

## **DRAFT: Multi-discharger Variance Justification**

*October 19, 2015*

### **Department Rationale for Approving Variance:**

In accordance with 40 CFR 131.14, a state may adopt a water quality standards variance if it is able to demonstrate that it is not feasible to attain the currently applicable designated use and criterion during the period of the variance if compliance with the standards would result in a substantial and widespread economic and social impact. Pursuant to Wis. Stat. s. 283.16, the Department believes that complying with phosphorus water quality-based effluent limitations causes a substantial and widespread impact to the state and cannot be met for at least 10 years in an economically viable way.

In Wisconsin phosphorus water quality-based effluent limitations (WQBELs) are typically restrictive limitations that require a major facility upgrade to comply with them. In fact, 60% of WPDES permit holders face phosphorus WQBELs that are set equal to the phosphorus criteria, and another 20% face more restrictive phosphorus WQBELs than what is currently present in their WPDES permit. The cost to comply with these restrictive limitations are estimated to be \$3.4 billion dollars over a 20-year timeframe, which surges to almost \$6 billion once interest is factored in (See Final Economic Determination for details). These costs are based on cost projections for individual facilities to install, operate, and maintain additional phosphorus treatment technology as well as potential economic impacts generated from additional construction activities, increased energy use, and other “upstream” offsets throughout the state. The Department believes these costs to be substantial on Wisconsin’s economy for the following reasons:

1. Phosphorus compliance costs disproportionately affect Wisconsin’s economically sensitive areas, primarily among rural and aging populations (see p. 55 of the Final Economic Determination).
2. Phosphorus compliance costs are believed to push municipal sewerage rates above 2% median household income (MHI) for communities in 30 counties across the state, and another 35 counties will have communities with municipal sewerage rates in the 1-2% MHI range (p. 13 of the Addendum).
3. Phosphorus compliance costs substantially impact key industrial groups in Wisconsin that are critical to Wisconsin’s economic health and are also culturally significant. This includes cheese, paper, food processing, aquaculture, non-contact cooling waters, and other dischargers. Adverse impacts these industrial groups face includes the potential loss of jobs, decreased investment, potential relocation or closing of facilities, and other adverse impacts (p. 47 of the Final Economic Determination). Specifically, the loss of permanent employment opportunities in the state is projected to be over 4,000 jobs over a 20-year period. Even with temporary job offsets incurred by the installation and maintenance of phosphorus technology, the overall impacts on jobs is still believed over 3,300 jobs (see Addendum). As previously mentioned, these impacts disproportionately affect regions and counties in the state.
4. Phosphorus compliance costs put Wisconsin’s industries at a competitive disadvantage from industries in other states that do not yet have standards (pp. 28 and 47 of the Final Economic Determination).
5. A major facility upgrade is necessary to qualify for the MDV, which ensures that only those facilities facing substantial capital and operation and maintenance expenditures qualify for the MDV.
6. The overall cost of complying with phosphorus is estimated to be \$6 billion across the state, which is a significant cost burden for the state.

The Department also finds that these costs will cause widespread adverse social and economic impacts in Wisconsin. To determine potential widespread impacts, economic forecasting simulations using REMI

(Regional Economic Model, Inc.) were run to determine the potential impacts of these costs to the Wisconsin economy. This analysis demonstrated that Wisconsin's economy cannot absorb these costs without suffering statewide economic depreciation. These impacts will be amplified in already economically strained parts of the state. Specifically, this analysis demonstrated that phosphorus compliance costs would cause a loss of over 3,300 jobs, a loss of gross state product of \$478.9 million, a reduction of total wages of \$184.1 million, and over 7,500 fewer Wisconsin residences (Section 6 of the final Determination). For these reasons, the Department believes a multi-discharger variance is appropriate for potentially qualifying point source discharges in Table 1 pursuant to 40 CFR 131.14(a) and Wis. Stat. s. 283.16.

**Site-Specific Eligibility Criteria:**

The data and assumptions used to determine substantial and widespread impacts were largely aggregate data that reflected reasonable data inputs and assumptions for the categories of discharges in question. Each time an individual point source submits an application for the MDV (s. 283.16(4)(b), Wis. Stat.), the Department must determine whether the data and assumptions in the Department of Administration's substantial impacts determination applies to an individual point source as required pursuant to Wis. Stat. s. 283.16(4)(a)1. To determine whether the substantial impact determination applies to an individual point source, the Department will request and compare site-specific data to the data used to derive the statewide analysis for each applicant. Key data inputs that point sources must provide to the Department include:

- A certification that the point source is an existing source and requires a major facility upgrade to comply with the phosphorus WQBELs (s. 283.16(4)(a)2, Wis. Stat.);
- Site-specific compliance cost data (Section 5 of the Final Determination);
- Representative effluent TP concentrations (s. 283.16(6)(a), Wis. Stat.);
- Representative influent TP concentrations (if available); and
- Optimization analysis for internal waste streams (s. 283.16(6)(a), Wis. Stat.).

When requesting coverage under the MDV, a point source must provide information to the Department to document that the substantial impacts determination under Wis. Stat. 283.16(2)-(3) applies to the individual point source as is required under Wis. Stat. 283.16(4)(a)1. The Department will compare information provided in an application to the categorical economic indicators to ensure that the phosphorus compliance costs will cause a substantial and widespread adverse impact to the individual applicant or the area served by the applicant. These eligibility indicators are described in Section 5 of the Final Economic Determination, and are summarized in Table 2.

For municipal permittees, phosphorus compliance costs are deemed to have a substantial impact, and a permitted WWTF is eligible for coverage under the MDV in the following two scenarios:

1. Based on data that are available at the time that a municipal WWTF is seeking coverage under the MDV, if the estimated per-customer cost is at least 2% of MHI, then phosphorus compliance costs are deemed to have a substantial impact on municipal WWTFs if at least two other secondary screeners are satisfied (Secondary indicators are discussed in depth in part B of this section, "Secondary Indicators", p. 33).
2. Based on data that are available at the time that a municipal WWTF is seeking coverage under the MDV, if the estimated per-customer cost is at least 1% of MHI but less than 2% of MHI, then phosphorus compliance costs are deemed to have a substantial impact on municipal WWTFs if at least three other secondary screeners are satisfied. The substantial impact is less obvious for municipal WWTFs with service areas in this MHI range, so these municipal WWTFs face a higher secondary indicator threshold.

For industrial permittees that are not included in the power sector, the phosphorus compliance costs are deemed to have a substantial impact on an industrial permittee and an industrial permittee is eligible for coverage under the MDV in the following two scenarios:

1. An industrial permittee is eligible for coverage under the MDV if the permittee meets two primary screening conditions:
  - a. the permitted facility is within the top 75% of permittees incurring costs); **and**
  - b. the permittee’s discharge is located in a county that is within the top 75% of counties incurring costs.;

**and** the permittee meets at least two of the secondary screeners.

2. An industrial permittee is eligible for coverage under the MDV, if the permittee meets one of the following primary screening conditions:
  - a. the permitted facility is within the top 75% of permittees incurring costs; **or**
  - b. the industrial facility’s discharge is located in a county that is within the top 75% of counties incurring costs are eligible for the coverage under the MDV;

**and** the permittee meets at least three secondary screeners.

Industrial permittees do not meet the substantial impact test and are not eligible for coverage under the MDV if they don’t meet either primary indicator. If an industrial permittee does not satisfy one of the two scenarios specified above, the economic determination does not apply to that permittee and the permittee is not eligible for coverage under this MDV. The secondary indicators specified in the Final Determination are also summarized in Table 2.

For discharges in the power sector, it was not possible to collect sufficient data regarding whether power plants’ phosphorus compliance costs would have a substantial impact on Wisconsin’s economy at this time. Therefore, the MDV is not available to this category of discharge at this time (s. 283.16(2)(a), Wis. Stat.)

*Table 2. Economic eligibility criteria.*

<u>Screener Type</u>	<u>Applicable Category</u>	<u>Screener</u>	<u>Scoring</u>
Primary Screener	Municipal	Sewerage Rates at least 1-2% of MHI <sup>1</sup>	A secondary score of at least 3 to qualify
	Municipal	Sewerage Rates at least 2% of MHI <sup>1</sup>	A secondary score of at least 2 to qualify
	All Industrial Categories	Must be in the top 75% of dischargers incurring costs within that category	If both are met, a secondary score of at least 2 is needed to qualify;
	All Industrial Categories	Must be located in a county that is within the top 75% of counties incurring costs for that category	If only one met, a secondary score of at least 3 is needed to qualify
Secondary Screener <sup>2</sup>	All Categories	County Personal Current Transfer Receipts Share to Total Income > 17.1%	Score=1
	All Categories	County Jobs per Square Mile < 50	Score=1

All Categories	County Population Change<4.4%	Score=1
All Categories	County Change in Net Earnings<39.9%	Score=2
All Categories	County Employment Change<4.8%	Score=1
All Industrial Categories	County MHI <sup>1</sup> <\$53,000	Score=1
Cheese Manufacturing, Food Processing, Aquaculture, and Paper	Capital Cost as a % of County Payroll>1%	Score=2

1- MHI= Median Household Income

2- Secondary screener thresholds will be updated in accordance with the “Interim Updates” section below.

**Duration of the Variance:**

*Importance of Reducing Point Source and Nonpoint Source loads to Meet Water Quality Goals*

It is well documented in TMDL reports and allocations, the PRESTO model, Wisconsin's Nutrient Reduction Strategy, and other sources that the majority of Wisconsin's watersheds are either dominated by nonpoint source phosphorus loads, or are a blend of point and nonpoint source phosphorus loads. In fact, it is approximated that almost 82% of WPDES permit holders discharge to a receiving water that is dominated by nonpoint source phosphorus loads (<http://dnr.wi.gov/topic/surfacewater/presto.html>). These watersheds will likely require a combination of point source and nonpoint source reductions to be made in order to achieve water quality goals. EPA has also acknowledged the importance of reducing both point and nonpoint sources to address phosphorus pollution in its report, “A Compilation of Cost Data Associated with the Impacts of Control of Nutrient Pollution” (EPA 820-F-15-096). This issue is also discussed in the Adaptive Management Technical Handbook (<http://dnr.wi.gov/topic/SurfaceWater/AdaptiveManagement.html>).

The path for municipal and industrial wastewater treatment plants (WWTFs) to meet their phosphorus reduction obligations is straight forward: permit limitations are placed in WPDES permits, and point sources must comply with these limitations at the end of the compliance schedule (if one is granted). However, the path for achieving nonpoint source reductions is less certain since these sources are not required to obtain permits. Wisconsin’s nonpoint source program is one of the strongest in the country, establishing clear agricultural performance standards and prohibitions in administrative code. However, these performance standards are not enforceable unless an offer of cost sharing is made to a farmer with an existing facility or practice to cover at least 70% of the value of the corrective measures. These performance standards may also not be sufficient to achieve water quality goals in all instances. Budget constraints and a lack of available staff have been key barriers to implementing and enforcing these agricultural performance standards to-date.

Additionally, nonpoint source improvements do not occur over night. It takes time to establish key relationships, build partnerships, and find creative solutions that can be maintained over time. It also takes time to realize the full water quality benefit from many agricultural best management practices. Wisconsin’s “dairy state” reputation is not misplaced. Wisconsin is home to nearly 17,000 dairy farms, with over one million cows ([http://www.netstate.com/states/intro/wi\\_intro.htm](http://www.netstate.com/states/intro/wi_intro.htm)) and millions of acres of cropland. With this much livestock and cropland, the build-up of phosphorus concentrations in the soil due to over-application of nutrients is a key concern for our state. Once best management practices are established to address this concern, it can require years to draw down excessive levels of phosphorus in the soil in order to realize water quality benefits. It also takes time for some best management practices to become established, and to educate landowners on the benefits of effective nutrient management plans.

Grassed waterways and other permanent-vegetative practices, for example, can take several growing seasons before the practice is properly established and effective.

In more urbanized watersheds, permitted and non-permitted municipal separate storm sewer systems (MS4s) are also key sources of phosphorus loadings that must be reduced to achieve water quality goals. Compliance with water quality goals in MS4 areas frequently rely on the installation of urban best management practices on redevelopment projects as well as on future developments (<http://dnr.wi.gov/topic/stormwater/documents/MS4TMDLImpGuidance.pdf>). Improvements to existing infrastructure can be expensive and require substantial planning and effort. EPA's cost report for nutrient pollution (EPA 820-F-15-096) acknowledges that urban best management practices may cost as much as \$8,000/acre. For these reasons, permitted MS4s require additional time to plan and implement strategies to achieve water quality standard targets for phosphorus.

The proposed MDV is a strategic tool that provides much needed financial resources and time to hire and train staff and plan and implement practices to meet nonpoint source reduction goals. Absent these financial resources, nonpoint source improvements will be far less extensive and a barrier to achieving water quality goals in many watersheds. A ten-year MDV timeframe is likely to be the minimum necessary to implement meaningful phosphorus reductions in permitted and non-permitted MS4 areas and realize the water quality benefits of these efforts in most watersheds. It may even be necessary to extend the MDV timeline beyond a 10-year period. The MDV will be re-evaluated in the future to determine if it is appropriate for the MDV to continue further into the future.

#### *The Importance of Legacy Phosphorus in Receiving Waters*

Phosphorus can build up in lakes, reservoirs, and riverbeds over time. The first step to improving water quality in these receiving waters is to curb the "upland" sources of phosphorus, i.e. the current sources of excess phosphorus to the receiving water. Once these sources are addressed, however, water quality standards may still not be attained given the amount of legacy phosphorus in the system. In some instances, it may be beneficial to implement dredging activities to remove legacy phosphorus from the system mechanically. Dredging is an expensive activity in both cost and in impacts to the environment and is not appropriate for many receiving waters, especially for those with sensitive ecosystems. Therefore, the preferred option for many receiving waters is to allow the legacy phosphorus to be attenuated or move through the system naturally. Eventually, sediment laden with excess phosphorus will be buried or move downstream such that the receiving water will meet standards. This process can take years and depends on a number of factors including: presence or absence of mixing/sediment disturbance, sedimentation rates, and sediment phosphorus concentrations. For waterbodies that seasonally mix, have excess phosphorus in bed sediment, and have large drainage basins, it may take decades before significant phosphorus water quality improvements are realized.

#### *Addition of Polyphosphates in Drinking Water Systems*

Polyphosphates are frequently used in wastewater and water supply streams to control pipe corrosion and to sequester heavy metals such as iron (Fe) and manganese (Mn) to protect human health and welfare. Despite these benefits, the use of polyphosphates in municipal water supplies can cause phosphorus standard exceedances at the point of discharge and can inhibit downstream uses due to elevated phosphorus concentrations. A large number of industrial dischargers use municipal water containing polyphosphate additives. In fact, a recent poll of non-contact cooling water (NCCW) general permit holders indicated that over 150 NCCW general permit holders may need more restrictive phosphorus limits because their municipal water supply adds polyphosphates. Currently, EPA views the addition of polyphosphates as the best available technology to protect human health and welfare from excess heavy metals in the drinking water supply (EPA 570/9-91-003, May 1991). Until an alternative chemical is available and accepted as the best available technology for municipal water supplies, it will be challenging for point source dischargers to comply with phosphorus WQBELs in an economically viable

manner. It is also economically infeasible to install expensive treatment facilities on all of the NCCW discharges in these communities. Through discussions with EPA staff, the Department does not believe that a viable chemical alternative will be available for municipal water supplies within 10 years. Therefore, a 10-year MDV timeframe is further justified.

*Phosphorus Concentrations in Groundwater*

Background phosphorus concentrations in groundwater fluctuate throughout the state (Figure 1). In some areas, data suggests that phosphorus concentrations due to background conditions may even exceed surface water quality standards for phosphorus. Site-specific phosphorus criteria protocols and procedures are being developed to provide corrective relief for these situations. Until these procedures are completed, however, effluent limitations for point sources may be set lower than natural background concentrations of phosphorus creating a situation where point sources are responsible for producing effluent with lower phosphorus concentrations than what is naturally occurring in the environment. To provide interim relief, and avoid significant compliance costs in these areas, it is recommended that MDV be implemented for a 10-year period. This would provide time for the site-specific criteria rulemaking effort to conclude, and provide time for DNR and/or point sources to successfully implement these protocols to develop an appropriate phosphorus site-specific criteria.

**|| Drinking Water Median P (mg/l)**

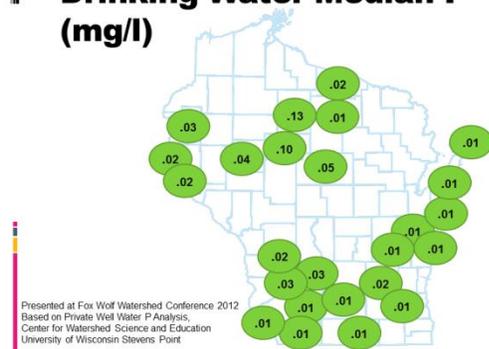


Figure 1. Average median phosphorus in private wells in Wisconsin. McGinley, Paul. (2012). Phosphorus Concentration Trends in Wisconsin’s Groundwater. UW-Stevens Point: Unpublished report.

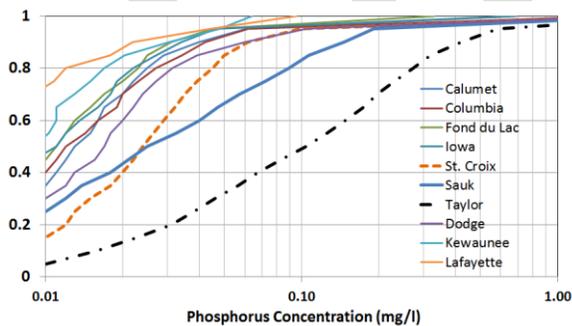
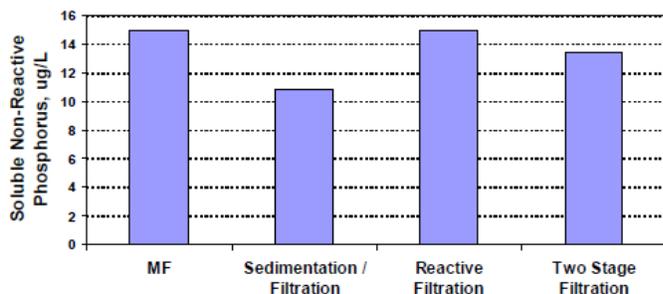


Figure 2. Bitmap of percentile distribution of phosphorus concentrations taken from private wells in select counties. McGinley, Paul. (2012). Phosphorus Concentration Trends in Wisconsin’s Groundwater. UW-Stevens Point: Unpublished report.

### *Non-Reactive Phosphorus in Effluent Streams*

Soluble non-reactive phosphorus (SNRP) is the difference between total soluble phosphorus and soluble reactive phosphorus. The chemical species that make up SNRP are largely unknown at this time, but could include polyphosphates, condensed phosphates, soluble organic phosphorus species, and other phosphorus containing species (WERF 2008). Recent publications have indicated that it may not be viable to chemically remove the SNRP portions of the phosphorus within the effluent. Specifically, the portion of the dissolved acid-hydrolyzable and/or dissolved organic phosphorus fractions may not be able to be removed by tertiary processes (WERF 2008). One case study completed in Coeur D'Alene, Idaho, indicated that the baseline SNRP concentration of a municipal wastewater treatment in that community ranges between 11-15 ug/L, and this SNRP fraction was not easily removed through pilot testing of tertiary treatment facilities (Benisch et al., 2007). The graph below shows the data from that study.



*Figure 1. Phosphorus species remaining following four different chemical treatment options using alum and ferric. Results show the persistence of soluble non-reactive phosphorus in all processes (Benisch et al., 2007).*

The portion of SNRP in a waste-stream is site-specific, and is something that DNR is continuing to explore with partners. Cursory results provided by Wisconsin State Laboratory of Hygiene have determined that some municipal wastewater treatment facilities may have SNRP concentrations as high as 80-90 ug/L (unpublished research). This trend may be true for other discharger categories including some industrial categories; however, these data are not available at this time. For facilities with high concentrations of SNRP in their effluent streams, it may be technologically infeasible to consistently comply with ultra-low phosphorus limitations.

Additionally, DNR is investigating potential toxicity concerns related to achieving compliance with restrictive phosphorus limitations. Phosphorus-binding chemicals like ferric/ferrous chloride and SorbX are frequently added to the waste stream to bind with phosphorus so it can be filtered from the liquid portion of the effluent. These chemicals have occasionally triggered WET violations in the state. It is unclear at this time if these instances stem from the need to add large amounts chemical to consistently comply with stringent phosphorus limits.

Given these technical challenges, it may be that some ultra-low phosphorus limits are not achievable with existing treatment technology. A ten-year MDV timeline would provide time for new or revised technologies to be developed and tested. Therefore, a 10-year MDV timeline is further justified.

### *Cost of Existing Treatment Options*

As stated in the Final Economic Determination,

*“The overall cost to Wisconsin communities will be a minimum of \$3.4 billion in capital expenditures which will rise to over \$6 billion when accounting for interest paid on borrowing needed to meet increased capital costs. In addition, an O&M cost of \$405 million annually combined with debt service will equate to \$708 million annually, placing an additional economic*

*burden upon business already affected by a slowly recovering economy and additional regulations beyond phosphorus.”(p. 67)*

There is no evidence to suggest that innovative technologies will become available over the next 10 years that would substantially lessen the economic burden Wisconsin’s point source dischargers face to comply with phosphorus. Therefore, the Department believes a 10-year MDV timeline is justified.

### **Conditions to be Included in WPDES Permits:**

When a permit application for the MDV has been approved by the Department, the Department has made a determination that there is no feasible pollutant control technology available for that facility due to substantial and widespread adverse impacts. When the Department approves the MDV, interim conditions will be included in the WPDES permit that includes requirements of the pollution reduction strategy pursuant to Wis. Stat. s. 283.16(6). The pollution reduction strategy represents the greatest pollutant reduction achievable by requiring interim limitations in the WPDES permit, plant optimization (pollutant minimization program), and implementation of a watershed project. Implementation of the pollution reduction strategy in Wis. Stat. s. 283.16(6) and (7) is the highest attainable condition at this time for affected waterbodies. A WPDES permit must be reissued, modified, or revoked and reissued before the conditions of the MDV take effect for an individual WPDES permit holder. This will ensure that public comment opportunities are provided regarding the site-specific applicability of the MDV to an individual WPDES permit holder.

#### *Interim Limits- Highest Attainable Condition*

All WPDES permits with MDV requirements will include interim limits for phosphorus and accompanying monitoring and reporting requirements. These interim limitations shall be set equal to or below effective numeric phosphorus limitations in existing WPDES permits, and will ensure that point sources reduce their phosphorus loadings over the term of the MDV. This will also ensure that antibacksliding provisions are met.

In most cases, the Department believes that interim limits equal to 0.8 mg/L, expressed as a monthly average, is appropriate for the first permit term, and 0.6 mg/L, expressed as a monthly average is appropriate for the second (Wis. Stat. s. 283.16(6)). These interim limits ( in combination with reductions from watershed projects) are typically reflective of the greatest pollutant reduction achievable based on existing on-site treatment of wastewater treatment facilities, and taking into account nonpoint reductions in many watersheds. Since most WPDES permits have an existing 1.0 mg/L technology-based effluent limit in the WPDES permit, the interim effluent limits will provide significant stepwise reductions in phosphorus loadings from point source dischargers over the term of the MDV. Although optimization and other minor operation changes may be needed to comply with these interim limits, facilities should not need to enter into a major facility upgrade to comply. A compliance schedule may be granted to provide WPDES permit holders with time to comply with MDV interim limits if a permittee cannot immediately comply with the interim limitations. These compliance schedules will be developed on a case-by-case basis, and will lead point sources into compliance as soon as possible.

Pursuant to Wis. Stat s. 283.16(6)(am), a less restrictive interim limitation may be granted if the applicant can demonstrate that these interim limitations cannot be achieved without a major facility upgrade. In no case will the interim limitation be set higher than 1.0 mg/L, expressed as a monthly average. More restrictive interim limitations may also be warranted for some facilities already achieving these interim limitations under Wis. Stat. s. 283.16(7). To determine if a more restrictive interim limitation is needed that reflects the highest attainable condition, the 30-day P99 will be used to compare the existing effluent quality to the typical interim limit for that permit term. Alternatively, the Department may use a shorter duration P99 calculation for seasonal discharges, or peaking operations. The Department believes that in

most cases the 30-day P99 is appropriate because it is reflective of the averaging period of the limitation in question.

Phosphorus is known to fluctuate significantly in plants and is susceptible to dramatic fluctuations during rainfall events or from slight operational changes like fluctuations in pH. These peak events can cause compliance concerns, and make it difficult for facilities to maintain compliance over time. For these reasons, the Department finds it appropriate to consider statistical approaches for evaluating the need for a more restrictive effluent limitation pursuant to s. 283.16(7), Wis. Stat. Using a statistical approach for making this determination will help ensure that effluent limitations reflect the highest attainable condition with existing treatment conditions. This interim limitation will be coupled with optimization requirements pursuant to s. 283.16(6)(a) to also ensure that the greatest pollution reduction is achieved using existing treatment technology (discussed on p. 10 in more detail).

One option for evaluating variability in effluent data is to consider the statistical approach on pages 100-106 of EPA’s “Technical Support Document for Water Quality-based Toxic Controls” (EPA/505/2-90-001, March 1991). This approach can be used to determine an appropriate effluent limitation given effluent variability over time where the average monthly limits is equal to the long-term average times a multiplication factor:

$$AML = LTA * \text{Multiplication Factor (Table 3)}$$

Where:

AML= average monthly limit

LTA= long-term average= *Effluent TP concentration \* Wasteload allocation multiplier (Table 4)*

CV= Coefficient of variation

n= Number of samples

Table 3. Multiplication factor

CV	Wasteload allocation multiplier			
	n=1	n=2	n=4	n=30
0.1	1.25	1.18	1.12	1.04
0.2	1.55	1.37	1.25	1.09
0.3	1.90	1.59	1.40	1.13
0.4	2.27	1.83	1.55	1.18
0.5	2.68	2.09	1.72	1.23
0.6	3.11	2.37	1.90	1.28
0.7	3.56	2.66	2.08	1.33
0.8	4.01	2.96	2.27	1.39
0.9	4.6	3.28	2.48	1.44
1.0	4.90	3.59	2.68	1.50

Table 4. Wasteload allocation multipliers

CV	Wasteload allocation multiplier
0.1	0.891
0.2	0.797
0.3	0.715
0.4	0.643
0.5	0.581
0.6	0.527

0.7	0.481
0.8	0.440
0.9	0.404
1.0	0.373

Effluent phosphorus concentrations in Wisconsin for mechanical treatment plants vary widely, but may be as low as 0.3 mg/L for certain treatment systems. Using the statistical approach specified above, a monthly average limitation of 0.5 mg/L is justified for these facilities that can achieve these effluent phosphorus concentrations (assuming a monthly sampling frequency and CV of 0.6). More commonly, an interim limitation of 0.8 mg/L is appropriate and justified given this statistical approach and the fact that many mechanical treatment facilities will be producing a consistent effluent quality in the 0.8-0.4 mg/L range after optimization. For these reasons, the Department does not believe that an interim limitation below 0.5 mg/L, expressed as a monthly average, is appropriate and that a numeric limitation of 0.8 mg/L represents the highest attainable condition for most permittees at this time. MDV applications and effluent data will be evaluated on a case-by-case basis to determine the appropriate interim limitations for the MDV at the time of permit reissuance. Sections 2.02 and 5.01 of the MDV Implementation guidance provide additional guidance on this process. In addition, the Department will evaluate advances in treatment technology and the highest attainable condition for this MDV during the triennial standard reviews. This is discussed in more detail in the “reevaluation section”.

*Optimization (Pollutant Minimization Program)- Highest Attainable Condition*

Pursuant to Wis. Stat. s. 283.16(6)(a)(intro), the WPDES permit will include a requirement that the permittee optimize the performance of the point source in controlling phosphorus discharges. If a facility has already optimized for phosphorus, the WPDES permit will require that they continue to implement their optimization plan. The purpose of the optimization plan is to reduce as much of the discharged phosphorus as possible through slight operational changes to the facility (for example, adding additional chemical to the treatment process). It is noted that all WPDES permits containing a phosphorus compliance schedule require the permittee to develop and implement a phosphorus discharge optimization plan. Optimization guidelines provided in Section 4.03 of Wisconsin’s Guidance for Implementing Phosphorus Water Quality Standards for Point Source Discharges will continue to be used to review optimization plan submittals for phosphorus.

*Watershed Projects- Highest Attainable Condition*

In addition to interim limit requirements, point sources will be required to implement a watershed project to help reduce phosphorus pollution to the receiving water during the term of the MDV. There are three types of watershed projects that can be implemented:

- The permittee can choose to make payments to the Counties (commonly referred to as the “county payment option”) (s. 283.16(6)(b)(1), Wis. Stats.);
- The permittee may enter into a binding, written agreement with the department under which the permittee constructs a project or implements a plan;
- The permittee may enter into a binding, written agreement that is approved by the department, with another person under which the person constructs a project or implements a plan;

Point sources must notify the Department of their preferred watershed project option with the MDV application. If the point source chooses to enter into a binding written agreement with the Department, the watershed plan must also be submitted with the MDV application for the Department’s review and approval. In the county payment option, County Land and Water Conservation Departments are responsible to develop the watershed plans and implement projects. Therefore, the permit conditions will be different between these options, as discussed in subsequent subsections.

Each of these watershed options will result in phosphorus reduction projects to be implemented throughout the permit term and will require annual reporting and verification. Annual reporting requirements are consistent among the watershed project options. All projects must track all of the following, at a minimum:

- What was done (practices put in place);
- Where the project was done;
- How much money was spent;
- How much phosphorus was reduced;
- If the practice resulted in compliance with ch. NR 151 performance standards; and
- That the practice was installed in accordance with applicable technical standards.

Annual reports will also include information about operation and maintenance verification that was completed during the previous year.

*County payment option:*

Point sources that implement the county payment option will have a strong economic incentive to reduce their effluent phosphorus concentrations during the term of the MDV. In this option, point sources pay Counties to implement nonpoint source improvement activities in the HUC-8 watershed. These payments are based on the previous annual loading from the treatment plant (s. 283.16(1)(h), Wis. Stats.). Therefore, point sources will have a strong economic driver to achieve the lowest effluent phosphorus concentrations practicable throughout the year to minimize these payments. To implement this effectively, these WPDES permits will require total annual phosphorus loadings to be reported to the Department. Additionally, the WPDES permit will require that annual payments be made to the County no later than March 1<sup>st</sup> of every year and the method for calculating these payments. Chapter 3 of the MDV Implementation Guidance provides additional information about this watershed option, focusing on County expectations throughout the MDV timeline. Pursuant to Wis. Stat. s. 283.16 (8), an annual cap of \$640,000 is set for these payments.

The funds generated through this approach may only be used for cost sharing practices to reduce phosphorus from entering waters of the state from agricultural nonpoint sources, or for staffing, monitoring or modeling needs to support these projects. At least 65% of these moneys must be spent on Wisconsin’s agricultural performance standards specified in ch. NR 151, Wis. Adm. Code s. 283.16(8)(b)2, Wis. Stat. For simplicity, these practices are list in Table 5 below.

Table 5. Agricultural performance standards.

<b>Practice</b>	<b>Citation</b>
<b>Manure Storage Systems</b>	NR 154.04(3)
<b>Manure Storage System Closure</b>	NR 154.04(4)
<b>Barnyard Runoff Control Systems</b>	NR 154.04(5)
<b>Access Roads &amp; Cattle Crossings</b>	NR 154.04(6)
<b>Animal Trails and Walkways</b>	NR 154.04(7)
<b>Critical Area Stabilization</b>	NR 154.04(10)
<b>Diversions</b>	NR 154.04(11)
<b>Field Windbreaks</b>	NR 154.04(12)
<b>Filter Strips</b>	NR 154.04(13)
<b>Grade Stabilization</b>	NR 154.04(14)
<b>Heavy Use Area Protection</b>	NR 154.04(15)

<b>Lake Sediment Treatment</b>	NR 154.04(16)
<b>Livestock Fencing</b>	NR 154.04(17)
<b>Livestock Watering Facilities</b>	NR 154.04(18)
<b>Prescribed Grazing</b>	NR 154.04(22)
<b>Relocating or Abandoning Animal Feeding Operations</b>	NR 154.04(23)
<b>Riparian Buffers</b>	NR 154.04(25)
<b>Roofs</b>	NR 154.04(26)
<b>Roof Runoff Systems</b>	NR 154.04(27)
<b>Sediment Basins</b>	NR 154.04(28)
<b>Sinkhole Treatment</b>	NR 154.04(30)
<b>Subsurface Drains</b>	NR 154.04(33)
<b>Terrace Systems</b>	NR 154.04(34)
<b>Underground Outlets</b>	NR 154.04(35)
<b>Waste Transfer Systems</b>	NR 154.04(36)
<b>Wastewater Treatment Strips</b>	NR 154.04(37)
<b>Water and Sediment Control Basins</b>	NR 154.04(38)
<b>Waterway Systems</b>	NR 154.04(39)
<b>Well Decommissioning</b>	NR 154.04(40)
<b>Wetland Development or Restoration</b>	NR 154.04(41)
<b>Milking Center Waste Control Systems</b>	
<b>Feed Storage Leachate</b>	
<b>Stream Crossing</b>	
<b>Streambank/Shoreline Rip-rapping</b>	
<b>Streambank/Shoreline Shaping &amp; Seeding</b>	
<b>Contour Farming</b>	NR 154.04(8)
<b>Cover &amp; Green Manure Crop</b>	NR 154.04(9)
<b>Nutrient Management</b>	NR 154.04(20)
<b>Pesticide Management</b>	NR 154.04(21)
<b>Residue Management</b>	NR 154.04(24)
<b>Other Site-Specific Practices</b>	

*Other Watershed Project Options:*

For the other water project options, the WPDES permit holder will be responsible to provide an annual offset of their phosphorus load in an amount equal to the difference between the annual amount of phosphorus discharged by the point source and the target value. Therefore, these WPDES permits will require total annual phosphorus loadings be reported to the Department as well as the method for calculating the annual offset needed. Additionally, the WPDES permit will reference the watershed plan number and will include the following requirements:

- A statement that the point source must comply with the MDV interim limits regardless of the offset generated;
- A requirement that offsets must be generated under the approved watershed plan;

- A requirement that the permittee notify the Department when becoming aware that the offset is not operating properly; and
- Other terms determined to be appropriate by the Department on a case-by-case basis.

Additional information about these watershed projects is available in Chapter 4 of the MDV Implementation Guidance.

**Interim Updates and Reevaluations:**

Reevaluations will be done throughout the term of this variance. Permit-specific reevaluations will occur at the time of permit reissuance and will reconsider the permittee’s eligibility for the MDV as well as site-specific permit conditions including the interim limitations and optimization requirements. For permittees that apply for continued coverage in subsequent permits, applications will be submitted to DNR at the time of permit application for reissuance (s. 283.16(4)(am)1, Wis. Stat.). This will ensure that site-specific reevaluations occur every 5 years and that public comment opportunities are provided as part of the permit reissuance process (40 CFR 131.14(b)(1)(v)).

In addition to the site-specific review, the Department shall evaluate the need for the variance and the highest attainable condition assessment during the triennial standard review process (s. 283.16(2m), Wis. Stats.). This process will allow the Department to determine if any additional information is available that would warrant updating or revisiting the MDV. Specific topics of interest in this process include:

- Technology that has become reasonably available after 2015 that is likely to result in point sources being able to comply with more restrictive interim phosphorus limits (s. 283.16(3)(b), Wis. Stats.);
- Technology has become more cost effective (s. 283.16(3)(b)(3), Wis. Stats.);
- New economic information that would result in phosphorus compliance no longer having a substantial and widespread impact (p. 64 of the Final Determination);
- New information that would warrant updates to the industrial primary screeners (see Table 2 and p. 64 of the Final Determination);

The Triennial Standard Review (TSR) process engages public, partners, and staff and also provides public comment opportunities both through a written comment period as well as a public hearing. The TSR is also formally submitted to EPA for review. If a full re-evaluation of the MDV is warranted as a result of new information, it will be prioritized in accordance with the Triennial Standards Process (See Section 5.03 of the Implementation Guidance and <http://dnr.wi.gov/topic/surfacewater/tsr.html> for details). If changes to the implementation procedures of the MDV are warranted, such as updates to the optimization requirements or pollution reduction strategy, those changes will take effect immediately with no further action required. MDV implementation guidance will be updated, as necessary and appropriate, to reflect these changes. Because this process is occurring every three years, and includes public participation requirements, this process will ensure that the provisions at 40 CFR 131.14(b)(1)(v) and (vi) are met.

In addition to these updates, the Department shall, on an annual basis, determine if adjustments are needed to the per pound payment option for point source discharges that choose to enter into the “county payment option”. Currently, payments will be set equal to \$50/lb of phosphorus. However, annual payment adjustments will be based on the percentage equal to the average annual percentage change in the U.S. consumer price index for all urban consumers, U.S. city average, as determined by the federal department of labor, for the 12 months ending on the preceding December 31 (s. 283.16(8)(a)2., Wis. Stats.).

**Attachments:**

- [Section 283.16, Wis. Adm. Code](#)
- Act 378 Response to Comments
- Final Economic Determination
- Response to Comments on Preliminary Economic Determination
- [Economic Impact Analysis Combined Report](#)
- [Addendum to Report](#)
- Guidance for Implementing Wisconsin’s MDV for Phosphorus
- *Response to Comments on Preliminary Variance Package*
- *Response to Comments on Implementation Guidance*

*Table 1. Potentially eligible MDV areas by county.*

<b>County</b>	<b>Category</b>						
	<b>Municipal</b>	<b>Cheese</b>	<b>Food</b>	<b>Fish</b>	<b>Paper</b>	<b>NCCW</b>	<b>Other</b>
Adams	X	X					
Ashland	X						
Barron	X		X			X	
Bayfield	X			X			
Brown	X				X	X	
Buffalo	X					X	
Burnett	X	X					
Calumet	X						X
Chippewa	X					X	X
Clark	X	X				X	X
Columbia	X		X			X	
Crawford	X						
Dane							
Dodge	X	X				X	
Door	X						
Douglas	X			X			X
Dunn	X						
Eau Claire							
Florence	X						
Fond du lac	X	X	X			X	
Forest							
Grant	X	X				X	
Green		X					
Green Lake	X		X				
Iowa	X						X
Iron	X						
Jackson	X						
Jefferson	X			X		X	X

Juneau	X						
Kenosha	X		X				
Kewaunee	X	X					
La Crosse	X					X	X
Lafayette	X	X					
Langlade	X			X		X	
Lincoln	X				X		
Manitowoc	X					X	
Marathon	X	X	X		X	X	
Marinette	X			X			X
Marquette	X						
Menominee							
Milwaukee	X			X		X	X
Monroe	X		X			X	
Oconto	X	X	X	X	X	X	
Oneida	X			X	X		
Outagamie	X				X	X	
Ozaukee	X		X			X	
Pepin	X						
Pierce	X	X					
Polk	X			X		X	
Portage	X	X	X		X		
Price	X						X
Racine	X						
Richland	X	X				X	
Rock	X					X	
Rusk	X				X		
Sauk	X	X	X			X	X
Sawyer							
Shawano	X				X		
Sheboygan	X	X	X	X		X	X
St. Croix							
Taylor	X	X					
Trempealeau	X					X	
Vernon	X	X					
Vilas	X						
Walworth	X						
Washburn				X			
Washington	X					X	X
Waukesha	X						
Waupaca	X					X	

Waushara	X					X	
Winnebago	X				X	X	
Wood	X	X			X	X	X

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