 lbs/day, Facility X would have been out of compliance with the 6-month average effluent limit of 52.8 lbs/day.

Continuing with this example, effluent limits of 1,196 lbs/day monthly average and 1,478 lbs/day weekly average for TSS were derived from TSS WLAs. From Table 7 it can be seen that had TSS effluent limits been in effect during 2011, Facility X would have been in compliance with the monthly average limit for the month of September, but not April. Similarly, Facility X would have been in compliance with the weekly average limit for the four weekly averaging periods during September, but out of compliance for the four weekly averaging periods during April.

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An additional example compares the Facility Y Wastewater Treatment Facility effluent data to TP effluent limits of 19.4 lbs/day 6-month average and 58.2 lbs/day monthly average. From Table 8 it can be seen that had the phosphorus limits been in effect during 2011, the Facility Y WWTF would have complied with the monthly average effluent limit every month depicted except May. Since the average of all 120 daily discharge values collected during the 6-month period equals 39 lbs/day, Facility Y would have been out of compliance with the 6-month average effluent limit.

Table 6. Facility X 2011 Discharge of Total Phosphorus

Date	May (lbs/day)	June (lbs/day)	July (lbs/day)	August (lbs/day)	September (lbs/day)	October (lbs/day)
1	25	69	44	75	63	60
2	37	61	56	277	189	43
3	66	59	58	120	213	56
4	38	41	37	115	174	45
5	40	26	151	280	111	44
6	39	31	279	173	254	46
7	34	36	139	63	79	38
8	29	29	180	52	79	29
9	50	31	247	52	115	27
10	70	38	237	47	147	29
11	67	64	258	85	157	39
12	72	37	139	40	226	46
13	52	26	107	39	100	47
14	99	38	117	30	65	48
15	38	67	315	32	76	44
16	29	55	140	38	66	50
17	45	30	167	41	62	41
18	32	25	393	40	51	53
19	38	31	303	92	84	168
20	41	30	167	90	85	249
21	52	32	99	51	43	185
22	39	236	71	54	37	159
23	33	187	54	59	43	160
24	46	100	61	51	44	230
25	55	46	167	50	50	124
26	38	43	161	112	48	79
27	56	42	184	190	46	51
28	37	151	215	183	44	49
29	33	52	424	155	41	41
30	27	41	159	69	49	43
31	74	-	66	69	-	132
Monthly Average	46	59	168	91	95	79

Table 7. Facility X 2011 Discharge of Total Suspended Solids

Date	<u>April</u>		<u>September</u>	
	Daily Discharge (lbs/day)	Weekly Average Discharge (lbs/day)	Daily Discharge (lbs/day)	Weekly Average Discharge (lbs/day)
1	2005		2005	
2	1980		1980	
3	2733		2733	
4	2256		2256	
5	2143		2143	
6	2055		2055	
7	1486	2094	1486	939
8	1671		1671	
9	1548		1548	
10	2593		2593	
11	3471		3471	
12	4883		4883	
13	1678		1678	
14	1255	2443	1255	782
15	1392		1392	
16	3310		3310	
17	2886		2886	
18	2412		2412	
19	2191		2191	
20	1814		1814	
21	4080	2583	4080	767
22	2942		2942	
23	2265		2265	
24	2006		2006	
25	1747		1747	
26	7512		7512	
27	4628		4628	
28	3247	3478	3247	689
29	2138		2138	
30	1905		1905	
Monthly Average	2608		797	

Table 8. Facility Y Wastewater Treatment Facility 2011 Discharge of Total Phosphorus

Date	May (lbs/day)	June (lbs/day)	July (lbs/day)	August (lbs/day)	September (lbs/day)	October (lbs/day)
1	48	25	29	41	31	35
2	49	25	23	48	39	31
3	37	18	27	40	43	32
4	27	15	31	48	35	25
5	26	14	31	-	42	29
6	-	-	-	-	-	-
7	-	-	-	-	-	-
8	46	12	22	66	36	31
9	122	11	24	59	15	39
10	158	15	39	50	25	46
11	202	11	36	45	42	67
12	213	7	31	72	54	62
13	-	-	-	78	-	-
14	-	-	-	-	-	-
15	26	14	21	58	47	31
16	27	13	20	49	34	27
17	28	11	26	45	21	24
18	24	13	38	53	22	21
19	31	17	34	47	23	51
20	-	-	-	-	-	-
21	-	-	-	-	-	-
22	16	28	24	73	36	21
23	20	97	32	61	41	27
24	23	31	37	42	32	27
25	45	34	25	35	53	27
26	25	25	21	30	92	25
27	-	-	-	-	-	-
28	-	-	-	-	-	-
29	-	-	-	-	-	-
30	-	-	-	-	-	-
31	-	-	-	-	-	-
Monthly Average	60	22	29	52	38	34

4.9 Compliance Schedules

When incorporated into a WPDES permit, a limit that is consistent with the requirements and assumptions of a TMDL WLA is a WQBEL, as discussed previously in Section 4.6. At the time of permit reissuance, the Department will evaluate the potential for a discharge to exceed this TMDL-derived WQBEL to determine the need for a compliance schedule. If the WQBEL has the potential to be exceeded, a compliance schedule may be granted for existing facilities to comply with these limits when justifiable (Wis. Stat. § 283.13(5), ss. NR 212.76(5) and NR 106.117, Wis. Adm. Code).

A compliance schedule may not be included in the permit for a new discharger. Chapters NR 106, NR 207, and NR 217, Wis. Adm. Code, have different definitions of “new discharges” making it necessary to complete a new discharge determination on a case-by-case basis, depending on the pollutant(s) covered under the TMDL.

Procedures for including a compliance schedule for a WQBEL based on an established TMDL are specified in s. NR 212.76 (5), Wis. Adm. Code:

(5) COMPLIANCE SCHEDULES. When a permit is issued, reissued, or modified with new WQBELs based on a TMDL established using the procedures in this subchapter, the Department may include a compliance schedule to achieve compliance with the TMDL based limitation if the permittee’s treatment system is unable to immediately comply with the limitation. The compliance schedule shall meet all of the following conditions:

- a) The schedule of compliance will lead to compliance with the water quality based effluent limitation as soon as possible.*
- b) The compliance schedule may not extend beyond the expiration date of the permit unless extended compliance schedules are authorized in ch. NR 217, other Wisconsin administrative code chapters, or a TMDL schedule in an approved areawide water quality management plan under ch. NR 121. Compliance schedules for toxic and organoleptic substances shall be consistent with the requirements of s. NR 106.117.*
- c) Dates between interim compliance steps in the compliance schedule may not exceed one year.*
- d) Development and implementation of an optimization plan or pollution minimization plan may be included as part of the compliance schedule as a means of complying with the effluent limitation.*

There are many factors the Department can consider when determining the appropriate length of a compliance schedule. These factors can include the stringency of the limit, the length of time the facility has already had to consider compliance options for any WQBELs, and the complexity/cost of the compliance options, among others. For TMDLs that cover multiple pollutants, Department staff will need to evaluate the need for and appropriate duration of a compliance schedule for each pollutant separately from one another. In these instances, however, the Department may consider the similarities and differences in compliance options for these pollutants. If similar compliance options will likely be used for both pollutants, the Department may wish to coordinate the timing between the compliance schedules.

Example 1: A TMDL is developed to control TP and TSS pollution. A facility needs to install treatment technology to comply with both phosphorus and TSS limits. To avoid the need for separate facility plans and overlapping construction projects, it makes sense to synchronize the compliance dates for TSS and phosphorus in the permit.

Example 2: A TMDL is developed to control TP and TSS pollution. A facility needs to install treatment technology to comply with phosphorus limits but can optimize treatment to meet the TSS limit. In this case, the compliance schedules should not be synchronized as the TSS limit can be achieved far sooner than the phosphorus limit.

4.10 Reassigning Wasteload Allocations (WLAs)

TMDLs are developed to establish maximum allowable loads for an impaired water body to ensure water quality standards will be met. The WLA is the portion of the maximum allowable load allocated to point sources that discharge into that waterbody. For holders of individual wastewater permits, the TMDL will assign individual WLAs. The individual WLA is then used as the basis for water quality-based effluent limits in the wastewater discharger's permit. This section of the guidance on reassigning WLA applies only to permittees that have been assigned individual WLAs; general permittees that were assigned a group allocation are discussed in section 4.2.

Individual WLAs may be adjusted during the permitting process, so long as the total WLA expressed in the TMDL remains the same or decreases and there is no reallocation between the total WLA and the total load allocation. In other words, individual WLAs may increase or decrease so long as the total WLA expressed in the TMDL is not exceeded. It may be appropriate to adjust/reassign individual WLA to correct allocation errors in the TMDL, to allow discharges and communities to regionalize, or to reassign WLA that becomes available when a facility ceases to discharge or an outfall is terminated.

Note: for specific BOD allocations established in ch. NR 212, subchapter II, Wis. Adm. Code, the procedures in that chapter must be followed for reallocations or temporary transfers of those WLAs. This guidance is intended to address other reallocations of available WLA not covered by ch. NR 212, Wis. Adm. Code.

If individual WLAs were given for separate outfalls at the same facility, that facility may choose to use their total assigned WLA (the sum of their individual WLAs) across their outfalls, as long as the total WLA for applicable TMDL reaches is not exceeded (e.g., the outfalls are in the same or downstream TMDL reach where the original WLA was assigned). Similarly, a portion of the facility's total WLA could be used to cover a new outfall from the facility, if it discharges to the same or downstream TMDL reach. The facility would need to apply for reserve capacity, if their assigned WLA was not enough to cover the new discharge. See Section 4.11 for more information on reserve capacity.

Reassigning WLAs to Correct for Allocation Errors

In some cases, the Department may need to reassign WLAs to account for an existing point source that was 'missed' or under-allocated during TMDL development. These sorts of corrections should be made before any available WLA is set aside in reserve capacity or otherwise reassigned. As mentioned, this WLA adjustment process does not require establishment of a new TMDL but affected permittees and other interested parties should be notified when these decisions are made. Public notification includes written notification to the affected permittees as well as posting these decisions on the public notice website (<http://dnr.wi.gov/topic/wastewater/publicnotices.html>) for 30 days.

Reassigning Available WLA to Account for Regionalization

Rather than discharging their effluent directly, some point sources may choose to send their effluent to another point source for further treatment. For example, an industry that previously treated and discharged its own wastewater may decide to connect to a municipal wastewater treatment plant for treatment. Or a smaller municipality may connect to a larger municipal wastewater treatment plant

rather than continue to treat its own wastewater. In these cases, it is recommended that the available WLA be added to the WLA of the point source that is accepting the additional effluent, as long as the total WLA for applicable TMDL reaches is not exceeded. This will require permit reissuance/modification of the facility accepting the waste and permit termination of the other. Adjustments to the available WLA may be necessary to accommodate the change in location of the discharge. It should be noted that a reallocation may in some circumstances be considered an increased discharge subject to antidegradation demonstrations, as required by ch. NR 207, Wis. Adm. Code. If the point source that is accepting the additional effluent does not need the additional WLA, then the department has determined that WLA will be set aside as reserve capacity.

Reassigning Available WLA When a Facility Ceases to Discharge or an Outfall is Terminated

Upon a facility ceasing to discharge and subsequent termination of a permit containing TMDL-derived effluent limits, or the reissuance or modification of a permit to remove a surface water outfall or WLA, the department has determined that the available WLA will be rolled into the reserve capacity of the TMDL upon termination of the permit, in order to allow for future growth (i.e., future new or expanding discharges) within the TMDL reach. It should be noted that in some TMDL areas where reserve capacity was not set aside during TMDL development (e.g., Lower Fox River and Rock River TMDL areas), available WLA may be in higher demand.

If WLA is assigned to a facility with multiple outfalls in the TMDL and only one outfall is being terminated, the WLA may remain with the facility and be applied to its other surface water outfall(s), as long as the total WLA for applicable TMDL reaches is not exceeded.

Reassigning Available WLA to Account for Changing Permit Type

Many recently developed TMDLs have included a single WLA that applies to all general permits in a given TMDL reach. That single “lumped” WLA is intended to cover all general permitting activities, i.e., discharges covered by general permits at the time of TMDL approval and general permits that are newly conveyed or whose coverage is discontinued after the TMDL is approved. As long as a discharge is covered by a general permit, then the lumped WLA assigned to general permits covers that discharge. Reserve capacity may be applied to general permittees if it is determined, through analysis of discharge monitoring data, that the WLA set aside for GPs is not enough to cover the actual discharge load. (See section 4.11 for more about reserve capacity.)

In situations where DNR staff determine that a discharge previously covered by a general permit will need coverage by an individual permit, reserve capacity should be used to generate new WLA for that discharge. If reserve capacity is unavailable, then it may be possible to “carve out” a portion of the general permit WLA to cover the discharge. This approach should only be implemented as a last resort after all other approaches have been exhausted.

In situations where DNR staff determine that a discharge previously covered by an individual permit can be covered by a general permit, the department has determined that the WLA originally assigned to that individual permittee will be placed in reserve capacity. If there is not enough WLA available in the “lumped” general permit WLA to cover that discharge, the individual WLA may be added to the general permit WLA to account for that discharge.

Staff should contact the Point Source TMDL Implementation Coordinator ([Kari Fleming](#)) when making decisions about reassigning WLA, so that decisions can be documented for future reference and appropriate notifications can be made (e.g., USEPA must be notified when TMDL WLA is reassigned). Decisions should be clearly documented in WQBEL memos and/or permit fact sheets, so others can tell why/how they were made.

4.11 Reserve Capacity

Background

Reserve capacity, when available in TMDLs, is intended to provide WLA for future new or expanding wastewater permittees (municipal and industrial) and concentrated animal feeding operations (CAFO) that decide to treat production area wastewaters and discharge them to a surface water (subject to the department's antidegradation determination on a discharge-by-discharge basis). Reserve capacity may also be used to cover discharges from general permits if it is determined that the general permit WLA set aside in the TMDL does not adequately cover existing, new, or expanding discharges from general permit holders. Reserve capacity is generally not made available to permitted stormwater (MS4s). The guidance provided below describes a process that can be used for requesting, reviewing, and approving reserve capacity assignment for wastewater discharges.

Staff should consult TMDL reports and contact TMDL project managers to see if reserve capacity is set aside and to determine whether conditions were placed on the use of reserve capacity in the TMDL area. Each TMDL will specify the method used to determine the amount of reserve capacity and how much mass is set aside (if any). Reserve capacity may either be built into the overall WLA or be a separate component of the total loading capacity to allow for future growth in the watershed.

The guidance in this section describes recommended methods to distribute reserve capacity in most cases, but individual TMDL reports should be consulted to check for requirements specific to that TMDL area. In addition to any specific requirements described in the TMDL, any new or increased discharge must comply with the antidegradation and antibacksliding requirements of Chapter NR 207, Wis. Admin. Code.

In recently developed TMDLs where reserve capacity was set aside, it was calculated on a reach-by-reach basis with a percentage of each reach's available loading capacity set aside as reserve capacity. The TMDLs provide adequate capacity for potential new or expanding dischargers in the headwater sections of the basin. In addition, reserve capacity accumulates from contributing reaches moving down through the basin making it more available for dischargers located on larger downstream rivers. This approach affords dischargers greater flexibility in where they can locate or expand, minimizes impacts on existing dischargers, and is consistent with the observed practice of larger dischargers locating on larger bodies of water.

The amount of accessible reserve capacity may increase after a TMDL is approved if WLA becomes available due to the closing of facilities with previously assigned WLAs (see section 4.10), due to facilities that close during TMDL development (if a facility closed after being identified in the baseline but before being assigned a final WLA in the approved TMDL), or for other reasons.

Submittal of Requests for Reserve Capacity

If a permittee wishes to commence a new discharge or expand an existing discharge of a pollutant covered by the TMDL and the discharge is within the area covered by the TMDL, the permittee will need to submit a written notice of interest for reserve capacity along with a demonstration of need to the WDNR.

Consistent with antidegradation requirements in ch. NR 207, Wis. Adm. Code, interested dischargers should not be given reserve capacity unless they can demonstrate need. A demonstration of need should include an evaluation of conservation measures, recycling measures, and other pollution minimization measures that will reduce discharges of the pollutant(s) of concern. New dischargers should evaluate currently available treatment technologies and expanding dischargers should evaluate optimization of their existing treatment system and evaluation of alternative treatment technologies. In addition to evaluation of treatment options, an expanding discharger must demonstrate that the request for reserve capacity is due to increasing production levels or industrial, commercial, or residential growth in the community.

Requests for reserve capacity can be made prior to final approval of a TMDL, but no final assignments can be made until after the TMDL has been approved by EPA. Information related to the demonstration of need, the average annual design flow expected from the new or expanded discharge, the expected discharge concentration of the pollutant, and other relevant information should be included in the request for reserve capacity. This information will need to be submitted for each pollutant covered by a TMDL for which the permittee is requesting reserve capacity.

Requests for reserve capacity should be sent to the Permits Section Chief (Wade Strickland: wade.strickland@wisconsin.gov or WDNR, 101 S. Webster St., WY/3, Madison, WI 53707-7921). The Permits Section Chief will assign a WQBEL calculator to make reserve capacity recommendations.¹ Once assigned, WQBEL staff should send an email to the Water Evaluation Section Chief (Marcia Willhite: marcia.willhite@wisconsin.gov), the Wastewater TMDL Implementation Coordinator (Kari Fleming: kari.fleming@wisconsin.gov), and the Project Manager and Wastewater Sector Lead assigned to the TMDL in which reserve capacity is being requested to let them know that a request has been received and that they've been assigned to work on it.

¹ Staff have requested that the electronic permit application be updated so that reserve capacity requests can be submitted with the e-application. This has been added to the SWAMP "wish list" and will be completed once programmer time and funding is available to complete the work needed to add this to the e-application.

Wastewater and TMDL staff will need to work cooperatively to process a request for reserve capacity. WQBEL staff will need to review the request for reserve capacity, determine if the permittee can demonstrate need via antidegradation requirements, and calculate an appropriate WQBEL for each pollutant for which reserve capacity was requested if reserve capacity exists and need is demonstrated by the permittee. TMDL staff will need to determine if enough reserve capacity is available in the TMDL, where reserve capacity will come from in the TMDL area (i.e., which TMDL reaches), and keep track of all assigned reserve capacity for each pollutant in each TMDL area.

The Department's final decision regarding the assignment of reserve capacity will be formalized during the normal permit issuance, reissuance, or modification process, since the assignment of reserve capacity will be accomplished via placement of a new or revised TMDL-based WQBEL in the WPDES permit. Timelines for review and approval of a reserve capacity request will depend on the complexity of the request but will typically align with other permitting steps and timelines. Reserve capacity decisions and supporting information will be documented in WQBEL memos and permit fact sheets. The permittee (along with other external stakeholders) will have a chance to review preliminary reserve capacity decisions ahead of the final permit issuance, during the normal steps in the permit drafting public notice and participation process where external input is gathered – i.e., during review of draft permits and WQBEL memos, the permit fact check, and permit public notice periods.

Pursuant to 40 CFR 122.41(g) and s. NR 205.07(1)(c), Wis. Adm. Code, a WPDES permit does not convey any property rights of any sort nor any exclusive privilege. All proposed reserve capacity assignments are subject to WDNR review and approval and must be consistent with applicable regulations.

Reserve capacity decisions and other related permit determinations are subject to public notice and participation procedures as well as opportunities for challenge at the time of permit issuance, reissuance, or modification under chapter 283, Stats. The affected permits will be public noticed at <http://dnr.wi.gov/topic/wastewater/publicnotices.html> and in the legal notices section of a local newspaper in the vicinity of the facility for the standard 30 days.

Finding Reserve Capacity in the TMDL

TMDL staff will determine if enough reserve capacity is available in the TMDL, where reserve capacity will come from in the TMDL area (i.e., which TMDL reaches), and keep track of all assigned reserve capacity for each pollutant in each TMDL area. Reserve capacity will need to be tracked for each TMDL and each pollutant and may be tracked using either the original TMDL's allocation database or another appropriate tracking tool. Central Office TMDL staff will notify EPA in writing of reserve capacity assignments. (Note: staff have previously created a spreadsheet to track reassigned WLA, found here: \\central\water\WQWT_PROJECTS\WY_WT_WARP_TMDL_Imp_Guidance\Guidance\WPDES_Guidance\WLA_Tracking.xlsx)

Reserve capacity should be taken equally from all reaches upstream and in which the discharger is located. As additional demands are placed on available reserve capacity, it may become necessary to shift the location that previously assigned reserve capacity was taken. Once reserve capacity reaches levels that it is no longer usable, the TMDL could be re-evaluated to see if additional assimilative capacity has become available since the original TMDL analysis due to changes in flow or implementation of the reductions prescribed in the TMDL.

Calculation of Reserve Capacity WQBEL

If the Department determines that a new or expanding discharger qualifies for reserve capacity, WQBEL staff should determine the appropriate amount of reserve capacity that can be assigned using the procedures outlined below:

New Discharger: For a new discharger, calculate the WQBEL per NR 217 for phosphorus and NR 102 or NR 106 for other pollutants. If there is no WQBEL procedure available for the pollutant, apply the TMDL reductions consistent with the applicable reach, to the baseline condition (effluent concentration) used in the TMDL. Baseline conditions, consisting of concentration and design flows, are set for different pollutants and discharge types and are summarized in each TMDL. Talk to TMDL development staff, if you have questions. If the discharger can meet the resulting limit with available technology, then the limit is translated into a mass and this mass should become the amount of reserve capacity allocated to the discharger. That reserve capacity mass is then used as the dischargers new WLA from which WQBELs can be calculated using the procedures described in section 4.6 of this guidance for that TMDL.

If the discharger is unable to meet the new WQBEL(s) with available technology, then more reserve capacity, up to a maximum cap, may be allocated to the discharger. The maximum cap should be calculated based on the facility's expected design flow and the highest baseline concentration for a

similar type facility and treatment system. Determination of the WLA available to a new discharge will depend on the type and condition of the immediate receiving water. Limitations for new discharges to Outstanding Resource Waters shall be based on s. NR 207.03(3), Wis. Adm. Code. Limitations for new discharges to Exceptional Resource Waters which are not needed to prevent or correct either an existing surface or groundwater contamination situation, or a public health problem shall be based on s. NR 207.03(4)(b), Wis. Adm. Code. For all other new discharges to flowing waterbodies the following procedures should be applied to determine the appropriate mass allocation:

1. Determine the mass of reserve capacity that is available in the given reach.
2. Calculate the WQBEL per s. NR 217.13(2)(a) for phosphorus (or NR 102 or NR 106 for other pollutants) and the associated mass limit per s. NR 217.14(3), Wis. Adm. Code. Calculations should be based on current upstream water quality and for purposes of this calculation any other discharges within the given reach may be ignored.
3. Calculate the mass load associated with the baseline condition for the discharge type of the new discharger. Then apply the TMDL reductions, consistent with the applicable reach, to the baseline condition to determine the resultant mass.
4. Set the WLA equal to the most restrictive of the values determined by the above methods.

For a new discharge directly to a lake or reservoir, use the following procedure to determine the appropriate mass allocation:

1. Determine the amount of reserve capacity that is available for the lake or reservoir. This can include unassigned reserve capacity from contributory reaches located upstream of the lake or reservoir.
2. Calculate the WQBEL per s. NR 217.13(3) and associated mass limit per s. NR 217.14(3), Wis. Adm. Code (or chs. NR 102 or NR 106 for other pollutants).
3. Set the WLA equal to the more restrictive of the values determined by the above methods.

Expanding Discharger: For an expanding discharger, reserve capacity should be allocated to cover the increased mass attributed to the facility expansion, measured as the increase in flow over the flow assumed in the TMDL baseline, minus any reductions that can be realized through optimization or economically viable treatment technologies.

If a discharger needs more mass than what is available in reserve capacity, the difference between the mass discharged and their allocation could be made up through an off-set such as water quality trading (see *“Guidance for Implementing Water Quality Trading in WPDES Permits”* <http://dnr.wi.gov/topic/SurfaceWater/waterqualitytrading.html>). NOTE: At the time this guidance document was developed, the trading guidance document was not finalized. It may be updated or revised prior to adoption under the guidance procedures in Wis. Stat. s. 227.112. If sufficient reserve capacity is not available, the discharge must be offset or the TMDL could be re-evaluated to determine if more assimilative capacity has become available since the original analysis.

4.12 Variances

Since a WLA from an approved TMDL is expressed as a WQBEL in the permit, the permittee may seek a variance from the limit pursuant to Wis. Stat. § 283.15. If the TMDL-derived WQBEL is for phosphorus, the multi-discharger variance (MDV) from Wis. Stat. § 283.16, may be available. The need for a 283.15 variance would have to be based on naturally occurring pollutants or other limiting factors that prevent

attainment of the standard; human caused conditions or sources of pollution that prevent attainment of the standard and cannot be remedied; hydrologic modifications that preclude the attainment of the standard and cannot be restored; physical conditions related to the natural features of the water body that preclude attainment of aquatic life uses; or that the standard would cause substantial and widespread adverse social and economic impacts. (See Wis. Stat. §§ 283.15(4)(a)1a-f, for more detail.)

A TMDL does not have to be revised if multiple permittees receive a variance. Variances are intended to be temporary and each recipient of a variance is expected to eventually achieve their WLA. Although the timeline for compliance may change when a variance is granted, the intent of the TMDL does not change. Therefore, the TMDL does not have to be redone.

4.13 Antidegradation and Antibacksliding

If a new TMDL-derived limit results in an increase in an effective existing limit in a permit, then an antidegradation and antibacksliding evaluation is needed.

Subchapter I, NR 207, Wis. Adm. Code, establishes implementation procedures for antidegradation. TMDL limitations are no different than other WQBELs with respect to antidegradation. For example, the initial imposition of a WQBEL, including TMDL-derived limits, does not require an antidegradation evaluation as long as the pollutant of concern was previously present in the discharge and the permittee isn't proposing an increased load to the receiving water.

With a few exceptions, ch. NR 207 requires an antidegradation evaluation when a new or increased discharge is proposed. Therefore, an antidegradation evaluation is necessary before a TMDL-derived limit, which has been incorporated into a permit and has become effective, is increased or the TMDL-derived limit replaces a more restrictive effective effluent limit.

Subchapter II, NR 207, Wis. Adm. Code, establishes implementation procedures for antibacksliding. Section NR 207.12, Wis. Adm. Code, says that effluent limits in reissued, revoked and reissued, or modified permits must be at least as stringent as the effective effluent limits in the previous permit, except under certain circumstances. An effective WQBEL, including those based upon a TMDL, may be relaxed only if the less stringent limit is at least as stringent as required by applicable effluent limit guidelines, it complies with state WQS (including antidegradation requirements) and one of the following requirements is satisfied, according to s. NR 207.12 (3). Sections NR 207.12 (3) (1) and NR 207.12 (3) (b)(2), shown below, describe when a WQBEL may be made less stringent due to new information that was not available at the last permit reissuance, including a new EPA approved TMDL for the pollutant and receiving water.

(3) RELAXING A WQBEL OR A LIMIT BASED ON A STATE TECHNOLOGY BASED TREATMENT STANDARD

(a) *General.* Any effective WQBELs, including those based upon a TMDL or other wasteload allocation, or a limit based on a state technology-based treatment standard may be relaxed in a reissued, revoked and reissued, or modified permit if the requirements of sub. (1) (a) and (b) are met and, for an increased WQBEL, one of the following requirements is satisfied:

1. **'Impaired waters and TMDL based limits.'** For discharges of a pollutant to a receiving water or downstream water that is listed as an impaired water for the pollutant, any

WQBEL that is based upon a federally approved TMDL for the pollutant may be made less stringent, provided at least one of the following applies:

- a. Other wasteload allocated limits for one or more dischargers to the impaired receiving water or downstream water are also adjusted so, cumulatively, the TMDL allocations will still assure the attainment of water quality standards.
- b. The designated use that is not being attained has been removed or revised in accordance with state regulatory procedures and approved by the EPA.

(b) *Specific exceptions to backsliding prohibition.* Any effective WQBELs, including those based upon a TMDL or other wasteload allocation, or a limit based on a state technology-based treatment standard may be relaxed in a reissued, revoked and reissued, or modified permit if sub. (1) (a) and (b) are satisfied and at least one of the following applies:

2. New information is available that was not available at the time of permit issuance and that would have justified the application of a less stringent effluent limit at the time of permit issuance. **New information under this subdivision includes the establishment of an EPA approved TMDL for the pollutant and receiving water.** New information under this subdivision does not include revised regulations, guidance, or test methods. The relaxation of a WQBEL under this subdivision that is based upon a revised wasteload allocation, a revised TMDL, or any alternative grounds for translating water quality standards into effluent limits, is permissible only if the cumulative effect of the revised allocation results in a decrease in the amount of pollutants discharged into the receiving waters, and such revised allocations are not the result of a discharger completely or substantially eliminating its discharge of pollutants.

Additionally, s. NR 207.12 (4) describes when interim limits may be relaxed.

(4) RELAXING AN INTERIM EFFLUENT LIMITATION OR AN ELG-BASED LIMITATION OR STANDARD. Interim effluent limitations, standards, and conditions and ELG-based effluent limitations and standards that have taken effect in a permit may be relaxed in a reissued, revoked and reissued, or modified permit if the requirements in sub. (1) (a) and (b) are met and both of the following are met:

- (a) Circumstances upon which the previous permit was based have materially and substantially changed since the time the permit was issued.
- (b) Changes have occurred that would constitute cause for a permit modification or revocation and reissuance under ch. NR 203.

It is important to note that even if a limit may be made less stringent according to antibacksliding requirements, the requirements for antidegradation must still be met before the limit can be made less stringent. Staff must document decisions related to antibacksliding and antidegradation in fact sheets and WQBEL memos.

4.14 Monitoring TMDL Performance

If a permittee agrees to perform surface water monitoring or is required to perform this monitoring as part of an adaptive management project, surface water monitoring requirements may be placed in the permit. While the Department can require effluent monitoring to assess compliance with TMDL-based WQBELs, permits can't include surface water monitoring to verify compliance with a TMDL, unless this is

required as part of an adaptive management project as specified in s. NR 217.18, Wis. Adm. Code or other code requirements.

4.15 Monitoring of Pollutants Causing Impairments

If there is cause to believe that the discharge of a pollutant may be contributing to impairment of the surface water (i.e. exceeding the water quality standard), then limit calculators should recommend that facilities monitor their effluents for the pollutant of concern prior to or during TMDL development (Wis. Stat. § 283.55 (1)). Effluent monitoring data could be important when determining accurate loading rates from point sources for the TMDL. The frequency of monitoring necessary may depend on pollutant type, water quality standards, or site-specific factors. Permits staff should consult with TMDL development staff when developing a sample collection frequency.

4.16 WQBEL Calculator Responsibilities After TMDL approval

Once a TMDL is approved, limit calculators should include TMDL-derived WQBELs in limit memos for modified or reissued permits. When preparing WQBEL recommendations, identify the TMDL report as the source of TMDL-derived effluent limits. Refer to Section 4.6 for detailed guidance related to how to determine which limits are appropriate and how to express WLAs as permit limits.

Limit memos should also indicate whether the TMDL-derived effluent limit replaces other WQBELs for the same parameter and address antidegradation considerations when doing so. Recommendations for monitoring discharges of pollutants of concern to impaired waters without an approved TMDL should also be included in WQBELs recommendation memos.

4.17 Permit Drafter Responsibilities After TMDL Approval

The limit memo should specify which WQBELs (including TMDL-derived effluent limits, when appropriate) should be included in discharge permits. Here are a couple of examples on how to include TMDL-derived effluent limits in permits. If you are drafting a permit with more complex TMDL-derived effluent limits, contact the Permits Section for assistance.

Example #1:

If a permit with a P TBEL of 1 mg/L from ch. NR 217, Wis. Adm. Code, is being reissued with a TMDL-derived WQBEL for P of 6.7 lbs/day monthly average, the following steps should be taken:

- Include in the draft permit the parameter “Phosphorus, Total” and continue the 1 mg/L phosphorus limit, sample frequency and sample type from the previous permit;
- Include in the draft permit the parameter “Phosphorus Total” with units of lbs/day, a monthly average limit of 6.7 lbs/day, a sample frequency from the previous permit, and a calculated sample type; and
- Code the monthly average limit in SWAMP for all twelve months of the year, beginning in the year that the limit becomes effective.

Example #2:

If a permit with monthly average and daily maximum concentration TBEL for TSS is being reissued with TMDL-derived effluent limits for TSS of 3,000 lbs/day monthly average and 6,000 lbs/day daily maximum, for example, the following steps should be taken:

- Include in the draft permit the parameter “Suspended Solids, Total” and continue the TBELs, sample frequency and sample type from the previous permit;
- Include in the draft permit the parameter “WLA Suspended Solids, Total” with units of lbs/day, a monthly average limit of 3,000 lbs/day, a daily maximum effluent limit of 6,000 lbs/day, a sample frequency equal to that from the current permit, and a calculated sample type;
- Code the monthly average and daily maximum limits in SWAMP for all twelve months of the year, beginning in the year that the limit becomes effective

Example #3:

If a WQBEL is derived from an annual WLA (lbs/yr), the permit should require the permittee to report 12-month rolling sums for the parameter addressed by the TMDL-derived WQBEL.

Note that the method for calculating the 12-month rolling sum is included in the standard requirements provided by SWAMP. Therefore, a special footnote to explain how the value is calculated is not necessary in the main portion of the permit.

If the permittee requires time to comply with a TMDL-based effluent limit, see Section 4.9 for guidance related to compliance schedules for TMDL-based limits.

Appendix A. How to Access TMDL/WLA Information

TMDL/WLA information may be accessed in four ways:

A. Via DNR Web Site: Staff can find TMDL reports on the DNR web site.

Information about draft and final approved TMDLs can be found here: <http://dnr.wi.gov/topic/tmdls/>.

B. Via WATERS (Water Assessment, Tracking & Electronic Reporting System): It is possible to determine whether or not a TMDL is being or has been prepared for a particular waterbody by reviewing an "Impaired Waters Report" in WATERS. Here's how to do it:

Start by connecting to WATERS link under "DNR Tasks" on the DNR Intranet home page or at: <http://prodoasint.dnr.wi.gov/wadrs/>.

1. Log on to WATERS using your Oracle ID and password.
2. Click on the "Reports" tab.
3. Select "Impaired Water Reports."
4. Click on the drop-down box in the "Impaired Water Status" field and select either "TMDL Development" or "TMDL Approved."
5. Finally, click "Create Report."

Where applicable, TMDL reports (and the associated WLAs) are available to download from the "Waterbody Documents" section for a particular waterbody in WATERS.

C. Via Surface Water Data Viewer: It is possible to determine whether or not a TMDL is being or has been prepared for a particular waterbody by viewing and/or creating a map in the Surface Water Data Viewer. Start by connecting to the SWDV at: <https://dnrm maps.wi.gov/H5/?viewer=SWDV>

1. Click the "Find Location" tab.
2. To specify what you would like to find, select "Waterbody Name and County."
3. Enter the applicable waterbody and county information, click "Go!" A map showing the waterbody will appear. Zoom in and out as necessary.
4. Click the "Layers" tab.
5. Under "Watershed Management Layers," click on the "Standards, Monitoring, & Assessment Data" subfolder.
6. Under the "Impaired Waters" subfolder, select the "TMDL status" layer.
7. Finally, click on the "Legend" tab to determine the TMDL status for the waterbody in question.
8. If desired, click on the "Print" tab to print a PDF version of the map.

D. Via USEPA's Assessment TMDL Tracking and Implementation System (ATTAINS): It is possible to determine whether or not a TMDL has been prepared for a particular waterbody by viewing USEPA's ATTAINS web site at: https://ofmpub.epa.gov/waters10/attains_index.home. Users need to click on the state of Wisconsin on the map and then follow the link to the most current "Impaired Waters Report." From that report, users can conduct a "TMDL Document Search" by clicking on the link with that title.

Appendix B. How to Access Impaired Waters Information

Impaired waters information may be accessed in three ways:

A. Via DNR Web Site: DNR staff can find impaired water information, including the s. 303(d) List of Impaired Waters, on the DNR web site at: <http://dnr.wi.gov/topic/impairedwaters/>.

B. Via WATERS (Water Assessment, Tracking & Electronic Reporting System): It is possible to determine whether or not a waterbody is impaired by reviewing an "Impaired Waters Report" in WATERS. Here's how to do it:

Start by connecting to WATERS link under "DNR Tasks" on the DNR Intranet home page or at: <http://prodoasint.dnr.wi.gov/wadrs/>.

1. Log on to WATERS using Oracle ID and password.
2. Click on the "Reports" tab.
3. Select "Impaired Water Reports."
4. Click on the drop-down box in the "Impaired Water Status" field and select "303d Listed."
5. Finally, click "Create Report."

C. Via Surface Water Data Viewer: It is possible to determine whether or not a waterbody is impaired by viewing and/or creating a map in the Surface Water Data Viewer. Start by connecting to the SWDV at: <https://dnrmaps.wi.gov/H5/?viewer=SWDV>.

1. Click the "Find Location" tab.
2. To specify what you would like to find, select "Waterbody Name and County."
3. Enter the applicable waterbody and county information, click "Go!" A map showing the waterbody will appear. Zoom in and out as necessary.
4. Click the "Layers" tab.
5. Under "Watershed Management Layers," click on the "Standards, Monitoring, & Assessment Data" subfolder.
6. Under the "Impaired Waters" subfolder, select the "Impaired Waters (303d)" layer.
7. Finally, click on the "Legend" tab to determine the impaired waters status for the waterbody in question.
8. If desired, click on the "Print" tab to print a PDF version of the map.

Appendix C. Statutes and Administrative Rules Relevant to TMDLs

Chapter 227.52, Wis. Stats., ADMINISTRATIVE PROCEDURE AND REVIEW

(Go to: <http://nxt.legis.state.wi.us/nxt/gateway.dll?f=templates&fn=default.htm&d=stats&id=Ch.%20227>)

Chapter 283, Wis. Stats., POLLUTION DISCHARGE ELIMINATION

s. 283.13 (5) SUBCHAPTER III STANDARDS; EFFLUENT LIMITATIONS

(Go to: <http://nxt.legis.state.wi.us/nxt/gateway.dll?f=templates&fn=default.htm&d=stats&id=Ch.%20283>)

s. 283.31 SUBCHAPTER IV, PERMITS

(Go to: <http://nxt.legis.state.wi.us/nxt/gateway.dll?f=templates&fn=default.htm&d=stats&id=Ch.%20283>)

s. 283.35 (3) WITHDRAWAL.

(Go to: <http://nxt.legis.state.wi.us/nxt/gateway.dll?f=templates&fn=default.htm&d=stats&id=Ch.%20283>)

s. 283.83 SUBCHAPTER V, GENERAL PROVISIONS: ENFORCEMENT

s. 283.83 Continuing planning process.

(Go to: <http://nxt.legis.state.wi.us/nxt/gateway.dll?f=templates&fn=default.htm&d=stats&id=Ch.%20283>)

s. 283.84 Trading of water pollution credits.

(Go to: <http://nxt.legis.state.wi.us/nxt/gateway.dll?f=templates&fn=default.htm&d=stats&id=Ch.%20283>)

Chapter NR 102, Wis. Adm. Code, WATER QUALITY STANDARDS FOR WIS SURFACE WATERS

102.06 Phosphorus.

(Go to: https://docs.legis.wisconsin.gov/code/admin_code/nr/100/102)

Chapter NR 121, Wis. Adm. Code, AREAWIDE WATER QUALITY MANAGEMENT PLANS

(Go to: https://docs.legis.wisconsin.gov/code/admin_code/nr/100/121)

Chapter NR 151, Wis. Adm. Code, RUNOFF MANAGEMENT

NR 151.004 Performance standards for TMDLs.

NR 151.07 Nutrient management.

NR 151.24 Post-construction performance standard.

(Go to: https://docs.legis.wisconsin.gov/code/admin_code/nr/100/151)

Chapter NR 200, Wis. Adm. Code, VARIANCES

(Go to: https://docs.legis.wisconsin.gov/code/admin_code/nr/200/200)

Chapter 207, Wis. Adm. Code, WATER QUALITY ANTIDegradation

(Go to: https://docs.legis.wisconsin.gov/code/admin_code/nr/200/207)

Chapter NR 212, Wis. Adm. Code, WASTE LOAD ALLOCATED WQ RELATED LIMITATIONS

(Go to: https://docs.legis.wisconsin.gov/code/admin_code/nr/200/212)

Chapter NR 216, Wis. Adm. Code, STORM WATER DISCHARGE PERMITS.

NR 216.002 Definitions.

NR 216.023 Urbanized area exemption.

NR 216.025 Designation criteria.

(Go to: https://docs.legis.wisconsin.gov/code/admin_code/nr/200/216)

Chapter NR 217, Wis. Adm. Code, PHOSPHORUS EFFLUENT STANDARDS AND LIMITATIONS

(Go to: https://docs.legis.wisconsin.gov/code/admin_code/nr/200/217)

FEDERAL LAW/REGULATIONS

Overview: Go to: <http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/index.cfm>

TMDL Implementation Guidance for Wastewater Permits

Section 303(d) of the 1972 Clean Water Act
40 CFR Part 130 (1985, amended 1992)

USEPA's Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
(Go to: <https://www3.epa.gov/npdes/pubs/owm0264.pdf>)



WISCONSIN DEPARTMENT OF NATURAL RESOURCES NOTICE OF FINAL GUIDANCE & CERTIFICATION

Pursuant to ch. 227, Wis. Stats., the Wisconsin Department of Natural Resources has finalized and hereby certifies the following guidance document.

DOCUMENT ID

WY-20-0016

DOCUMENT TITLE

TMDL Implementation Guidance for Wastewater Permits

PROGRAM/BUREAU

Water Quality

STATUTORY AUTHORITY OR LEGAL CITATION

For wastewater discharges, TMDL wasteload allocations must be expressed in individual Wisconsin Pollutant Discharge Elimination System (WPDES) permits as water quality-based effluent limits (WQBELs), according to Wis. Stat. § 283.31(3)(d)3. and Wis. Adm. Code §§ NR 212.76 and NR 217.16.

DATE SENT TO LEGISLATIVE REFERENCE BUREAU (FOR PUBLIC COMMENTS)

03/09/2020

DATE FINALIZED

05/13/2020

DNR CERTIFICATION

I have reviewed this guidance document or proposed guidance document and I certify that it complies with sections 227.10 and 227.11 of the Wisconsin Statutes. I further certify that the guidance document or proposed guidance document contains no standard, requirement, or threshold that is not explicitly required or explicitly permitted by a statute or a rule that has been lawfully promulgated. I further certify that the guidance document or proposed guidance document contains no standard, requirement, or threshold that is more restrictive than a standard, requirement, or threshold contained in the Wisconsin Statutes.

Adrian Stocks

5/13/2020

Signature

Date