Multi-discharger Variance Justification

June, 2025

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 because 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 will cause a substantial and widespread impact to the state and cannot be met for at least another 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 achieve compliance. 35% of WPDES permit holders face phosphorus WQBELs that are set equal to the phosphorus criteria, and another 31% face phosphorus WQBELs that necessitate treatment below 0.5 mg/L. While many dischargers have complied with phosphorus limits since 2010, 37% of all dischargers remain with no viable or affordable compliance solution identified. The cost for these dischargers to comply with these restrictive limitations are estimated to be $900 million dollars in capital costs over a 20-year timeframe, which surges to over $1.7 billion once interest and operational costs are factored in (See DOA's Updated Economic Determination for details). These costs are based on cost projections and site-specific estimates for individual facilities to install, operate, and maintain additional phosphorus treatment technology. The Department believes these costs to be substantial on Wisconsin's economy for the following reasons:

1. Phosphorus compliance costs would push municipal sewerage rates above economic hardship thresholds in 227 communities across the state.
2. Phosphorus compliance costs substantially impact key industries in Wisconsin that are critical to Wisconsin's economic health and are also culturally significant. These industries include cheese, paper, food processing, aquaculture, industries with non-contact cooling waters, and other dischargers. Adverse impacts these industrial groups face include the potential loss of jobs, decreased investment, potential relocation or closing of facilities, and other adverse impacts (see section 4.1 of the Updated Economic Determination). The loss of permanent employment opportunities in the state is projected to be 1,341 jobs over a 20-year period.
3. Phosphorus compliance costs put Wisconsin's industries at a competitive disadvantage from industries in other states that do not yet have standards.
4. Compliance with the final phosphorus limits must result in a major facility upgrade in order to qualify for the MDV, which ensures that only those facilities facing substantial capital and operation and maintenance expenditures qualify for the MDV.
5. The overall cost of complying with phosphorus is estimated to be at least $1.7 billion across the state, which is a significant cost burden for the state's economy.

The Department also finds that these costs will cause widespread adverse social and economic impacts in Wisconsin. Economic forecasting simulations using REMI (Regional Economic Model, Inc.) were run as part of the 2015 Economic Impact Analysis to help make this determination. This analysis demonstrated that Wisconsin's economy cannot absorb these costs without suffering statewide economic hardship. These impacts will be amplified in already economically strained parts of the state. As part of the 2024 MDV reauthorization, widespread impacts were recalculated based on current compliance costs for Wisconsin dischargers. This analysis demonstrated that phosphorus compliance costs would cause a loss of 1,341 jobs and a loss of gross state product of $209.9 million (see chapter 4 of the Updated Economic Determination). For these reasons, the Department believes a second multi-discharger variance is

appropriate for qualifying point source dischargers in Table 7 pursuant to 40 CFR 131.14(a) and Wis. Stat s. 283.16.

General Method for Assessing Substantial and Widespread Impacts

As stated in s. 283.16(2)(a), Wis. Stats., a multi-discharger phosphorus variance is appropriate if phosphorus compliance for point sources or categories of point sources would result in "…*substantial* and *widespread* adverse social and economic impacts". An economic impact analysis was completed in 2015 by ARCADIS, Sycamore Advisors, and the University of Massachusetts. The results of the analysis confirmed that phosphorus compliance costs did result in substantial and widespread adverse social and economic impacts. At the time this initial analysis was completed, limited information regarding site specific compliance costs was available. Therefore, the Department of Administration (DOA) and Department of Natural Resources (DNR) relied upon treatment cost curves developed by ARCADIS, and model results from a REMI model to evaluate widespread impacts to the broader economy. EPA feedback was solicited throughout this process. Public comment was also solicited on the economic determination to promote transparency and public involvement in this process in accordance with s. 283.16, Wis. Stat., and 40 CFR 131.14. Ultimately, the initial MDV was approved by EPA on February 6, 2017 for a period of 10 years.

Following the 2017 approval, MDV coverage has been granted to 159 dischargers. Pursuant to s. 283.16(6), Wis. Stats., MDV coverage may be applied to a single discharger for up to four permit terms if that discharger continues to meet eligibility criteria. Accordingly, DOA and DNR must determine if extending the variance beyond its 2027 expiration date is appropriate. This determination is specified in statute at s. 283.16(3)(a), Wis. Stats., which requires that DOA, in partnership with DNR, evaluate if the initial economic determination remains accurate. DOA shall prepare a report for the determination and consult with dischargers and other interested parties when doing so. Consultation efforts began in 2023 and an updated determination was issued in 2024.

The purpose of this section is to highlight key aspects of the methods used to update the substantial and widespread economic and social impact determination summarized in the previous section. Additional details about this analysis are available in the Updated Economic Determination.

Step 1. Determining costs

The first step in this process was to tabulate compliance costs for point sources across Wisconsin. When making the initial determination, insufficient facility-specific information was available to quantify individual compliance costs across the state. Rather, cost curves were developed by the engineering consultant firm retained by DOA to estimate compliance costs based on the restrictiveness of the phosphorus WQBEL and the permitted flow of the facility. For the Updated Economic Determination, DNR had access to site-specific compliance costs generated by dischargers or their consulting engineers. These were generally made available to DNR as part of the variance application process. Where site-specific compliance costs were not available, and DNR found that a major facility upgrade was still likely to be needed, the initial cost curve values were used. All dollar values were adjusted to December 2023 dollars based on the Engineering News Review (ENR) Construction Cost Index.

While the initial economic determination assumed that the majority of Wisconsin dischargers would need to undertake a major facility upgrade to meet phosphorus limits, the Updated Economic Determination took a more detailed approach to determine what compliance costs may yet be incurred in 2024 and beyond. The s. 283.16(2)(a), Wis. Stats. determination is limited to those dischargers that "cannot achieve compliance without major facility upgrades". Therefore, dischargers whose phosphorus WQBELs can be met without major facility upgrades do not have compliance costs counted in the updated economic

determination. Additionally, those dischargers that have already achieved compliance with phosphorus WQBELs, either through facility upgrades or watershed-based compliance options, also do not have compliance costs considered in the Updated Economic Determination.

Step 2. Determining substantial impacts

As part of the initial Economic Determination, DOA and DNR utilized applicable portions of EPA's individual variance guidance (EPA–823–B–95–002) for assessing "substantial impacts" across multiple permittees. For the time period encompassed by the renewed variance, DNR will continue to use the two-step process outlined in the Initial Economic Determination. The first step, called the "primary screener", provides a first cut for determining who is likely to experience substantial impacts and who is not. The "secondary screener" is then used to confirm these impacts. For consistency, DOA and DNR mirrored its approach after this two-step model. While revisions to the MDV economic framework are outside the scope of the Updated Economic Determination, a discussion of the initial economic framework is included below for context.

Step 2a. Establishing primary screening thresholds
EPA's guidance provided a clear primary screening tool and threshold for municipal wastewater treatment facilities (WWTFs)- median household income (MHI). This primary screening tool was a good fit for the MDV as it links facility and community-level concerns. For this reason, the decision was made to continue to utilize MHI and the accompanying recommended screening thresholds for the purposes of determining substantial impacts for the MDV. It is noted, however, that this approach does not address some key community-level impacts, such as increased costs to commercial and industrial ratepayers. Although DNR and DOA acknowledge this limitation, these indirect costs are extremely site-specific and it is difficult to provide clear, numeric thresholds. Because these indirect costs are not accounted for in the primary screening tool, a margin of safety is also provided within this methodology.

EPA's guidance recommends "profitability" as the primary screening tool for industrial facilities. EPA's guidance provides no threshold for determining what is substantial using this indicator, nor does EPA guidance account for community-level impacts that would result from compliance costs incurred. To address this gap, DNR, DOA, and others worked to determine a reasonable approach for developing an appropriate primary screening tool and threshold for the purposes of determining MDV eligibility. Through discussions with stakeholders, as well as a business survey that was completed by the University of Massachusetts- Donahue Institute, it became clear that there were two main options for industries to handle phosphorus compliance costs: absorb the costs or increase the costs of goods produced. Both of these options have direct impacts on the profitability and competitiveness of Wisconsin's businesses, and have impacts on the community such as a loss of investment, jobs, and tax revenue (pg. 60-61 of the "Economic Impact Analysis", April 24, 2015).

Wisconsin's industries are dominated by small to medium-sized businesses and tend to be geographically clustered (Figure 1 on page 3 of the "Economic Impact Analysis"). This is likely the result of these businesses relying on the same raw materials and/or the same infrastructure to develop and transport goods. Wisconsin's industries face significant local and regional competition given this clustering. For example, the demand for raw materials in a geographic area is higher given the clustering of industry thereby increasing the raw material value and cost. Larger industries in Wisconsin also face these challenges as well as national competition concerns. Because Wisconsin is a leader in the nation in phosphorus regulations, many facilities outside the state are not facing the same compliance costs as Wisconsin facilities. Based on currently available information, it does not appear that other states will be making significant strides towards developing phosphorus water quality standards to help alleviate this competitive disadvantage (https://www.epa.gov/nutrientpollution/state-progress-toward-adopting-numeric-nutrient-water-quality-criteria-nitrogen). This disadvantage will likely impact expansion

opportunities and job creation within the state (pg. 60-61 of the "Economic Impact Analysis", April 24, 2015). These impacts are discussed in more detail in the "widespread determination".

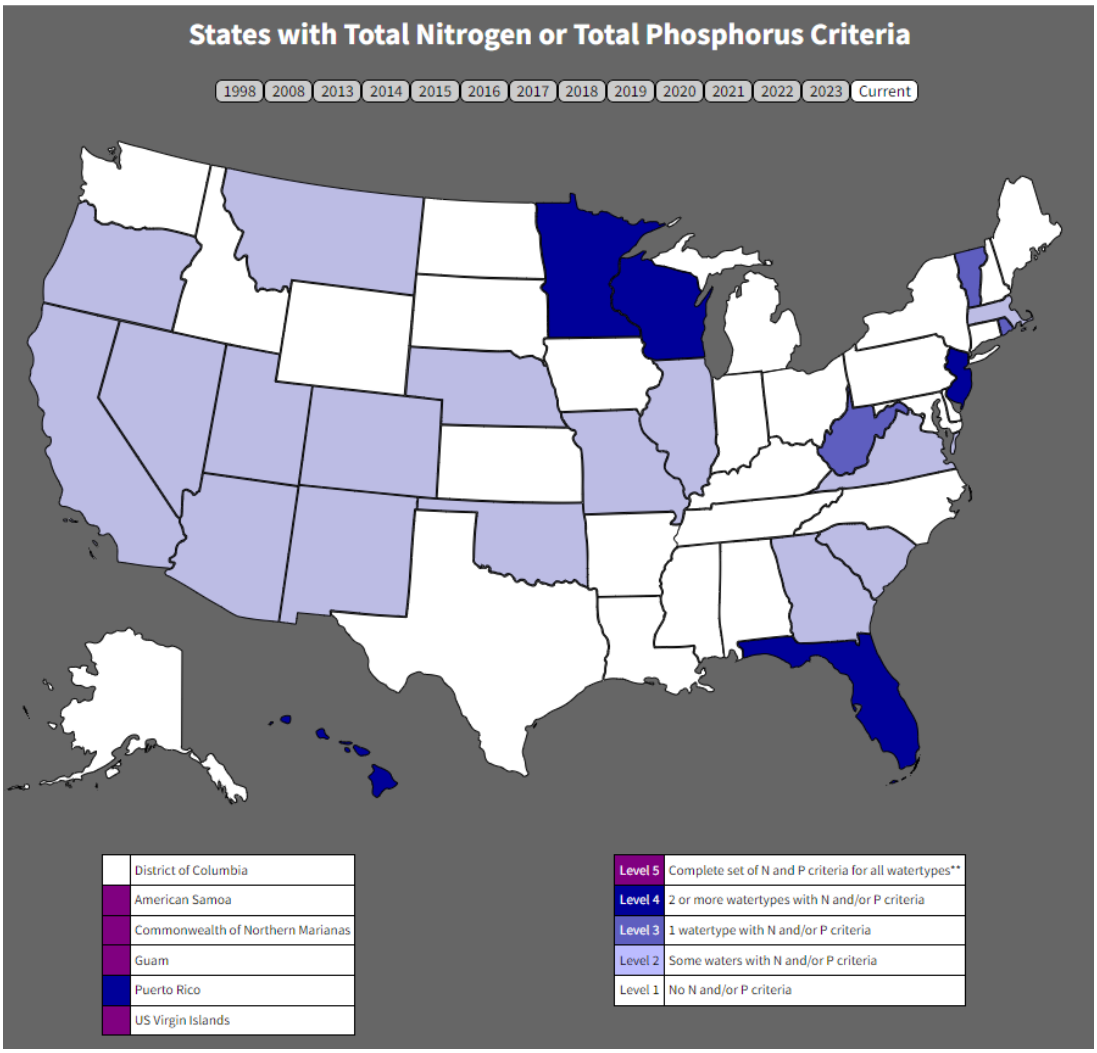

Figure 1. EPA's N/P Criteria Progress Map as of July 2024

Direct compliance cost is the purest measure of economic impact and has been used almost exclusively as the metric on which to base substantial impacts in other studies (Montana's economic study). Given the unique and highly competitive nature of Wisconsin's industries, however, DNR and DOA felt that the primary screening tool for industries would be strengthened if it not only accounted for the total compliance costs for phosphorus, but also how these costs would impact the competitiveness of the facility in question. Therefore, a breakpoint analysis was completed based on estimated compliance costs for each discharge category. This approach allowed estimated site-specific compliance costs to be compared to the anticipated range of compliance costs within the category; if the specific facility is incurring significant compliance costs relative to other members of the category, this will likely put the facility at a competitive disadvantage and affect profitability for that facility. Conversely, if a facility is facing compliance costs within the lower quartile ration for similar businesses, the facility is considered to be capable of coping with phosphorus compliance costs. Therefore, substantial impacts due to phosphorus compliance costs are not anticipated. The Updated Economic Determination contains revised lower quartile primary screening thresholds based on current information.

Although this approach provides a transparent threshold to compare the financial health of permittees across a given industrial category, it does not fully account for the anticipated community-level impacts associated with phosphorus regulations. As previously mentioned, communities in Wisconsin, especially rural communities, tend to be less economically diverse and have a greater potential to become economically distressed due to phosphorus compliance costs. Since Wisconsin is home to many small to medium-sized businesses, it is expected that these adverse community-level impacts will be incurred even if the compliance costs themselves are relatively small on a facility-by-facility basis. To address this issue, a second primary screener was established for industrial permittees. This second primary screener ranks total compliance costs by county for each category. If the aggregated community costs are within the lower quartile, it is anticipated that the community's economic health will not be significantly affected by phosphorus compliance costs. Communities in the upper three quartiles are more likely to be economically distressed, and for these reasons, the industries in the surrounding area may qualify for the MDV if a sufficient secondary indicator score applies. The Updated Economic Determination contains revised county-wide compliance costs and lower quartile county lists based on current information.

DNR finds that the above methodology provides a clear and transparent approach for assessing the substantial impacts incurred at the facility and community level. Like with any analysis, the Department recognizes that the threshold approach for industries is based on guidance and information available at this time. In accordance with s. 283.16(2m), Wis. Stat., and as specified in Section 7 of the Final Economic Determination, the Department will reevaluate this approach triennially to ensure that it continues to be reasonable, and will update this approach as necessary and appropriate based on new information.

Step 2b. Establishing secondary screeners

The purpose of the secondary screener is to verify the substantial impacts by evaluating the capacity of the permittee and community to absorb phosphorus compliance costs. DOA and DNR are not proposing to utilize different secondary screener metrics during the time period of the renewed variance. The secondary scores themselves have been updated for all categories based on recent economic information. For context, a discussion of secondary screener development and applicability is included below.

To develop an appropriate methodology for determining economic capacity, DOA and DNR worked with economists and analysts in the Departments of Workforce Development, Revenue, and Health Services, as well as economists at the University of Massachusetts-Donahue Institute. Through various discussions with this technical team, it was determined that readily available economic data could be used to determine the economic resiliency for a given county to absorb phosphorus compliance costs. If a given county shows multiple signs of economic distress, incurring additional phosphorus compliance costs would likely be substantial for the communities within the county.

This approach was determined reasonable for both municipal WWTFs and industrial permittees. Whether permittees handle the increase in production costs internally or externally, there are potentially negative ramifications for the regions of the state with high concentrations of affected businesses within the category of industry. If the permittee reduces capital spending for production equipment, it could lower efficiency compared to competitors that continue to make these types of investments. Longer-term, a less efficient and less competitive industry may experience an erosion in market share that would also translate into a less dynamic regional economy (lower wage growth, fewer jobs). Similarly, if a permittee in an industry lowers wage levels in response to increased compliance costs, the permittee's employees will have fewer dollars to make local purchases for retail, real estate, and restaurants. Any loss in sales for a Wisconsin business can then extend through its county or region in the form of fewer jobs, decreased investment, etc. The degree to which Wisconsin's regions will be affected by industry's phosphorus compliance costs will be a function of several factors, including the magnitude of these costs

as well as the underlying economic conditions of the affected counties[1]. For these reasons, verifying substantial impacts through county-level economic data was determined appropriate for industrial categories.

There is a wide range of county-level economic data that is readily available. The team of economists and analysts agreed that selecting economic indicators from this array should be based on the specific question at hand; in this case, how do phosphorus compliance costs impact the local economy. Unfortunately, literature reviews did not uncover an appropriate suite of indicators that have been previously used to answer this type of question. Therefore, DOA and DNR worked with the technical team to evaluate the appropriateness of various economic indicators. Through discussions, one indicator was identified as most appropriate for establishing economic distress: net earnings by place of residence. The "net earnings by place of residence" indicator is generally money earned from work. Communities with slower growth in net earnings will have fewer resources to draw upon when paying for the cost of phosphorus compliance. Moreover, fast growth in net earnings is likely to boost future MHI, reduce future transfer receipts as a share of income, raise job density, and benefit population growth. Other indicators were also accepted by the technical team as reasonable indicators for this analysis, including:

- Personal current transfer receipts share of total income;
- Jobs per square mile;
- Population changes; and
- Job growth.

Each of these indicators provides a unique perspective regarding economic sensitivity to absorb phosphorus compliance costs and is described in more detail in section 3.3 of the Updated Economic Determination.

Two additional indicators were added to the list of appropriate secondary indicators for industries:

- Median household income; and
- Capital costs as a percent of payroll.

MHI is an indicator of how easily consumers can cope with increased utility bills and how easily workers can cope with slower job growth, reduced hours and/or job losses caused by regulatory change. Because MHI was utilized as the primary indicator for municipal WWTFs, a county-level MHI screener would double count the importance of MHI. Therefore, it was not included in the list of viable secondary screeners for municipal WWTFs, but was included for industrial discharges. Capital costs as a percent of payroll is a unique indicator that was developed by the University of Massachusetts-Donahue Institute for the express purpose of helping verify substantial impacts for industries. The purpose of this additional indicator was to acknowledge the unique range of potential impacts that could stem from absorbed costs within an industry that were not already accounted for with other identified indicators. This analysis compared projected compliance relative to the size of the county economy (percent of payroll earnings) to gauge the relative economic significance of costs. One key benefit to this indicator is that it is unique for each industrial category, relying on category-specific total wage information for each county provided by the Census Bureau's County Business Patterns. Because this census data was not available for municipal WWTFs or to dischargers in the categories designated as noncontact cooling water (NCCW) or "Other", this indicator could not be developed for these categories. It is also noted that updates to this indicator can be based on updated Census Bureau data as well as site-specific compliance cost information once these data become available.

Once these secondary indicators emerged from the consensus, thresholds needed to be established for each to quantify economic sensitivity/distress. Typically, the national average was utilized as an

appropriate threshold i.e., if the specific county is performing worse than the national average, there is a greater demonstration of economic distress in that county. There were three exceptions to this general rule: population changes and job growth were measured against half the national average, and capital costs as a percent of payroll relied on the best professional judgment of economists at the University of Massachusetts-Donahue Institute. The reason population change was measured against half the national rate was that below-national rates of population change and economic impact link indirectly. The half-national-rate threshold was selected to acknowledge and account for this indirect linkage. Although job growth is an important indicator to consider, it is acknowledged that many counties in Wisconsin already experience job growth well below the national average. Therefore, using the national average for this indicator would have diluted its meaningfulness. Relying on the half-national-rate provides a margin of safety within the methodology.

Using these indicators and thresholds, a permittee can confirm that its estimated compliance costs would have substantial impacts. When determining an exact threshold for evaluating economic distress, DOA and DNR determined that a weighted average approach was appropriate to allow greater emphasis on those indicators with greatest economic significance. Therefore, the analysis weighted "net earning change" and "capital costs as a percent of payroll" more heavily than the other indicators. These indicators were selected for their broad, deep, forward-looking implications. The ultimate conclusion of these methods is provided in the Appendices in both the Updated Economic Determination and MDV Implementation Guidance.

Step 3. Widespread impacts

The "widespread impact" analysis relied on the Regional Economic Models, Inc. (REMI) model of the Wisconsin economy to demonstrate the economic impacts of phosphorus compliance costs. The REMI model is a dynamic economic forecasting software application that is used by many consulting firms, educational institutes, and government agencies (local, state, and federal) for a number of applications from determining the economic impacts of highway projects to projecting the economic impacts of environmental policies. This modeling approach, undertaken for the 2015 Economic Impact Analysis, helped quantify both the costs and benefits of implementing the phosphorus rule. Specifically, this analysis included: (1) the increase in costs accruing to industry and municipalities to meet the water regulations; and (2) the new economic activity projected to be generated in Wisconsin as industries and municipalities increase their spending on construction, industrial equipment, chemicals, etc. to comply with the stricter water quality regulations. Details about this analysis are provided in the "Addendum to Economic Impact Analysis" (April 24, 2015). Based on the results of this analysis (summarized in Table 1), and as articulated in the Department's rationale for initially approving the variance, the DNR concurs with DOA that phosphorus compliance costs are widespread throughout much of Wisconsin.

Table 1. Statewide Economic Impacts with Upstream Offsets in 2025 (results from 2015 REMI analysis).

Economic Impacts	Forgone in 2025
Total Employment (# of Jobs)	-3,361
Gross State Product (Millions of Fixed 2014 Dollars)	-$478.9
Total Wages (Millions of Fixed 2014 Dollars)	-$184.1
Population (Individuals)	-7,545

Although these economic impacts will be sustained on a statewide basis, these impacts will not be uniformly distributed across the state. This is because point sources are not homogenously distributed throughout Wisconsin. Additionally, some counties are more affluent than other counties, so they have a

greater ability to absorb increases in compliance costs. To account for this, Table 7 was developed under the initial economic determination to specify which counties will incur widespread impacts as a result of the phosphorus rule based on the categories of discharges evaluated. This table was not revised for the Updated Economic Determination.

It is acknowledged that there are some economic benefits that were not specifically quantified in the "widespread test". These benefits deal with ancillary economic benefits that are gained from improvements to water quality; mainly, increases in tourism and recreation.

The Updated Economic Determination does not include a new iteration of the REMI model. Rather, it relies on several basic principles regarding economic relationships established under the 2015 Economic Impact Analysis and Initial Economic Determination. The type of economic impacts demonstrated in 2015 are impacts to critical, core economic metrics. This indicates that municipalities' and industries' economic viabilities are inexorably linked to broader economic health statewide. Neither DOA nor DNR have reason to believe that these economic relationships have changed since 2015. Furthermore, results of the sensitivity analysis conducted with the 2015 Economic Impact Analysis indicate that widespread impacts scale proportionally to substantial capital costs incurred by municipalities and key industries. The Updated Economic Determination applied this concept of scalability to project updated widespread impacts based on current compliance costs.

Table 2. Widespread Impact REMI Scenario Results (Updated Economic Determination)

Scenario	Main Categories (total)			
	Gross State Product (millions)		Jobs	
	Value	Percent Change	Value	Percent Change
Original	-642.9	0%	-4631	0%
Low (-10%)	-584.7	9.1%	-4185	9.6%
Current (-74%)	-209.9	67.3%	-1341	71.0%

These projections indicate that gross state product would decline by $209.9 million, and 1,341 jobs would be lost within the categories evaluated, assuming the MDV is not reauthorized, and compliance costs are incurred by Wisconsin municipalities and industries over the next several years.

Site-Specific Eligibility Criteria – Applications for MDV coverage:

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 impact 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 and economic data (Chapter 3 of the Updated Economic Determination);
- Representative effluent TP concentrations (s. 283.16(6)(a), Wis. Stat.);
- Representative influent TP concentrations (if available); and
- Optimization analysis (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 impact 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. Updated MDV application and evaluation forms are included as part of the Department's MDV submittal to EPA. 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 and/or the area served by the applicant. These eligibility indicators are described in Chapter 3 of the Updated Economic Determination, and are summarized in Table 3.

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 secondary indicator points are also met (See Section 3.3 of the Updated Economic Determination for additional information regarding the application of secondary indicators to municipal WWTFs).
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 secondary indicator points are met. 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. (See Section 3.3 of the Updated Economic Determination).

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 <u>two</u> 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 a secondary score of at least <u>two</u>.

2. An industrial permittee is eligible for coverage under the MDV if the permittee meets <u>one</u> 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 a secondary score of at least three.

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 Economic Determination are also summarized in Table 3.Section 3.2 of the Updated Economic Determination includes additional information on the applicability and scoring for secondary indicators.

For discharges in the power sector, it was not possible to collect sufficient data when completing the 2015 Economic Impact Analysis to determine whether power plants' phosphorus compliance costs would have a substantial impact on Wisconsin's economy. Furthermore, it was determined that power companies, unlike other industries, had the ability to pass compliance costs onto consumers without suffering substantial impacts (inability to compete, potential relocation/closing, reduction of employment). Therefore, the MDV is not available to this category of discharge at this time (s. 283.16(2)(a), Wis. Stat.)

Table 3. Economic eligibility criteria.

Screener Type	Applicable Category	Screener	Scoring
Primary Screener	Municipal	Sewerage Rates at least 1-2% of MHI[1]	A secondary score of at least 3 to qualify
	Municipal	Sewerage Rates at least 2% of MHI[1]	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[2]	All Categories	County Personal Current Transfer Receipts Share to Total Income>21.7%	Score=1
	All Categories	County Jobs per Square Mile<51.7	Score=1
	All Categories	County Population Change<3.2%	Score=1
	All Categories	County Change in Net Earnings<49.4%	Score=2
	All Categories	County Employment Change<7.1%	Score=1
	All Industrial Categories	County MHI[1]<$69,021	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, over 80% 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 require a combination of point source and nonpoint source load reductions 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 (https://dnr.wisconsin.gov/topic/Wastewater/AdaptiveManagement.html).

The path for municipal and industrial WWTFs to meet their phosphorus reduction obligations is straightforward: 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 in many cases. 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 cost to implement the corrective measures. Budget constraints and a lack of available staff have been key barriers to implementing and enforcing these agricultural performance standards to-date.

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. Establishing trust requires an ongoing effort and is a critical element of any watershed based plan, especially to ensure that nonpoint source control measures are implemented and maintained in accordance with applicable technical performance standards. Once installed or adopted, practices that reduce phosphorus runoff may diminish over time, resulting in less efficient pollution reduction; diligent operation and maintenance of installed practices (e.g., grassed waterways, filter strips) over time is necessary (see EPA memo - http://www.epa.gov/sites/production/files/2015-10/documents/tech_memo_1_oct15.pdf). This puts additional emphasis on up-front relationship building, and a sufficient project timeline to implement and verify BMP practice installation and maintenance.

Some cropland practices that reduce phosphorus runoff (e.g., changes in crop rotation, reducing soil test P levels, manure application timing/method, reduced tillage) take time to establish and may not immediately reduce phosphorus runoff to receiving waters. It also takes time (years) before nutrient management or vegetative practices (e.g., application rates and timing, cover crops, filter strip or riparian buffers) reach their full pollutant reduction capacity. This is especially true for areas where persistent over-application of nutrients has occurred. The build-up of phosphorus concentrations in the soil due to over-application of nutrients is a key concern for Wisconsin. This build up can cause significant lag time between when practices are implemented and in-stream water quality improvements are observed. For

these reasons, the Department finds that the nonpoint implementation aspect of achieving phosphorus standards will likely exceed the time needed to bring point sources into compliance. A 10-year variance timeframe is consistent with:

- Prior and existing nonpoint source watershed plans within Wisconsin;
- EPA and DNR's determination that 9 Key Element watershed plans should have a 10-year timeframe to establish, maintain and then evaluate how well practices are reducing phosphorus runoff;
- TMDL implementation plans; and
- County land and water resource management plans.

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 green space developments See the following webpage for the most up to date MS4 guidance documents: https://dnr.wisconsin.gov/topic/Stormwater/standards/ms4_modeling.html#:~:text=The%20MS4%20TMDL%20Implementation%20Guidance,be%20implemented%20within%20MS4%20permits.
Improvements to existing infrastructure can be expensive and require substantial planning and effort. For these reasons, permitted MS4s require additional time to plan and implement strategies to achieve water quality standards targets for phosphorus. In many cases, MS4s are given compliance schedules to achieve TMDL phosphorus wasteload allocations. These schedules can extend beyond the maximum timeframe allowed for WWTFs to comply with phosphorus standards.

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 Phosphates in Drinking Water Systems
Polyphosphates are frequently used in water supply streams to control pipe corrosion and to sequester heavy metals such as iron (Fe), and manganese (Mn) to improve the physical properties of water (taste, color, etc.). Orthophosphates are sometimes added to drinking water to protect human health and welfare from lead and copper. Despite these benefits, the use of phosphates 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. EPA has acknowledged the addition of phosphates 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).

Polyphosphates typically represent a small portion of total phosphorus in domestic or industrial process wastewater, but are not readily removable via chemical precipitation. The use of polyphosphates can be a determining factor in whether a discharger can meet a low phosphorus WQBEL or not. For some NCCW dischargers, source water polyphosphates can represent a large portion of phosphorus in the waste stream. In these cases, the presence of polyphosphates can make the difference between triggering reasonable potential for assignment of a phosphorus limit or discharging safety below phosphorus criteria with no limits required. In some cases, source reduction efforts may be successful by discontinuing polyphosphate use and switching to water treatment compounds with no phosphate component. Orthophosphates may be more challenging to replace, and the department has not requested that water utilities make changes to treatment if doing so could risk exposing system users to lead or copper.

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 (WRF, 2019). Recent publications have indicated that it may not be viable to chemically remove the SNRP portions of the phosphorus within the effluent. 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. 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.

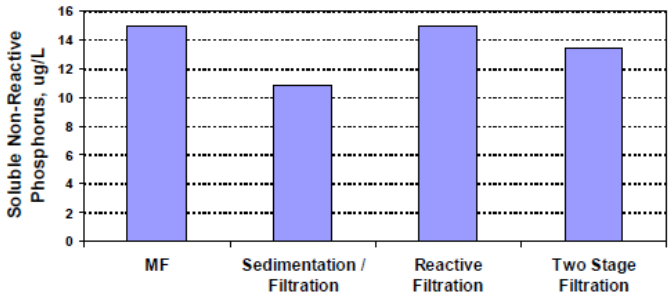

Figure 2. Phosphorus species remaining following four different chemical treatment options using alum and ferric. Results show the persistence of soluble non-reactive phosphorus in all processes (Benisch et al., 2007).

Another evaluation, undertaken by the City of Fond du Lac, suggests that tertiary treatment following chemical and biological treatment may remove some SNRP from the waste stream. Fond du Lac's effluent, following a tertiary treatment pilot test, is characterized as averaging 0.078 mg/LSome common tertiary treatment pilot installations achieved results in the 0.06 – 0.07 mg/L range (Fisher, Cramer, & Lynne, 2016). In context of a 0.04 mg/L phosphorus WQBEL, SNRP posed a significant concern when determining the viability of treatment technology.

The portion of SNRP in a waste-stream is site-specific, and is something that DNR is continuing to explore with partners. High SNRP is generally associated with certain discharger categories including some industrial categories. Waste streams comprised solely of domestic waste generally do not exhibit high SNRP concentrations. Many of the smaller municipalities currently covered under the MDV do not have major industrial loadings. For facilities with high concentrations of SNRP in their effluent streams, or a large industrial influent load, it may be more costly to consistently comply with ultra-low phosphorus limitations. Some types of advanced biological phosphorus removal may be able to remove SNRP from the waste stream, but consistent treatment performance in all applications has not been proven. The

Department is aware of at least one municipal facility that installed tertiary filtration (reactive sand filtration, the treatment technology specified under the 2015 EIA) and is experiencing challenges meeting final limits due to SNRP.

Cost of Existing Treatment Options

As stated in the Updated Economic Determination,

> *"Without a variance to address the existing phosphorus regulations, roughly 200 wastewater dischargers are expected to see substantial economic impacts. The overall cost to Wisconsin communities will be a minimum of $900 million in capital expenditures, which will rise to above $1 billion due to interest costs applied to borrowing needed to meet increased capital costs."*

As part of the Updated Economic Determination, pursuant to s. 283.16(3)(b), Wis. Stats., the Department undertook an evaluation of currently available phosphorus treatment technologies to understand if improved phosphorus treatment is readily available, from a cost-effective standpoint, for any category of point source (see Appendix J of the Updated Economic Determination). 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 stringent phosphorus limitations. Therefore, the Department believes a second 10-year MDV timeline is justified. Presuming EPA approves the 10-year MDV term extension, the Department recognizes that the MDV will terminate at the end of the approved 10-year period.

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 permit term (Wis. Stat. s. 283.16(6)). In most cases, these limitations in combination with watershed projects reflect the highest attainable condition for the term of the variance. 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. Since some dischargers have an existing 1.0 mg/L technology-based effluent limit in the WPDES permit prior to requesting MDV coverage, the interim effluent limits will provide modest reductions in phosphorus loadings from those point source dischargers over the term of the MDV. For those facilities not subject to technology-based limits before requesting MDV coverage, the MDV

mandates that some form of phosphorus treatment be installed at the facility. The small yet numerous facilities adopting chemical or biological treatment for the first time under the MDV represents a stride towards achieving water quality standards.

In order for a facility to consistently comply with its 1.0 mg/L technology-based effluent limit, their existing effluent phosphorus concentration needs to be below this value. Phosphorus is known to fluctuate significantly in wastewater treatment plants and is susceptible to dramatic fluctuations during wet weather events or from slight operational changes like fluctuations in pH or changes in the influent. These peak events can cause compliance concerns, and make it difficult for facilities to maintain compliance consistently over time. Many point sources account for this effluent variability when making operational decisions about their treatment process. The Department finds it appropriate to consider phosphorus variability when establishing an interim limitation in a WPDES permit. This interim limitation will be coupled with optimization requirements pursuant to s. 283.16(6)(a), Wis. Stat., to also ensure that the greatest pollution reduction is achieved using existing treatment technology.

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:

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

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 4. 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 5. 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 many mechanical treatment facilities are currently producing effluent with a phosphorus concentration in the 0.4-0.8 mg/L range after optimization. When considering this existing range, and the technical approach for accounting for effluent variability specified above, the Department finds that the default interim limitations of 0.8 mg/L and 0.6 mg/L are appropriate at this time, with regards to any category defined in the variance framework.

Although this will be true for the majority of permittees, it is acknowledged that some permittees consistently produce effluent phosphorus concentrations outside of this typical range. In these cases, the Department may consider site-specific interim limitations that reflect the highest attainable condition for the specific permittee in question. 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 effluent phosphorus concentrations substantially below these interim limitations. More restrictive interim limitations may be included in the WPDES permit pursuant to Wis. Stats. ss. 283.16(3m)(d) and (7). To determine if a more restrictive interim limitation is needed that reflects the highest attainable condition, statistical analyses will be used to compare the existing effluent quality to the typical interim limit for that permit term. If it is determined that a more restrictive interim limitation is needed, the calculated P99 may be included in the WPDES permit as the appropriate interim limitation, or an alternative statistical approach can be used based on staff best professional judgment. See Section 2.02 of the MDV Implementation Guidance for details.

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 information about this process. In addition, the Department will evaluate advances in treatment technology and the highest attainable condition throughout the duration of the MDV, as discussed in the Reevaluation section (also see Wis. Stat. 283.16(3m)). Although optimization and other minor operation changes may be needed to comply with these interim limits, facilities should not need to construct a major facility upgrade to comply. A 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 schedules will be developed on a case-by-case basis, and will lead point sources into compliance with interim limits as soon as possible.

Optimization (Pollutant Minimization Program)- Highest Attainable Condition
Pursuant to Wis. Stat. s. 283.16(6)(a), the WPDES permit may 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.

Because watershed project requirements are based on the amount of phosphorus discharged from a given facility, there exists a strong impetus to optimize treatment as much as possible within logistical and cost constraints. For facilities that have selected the county payment option, reduced phosphorus in effluent will immediately reduce county payment amounts. Facilities planning self-directed or third-party offset projects may be able to undertake smaller or fewer projects if treatment is optimized. This type of incentive is novel within the NPDES variance framework and should reveal the true boundaries of biological and chemical phosphorus treatment.

In 2022, DNR published a highest attainable condition evaluation as required under s. 286.16(3m), Wis. Stats. Optimization of phosphorus treatment was evaluated as part of this effort. It was noted that optimization was occurring faster than required in many cases, and statewide monthly averages for MDV facilities were commonly falling into the 0.6 to 0.7 mg/L range. During the evaluation period, the majority of phosphorus mass loading reduction occurred due to dischargers installing and optimizing phosphorus treatment.

As of 2023, the average total phosphorus monthly result for all facilities covered under the MDV was 0.78 mg/L. The median value for the same dataset is 0.41 mg/L. Figure two, below, shows the progression of means and median results over the 7-year implementation period.

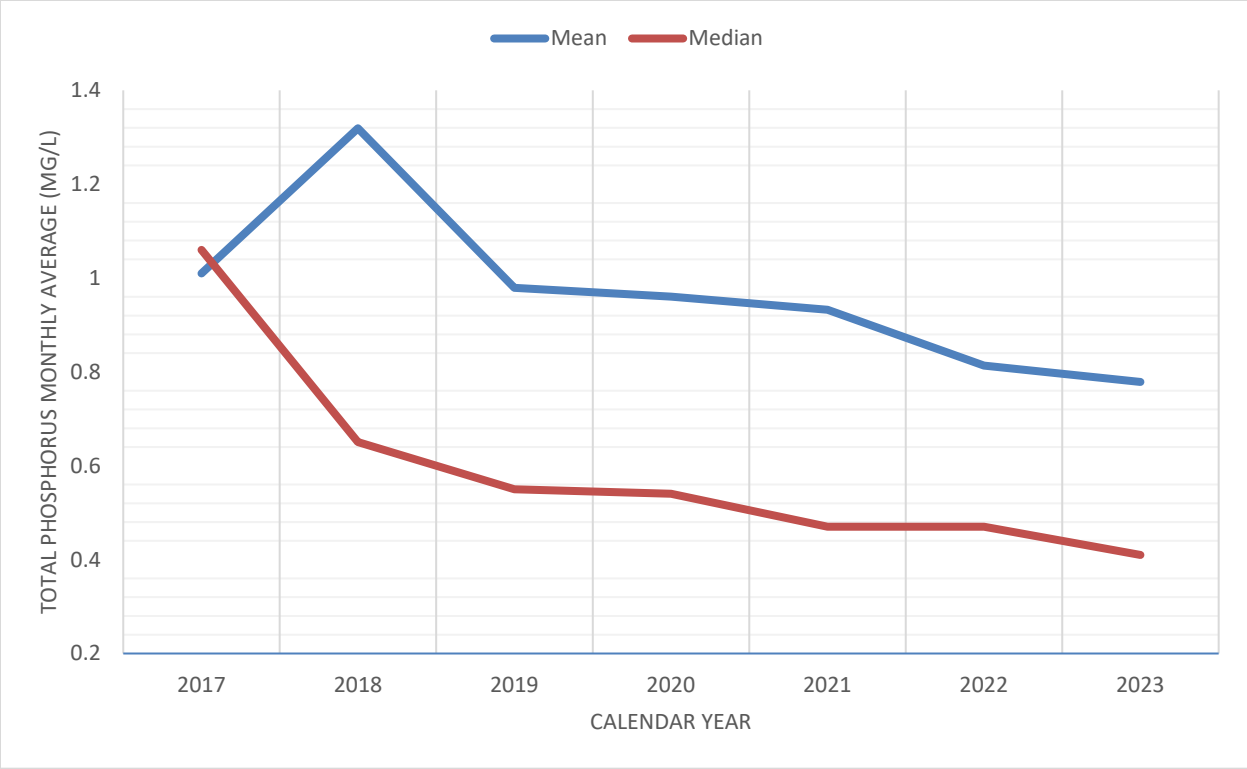

Figure 3. Monthly average results summary for all dischargers with MDV coverage 2017 - 2023

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 (commonly referred to as "self-directed projects") (s. 283.16(6)(b)2., Wis. Stats.);
- 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 (commonly referred to as "third-party projects") (s. 283.16(6)(b)3., Wis. Stats.)

The selected watershed project option is evaluated by the Department when reviewing a specific MDV application. If the point source chooses to utilize a self-directed or third-party project, 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 for developing the watershed plans and implementing 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, Wis. Adm. Code, performance standards; and
- Certification 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 are not required to organize a phosphorus-reduction project prior to receiving MDV coverage. 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. The WPDES permit will require that annual payments be made to the County no later than March 1st 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 per discharger 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, some of the practices that can achieve compliance with the performance standards in chapter NR 151, Wis. Adm. Code are listed in Table 6 below.

Table 6. Agricultural performance standards.

Practice	Citation
Manure Storage Systems	NR 154.04(3)
Manure Storage System Closure	NR 154.04(4)
Barnyard Runoff Control Systems	NR 154.04(5)
Access Roads & Cattle Crossings	NR 154.04(6)
Animal Trails and Walkways	NR 154.04(7)
Critical Area Stabilization	NR 154.04(10)
Diversions	NR 154.04(11)
Field Windbreaks	NR 154.04(12)
Filter Strips	NR 154.04(13)
Grade Stabilization	NR 154.04(14)
Heavy Use Area Protection	NR 154.04(15)
Lake Sediment Treatment	NR 154.04(16)
Livestock Fencing	NR 154.04(17)
Livestock Watering Facilities	NR 154.04(18)

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

The 2022 HAC evaluation documents a phosphorus reduction of 13,852.1 pounds achieved by counties. The 2025 nonpoint reduction evaluation provides a more comprehensive review of phosphorus reductions achieved under the county payment system. Between 2017 and 2023, county payments increased to exceed $1 million per year as a statewide total. Counties reported a total of 58,123 pounds of phosphorus reduced from installed practices. Refer to the 2025 nonpoint reduction evaluation document for more details regarding implementation of the county payment option.

Other Watershed Project Options:
For the other water project options, the WPDES permit holder will be responsible for providing 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. 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. As part of the 2025 nonpoint source reduction evaluation, the Department conducted a review of nonpoint phosphorus reductions achieved by self-directed and third party watershed projects implemented thus far. The results indicate that the amount of reductions that have been achieved with self-directed and third-party offsets is 20% greater than if those facilities had installed treatment to meet WQBELs. Refer to the attached document 2025 nonpoint source reduction evaluation for more information.

Permittee Actions during the MDV:

Because every facility and watershed is unique, it is not possible to specify exactly what actions will need to be taken by the permittee during the term of this variance. This section seeks to provide some general examples of actions permittees may need to take during the MDV in order to comply with the highest attainable condition analysis. This section focuses on three permit terms of MDV coverage, since the Department is requesting EPA approval of a second 10-year variance at this time. In the 2023-2024 timeframe, many dischargers are entering their second permit term of MDV coverage. In 2029, any dischargers left seeking MDV coverage would be starting their third permit term, which would extend to 2034. Some, albeit fewer, dischargers will receive MDV coverage for the first time in years 2024 and beyond, and will progress through terms 1-3 accordingly.

MDV permit term #1:

As stated in Section 2.02 of the Phosphorus Implementation Guidance, many facilities will have already optimized their existing treatment process for phosphorus pursuant to s. 217.17(3)(b)1., Wis. Stat. Such facilities will continue to operate their treatment facility in accordance with their existing optimization plan during the term of this permit. If updates to the optimization plan are required, or a facility has not yet completed their optimization measures, these measures will need to occur during permit term 1 of the MDV (s. 283.16(6)(a), Wis. Stat.). It is anticipated that as wastewater operators gain experience operating their treatment process at the optimized treatment level, effluent variability will be reduced. This means that throughout this permit term, spikes in effluent phosphorus concentrations will be lessened. Effluent monitoring conducted throughout the permit term will help quantify these improvements and include appropriate interim limitations in permit term 2 of the MDV.

Pursuant to s. 283.16(6)(a)2., Wis. Stat. a permittee is not automatically eligible for a second permit term with the MDV. The Department must approve the second permit term, and reissue the WPDES permit prior to the conditions of the second permit term taking effect. This means that the permittee may need to revisit their treatment options to update their projected compliance costs. If the facility is eligible for trading and adaptive management, that facility may wish to revisit these compliance options based on new information that becomes available during the permit term. For example, additional information provided through the implementation of the MDV watershed projects may help support further analysis of trading and adaptive management.

In addition to the above, a watershed project will be implemented throughout the MDV (ss. 283.16(8) and (8m), Wis. Stats.). During the first couple of years, these projects will likely focus on implementing known and accepted BMPs, working with willing landowners, and outreach and education. As relationships and trust are built with landowners, broader participation is anticipated. Additionally, the feasibility of innovative BMPs can be explored. This permit term can also be used to establish those practices that will take time to become established and effective, and/or need time before they lead to

measurable improvements in water quality. Baseline data such as soil phosphorus data will be collected in accordance with technical standards and UW-Extension recommendations to aid in future practice verification efforts. During this permit term, county staff can also provide written documentation to landowners confirming their compliance with agricultural performance standards pursuant to ch. NR 151, Wis. Adm. Code. For projects where in-stream monitoring is included, this permit term will help establish a baseline for in-stream phosphorus concentrations. As described previously, it is unlikely that significant measurable improvements will be made to surface water during this permit term. Again, there is a lag-time between BMP installation and water quality response, and many surface waters will have delayed responses due to legacy phosphorus. This may also be subject to weather patterns that occur during this period.

Additional watershed-specific information will also be gathered throughout the permit term by working with local stakeholders and as implementation experience is gained. This information can inform BMP selection decisions, more strategically target BMPs, and identify watershed-specific concerns that may not have been originally obvious such drain tiles, legacy phosphorus concerns, etc. This information will aid in improving plan submittals during the second permit term with the MDV.

MDV permit term #2:
Through the experiences gained from MDV permit term #1, as well as broader implementation of the phosphorus rule, updates to the optimization guidance may be made. This means that many point sources will need to submit updated optimization plans to the Department and implement those plans during permit term 2. Permittees can utilize permit term 2 to explore new treatment options for phosphorus in order to comply with their final phosphorus limitations. This may include pilot testing at their treatment plant or exploration of treatment options on whole effluent toxicity. Point sources should expect that their final phosphorus limitations be included in the WPDES permit upon permit reissuance, and compliance with those limitations should be achieved as soon as practicable during that permit term. The permittee can also use this time to reevaluate trading and adaptive management feasibility based on the knowledge and experiences gained through implementing the watershed projects. If these options appear to be viable, this permit term can be used to develop trading or adaptive management plans.

Implementation of watershed projects will also occur during this permit term. Compared to permit term 1, additional emphasis will be placed on BMP maintenance to ensure that the improvements made during permit term 1 are maintained. Follow-up monitoring will also ensure that practices are achieving their intended water quality benefits. For example, soils data collected during this permit term can ensure the drawdown of soil phosphorus concentrations is occurring. If these benefits are not occurring, or practices are not being effectively maintained, corrective action may be necessary in accordance with ch. NR 151, Wis. Adm. Code. Additional land use improvement projects may also be installed at this time. These practices will likely target areas where landowner participation has been more difficult to achieve, or have not yet occurred.

For projects where in-stream or edge of field monitoring is occurring, water quality trends may be observed during this permit term. These improvements may or may not be sufficient to meet water quality standards, but may provide important information that can contribute to future decision making. During this permit term, planning will need to occur to ensure that water quality improvements that are realized during permit term 2 are maintained. Additionally, thought will need to be given if additional watershed efforts can feasibly occur in this area outside of the MDV. Does this area need a TMDL? Are there other watershed project options that can continue to improve water quality in this area? Is a site-specific phosphorus criteria appropriate for the area in question? If additional follow-up action is desirable for the area, planning should occur during permit term 2 to maintain participation and project momentum.

MDV permit term #3:

By this point in time, many dischargers will have optimized existing phosphorus treatment to the greatest extent possible. There may be additional emphasis placed on budgeting for a major facility upgrade to meet final WQBELs, as the following permit term will require meeting the final WQBEL pursuant to s. 283.16(6)(a)4., Wis. Stat. Dischargers will likely need to investigate financial assistance opportunities through the state revolving fund or other sources. New EPA guidance released in February of 2023 places a greater focus on evaluating sources of financial assistance under the variance process. The document, *Clean Water Act Financial Capability Assessment Guidance- 800B24001* includes a comprehensive checklist for dischargers to complete to ensure all financial options have been considered.

Progress towards establishing a water quality trade or adaptive management plan during permit term 3 would be needed to avoid taking steps towards a major facility upgrade during permit term 4. For those permittees that have established a self-directed or third-party project, some experience will have been gained working with nonpoint sources to maintain pollution-reducing projects. These activities may lower the barrier to water quality trading or undertaking adaptive management. The discharger may need to engage with new partners to establish a watershed-based compliance option. Various consulting firms, county land conservation departments, and the Water Quality Trading Clearinghouse are all gaining experience establishing water quality trades, increasing the number of opportunities for cost-effective compliance for dischargers.

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 (highest attainable condition evaluation). 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 statewide variance implementation for consistency with highest attainable condition requirements. This review will help ensure that interim limitations and optimization requirements are updated as necessary to reflect the highest attainable condition for categories of dischargers across the state (Wis. Stat. s. 283.16(3m)). The Department will also hold a public hearing to receive comment and additional information for this review pursuant to s. 283.16(3m)(a), Wis. Stat. This review will occur at least every 5 years after the date EPA approves the MDV and will be submitted to EPA no later than 30 days after completion (s. 283.16(3m)(b), Wis. Stat.). Because this process is occurring at least every 5 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.

During the triennial standard review process (ss. 283.15(6) and 283.16(2m), Wis. Stats.), the Department will also 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 that 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
- New information that would warrant updates to the industrial primary screeners

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 reevaluation 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 with no further action required. MDV implementation guidance will be updated, as necessary and appropriate, to reflect these changes.

In addition to these updates, the Department shall, on an annual basis, adjustment the per pound payment amount for point source discharges that choose to enter into the "county payment option". At the onset of the MDV, payments were set equal to $50/lb of phosphorus. However, annual payment adjustments are required 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.). For the period of April 1, 2024 to March 31, 2025, the per pound payment amount is $64.75.

MDV Reauthorization Documents List:

- Wisconsin's Updated Economic Determination
- Phosphorus Economic Impact Analysis Report and Addendum (2015, original)
- Multi-Discharger Variance Justification Document
- Public Notice and Preliminary Outreach Summary
- Response to Comments on Multi-Discharger Variance Package
- Updated Multi-Discharger Variance Implementation Guidance
- Updated Implementation Forms
- State Statue 283.16 and Act 205
- Legal Certification Letter
- Wis. Adm. Code s. NR 102.06
- Nonpoint Reductions Evaluation Document
- 2022 Highest Attainable Condition Evaluation

Table 7. Potentially eligible MDV areas by county.

	Discharge Category						
County	**Municipal**	**Cheese**	**Food**	**Fish**	**Paper**	**NCCW**	**Other**
Adams	X	X				X	
Ashland	X						
Barron	X		X			X	
Bayfield	X			X		X	
Brown	X				X	X	
Buffalo	X	X				X	
Burnett	X	X				X	
Calumet	X	X				X	X
Chippewa	X					X	X
Clark	X	X				X	X

Columbia	X			X			X	
Crawford	X						X	
Dane								
Dodge	X		X	X			X	
Door	X							
Douglas	X				X		X	X
Dunn	X						X	
Eau Claire						X		
Florence	X							
Fond du lac	X		X	X			X	
Forest							X	
Grant	X		X				X	
Green			X					
Green Lake	X			X			X	
Iowa	X						X	X
Iron	X						X	
Jackson	X						X	
Jefferson	X				X		X	X
Juneau	X						X	
Kenosha	X			X			X	
Kewaunee	X		X				X	
La Crosse	X						X	X
Lafayette	X		X					
Langlade	X						X	
Lincoln	X					X	X	
Manitowoc	X						X	
Marathon	X		X	X		X	X	
Marinette	X				X		X	X
Marquette	X						X	
Menominee								
Milwaukee	X				X		X	X
Monroe	X			X			X	
Oconto	X		X	X	X	X	X	
Oneida	X				X	X	X	
Outagamie	X			X		X	X	
Ozaukee	X			X			X	
Pepin	X							
Pierce	X		X				X	
Polk	X				X		X	
Portage	X		X	X		X	X	
Price	X						X	X
Racine	X						X	
Richland	X		X				X	

Rock	X						X	
Rusk	X					X	X	
Sauk	X	X	X				X	X
Sawyer							X	
Shawano	X					X	X	
Sheboygan	X	X	X	X			X	X
St. Croix								
Taylor	X	X					X	
Trempealeau	X						X	
Vernon	X	X						
Vilas							X	
Walworth	X						X	
Washburn							X	
Washington	X	X					X	X
Waukesha	X						X	
Waupaca	X						X	
Waushara	X			X			X	
Winnebago	X					X	X	X
Wood	X	X				X	X	