# Economic Impacts of Wisconsin's Phosphorus Regulations: An Updated Determination

***This document is intended to evaluate substantial and widespread adverse social and economic impacts of Wisconsin's phosphorus regulations in accordance with s. 283.16(3)(a), Wis. Stats.***

***Wisconsin Department of Administration***

***Wisconsin Department of Natural Resources***

***12/16/2024***

## Summary

Wisconsin's phosphorus multi-discharger variance (MDV) was the result of efforts by numerous water quality stakeholders, state agencies, and legislators that occurred from 2013 to 2016. Following a 2015 Department of Administration (DOA) determination that phosphorus standards would cause substantial and widespread adverse social and economic impacts on a statewide basis, the Department of Natural Resources (DNR) prepared a variance package for federal approval of the MDV. The MDV was approved by the United States Environmental Protection Agency (EPA) on February 6, 2017. The MDV was approved for an initial 10-year period, expiring in February 2027. Section 283.16 of the Wisconsin Statutes allows the MDV to apply to a given permittee for up to four 5-year permit terms, if eligibility criteria are met on a discharger-specific basis. Roughly 160 Wisconsin Pollutant Discharge Elimination System (WPDES) permittees have utilized the MDV to avoid economic hardship and make stepwise phosphorus reductions in effluent and nonpoint sources.

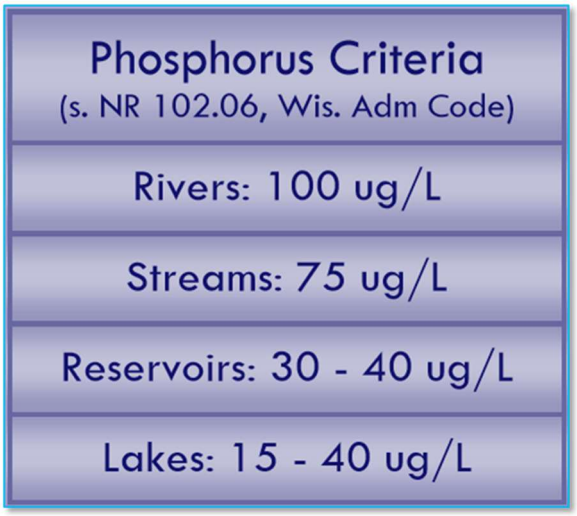


**Figure 1: Phosphorus criteria adopted under rule in 2010**

Section 283.16 (3), Wis. Stats. outlines the MDV reauthorization process relative to the determination that phosphorus effluent limits result in substantial and widespread adverse social and economic impacts. Prior to seeking reapproval of the variance from the EPA, DOA and DNR must evaluate whether the initial, 2015 determination, remains accurate. In summary, the following question is applicable: Would achieving compliance with water quality-based effluent limitations (WQBEL) for phosphorus, based on criteria without a variance, continue to result in substantial and widespread adverse social and economic impacts?

To answer this question, DOA and DNR have undertaken an evaluation utilizing recently available information such as updated site-specific compliance costs and secondary indicator scores as well as widespread economic impact projections. These updated values can be compared to initially-assumed values in the 2015 Economic Impact Analysis completed by ARCADIS, Sycamore Advisors, and University of Massachusetts.

Based on the analysis, as explained throughout this document, DOA finds the original 2015 economic determination to remain accurate. Absent continued use of the phosphorus MDV, Wisconsin municipalities and businesses would incur $900 million worth of capital cost expenditures in the coming years, resulting in an estimated 1,341 fewer jobs and gross state product reduction by at least $209.9 million.

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# Chapter 1: MDV Foundational Elements: Then & Now

## Section 1.1: MDV Background

On December 1, 2010, the DNR promulgated phosphorus standards intended to control excess phosphorus pollution in Wisconsin's waterways. These standards included numeric phosphorus criteria to assure a level of water quality that will protect human health from harmful and nuisance algal blooms and maintain the beneficial uses of these waterbodies. Since December 2010, DNR has been evaluating the need for phosphorus WQBELs in WPDES permits to comply with numeric phosphorus criteria. Many point sources face restrictive phosphorus limitations as a result of these criteria. Pursuant to s. NR 217.13 Wis. Adm. Code, many phosphorus WQBELs were set equal to the phosphorus criteria, shown in Figure 1. Compliance with these restrictive WQBELs frequently requires substantial capital investments, yet treatment may only target a small fraction of the total phosphorus loading entering many Wisconsin surface waters. Nonpoint source phosphorus loadings frequently contribute the majority of phosphorus to Wisconsin's waters. However, in some effluent-dominated streams, and in many systems during dry weather conditions, point sources of phosphorus may be a larger contributor to phosphorus impairment.

The concept of an MDV is attractive for a number of reasons – both economic and environmental. DNR has extensive experience working with EPA to grant individual variances in accordance with s. 283.15 Wis. Stats. While individual variances may be an option for some permittees, the MDV offers administratively streamlined application processing, saving considerable staff time at DNR and EPA. Pollution minimization efforts for the MDV are made clear up front and combined across a large area, rather than limited to site-specific pollutant reductions. An economy of scale is achieved for nonpoint source pollution control projects, which indicates an MDV will result in better environmental outcomes.

The federal water quality standards regulations at 40 CFR 131 and the federal permitting regulations at 40 CFR 122 provide for the use of water quality standards variances. A water quality standards variance is a time limited designated use and criterion (i.e., interim requirements) that is targeted to a specific pollutant(s), source(s), and/or waterbody segment(s) that reflects the highest attainable condition during the specified time period. As such, a variance requires a public process and EPA review and approval under section 303(c) of the Clean Water Act. Typically, variances are implemented on an individual, permit-by-permit basis. Additional information regarding Wisconsin's individual variance program is available at http://dnr.wi.gov/topic/wastewater/variances.html.

There are several factors that can be used to demonstrate the need for an individual variance (s. 283.15, Wis. Stat.; 40 CFR 131), but a factor six economic demonstration is the most commonly used. Factor six, meaning the 6$^{th}$ justification listed at 40 CFR 131.10(g), is often referred to as an "economic hardship variance". The economic demonstration requires that a point source demonstrate that compliance with a water quality standard would result in "…substantial and widespread adverse social and economic impacts" (s. 283.15(4)(a)1.f., Wis. Stats.). Although this option is available, individual variances can be a time-consuming process for point sources, DNR, and EPA staff, and can lead to delays in the permit reissuance

process. For these reasons, Wisconsin has streamlined the process through the implementation of an MDV. 2013 Wisconsin Act 378 was enacted by the Wisconsin Legislature and became effective on April 25, 2014. This law required that the Wisconsin DOA, in consultation with DNR, determine "…whether attaining the water quality standard for phosphorus is not feasible because it would cause substantial and widespread social and economic impacts" (s. 283.16(2)(a), Wis. Stats.). Such a determination was to be made on a statewide basis or, optionally, for statewide categories of point sources.

EPA has acknowledged that MDVs may be established, and has authorized them for toxic substances, mainly mercury and chloride, in several states. Additionally, EPA has recognized that MDVs are distinctive from an individual discharger WQS variance in the "Water Quality Guidance for the Great Lakes System: Supplementary Information Document" (EPA–820–B–95–001; March 1995). Currently, EPA does not have guidance specific for MDVs, but has provided a few general factors for consideration when making a determination of substantial and widespread adverse social and economic impacts for multiple point sources (EPA-820-F-13-012, March 2013):

1. MDVs should only apply to permittees experiencing the same challenges in meeting WQBELs for the same pollutant(s), criteria and designated uses;
2. Permittees should be grouped based on specific characteristics or technical and economic scenarios that the permittees share and conduct a separate analysis for each group;
3. Sufficient information should be collected for each individual permittee, including engineering analyses and financial information, to adequately support the specification of permittee groups for each individual permittee to be covered by the variance;

To lay the groundwork for an MDV economic demonstration and meet the requirements of s. 283.16(2)(a), Wis. Stats., DOA contracted with ARCADIS, Sycamore Advisors, and University of Massachusetts Donahue Institute to evaluate economic impacts of phosphorus regulations on a statewide basis. These entities produced reports titled "Economic Impact Analysis" and "Addendum to Economic Impact Analysis: Statewide Economic Impacts" (April 24, 2015). These documents informed DOA's economic determination in 2015 and have continued to be a resource during implementation and reauthorization of the MDV.

*Note: This report frequently refers to supplemental reports developed by ARCADIS, Sycamore Advisors, and University of Massachusetts Donahue Institute, entitled "Economic Impact Analysis" and "Addendum to Economic Impact Analysis: Statewide Economic Impacts" (April 24, 2015). These reports will be referred to in this document as "2015 EIA Report" and "EIA Addendum" for simplicity.*

## Section 1.2: 2015 Economic Determination

In 2015, DOA and DNR undertook an economic evaluation to satisfy the s. 283.16(2)(a), Wis. Stats. requirement to determine if phosphorus compliance costs resulted in substantial/widespread adverse impacts to the state. A preliminary economic determination was published on April 29, 2015, and a final economic determination was published on December 29, 2015, after receiving public comment.

Section 283.16(2)(a) of the Wisconsin Statutes:

> "The department of administration, in consultation with the department of natural resources, shall determine whether attaining the water quality standard for phosphorus, adopted under s. 281.15, through compliance with water quality based effluent limitations by point sources that cannot achieve compliance without major facility upgrades is not feasible because it would cause substantial and widespread adverse social and economic impacts on a statewide basis. The department of administration may make separate determinations under this paragraph for statewide categories of point sources."

These reports were largely based on economic impact information provided in the 2015 EIA Report and EIA Addendum. The prior determination documents incorporated a number of refinements based on WPDES program data and an improved secondary indicator scoring system. The documents also interpreted results of the 2015 EIA report, putting the data in context relevant to the concerns of WPDES permit holders and water quality stakeholders. Descriptions of primary and secondary indicators, and supporting justification for their use, are also included in the document.

Prior to finalizing the 2015 report, DOA published a preliminary economic determination document, subject to public notice and comment. This allowed for public input to be considered regarding a myriad of issues affecting the economic determination. In a response to comments document, included in the final variance package, roughly 90 comments are considered and provided with written responses from DOA and DNR. Ultimately, the document supported DOA's determination that phosphorus compliance costs result in substantial/widespread economic impacts to the State.

## Section 1.3: Defining Categories of Dischargers

There are over 750 municipal and industrial point sources covered under an individual WPDES permit in Wisconsin, ranging from paper mills to municipal wastewater treatment facilities (WWTFs) to cheese making operations. Pursuant to s. 283.16(2)(a), Wis. Stats., the substantial and widespread adverse impacts determination may be made on either a statewide basis for all point sources, or for statewide categories of point sources. EPA guidance recommends that point sources be grouped by technical and economic characteristics to create as much uniformity within each category as possible. To be consistent with this guidance, DOA and DNR determined categorization was the most appropriate method to analyze costs to make a substantial and widespread adverse impact determination. This method must result in categories of point sources that are socially and economically important on a statewide basis to be consistent with s. 283.16(2)(a), Wis. Stat. Several factors were utilized to help split point sources into categories and are

described in this section.

First, it was important to determine what would constitute a "statewide category". To balance the requirements of s. 283.16(2)(a),Wis. Stat., and EPA's MDV factsheet (EPA-820-F-13-012, March 2013), the following criteria were developed:

1. The final category should have at least ten individual WPDES permit holders;
2. The final category should have important social and/or economic value to the state of Wisconsin; and
3. Point sources within the final category should have similar technical and economic characteristics.

With the above criteria in mind, EPA's economic guidance was reviewed to help identify categorical distinctions EPA makes for individual variance requests. This guidance separates municipal and industrial permittees and provides distinct "primary" and "secondary" indicators for each group to assess the social and economic impacts of a given regulator policy. For example, the primary screener for municipal discharges is based on median household income (MHI), while industrial variance requests rely on profitability and other factors. To be consistent with this guidance, municipal and industrial categories were separated for the 2015 EIA Report. EPA's guidance did not have other clear categorical distinctions that were applicable for this effort. Further categorization was, therefore, the result of applying the aforementioned criteria to the municipal and industrial categories.

Municipal WWTFs are very similar from a financial standpoint: EPA applies the same economic primary and secondary indictors to all municipal WWTFs, they all have the same mechanisms for financing facility upgrades, and they all serve a community function rather than being profit seeking. Given these similarities, it did not seem to be necessary to further divide the municipal WWTFs into additional financial categories. It is important to note that the 2015 EIA Report discussed differences between municipal lagoon and mechanical facilities. These differences do not result in a formal categorical distinction between lagoons and mechanical facilities, as the same economic eligibility criteria are applied to all municipal facilities. Technical differences are addressed when evaluating MDV applications and implementing the MDV in permits, on a facility-specific basis.

Several distinctive categories were generated among industries, both for technical and economic reasons. A clear technical difference among industries is whether they produce process wastewater or non-contact cooling water (NCCW) and/or other low-strength effluents. Industries that generate process wastewater include paper mills, aquaculture, cheese/dairy manufacturers, and food processors, among others. Dischargers that produce low-strength waste or NCCW include power plants and segregated outfalls from some cheese and canning/food processing facilities, and other industries. The low-strength waste group was further separated into two categories: power plants and NCCW discharges. Because the Public Service Commission of Wisconsin regulates power plants and the setting of rates, such plants are fundamentally different, from a financial perspective, from other discharges of low strength wastewater. This factor ultimately led to the power plant category being excluded from MDV eligibility.

The industries within the process wastewater group were separated into several categories. From a technical wastewater perspective, pulp and paper mills have a much higher concentration of recalcitrant phosphorus requiring additional processes for treatment (see p. 22 of the EIA Report). Therefore, paper

mills were separated into their own category to more accurately estimate compliance costs.

Economic factors drove aquaculture, cheese/dairy manufacturing, and other food processing plants to be divided into their own categories. For example, aquaculture was placed into a separate category because this industry's economic characteristics are more similar to agricultural production. Cheese manufacturing in Wisconsin is an important cultural industry and the state has become a worldwide leader in artisanal and specialty cheeses. Wisconsin's cheese industry has been less successful in gross cheese production, compared to California, and faces competition in the specialty cheese markets from Vermont, California, and other states. Additionally, this industry relies heavily on local dairy production and local milk prices, which makes this a unique category from a financial standpoint. There are a number of vegetable processing and animal slaughtering/meat processing facilities, which also warranted their own category called "food processing". Many of these facilities tend to be canning or freezing operations and are more active during the harvest season. These facilities also tend to rely heavily on local agriculture for its raw materials. Of the remaining process wastewater industrial dischargers, almost 40 facilities are covered under a WPDES permit, but do not meet the criteria to warrant a separate statewide category. Therefore, an 'other' category was created for these rather unique operations. Facilities in the 'other' category include metal finishing, airports, fire products manufacturing, greenhouses, and quarries, among others. A small number of dischargers exhibit technical and economic characteristics that would allow them to be appropriately grouped in more than one category; such situations have required DNR to exercise professional expertise and judgment in determining which category is most appropriate for a particular discharger.

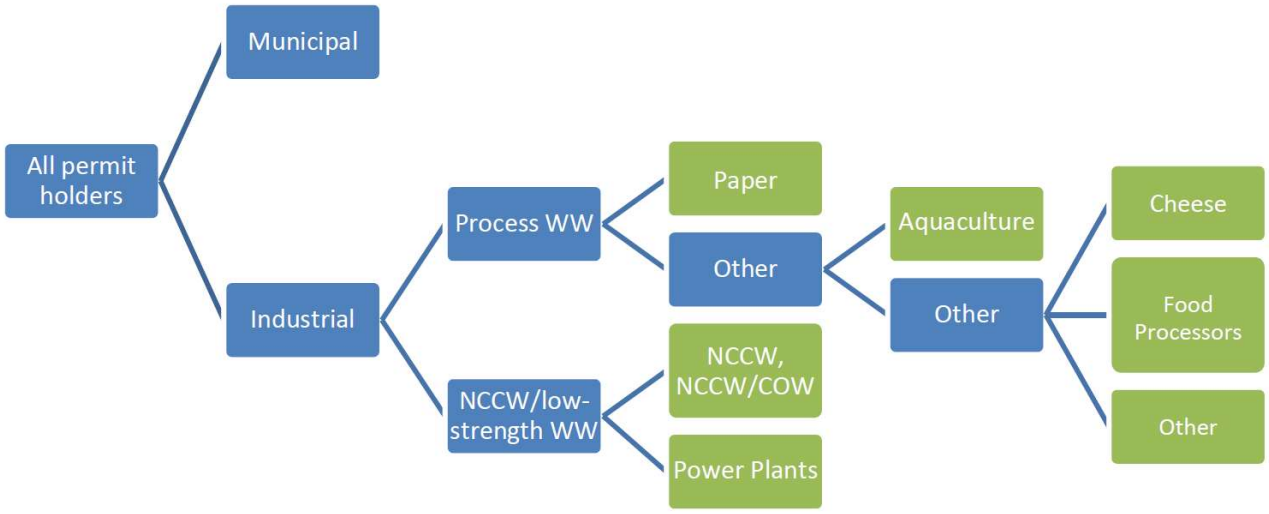


**Figure 2: Logic matrix used to determine discharger categories in the 2015 EIA Report**

Over seven years of MDV implementation to date, categories have generally functioned as intended. Neither DOA nor DNR is aware of any undue gap in MDV applicability created by how the discharger categories are defined. For the updated determination, no change to category definitions have been

proposed. As shown in Table 1, the municipal category is most heavily used. This is expected, as municipal facilities make up the largest number of dischargers in the state, and almost always have significant phosphorus in the influent waste stream. Industrial categories have varied in their usage of the MDV, with the majority of covered dischargers being in the Cheese Makers and Food Processors categories. Table 1 may seem to indicate that some of the industrial categories are under-utilized. This condition may change as phosphorus compliance schedules mature and additional facilities seek MDV coverage.

**Table 1: Number of dischargers with current MDV coverage in each category**

| Category | Number of Dischargers with MDV Coverage |
|---|---|
| Municipal | 130 |
| Cheese Makers | 10 |
| Food Processors | 6 |
| Paper | 2 |
| Aquaculture | 1 |
| Other | 1 |
| NCCW | 1 |

# Chapter 2: Phosphorus Implementation Metrics

## Section 2.1: Phosphorus Water Quality-Based Effluent Limits

As previously stated, many dischargers initially received phosphorus WQBELs set equal to the applicable phosphorus criterion. Section NR 217.13, Wis. Adm. Code describes the process for calculating WQBELs based on receiving water flows and in-stream concentrations of total phosphorus. The 2015 EIA Report assumed that 592 out of roughly 750 surface water dischargers would incur compliance costs associated with attaining phosphorus criteria. A 2016 analysis conducted by DNR staff indicated that roughly two thirds of dischargers would receive a phosphorus WQBEL set equal to the applicable phosphorus criterion. This means that WQBELs were commonly set at 0.1 mg/L or 0.075 mg/L. Where these limits are assigned to facilities (as of 2023), they are included in the Appendix A table.

Since 2010, DNR and partners have developed Total Maximum Daily Loads (TMDLs) for many of the larger phosphorus-impaired waterways across the state. These are shown in Figure 2 and include the following:

- Rock River (Approved 2012)
- Lower Fox River Basin (Approved 2012)
- Tainter Lake / Lake Menomin (Approved 2012)
- St. Croix River (Approved 2013)
- Milwaukee River Basin (Approved 2018)
- Wisconsin River Basin (Approved 2019)
- Upper Fox and Wolf Rivers Basin (Approved 2020)
- Northeast Lakeshore (Approved 2023)
- Fox-Illinois River Basin (in development)

TMDLs assign wasteload allocations to point sources and load allocations to nonpoint sources, in combination with a margin of safety, to ensure waterbodies meet applicable water quality criteria. When calculating phosphorus WQBELs in a TMDL area, the wasteload allocation for a specific discharger is expressed as a lbs/day value and subject to monthly and potentially six-month averaging periods. TMDL-based limitations may be less stringent than the water quality based effluent limitation calculated under s. NR 217.13 Wis. Adm. Code, in cases where nonpoint sources are the significant phosphorus sources responsible for the impairment. These less stringent limits may be included in permits in lieu of the more stringent s. NR 217.13 Wis. Adm. Code limits if the latter has not taken effect. In many cases, the development of a TMDL provides relaxed effluent limitations for wastewater point source dischargers. Whether these limitations can be met without a major facility upgrade is site-specific and based on the limitation itself, wastewater influent characteristics, plant design, and other factors.

To better understand the level of treatment required to achieve a TMDL-based effluent limit, mass limits can be translated into concentration equivalent values using an assumed flow value. Appendix A contains the most stringent limit applicable to each surface water discharger in the state, whether a s. NR 217.13 Wis. Adm. Code concentration limit or concentration-equivalent of a TMDL-based limit.

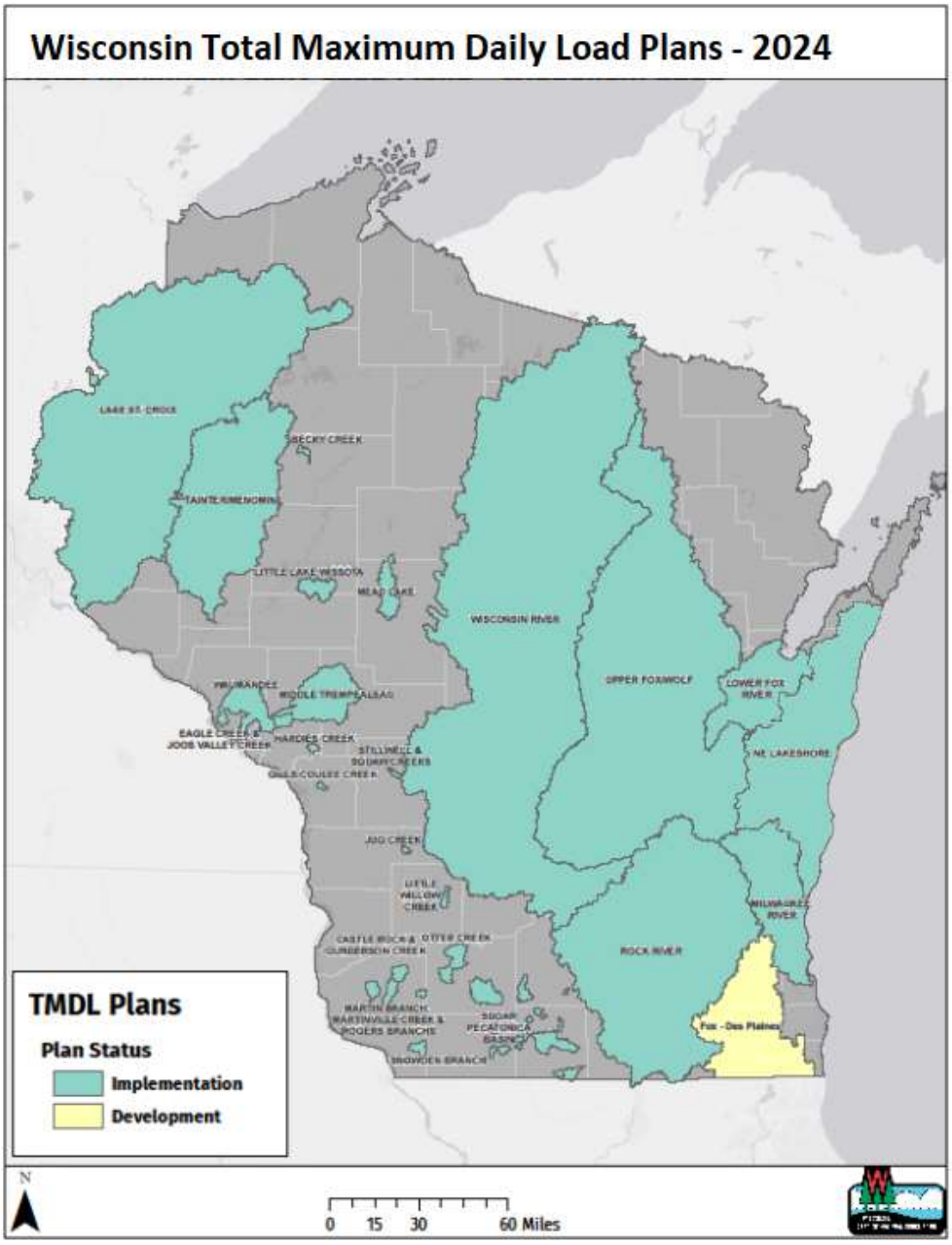


**Figure 3: 2022 TMDL Development and Implementation Map**

Table 2, below, compares limits for all surface water dischargers under two separate analyses: the 2015 EIA

Report and a recent evaluation completed by DNR in 2023. The 2023 evaluation pulled data from all final WQBELS for phosphorus. This includes limits that are not yet effective in permits due to compliance schedules or variances.

**Table 2: Phosphorus WQBEL Concentrations Statewide**

| Limit range | Number of Facilities 2015 EIA | Number of Facilities 2023 Evaluation |
|---|---|---|
| <0.075 mg/L | 20 | 29 |
| =0.075 mg/L | 344 | 211 |
| 0.075 mg/L - 0.2 mg/L | 107 | 96 |
| >0.2 mg/L | 121 | 405 |
| | | |
| Total | 592* | 741 |

*Though all WPDES permittees were evaluated, roughly 150 permittees were excluded from the 2015 analysis due to not needing to install phosphorus treatment technology. These would typically fall within the ">0.2 mg/L" category for the 2023 evaluation.

Table 2 shows a shift in final phosphorus WQBELs away from being set equal to the criterion and towards the ">0.2 mg/L" category. For example, 344 WQBELs were set equal to the most commonly-applicable criterion (wadeable streams & rivers, 0.075 mg/L) in 2015, while in 2023 only 211 WQBELs were set equal to that criterion. TMDL limits tend to fall within the 0.2 – 0.3 mg/L concentration-equivalent range. For example, the average concentration-equivalent WQBEL calculated under the Wisconsin River TMDL (with site-specific criteria) is equal to 0.28 mg/L for a dataset of 104 dischargers. The median value of the same dataset is 0.34 mg/L.

This trend of modestly increased WQBELs has worked to reduce the number of facilities covered under the MDV. There are roughly a dozen examples of dischargers no longer needing MDV coverage due to a moderately increased WQBEL, following the adoption of the Wisconsin River TMDL in Upper Fox and Wolf Rivers TMDL in 2019 and 2020, respectively. DNR will continue to evaluate the achievability of WQBELs when dischargers apply for MDV coverage. Should increased WQBELs no longer mandate a major facility upgrade, the discharger would not be eligible for MDV coverage pursuant to s. 283.16(4), Wis. Stats. It is important to note that whether a WQBEL is attainable for a facility without a major upgrade is highly site-specific. Some facilities cannot achieve WQBELs in the 0.2 – 0.5 mg/L range, even with optimization of biological or chemical treatment. This is consistent with the assumptions applied in the 2015 EIA report, which grouped dischargers subject to WQBELs ranging from 0.1 mg/L to 0.5 mg/L in the same category for purposes of compliance cost estimation, with the assumption that a major facility upgrade is required.

## Section 2.2: Watershed-based Compliance Alternatives

Nutrient pollution, due to its varied sources (point and nonpoint), has been a well-documented water quality challenge for decades. To help address this, DNR, in collaboration with stakeholders, developed

innovative compliance options as part of the 2010 phosphorus rulemaking, to reach water quality goals in a more economically efficient manner. This spurred the development of Wisconsin's adaptive management (AM) and water quality trading (WQT) programs. The premise behind these compliance options is that point source dischargers could invest a smaller amount of money towards nonpoint source pollution control projects (compared to a facility upgrade), and potentially have a greater water quality benefit. These compliance options have been selected by some WPDES Permittees and continue to be explored by others as they work towards phosphorus compliance.

During the early periods of WQT and AM implementation, dischargers identified challenges with participation in these programs; insufficient political support, unwilling partnerships, eligibility constraints, economic limitations, and compliance risks are some of the reasons cited that make WQT and AM infeasible for some permittees. In light of these challenges, made apparent in the 2010 – 2013 timeframe, the MDV was conceived to provide yet another mechanism to address low-level phosphorus effluent limits.

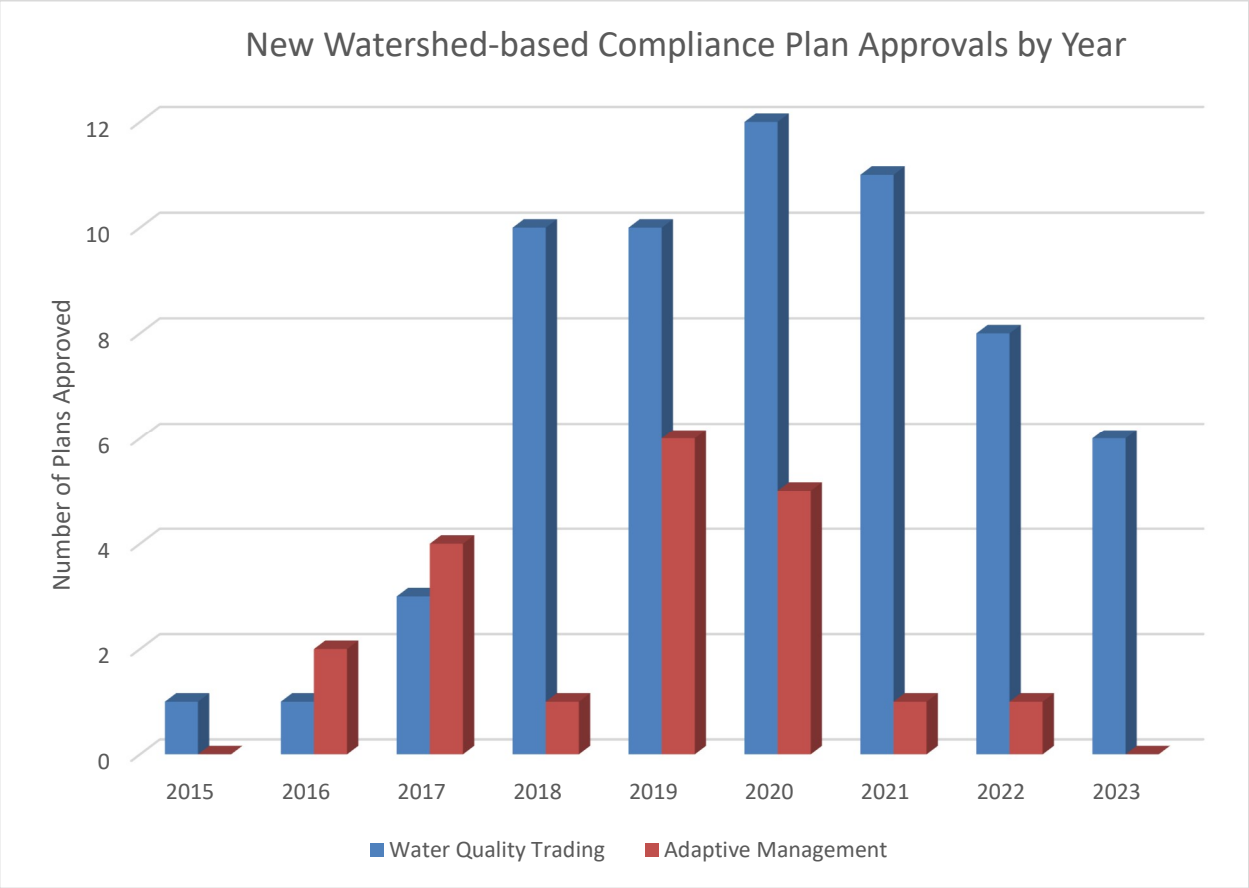


**Figure 4: Annual totals for water quality trading and adaptive management plan approvals**

WQT and AM activity markedly increased in the 2017 – 2020 timeframe due to several factors. As initial compliance schedules ended, often 7 years after the initial phosphorus WQBEL was issued, dischargers had completed the phosphorus planning process and were able (and required) to make an informed compliance option selection. Efforts to address the perceived barriers to trading may have also spurred more trading activity. Modest WQT policy revisions were adopted in DNR guidance in 2020. Further, 2019 Wisconsin Act

151 established the framework for a Water Quality Trading Clearinghouse, which began operating in 2023. At the outset of 2023, 62 dischargers have approved water quality trades and 23 permittees have approved AM plans.

While watershed-based compliance options are not appropriate in all situations, many permittees have the opportunity to use trading or AM to permanently comply with phosphorus criteria. These solutions are often implemented at a much lower cost than tertiary filtration. Appendix A contains phosphorus compliance status of all facilities, including those that have engaged in WQT or AM. Over 10 percent of all permittees have implemented solutions using these watershed-based compliance options (Figure 5). See Appendix A Supplement for category definitions.

For those facilities that have implemented trading and AM, a major facility upgrade is no longer necessary. Therefore, compliance costs incurred by permittees who have implemented trades and AM programs are not considered to be within the scope of the updated MDV economic evaluation.

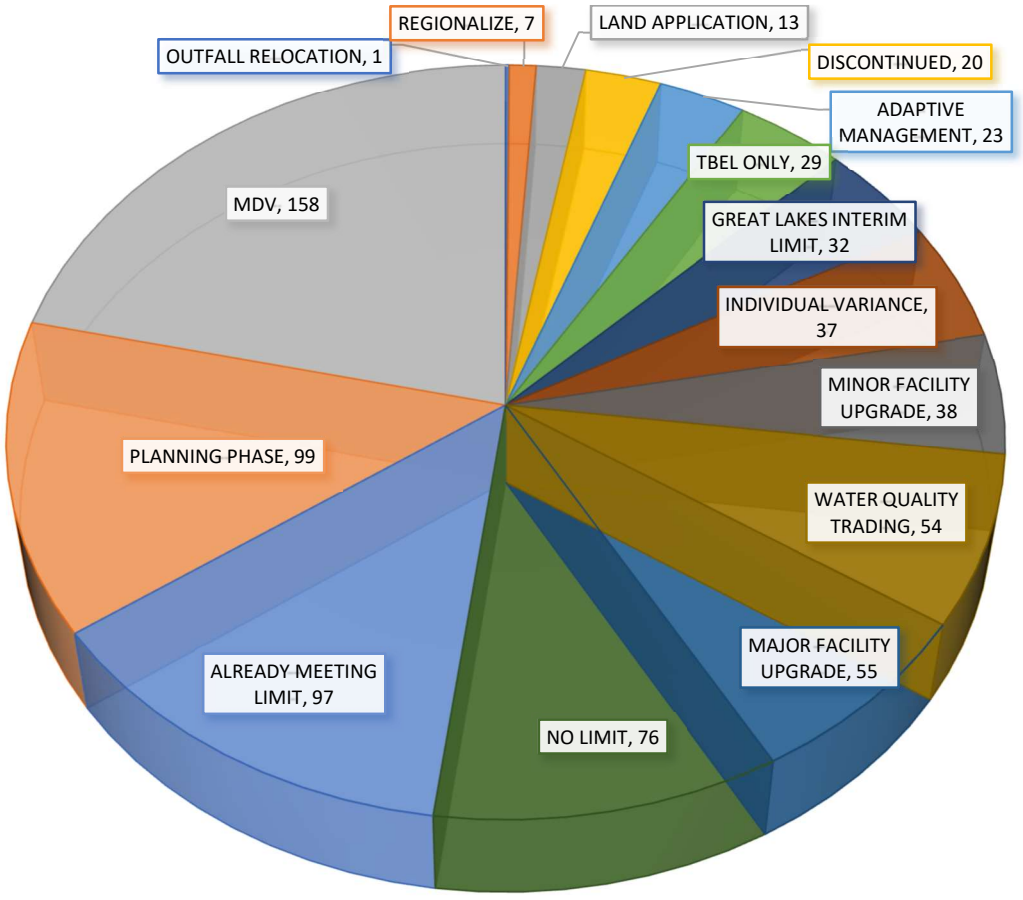


**Figure 5: Phosphorus Planning Outcomes Statewide - Appendix A Summary Graphic**

## Section 2.3: Treatment Technology

The process to establish a justification for the MDV, as provided in statute at s. 283.16(2)(a), Wis. Stats., requires DOA to determine "whether attaining the water quality standard for phosphorus, adopted under s. 281.15, through compliance with water quality based effluent limitations by point sources that cannot achieve compliance without major facility upgrades is not feasible because it would cause substantial and widespread adverse social and economic impacts on a statewide basis." This initial determination was completed by DOA on October 6, 2015, and serves as the initial foundational basis for the MDV's variance justification in accordance with 40 CFR §131.10(g)(6).

Information supporting the initial determination was provided in supplemental reports developed by ARCADIS, Sycamore Advisors, and the University of Massachusetts Donahue Institute. These firms were contracted to provide key economic information to support the initial 2015 determination. The reports included a Final Economic Impact Analysis (dated December 29, 2015) and an Addendum to the Economic Impact Analysis (dated April 24, 2015).

Within the 2015 EIA Report, ARCADIS estimated compliance costs for all WPDES permit holders who were expected to be subject to low phosphorus WQBELs. Cost estimates relied on a set of assumptions that defined what treatment technology would commonly be required to meet phosphorus WQBELs on a consistent basis. To structure the assessment, the 592 evaluated municipal and industrial wastewater treatment facilities were divided into three groups based on their final WQBEL for total phosphorus:

- >0.5 to 1 mg/L
- >0.1 to 0.5 mg/L
- less than or equal to 0.1 mg/L

Facilities were also grouped by basic treatment type – either lagoon or mechanical plant. This provided a set of assumptions to inform what equipment was likely to already be in place at a given facility.

Regardless of existing treatment type, the EIA analysis assumed that any WQBELs lower than 0.5 mg/L required tertiary filtration to achieve. Limits of 0.5 mg/L and higher were assumed to be met by biological or chemical phosphorus removal. Setting the threshold for filtration at 0.5 mg/L is appropriate for a statewide analysis where facility-specific information is not available. Some facilities are able to treat to lower levels without filtration. It should be noted that some facility types are unlikely to achieve 0.5 mg/L even after optimizing traditional treatment. These include shallow stabilization ponds and recirculating sand filters.

In 2022, DNR conducted a review of currently available treatment technology as required under s. 283.16(3)(b), Wis. Stats. The review indicated that a subset of Wisconsin facilities were able to achieve lower effluent limits than the originally-specified 0.5 mg/L using biological or chemical phosphorus treatment. Based on 2021 data, 23 of the 119 facilities covered under the MDV could comply with limits lower than 0.5 mg/L. Lower interim limits are issued in individual WPDES permits accordingly, on a site-

specific basis pursuant to s. 283.16(7), Wis. Stats. There was no indication that an entire category of dischargers could meet a lower interim limit than 0.5 mg/L. DNR assigns lower interim limits, as needed pursuant to s. 283.16(7), Wis. Stats., when approving coverage under the MDV. These lower interim limits may be 0.5, 0.4. or 0.3 mg/L expressed as a monthly average, for example.

The treatment technology review also Investigated novel or emerging technologies including algae-based treatment systems, absorptive media systems, ion exchange, and constructed wetlands. While some of these technologies have shown success in a controlled setting, such as laboratory testing or small-scale installations, there was no evidence to suggest that these emerging treatment technologies would enable compliance with low-level phosphorus WQBELs at a lower cost than the tertiary filtration prescribed in the EIA analysis. The 2022 treatment technology evaluation is attached to this document – see Appendix J.

It is important to note that DNR reviews each MDV application to verify that tertiary filtration is indeed required to meet the applicable WQBELs. In cases where a facility has existing traditional treatment capable of meeting WQBELs, coverage under the MDV is not granted. In these cases, the WQBEL is made effective in the reissued permit. Achievable WQBELs are shown in the Appendix A table.

Many facilities have been able to comply with phosphorus WQBELs without installing tertiary filtration. Those facilities no longer fall within the scope of the MDV economic determination at s. 283.16(2), Wis. Stats., due to not being considered "point sources that cannot achieve compliance without major facility upgrades". Site-specific compliance costs for these facilities are not considered in the updated economic determination. Conversely, those facilities whose regulatory requirements currently require (after a compliance schedule or variance) a major facility upgrade resulting in substantial adverse economic impacts have compliance costs included in the updated determination.

For the purposes of determining whether the 2015 economic determination remains accurate, consideration of advances in treatment technology is essential. If new developments in treatment technology were to render the compliance cost assumptions of the 2015 EIA Report inaccurate for every discharger, the 2015 economic determination would be called into question. Based on consultation with DNR, including the aforementioned review of treatment technology required under s. 283.16(3)(b), Wis. Stats., this is not the case. The treatment technologies used in the 2015 EIA Report remain the industry standard lowest-cost facility upgrade for meeting low-level phosphorus effluent limits.

# Chapter 3: Substantial Impact Analysis

*Note: This chapter contains discussion pertaining to primary screener and secondary indicator score updates used in the economic determination. For a complete background on primary screening metrics, refer to section 5 of the 2015 Economic Determination*.

## Section 3.1: Updated Compliance Costs

As discussed above, the 2015 EIA Report estimated compliance costs based on information available at the time. Cost curves for installation of tertiary filtration were used to determine compliance costs for each discharger based on flow rate and facility type.

The 2015 analysis assumed that low-level phosphorus limits mandated a major facility upgrade, as it was not possible to predict which dischargers would find alternative compliance solutions such as WQT or AM. As discussed in section 2.2 of this document, a substantial number of dischargers have utilized these compliance options, and therefore projected facility upgrade compliance costs for those dischargers are not included in updated total compliance cost values.

The changing landscape of phosphorus WQBELs Is also considered when updating compliance costs. As discussed in section 2.1 of this document, some WQBELs have been relaxed in accordance with Ch. NR 217 Wis. Adm. Code when initial WQBELs had not yet gone into effect. Those dischargers who can meet WQBELs, either with current equipment or through minor upgrades, are not included in compliance cost totals.

Based on currently available information, phosphorus compliance costs total, by category, as follows:

**Table 3. Updated phosphorus compliance cost totals (capital costs) by discharger category**

| Discharger Category | Compliance Costs Total | |
|---|---|---|
| Municipal | $ | 643,325,412.06 |
| Cheese Manufacturers | $ | 26,267,428.36 |
| Food Processors | $ | 26,139,413.87 |
| Paper Industry | $ | 124,645,423.83 |
| Aquaculture | $ | 47,322,128.37 |
| NCCW/Other | $ | 32,327,554.92 |

The above figures are a sum of capital costs for all permittees within each category, largely sourced from final compliance alternatives plans and MDV applications. These represent site-specific cost estimates at a project planning level of accuracy. Where site-specific information was not available, the initial 2015 EIA Report numbers were used. All dollar values are adjusted to December 2023 values, using the ENR Construction Cost Index. The total statewide capital cost required to meet phosphorus WQBELs, for those facilities where a major facility upgrade is required, totals to $900,027,361.41.

Table 4. Updated phosphorus compliance costs (capital costs) for municipal facilities by county.

| County | Total Capital Costs (Municipal Facilities) |
|---|---|
| Adams | $ - |
| Ashland | $ - |
| Barron | $ 7,382,921.35 |
| Bayfield | $ - |
| Brown | $ 12,359,611.74 |
| Buffalo | $ 11,899,519.40 |
| Burnett | $ 3,660,670.00 |
| Calumet | $ 5,307,269.80 |
| Chippewa | $ 2,264,138.80 |
| Clark | $ 29,070,054.64 |
| Columbia | $ 5,500,789.44 |
| Crawford | $ 9,994,876.42 |
| Dane | $ 5,322,379.30 |
| Dodge | $ 28,977,344.41 |
| Door | $ - |
| Douglas | $ 3,325,117.60 |
| Dunn | $ 1,702,210.53 |
| Eau Claire | $ 2,160,329.82 |
| Florence | $ - |
| Fond Du Lac | $ 11,400,142.77 |
| Forest | $ - |
| Grant | $ 22,869,428.30 |
| Green | $ 1,260,336.00 |
| Green Lake | $ 9,424,168.87 |
| Iowa | $ 29,034,238.46 |
| Iron | $ 1,602,184.73 |
| Jackson | $ 16,449,687.29 |
| Jefferson | $ 14,245,182.00 |
| Juneau | $ 8,136,356.00 |
| Kenosha | $ 27,726,883.30 |
| Kewaunee | $ 4,003,282.19 |
| La Crosse | $ 6,184,255.41 |
| Lafayette | $ 10,189,685.18 |
| Langlade | $ - |
| Lincoln | $ - |

| County | Total Capital Costs (Municipal Facilities) |
|---|---|
| Manitowoc | $ 13,216,322.58 |
| Marathon | $ 27,096,545.06 |
| Marinette | $ - |
| Marquette | $ 9,556,176.49 |
| Milwaukee | $ - |
| Monroe | $ 17,028,850.43 |
| Oconto | $ 5,258,836.00 |
| Oneida | $ 1,730,178.38 |
| Outagamie | $ 7,597,826.91 |
| Ozaukee | $ 2,066,650.20 |
| Pepin | $ 2,137,925.73 |
| Pierce | $ 13,485,466.91 |
| Polk | $ 5,005,443.33 |
| Portage | $ 4,622,256.01 |
| Price | $ 3,887,136.00 |
| Racine | $ 21,242,523.60 |
| Richland | $ 6,393,656.86 |
| Rock | $ 5,829,633.02 |
| Rusk | $ 1,209,162.49 |
| Sauk | $ 14,894,383.97 |
| Sawyer | $ - |
| Shawano | $ 5,166,556.64 |
| Sheboygan | $ 11,214,448.03 |
| St. Croix | $ - |
| Taylor | $ 9,298,655.23 |
| Trempealeau | $ 33,862,599.69 |
| Vernon | $ 18,389,453.43 |
| Vilas | $ - |
| Walworth | $ 25,131,438.58 |
| Washington | $ 5,810,870.40 |
| Waukesha | $ - |
| Waupaca | $ 10,163,536.66 |
| Waushara | $ 447,750.70 |
| Winnebago | $ 19,752,317.13 |
| Wood | $ 50,375,747.87 |

## Section 3.2: Primary Screener

In the municipal WWTF category, the primary screener compares phosphorus compliance cost per customer to MHI, using EPA's method for calculating a "Municipal Preliminary Screener Value" provided at http://water.epa.gov/scitech/swguidance/standards/economics/index.cfm (Interim Economic Guidance for Water Quality Standards: Workbook 1995/03/01 823/B-95-002). When a municipal WWTF seeks coverage under the MDV, the municipal WWTF must use updated, site-specific information available at that time to compare phosphorus compliance costs per customer to MHI by calculating a Municipal Preliminary Screener Value for the municipality.

For municipal permittees, phosphorus compliance costs are deemed to have a substantial impact and a permitted WWTF may be 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 Median Household Income (MHI), then phosphorus compliance costs are deemed to have a substantial impact on municipal WWTFs if at least two secondary indicator points are met

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.

Because the primary screener system for municipal facilities is well established in EPA and DNR guidance, and relies heavily on site-specific information at the time MDV a facility requests MDV coverage, no changes to the primary screener system are proposed for the updated economic determination.

Two primary screeners were used to determine if industrial dischargers face substantial impacts from phosphorus compliance costs. The first primary screener compared the phosphorus compliance costs of individual WPDES permit holders to the compliance costs of other discharges within the same category. As previously stated, applicable industrial categories are aquaculture, cheesemakers, food processors, NCCW, paper, and other. Within each category, the first primary screener ranks permittees by estimated phosphorus compliance costs. If an individual permittee bears a significant compliance cost compared to other members of the category, the phosphorus rule likely causes a substantial impact, such as competitive disadvantage or impaired profitability. Therefore, the first indicator allows the top 75 percent of a category's permittees with nonzero compliance costs to be considered for MDV coverage and proceed to secondary indicator scoring.

This indicator allows a discharger to compare its site-specific compliance costs to other projected compliance costs within the applicable discharge category. Again, if the site-specific costs are in the top 75 percent of costs within the category, these costs may be substantial. Table 13 in Appendix H of this document provides the threshold for determining if a specific industry in the top 75 percent of dischargers incurring costs within their category.

At the time the 2015 analysis was completed, there was no standard method or guidance for determining what constitutes substantial impact for industrial discharges. Selecting a threshold based on compliance costs within the category made intuitive sense because a facility paying more for phosphorus compliance is going to be at a competitive disadvantage compared to other companies that don't face these compliance costs. Several analyses were conducted to determine what threshold may be appropriate for considering substantial impacts. The 75$^{th}$ percentile impact was deemed appropriate given the distribution of compliance costs within categories.

It is important to note that in February of 2023, EPA released a document titled *Clean Water Act Financial Capability Assessment Guidance* (800B24001, revised March 2024) intended to supplement the aforementioned *Interim Economic Guidance for Water Quality Standards.* The guidance expands the 1995 methodology to include two new tests/considerations for determining the magnitude of economic impacts. The first involves evaluation of impacts to low-income households within a community using a lowest quintile poverty indicator score. The second consideration is evaluation of alternative financing and funding options, referred to as a financial alternatives analysis. These tests are not being quantitatively incorporated into the MDV eligibility criteria as part of the updated economic determination. These concepts may need to be employed at a discharger-specific level, however, to validate compliance costs. For example, if a discharger is able to receive significant financial assistance such as grants or principal forgiveness, that increased financial capability would need to be considered when calculating a primary screener value. The guidance is available at EPA's webpage: https://www.epa.gov/wqs-tech/economic-guidance-water-quality-standards.

## Section 3.3: Secondary Indicator Scores

Taken together, the secondary indicators should identify those counties that have particular susceptibility to the costs of phosphorus standards, either because local economic conditions limit the capacity to adapt productively to increased costs, or because affected industries' costs are particularly large in relation to a local economy. When selecting indicators, DOA consulted with economists and analysts at the Wisconsin Department of Workforce Development, the Wisconsin Department of Revenue, and the Wisconsin Department of Health Services, as well as consultants at the University of Massachusetts Donahue Institute. Those experts concurred that there is no standard array of data sets used for many types of analysis. They concurred that individual arrays of data sets are selected for specific questions. Seven indicators emerged from the experts' consensus: (MHI), personal current transfer receipts as a share of total income, jobs per square mile, population change, change in net earnings by place of residence, job growth, and capital costs as a share of total wages. MHI is not a secondary indicator for municipal WWTFs (this indicator was used as a primary screener for that category). Capital costs as a share of total wages is not a secondary indicator for municipal WWTFs because total wages are available at the county level, not at the municipal level. The NCCW category and the "other" category of industrial dischargers are not industries for which wage data is available; therefore this indicator (capital costs as a share of total wages) does not apply to these categories. The most recent data available at the time of this report was written were used to update the secondary indicators: population data is available for 2022; other data sets are available for 2021. These datasets are the same for all categories of permittees, excluding capital costs as a share of total wages,

which uses category-specific data and category-specific analyses. This section identifies and explains the importance of each of these secondary indictors.

With two exceptions, each secondary indicator offers one point if the threshold is met. One exception is net earnings change 2011-2021. This indicator offers two points if the threshold is met. As reported by the U.S. Department of Commerce Bureau of Economic Analysis, total income is divided into three categories: (1) net earnings (typically associated with work); (2) dividends, interest, and rent (typically associated with investment payouts); and (3) personal current transfer receipts (typically associated with government payments like Social Security and Medicare). Transfer receipts are sometimes seen as a drag on productive activity. Investment income often happens when retirees cash out of investments made long ago. Net earnings are the direct result of present-day productive work. Change in net earnings is probably one of the best predictors of future trends in a community's MHI, jobs per square mile, population change, and job growth.

The second exception is the category's capital costs as a share of total county payroll. This does not apply to municipal WWTFs, NCCW, or the "Other" category for reasons discussed above. In categories where it applies, this indicator was given extra weight in response to comments made by EPA and environmental groups during initial development of the secondary indicators. Also, directly comparing capital costs to county payroll is somewhat analogous to EPA economic guidance for water quality standards (in particular, dividing per-household compliance costs by MHI, to derive compliance costs as a share of MHI). See Interim Economic Guidance for Water Quality Standards Workbook, EPA March 1995.

The purpose of the secondary indicators for municipal WWTFs is to indicate the community's ability to obtain financing and describe the socioeconomic health of the community. As previously mentioned, municipal WWTFs finance phosphorus compliance costs by increasing user fees/revenues from the communities they serve. If the community faces socioeconomic decline and/or hardship, increased sewerage payments are likely to have a substantial negative impact on the community. The secondary indicators that help demonstrate the socioeconomic status of the community include: personal current transfer receipts as a share of total income, jobs per square mile, population change, net earnings by place of residence change, job growth, and capital costs as a share of total wages.

## Descriptions of Secondary Indicators

### Median Household Income

Median Household Income figures came from the Census Bureau's American Community Survey, which indicated that U.S. median household income was $69,021 in 2021. This indicator is met if the county MHI is below U.S. MHI.

Two notes relating to the use of MHI as a primary screener for municipal WWTFs: (1) Because MHI is the primary screener for municipal WWTFs, MHI is the only secondary indicator that is not used as a secondary indicator for municipal WWTFs; and (2) Because MHI in the municipal WWTF primary screener was MHI for affected communities in the county, it may differ slightly from MHI for the entire county used as a secondary indicator elsewhere.

**Personal Current Transfer Receipts as a Share of Total Personal Income**

While MHI gauges current income levels, it tells little about future trajectory. For insight into future income trends, it is useful to delve into the source of income. The U.S. Commerce Department's Bureau of Economic Analysis divides income into three categories: the "earnings" category, which is generally money earned from work; the "dividends interest and rent" category, which is investment income; and the "personal current transfer receipts" category, which reflects transfers ,mostly from governments to individuals. Nationally, transfer receipts constitute 21.7 percent of total income. This indicator is met if the county's percent of its total income derived from personal current transfer receipts is greater than the national average.

Transfer receipts achieve important goals for small amounts of money, but transfer receipts are not regarded as engines of economic activity to the same extent as earnings and investment. Communities relying heavily on transfer receipts are likely to face slower income growth. If current MHI is a relevant indicator, then likely future income growth seems equally relevant (though conceptually distinct). Slower income growth would make it more difficult to adjust to the cost of phosphorus standards.

**Jobs per Square Mile**

When asking how easily a community can adjust to phosphorus standards, it may be useful to consider how many jobs there are per square mile. Particularly in central Wisconsin and in northern Wisconsin, there are many communities with few jobs per square mile surrounded by many other communities with few jobs per square mile. Workers looking for jobs and utilities looking for ratepayers may have to look farther and wider in those cases. In communities with fewer jobs per square mile, finding a new job may take more time, may require a larger pay cut, and may require a commute that consumes more time, money, and fuel. Together, these factors suggest that, all else equal, low job density tends to increase a community's sensitivity to changing phosphorus standards.

The Wisconsin Department of Workforce Development's Quarterly Census of Employment and Wages supplies the numerator (jobs). The most recent annual figures available at this writing are from 2021. The U.S. Census Bureau's Quick Facts supplies the denominator (land area in square miles). Statewide, the average is 51.7 jobs per square mile. This indicator is met if the county's jobs per square mile is lower than the Wisconsin Statewide average. A statewide average was deemed the most appropriate comparison available because the Quarterly Census of Employment and Wages is based on employment covered by Unemployment Insurance laws whose scope and coverage vary considerably from state to state; the Bureau of Labor Statistics does not encourage or facilitate cross-state comparison or national summation of these job figures.

If phosphorus standards caused Wisconsin employers to restrict investment, restrain expansion, or reduce current employment, the number of jobs per square mile can affect how easily and how productively workers can resettle. Much of the northern tier of the state and much of the southwest corner of the state has very low job density.

**Population Change**

Compared to the faster-growing communities, communities with slower-than-national population change will spread their electricity and water costs across fewer rate payers, and they will have fewer consumers and workers to kick-start economic activity. Cultural trends and technological trends may be making people and jobs more mobile with each passing year. This would cause communities to compete more intensely to attract investment, jobs, wealth, and development. It may also suggest that below-par population growth could compound over time to widen the gap.

The Wisconsin DOA's Demographic Services Center publishes January 1 population estimates for each county, each year. This indicator increases the odds of qualifying for MDVs if the county's population change was 3.2 percent or less (less than half the nation's rate).

**Net Earnings by Place of Residence**

When reporting total personal income, the U.S. Department of Commerce's Bureau of Economic Analysis divides income into three categories: the "dividends interest and rent" category, which is typically associated with investment returns, rather than new, productive investments, this may reflect people cashing out of their retirement funds; the "personal current transfer receipts" category, which is discussed above; and the "net earnings by place of residence" category, which is generally money earned from work and is often considered a core driver of economic activity. 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. Because this indicator has such broad, deep, forward-looking implications, it is worth two points in the scoring process.

Between 2011 and 2021, U.S. nominal net earnings by place of residence increased by 49.4 percent. This indicator is met if the county's net earnings by place of residence increased by less than the national rate for the most recent ten-year period at issued, based on the then most-current published figures for the U.S. Bureau of Economic Analysis.

**Job Growth**

The pace at which a community adds (or loses) jobs may affect its ability to attract and retain workers, its ability to attract and retain businesses requiring local consumers, and its ability to pay higher electricity and water rates to comply with phosphorus standards.

The U.S. Department of Commerce's Bureau of Economic Analysis publishes annual employment figures. These figures indicate that U.S. job growth was 7.1 percent from 2011 to 2021. This indicator is met if the county's employment declined or grew less than half the U.S. rate of growth for the most recent ten-year period at issue, based on the then most-current figures published from the U.S. Bureau of Economic Analysis.

**Capital Costs as a Share of Total Wages**

The methods for estimating compliance costs for the purposes of this determination are detailed in Section 4 of the 2015 Economic Determination document. Total wages for each county came from the Census

Bureau's County Business Patterns. Each category has specific benchmarks for this indicator. This indicator does not apply to Municipal WWTFs or to dischargers in the categories designated NCCW or "Other".

In categories where it applies, this indicator is worth 2 points. This weighting reflects, in part, response to comments made by EPA and environmental groups regarding the 2015 preliminary economic determination. Also, directly comparing capital costs to county payroll is somewhat analogous to EPA economic guidance for water quality standards (in particular, dividing per-household compliance costs by median household income, to derive compliance costs as a share of median household income). See Interim Economic Guidance for Water Quality Standards Workbook, EPA March 1995.

# Chapter 4: Widespread Impact Analysis

## Section 4.1: 2015 Widespread Determination

Included in the s. 283.16(2)(a), Wis. Stat., determination is the evaluation of "widespread adverse social and economic impact", sometimes referred to as the "widespread test". The widespread test is also presented in EPA guidance as an important determination to justify the need for MDVs as well as individual variances. To make a widespread social and economic impact determination, the 2015 EIA Report focused on quantifying the effects of phosphorus compliance on Wisconsin's economy. Specifically, Section 3.0 of the EIA Report and the "Economic Impacts with Upstream Offsets" Section of the Addendum are the key sources of information for the widespread test. The purpose of this section is to review the information in the 2015 EIA Report and EIA Addendum, apply updated values relevant to current compliance costs, and evaluate ongoing widespread impacts of phosphorus regulations absent an MDV.

The 2015 analysis utilized the Regional Economic Models, Inc. (REMI) model of the Wisconsin economy to demonstrate the broad-reaching 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 various economic stressors ranging from highway projects to projecting the economic impacts of environmental policies. The key data input needed for the REMI model was the phosphorus compliance costs by facility. For industrial categories, the compliance costs were assigned to each applicable category of discharge in the REMI model to define the incremental cost increases of doing business in the state of Wisconsin as a result of the phosphorus rule. Compliance costs incurred by municipal WWTFs were distributed among five categories in the REMI model. Since the mechanism to finance these costs is through user rate increases, these categories include: residential, commercial, industrial, public, and other.

Using the general methods above (see supplemental reports for more details), the total economic impacts of Wisconsin's phosphorus compliance costs were estimated. Total economic impacts are the best estimates of how compliance costs will affect gross state product (state GDP), jobs, wages and population change. These indicators were deemed the most defensible metrics for assessing the widespread impacts of the phosphorus rule and were analyzed on a statewide basis as well as for categories of discharges. Statewide results help demonstrate the total adverse economic impacts of implementing the phosphorus rule in Wisconsin and are shown in Table 5. The purpose of the sector-by-sector analysis was to determine if implementing the phosphorus rule on any particular category caused widespread impacts to the state, and to conform to EPA's recommendation to conduct a separate analysis for each category. This sector-by-sector analysis is presented in Section 3.3 of the 2015 EIA Report.

Table 5: Adverse statewide impacts on Wisconsin's economy due to phosphorus compliance

| | 2017 | 2025 |
|---|---|---|
| **Total Employment (# of Jobs)** | -1,548 | -4,442 |
| **Gross State Product (Millions of Fixed 2014 Dollars)** | -$169.4 | -$604.2 |
| **Total Wages (Millions of Fixed 2014 Dollars)** | -$65.7 | -$234.8 |
| **Population (Individuals)** | -1,954 | -10,711 |

The employment impacts of the water compliance regulations associated with Wisconsin's water quality regulations for phosphorus are shown in Figure 6. The jobs impacts accelerate during the 2016-2025 period and then remain roughly steady through 2035.

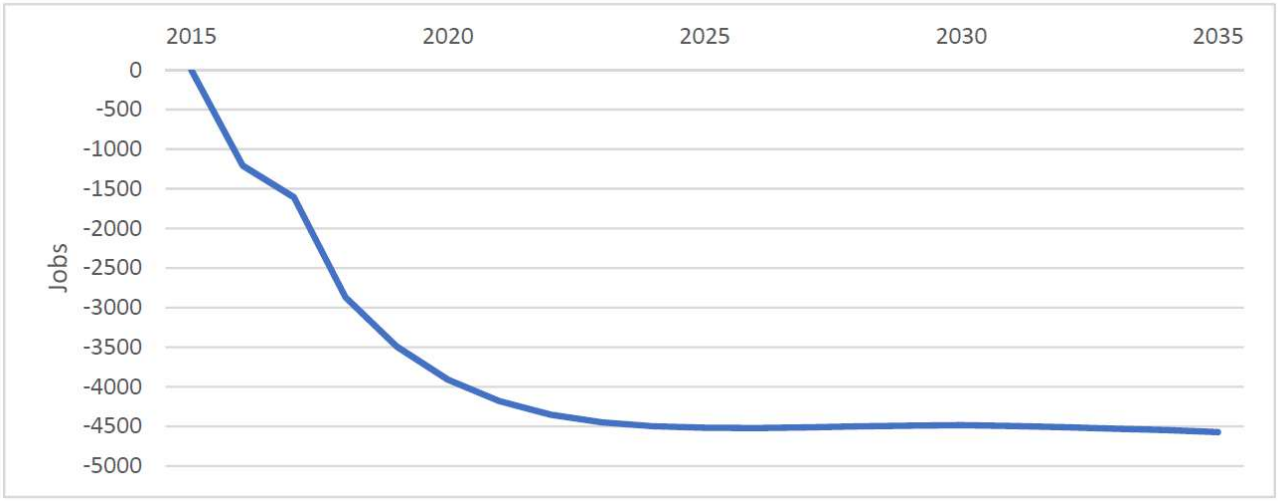


Figure 6: Statewide Employment Impact

Source: Regional Economic Models, Inc., as calculated by the University of Massachusetts Donahue Institute.

The increase in industry expenses and consumer expenses due to water quality compliance will circulate through the Wisconsin economy and result in lower gross state product ("GSP" – the value of goods produced in the state). The decline in GSP (Figure 7) is gradual through 2025 and is a result of industries reducing relative production levels in the state in response to higher costs and consumption declining as consumers and businesses have less money to spend. The overall effect is estimated to be a $616.6 million reduction in Wisconsin GSP in 2025 compared to the levels that would have been expected without the increase in costs for water quality compliance by the state's industries and municipalities. The annual loss in GSP (all in constant 2014 dollars) gradually becomes greater during the 2025-2035 period. By 2035, the

reduction in Wisconsin GSP is estimated to exceed $700 million compared to what it would have been without the phosphorus regulations.

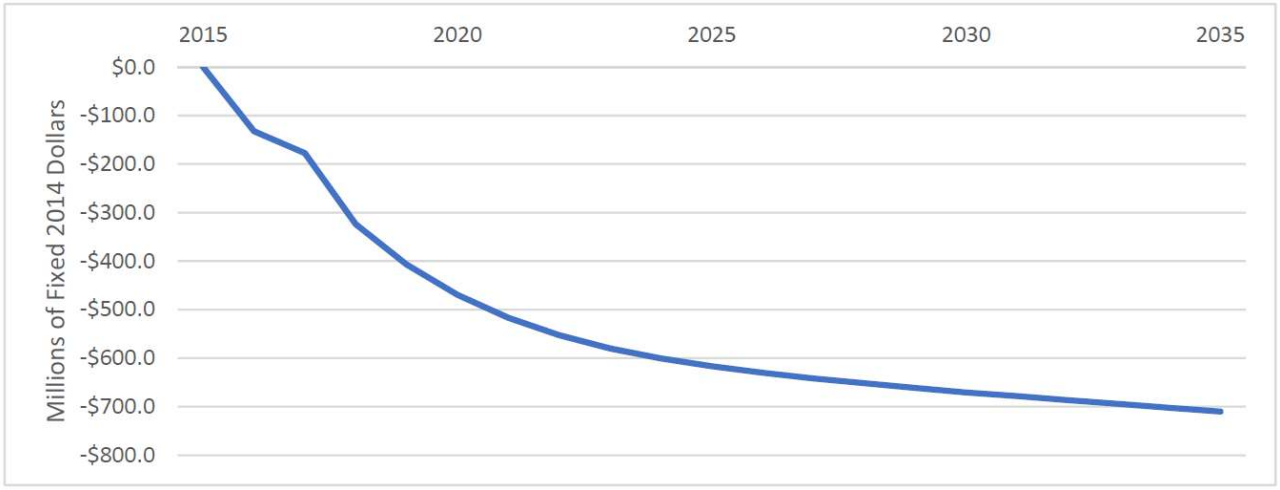


**Figure 7: Statewide Gross State Product Impact**

Source: Regional Economic Models, Inc., as calculated by the University of Massachusetts Donahue Institute.

The REMI model results, published as part of the 2015 EIA Report and Addendum, demonstrate the direct link between Wisconsin's dischargers incurring compliance costs and broader economic impacts.

In order to understand how changes in compliance costs might affect the overall impact of water compliance in Wisconsin, two additional REMI simulations were run for the industries that would incur the largest costs for water quality compliance (paper, power generation, and municipal utilities). The REMI analysis, based on the three industries, shows that the impacts to Wisconsin's employment and gross state product are expected to roughly scale with changes in the cost of compliance. This means that a 25 percent increase in the cost of water compliance should be accompanied by a 25 percent increase in the magnitude of the impacts to employment or gross state product, and a 10 percent decrease in the cost should be accompanied by a 10 percent decrease in the impact magnitudes. This is borne out by the results shown in Table 6 and Table 7 illustrating the impacts of the original as well as high and low impacts based on increasing or lowering the respective industry costs.

Table 6: Jobs Impact Projections Based on Varied Compliance Cost Scenarios

| Scenario | Paper(300 mg/L) | Paper (1000 mg/L) | Power | Municipal |
|---|---|---|---|---|
| | Jobs | Jobs | Jobs | Jobs |
| Original | -702 | -1,647 | -862 | -1,420 |
| High (+25%) | -878 | -2,050 | -1,074 | -1,774 |
| Low (-10%) | -630 | -1,499 | -776 | -1,280 |

Table 7: Gross State Product Projections based on Varied Compliance Cost Scenarios

| Scenario | Paper(300 mg/L) | Paper (1000 mg/L) | Power | Municipal |
|---|---|---|---|---|
| | Gross State Product (millions) | Gross State Product (millions) | Gross State Product (millions) | Gross State Product (millions) |
| Original | -$101.6 | -$237.9 | -$150.5 | -$152.9 |
| High (+25%) | -$127.1 | -$295.9 | -$187.7 | -$191.2 |
| Low (-10%) | -$91.3 | -$221.6 | -$135.7 | -$136.1 |

## Section 4.2: Economic Evaluation in Context of 2023 Data

The scalable relationship between magnitude of compliance cost and level of broader economic impact allows for approximation of economic impacts based on varied compliance costs. When compliance costs were reduced by 10 percent, the REMI model responded with reduced economic impact of roughly 10 percent. Specifically, GSP increased, on average, by 9.1 percent. Jobs results responded more directly with a 9.6 percent increase between the original and -10 percent compliance cost scenarios.

Updated capital costs for all categories total $900 million statewide. This value represents a 74 percent reduction from the initially projected $3.45 billion capital cost total. Using the assumption of full scalability of widespread impacts, future gross state product and jobs impacts can be predicted. The results of this analysis are shown in Table 8 below.

The results of this exercise could be considered conservative because they only evaluate a portion of compliance costs – those not yet incurred by dischargers. Dischargers have incurred compliance costs due to phosphorus regulations, and will continue to do so even with a statewide MDV available for a subset of municipalities and industries. It is also worth noting that $991 million of the $3.45 billion initially-projected capital costs are within the power sector – which was ultimately excluded from MDV coverage. Those costs have, in theory, been incurred over the past seven years with associated widespread impacts to some degree. This factor adds an additional layer of conservatism to the analysis.

Table 8: Projection of current widespread impacts based on downward scalability of the initial analysis.

| 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.

# Chapter 5: Conclusion

The Wisconsin DOA finds that implementation of the Wisconsin phosphorus water quality standards, absent ongoing use of the MDV, will cause substantial and widespread adverse social and economic impacts to all currently eligible categories of municipal and industrial wastewater dischargers. Therefore, it directs the Wisconsin DNR to move forward with the formal process of requesting reauthorization of the phosphorus MDV from the EPA for the purposes of phosphorus reduction.

DOA's conclusion is based on statewide categories, primary and secondary economic indicators, and multifaceted data provided by ARCADIS, The University of Massachusetts, Sycamore, DOA and the DNR. Preliminary information was shared with the public on October 10, 2023, with listening sessions held in November of 2023. Public comments and suggestions were accepted, reviewed, and taken into consideration for the purpose of rendering an updated 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.

When looking at all the sectors impacted it is not just their individual costs and their ability to absorb them, but how they will likely implement that absorption through rate/cost increases affecting all other sectors that rely on output to run their operations. In turn, businesses may potentially take one of four avenues if denied a variance: decrease investment, postpone expansion in Wisconsin, shift production to another state, or cease operations all together. Based on the methodology and quantitative analysis produced by the 2015 EIA Report, an MDV is critical and will achieve reduction in phosphorus amounts without placing additional undue burdens on existing utilities and business. Without the multi-discharger variance, affected businesses will realize the full impact of the regulatory costs totaling statewide to at least 1,341 fewer jobs and a $209.9 million reduction in gross state product. These results help illustrate that widespread economic impacts will occur throughout the state.

In addition to the widespread analysis, DOA recommends continuing to use the multi-step approach that was developed in 2015, to determine if phosphorus compliance costs are substantial to permittees. This standard methodology provides a predictable process for municipal and industrial dischargers to determine if phosphorus compliance costs are substantial for the permittee and community. Based on the methodology, it is believed that costs are substantial for municipal discharges if the estimated per-customer cost is at least 2 percent of MHI, and the municipality's county scores at least two points in the secondary indicator section or if the estimated per-customer cost is at least 1 percent of MHI but less than 2 percent of MHI, and the municipality's county scores at least three points in the secondary indicator section. Industrial dischargers are believed to have substantial impacts if they meet either of two conditions: 1) their site-specific compliance costs are greater than the specific cost threshold set in Table 13 for determining they are within the top 75 percent of permittees incurring costs; or 2) the discharge is located in a county that is listed in Table 14 of this determination as being a county within the top 75

percent of counties incurring costs. Permittees that meet both tests are believed to have a substantial impact, though must achieve a secondary indicator score of at least two points in order to confirm this determination. Permittees that meet only one primary screener must achieve a secondary indicator score of at least three points to qualify for MDV coverage. Facilities will need to provide sufficient, current site-specific information to determine whether these indicators and scoring are met, and thereby whether they potentially qualify for the MDV pursuant to s. 283.16(4)(a)(1), Wis. Stats.

Due to the current information presented in this report, especially the combination of primary and secondary indicators affecting communities throughout Wisconsin, it is the recommendation of the Wisconsin DOA that the Wisconsin DNR seek ongoing regulatory flexibility in implementing the phosphorus rule.

## Phosphorus Planning Outcomes Description (Appendix A Supplement)

ADAPTIVE MANAGEMENT**:** The permittee has an approved adaptive management plan addressing phosphorus requirements.

ALREADY MEETING LIMIT**:** The facility was able to meet the applicable phosphorus limit immediately upon or soon after permit issuance.

DISCONTINUED**:** The facility closed or otherwise ceased discharge. Those that transition to a general permit also fall within this category.

GREAT LAKES - INTERIM LIMIT**:** Facilities in this category discharge directly to Lake Michigan or Lake Superior. Phosphorus limits are set at 0.6 mg/L in accordance with s. NR 217.13(4), Wis. Adm. Code.

INDIVIDUAL VARIANCE**:** The permittee has an approved individual phosphorus variance, or has indicated intent to apply for an individual phosphorus variance.

LAND APPLICATION**:** The facility will be ceasing discharge to surface waters and transitioning to land-based treatment such as spray irrigation or a ridge and furrow system.

MAJOR FACILITY UPGRADE**:** The facility has completed or is in the process of completing installation of tertiary filtration or similar treatment technology to meet low-level phosphorus limits.

MDV**:** The permittee has been granted coverage under the MDV, or has indicated intent to apply for the MDV to temporarily address phosphorus requirements.

MINOR FACILITY UPGRADE**:** The facility is able to comply with phosphorus WQBELs via traditional treatment means such as biological or chemical phosphorus removal. Facilities that achieve compliance through minor operation modifications or source reduction are also included in this category.

NO LIMIT**:** The facility does not have a phosphorus limit included in the WPDES permit. While all facilities are evaluated for phosphorus limits, some facilities may not trigger reasonable potential to cause or contribute to an exceedance of phosphorus criteria in the receiving or downstream waters.

PLANNING PHASE**:** The facility has received a phosphorus limit and associated compliance schedule pursuant to s. NR 217.17 Wis. Adm. Code. The final limit is not effective during the compliance schedule period. The permittee must use this time to optimize treatment, plan, and select a compliance option.

REGIONALIZE**:** The facility has ceased discharge by sending wastewater to another facility.

OUTFALL RELOCATION**:** The discharge will be relocated to a different receiving water with more assimilative capacity for effluent phosphorus.

TBEL ONLY**:** The technology-based effluent limit applicable for the facility is the lowest applicable limit, after evaluating the need for WQBELs.

WATER QUALITY TRADING**:** The facility has achieved compliance with phosphorus WQBELs via water quality trading.

## Appendix A. Facility-specific Information Table

| Facility Name | Permit Number | County | Phosphorus Planning Outcome | Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent) | MDV Category | Major Facility Upgrade Required? |
|---|---|---|---|---|---|---|
| Beaver Dam Wastewater Treatment Facility | 0023345 | Dodge | ADAPTIVE MANAGEMENT | 0.163 | Municipal | NO |
| Blue Mounds Wastewater Treatment Facility | 0031658 | Dane | ADAPTIVE MANAGEMENT | 0.075 | Municipal | NO |
| Burlington Water Pollution Control | 0022926 | Racine | ADAPTIVE MANAGEMENT | 0.100 | Municipal | NO |
| Cambridge Oakland Wastewater Commission | 0026948 | Jefferson | ADAPTIVE MANAGEMENT | 0.075 | Municipal | NO |
| Cedarburg Wastewater Treatment Facility | 0020222 | Ozaukee | ADAPTIVE MANAGEMENT | 0.145 | Municipal | NO |
| Cuba City Wastewater Treatment Facility | 0022217 | Grant | ADAPTIVE MANAGEMENT | 0.075 | Municipal | NO |
| Dane Iowa Wastewater Commission WWTF | 0049816 | Dane | ADAPTIVE MANAGEMENT | 0.075 | Municipal | NO |
| Deerfield Wastewater Treatment Facility | 0023744 | Dane | ADAPTIVE MANAGEMENT | 0.075 | Municipal | NO |
| Grafton Water & Wastewater Utility | 0020184 | Ozaukee | ADAPTIVE MANAGEMENT | 0.011 | Municipal | NO |
| Green Bay Metropolitan Sewerage District | 0065251 | Brown | ADAPTIVE MANAGEMENT | 0.129 | Municipal | NO |
| Madison Metropolitan Sewerage District WWTF | 0024597 | Dane | ADAPTIVE MANAGEMENT | 0.075 | Municipal | NO |
| Mount Horeb Wastewater Treatment Facility | 0020281 | Dane | ADAPTIVE MANAGEMENT | 0.075 | Municipal | NO |
| Mukwonago Wastewater Treatment Plant | 0020265 | Waukesha | ADAPTIVE MANAGEMENT | 0.100 | Municipal | NO |
| New Richmond Wastewater Treatment Facility | 0021245 | St. Croix | ADAPTIVE MANAGEMENT | 0.075 | Municipal | NO |
| Oconomowoc Wastewater Treatment Plant | 0021181 | Waukesha | ADAPTIVE MANAGEMENT | 0.169 | Municipal | NO |
| Oregon Wastewater Treatment Facility | 0020681 | Dane | ADAPTIVE MANAGEMENT | 0.075 | Municipal | NO |
| Plymouth Utilities WWTF | 0030031 | Sheboygan | ADAPTIVE MANAGEMENT | 0.263 | Municipal | NO |
| Sparta Wastewater Treatment Facility | 0020737 | Monroe | ADAPTIVE MANAGEMENT | 0.075 | Municipal | NO |
| Stoughton Wastewater Treatment Facility | 0020338 | Dane | ADAPTIVE MANAGEMENT | 0.075 | Municipal | NO |
| Tomah Wastewater Treatment Facility | 0021318 | Monroe | ADAPTIVE MANAGEMENT | 0.170 | Municipal | NO |
| US Army Headquarters, Fort McCoy WWTP | 0022420 | Monroe | ADAPTIVE MANAGEMENT | 0.075 | Municipal | NO |
| Western Racine County Sewerage District | 0028754 | Racine | ADAPTIVE MANAGEMENT | 0.115 | Municipal | NO |
| WI DNR Nevin Fish Hatchery | 0002585 | Dane | ADAPTIVE MANAGEMENT | 0.016 | Fish | NO |
| Adams Wastewater Treatment Facility | 0023159 | Adams | ALREADY MEETING LIMIT | 0.366 | Municipal | NO |
| Agropur Inc Weyauwega Plant | 0001449 | Waupaca | ALREADY MEETING LIMIT | 0.118 | NCCW | NO |
| Ahlstrom Mosinee LLC | 0003671 | Marathon | ALREADY MEETING LIMIT | 0.367 | Paper | NO |
| Allenton Sanitary District WWTP | 0028053 | Washington | ALREADY MEETING LIMIT | 0.868 | Municipal | NO |
| Aspen Health & Rehabilitation Center | 0029742 | Douglas | ALREADY MEETING LIMIT | 2.700 | Other | NO |
| ATI Ladish, LLC | 0000728 | Milwaukee | ALREADY MEETING LIMIT | 0.024 | NCCW | NO |

| Facility Name | Permit Number | County | Phosphorus Planning Outcome | Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent) | MDV Category | Major Facility Upgrade Required? |
|---|---|---|---|---|---|---|
| Baraboo Wastewater Treatment Facility | 0020605 | Sauk | ALREADY MEETING LIMIT | 0.366 | Municipal | NO |
| Berlin Wastewater Treatment Facility | 0021229 | Waushara | ALREADY MEETING LIMIT | 0.385 | Municipal | NO |
| Birchwood Manufacturing Co | 0042528 | Barron | ALREADY MEETING LIMIT | 0.100 | Other | NO |
| Blenker Sherry Sanitary District WWTF | 0031950 | Wood | ALREADY MEETING LIMIT | 0.363 | Municipal | NO |
| Burnett Dairy Cooperative | 0039039 | Burnett | ALREADY MEETING LIMIT | 1.914 | Cheese | NO |
| Cambria Wastewater Treatment Facility | 0023523 | Columbia | ALREADY MEETING LIMIT | 0.367 | Municipal | NO |
| Catawba Kennan Joint Sewage Commission | 0061701 | Price | ALREADY MEETING LIMIT | 2.400 | Municipal | NO |
| Cedar Valley Cheese Inc | 0051535 | Ozaukee | ALREADY MEETING LIMIT | 0.044 | Cheese | NO |
| Colfax Wastewater Treatment Facility | 0023663 | Dunn | ALREADY MEETING LIMIT | 1.001 | Municipal | NO |
| Coon Valley Wastewater Treatment Facility | 0020958 | Vernon | ALREADY MEETING LIMIT | 3.300 | Municipal | NO |
| Cornell Wastewater Treatment Facility | 0021300 | Chippewa | ALREADY MEETING LIMIT | 6.000 | Municipal | NO |
| Cumberland City of | 0020354 | Barron | ALREADY MEETING LIMIT | 0.075 | Municipal | NO |
| Dunn Paper - Ladysmith, LLC | 0003204 | Rusk | ALREADY MEETING LIMIT | 1.400 | Paper | NO |
| Eagle River City of | 0022004 | Vilas | ALREADY MEETING LIMIT | 0.332 | Municipal | NO |
| Edgerton Wastewater Treatment Facility | 0020346 | Rock | ALREADY MEETING LIMIT | 0.435 | Municipal | NO |
| Elmwood Village WWTP | 0023922 | Pierce | ALREADY MEETING LIMIT | 1.900 | Municipal | NO |
| Foremost Farms USA Appleton | 0039993 | Outagamie | ALREADY MEETING LIMIT | 1.490 | NCCW | NO |
| Foremost Farms USA Reedsburg | 0000035 | Sauk | ALREADY MEETING LIMIT | 0.052 | NCCW | NO |
| Foremost Farms USA Richland Center | 0004413 | Richland | ALREADY MEETING LIMIT | 0.075 | NCCW | NO |
| Forest Junction Sanitary District | 0032123 | Calumet | ALREADY MEETING LIMIT | 0.490 | Municipal | NO |
| Forestville Wastewater Treatment Facility | 0028894 | Door | ALREADY MEETING LIMIT | 0.470 | Municipal | NO |
| Galloway Company | 0027553 | Winnebago | ALREADY MEETING LIMIT | 0.307 | NCCW | NO |
| General Mitchell International Airport | 0046477 | Milwaukee | ALREADY MEETING LIMIT | 1.000 | Other | NO |
| Glenwood City Wastewater Treatment Facility | 0060381 | St. Croix | ALREADY MEETING LIMIT | 1.008 | Municipal | NO |
| Grande Cheese Corp Wyocena | 0051764 | Columbia | ALREADY MEETING LIMIT | 0.089 | NCCW | NO |
| Grantsburg Village of | 0060429 | Burnett | ALREADY MEETING LIMIT | 1.568 | Municipal | NO |
| Gresham Wastewater Treatment Facility | 0022781 | Shawano | ALREADY MEETING LIMIT | 0.180 | Municipal | NO |
| Ho Chunk RV Resort and Campground | 0061263 | Juneau | ALREADY MEETING LIMIT | 0.066 | Municipal | NO |
| Holy Family Convent Wastewater Facility | 0028142 | Manitowoc | ALREADY MEETING LIMIT | 0.777 | Municipal | NO |
| Hudson Wastewater Treatment Facility | 0024279 | St. Croix | ALREADY MEETING LIMIT | 0.812 | Municipal | NO |

| Facility Name | Permit Number | County | Phosphorus Planning Outcome | Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent) | MDV Category | Major Facility Upgrade Required? |
|---|---|---|---|---|---|---|
| Hustisford Wastewater Treatment Facility | 0020303 | Dodge | ALREADY MEETING LIMIT | 1.198 | Municipal | NO |
| Iola Wastewater Treatment Facility | 0021717 | Waupaca | ALREADY MEETING LIMIT | 0.361 | Municipal | NO |
| Jefferson Wastewater Treatment Facility | 0024333 | Jefferson | ALREADY MEETING LIMIT | 0.161 | Municipal | NO |
| Johnson Creek Wastewater Treatment Facility | 0022161 | Jefferson | ALREADY MEETING LIMIT | 0.170 | Municipal | NO |
| Joy Global Surface Mining Inc | 0025321 | Milwaukee | ALREADY MEETING LIMIT | 0.247 | NCCW | NO |
| Juneau Wastewater Treatment Facility | 0021474 | Dodge | ALREADY MEETING LIMIT | 0.168 | Municipal | NO |
| Kenosha Beef International | 0050784 | Kenosha | ALREADY MEETING LIMIT | 0.075 | Food | NO |
| Kewaunee Wastewater Treatment Facility | 0020176 | Kewaunee | ALREADY MEETING LIMIT | 1.139 | Municipal | NO |
| Knapp Wastewater Treatment Facility | 0060500 | Dunn | ALREADY MEETING LIMIT | 3.800 | Municipal | NO |
| Lakeland Sanitary District | 0022837 | Oneida | ALREADY MEETING LIMIT | 0.366 | Municipal | NO |
| Lakeside Foods, Inc. New Richmond | 0002836 | St. Croix | ALREADY MEETING LIMIT | 0.075 | NCCW | NO |
| Lebanon Sanitary District #2 WWTF | 0023051 | Dodge | ALREADY MEETING LIMIT | 1.198 | Municipal | NO |
| Little Rapids Corporation, Shawano Paper Mill | 0001341 | Shawano | ALREADY MEETING LIMIT | 0.222 | Paper | NO |
| Lodi Canning Co | 0002658 | Columbia | ALREADY MEETING LIMIT | 0.366 | NCCW | NO |
| LSP Whitewater Limited Partnership | 0049069 | Jefferson | ALREADY MEETING LIMIT | 0.075 | Other | NO |
| Madison Gas & Electric Blount Station | 0001961 | Dane | ALREADY MEETING LIMIT | 0.125 | NCCW | NO |
| Markesan Wastewater Treatment Facility | 0024619 | Green Lake | ALREADY MEETING LIMIT | 0.367 | Municipal | NO |
| Marshall Wastewater Treatment Facility | 0024627 | Dane | ALREADY MEETING LIMIT | 0.581 | Municipal | NO |
| Mauston Wastewater Treatment Facility | 0024635 | Juneau | ALREADY MEETING LIMIT | 0.523 | Municipal | NO |
| Milton Wastewater Treatment Facility | 0060453 | Rock | ALREADY MEETING LIMIT | 0.435 | Municipal | NO |
| Montreal City of | 0022306 | Iron | ALREADY MEETING LIMIT | 1.950 | Municipal | NO |
| MSI Express Inc | 0069965 | Fond du Lac | ALREADY MEETING LIMIT | 0.062 | NCCW | NO |
| Mullins Cheese Inc - Knowlton | 0054127 | Marathon | ALREADY MEETING LIMIT | 0.431 | Cheese | NO |
| Nasonville Dairy, Inc. | 0040312 | Wood | ALREADY MEETING LIMIT | 0.143 | Cheese | NO |
| Nestle Purina PetCare Co | 0002518 | Jefferson | ALREADY MEETING LIMIT | 0.100 | NCCW | NO |
| New Lisbon Wastewater Treatment Facility | 0020699 | Juneau | ALREADY MEETING LIMIT | 0.366 | Municipal | NO |
| Plain Wastewater Treatment Facility | 0036048 | Sauk | ALREADY MEETING LIMIT | 0.075 | Municipal | NO |
| Plum City Wastewater Treatment Plant | 0021431 | Pierce | ALREADY MEETING LIMIT | 1.300 | Municipal | NO |
| Plymouth Town Sanitary District #1 WWTF | 0031054 | Rock | ALREADY MEETING LIMIT | 2.242 | Municipal | NO |
| Port Edwards Wastewater Treatment Facility | 0020451 | Wood | ALREADY MEETING LIMIT | 0.366 | Municipal | NO |

| Facility Name | Permit Number | County | Phosphorus Planning Outcome | Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent) | MDV Category | Major Facility Upgrade Required? |
|---|---|---|---|---|---|---|
| Poynette Wastewater Treatment Facility | 0021091 | Columbia | ALREADY MEETING LIMIT | 0.366 | Municipal | NO |
| Prentice Village of | 0021075 | Price | ALREADY MEETING LIMIT | 1.300 | Municipal | NO |
| Reeseville Wastewater Treatment Facility | 0028509 | Dodge | ALREADY MEETING LIMIT | 1.655 | Municipal | NO |
| Rice Lake Utilities City of | 0021865 | Barron | ALREADY MEETING LIMIT | 0.600 | Municipal | NO |
| Richland Center Renewable Energy | 0064718 | Richland | ALREADY MEETING LIMIT | 0.075 | Food | NO |
| Ridgeland Wastewater Treatment Plant | 0021296 | Dunn | ALREADY MEETING LIMIT | 0.839 | Municipal | NO |
| River Falls Municipal Utility WWTF | 0029394 | Pierce | ALREADY MEETING LIMIT | 0.770 | Municipal | NO |
| Schreiber Foods Inc - West Bend | 0026751 | Washington | ALREADY MEETING LIMIT | 0.200 | Food | NO |
| Schroeders Greenhouse | 0046248 | Brown | ALREADY MEETING LIMIT | 19.539 | Other | NO |
| Seneca Foods Corporation Cambria | 0003891 | Columbia | ALREADY MEETING LIMIT | 0.026 | NCCW | NO |
| Sensient Flavors LLC | 0002534 | Dodge | ALREADY MEETING LIMIT | 0.075 | NCCW | NO |
| Silver Lake Sanitary District | 0061301 | Waushara | ALREADY MEETING LIMIT | 0.811 | Municipal | NO |
| Star Prairie Wastewater Treatment Facility | 0060984 | St. Croix | ALREADY MEETING LIMIT | 5.000 | Municipal | NO |
| Tomahawk City of | 0021946 | Lincoln | ALREADY MEETING LIMIT | 0.366 | Municipal | NO |
| United States Geological Survey | 0045756 | La Crosse | ALREADY MEETING LIMIT | 0.100 | Other | NO |
| Valero Renewable Fuels Company, LLC | 0002038 | Jefferson | ALREADY MEETING LIMIT | 0.170 | Power Plant | NO |
| Warrens Monroe Wastewater Treatment Facility | 0060259 | Monroe | ALREADY MEETING LIMIT | 0.366 | Municipal | NO |
| Waste Management Omega Hills Landfill | 0049514 | Washington | ALREADY MEETING LIMIT | 0.081 | Other | NO |
| Waupaca Foundry Inc Plant No 1 | 0026379 | Waupaca | ALREADY MEETING LIMIT | 0.026 | NCCW | NO |
| Webster Village of | 0028843 | Burnett | ALREADY MEETING LIMIT | 0.330 | Municipal | NO |
| Westboro Sanitary District #1 | 0061107 | Taylor | ALREADY MEETING LIMIT | 2.200 | Municipal | NO |
| Wheeler Wastewater Treatment Facility | 0060852 | Dunn | ALREADY MEETING LIMIT | 0.999 | Municipal | NO |
| White Hill Cheese Co LLC | 0065757 | Lafayette | ALREADY MEETING LIMIT | 0.075 | Cheese | NO |
| WI Air National Guard | 0023078 | Juneau | ALREADY MEETING LIMIT | 0.366 | Municipal | NO |
| WI Dells Lk Delton Sewerage Commission | 0031402 | Columbia | ALREADY MEETING LIMIT | 0.366 | Municipal | NO |
| WI DNR Art Oehmcke State Fish Hatchery | 0058271 | Oneida | ALREADY MEETING LIMIT | 0.045 | Fish | NO |
| WI DNR Gov Tommy Thompson Fish Hatchery | 0049191 | Washburn | ALREADY MEETING LIMIT | 0.590 | Fish | NO |
| WI DNR Kettle Moraine Springs Fish Hatchery | 0026255 | Sheboygan | ALREADY MEETING LIMIT | 0.038 | Fish | NO |
| WI DNR Osceola Fish Hatchery | 0004197 | Polk | ALREADY MEETING LIMIT | 0.060 | Fish | NO |
| Wisconsin Dairy State Cheese, Inc. | 0055751 | Wood | ALREADY MEETING LIMIT | 0.927 | Cheese | NO |

| Facility Name | Permit Number | County | Phosphorus Planning Outcome | Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent) | MDV Category | Major Facility Upgrade Required? |
|---|---|---|---|---|---|---|
| WPS Fox Energy Center | 0061891 | Outagamie | ALREADY MEETING LIMIT | 0.824 | Power | NO |
| Arkema Inc. | 0027731 | Ozaukee | DISCONTINUED | NO LIMIT | NCCW | NO |
| Bloomfield Healthcare and Rehabilitation Center | 0030805 | Iowa | DISCONTINUED | NO LIMIT | Other | NO |
| Brookside Dairy | 0003191 | Winnebago | DISCONTINUED | NO LIMIT | Cheese | NO |
| Cellu Tissue Corporation Neenah | 0000680 | Winnebago | DISCONTINUED | NO LIMIT | Paper | NO |
| Dairyland Power Cooperative Genoa | 0003239 | Vernon | DISCONTINUED | NO LIMIT | Power | NO |
| DRS Technologies | 0062723 | Milwaukee | DISCONTINUED | 0.075 | NCCW | NO |
| Green Bay Packaging, Inc. - Mill Division | 0000973 | Brown | DISCONTINUED | NO LIMIT | NCCW | NO |
| Northern Wisconsin Center For Dev Disabled | 0039144 | Chippewa | DISCONTINUED | NO LIMIT | Other | NO |
| Pentair Flow and Filtration Solutions | 0055816 | Walworth | DISCONTINUED | NO LIMIT | Other | NO |
| Poly Vinyl Company Inc | 0066699 | Sheboygan | DISCONTINUED | 0.360 | NCCW | NO |
| PPG Industries Inc | 0029149 | Milwaukee | DISCONTINUED | NO LIMIT | NCCW | NO |
| Schreiber Foods Inc MGB Plant | 0004499 | Brown | DISCONTINUED | NO LIMIT | NCCW | NO |
| Stella Jones Corporation | 0056880 | La Crosse | DISCONTINUED | NO LIMIT | Other | NO |
| Village of Kimberly | 0065358 | Outagamie | DISCONTINUED | NO LIMIT | Municipal | NO |
| Village of Little Chute | 0065366 | Outagamie | DISCONTINUED | NO LIMIT | Municipal | NO |
| West Shore Pipeline Granville North Site | 0065048 | Washington | DISCONTINUED | NO LIMIT | Other | NO |
| WI DNR Copper Falls State Park | 0030449 | Ashland | DISCONTINUED | NO LIMIT | Municipal | NO |
| WPL - Rock River Generating | 0002402 | Rock | DISCONTINUED | NO LIMIT | Power | NO |
| Wisconsin Public Service Corp Pulliam | 0000965 | Brown | DISCONTINUED | NO LIMIT | Power | NO |
| Wrightstown Sanitary District No 2 WWTF | 0022357 | Brown | DISCONTINUED | NO LIMIT | Municipal | NO |
| Ashland Sewage Utility | 0030767 | Ashland | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Ashland/NSP Lakefront Superfund Site | 0065382 | Ashland | GREAT LAKES INTERIM LIMIT | 0.600 | Other | NO |
| Baileys Harbor Wastewater Treatment Facility | 0035840 | Door | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Bell Sanitary District 1 | 0061336 | Bayfield | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Cleveland Wastewater Treatment Facility | 0030848 | Manitowoc | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Clover Sanitary District | 0032069 | Bayfield | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Dominion Energy Kewaunee, Inc. | 0001571 | Kewaunee | GREAT LAKES INTERIM LIMIT | 0.600 | Power | NO |
| Egg Harbor Wastewater Treatment Facility | 0035661 | Door | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Ephraim Wastewater Treatment Facility | 0061271 | Door | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |

| Facility Name | Permit Number | County | Phosphorus Planning Outcome | Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent) | MDV Category | Major Facility Upgrade Required? |
|---|---|---|---|---|---|---|
| Fish Creek SD1 Wastewater Treatment Facility | 0035203 | Door | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Greater Bayfield WWTP Commission | 0063053 | Bayfield | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Kenosha Wastewater Treatment Facility | 0028703 | Kenosha | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Madeline Sanitary District | 0030759 | Ashland | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Manitowoc Public Utilities | 0027189 | Manitowoc | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Manitowoc Wastewater Treatment Facility | 0024601 | Manitowoc | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Milwaukee Metro Sew Dist Combined | 0036820 | Milwaukee | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| NextEra Energy Point Beach LLC | 0000957 | Manitowoc | GREAT LAKES INTERIM LIMIT | 0.600 | Power | NO |
| Northern States Power,d/b/a Xcel Energy | 0002887 | Ashland | GREAT LAKES INTERIM LIMIT | 0.600 | Power | NO |
| Ocean Spray Cranberries Inc Kenosha | 0062561 | Kenosha | GREAT LAKES INTERIM LIMIT | 0.600 | Food | NO |
| Port Washington | 0020460 | Ozaukee | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Racine Wastewater Utility | 0025194 | Racine | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Sheboygan Wastewater Treatment Plant | 0025411 | Sheboygan | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Sister Bay Wastewater Treatment Facility | 0022071 | Door | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| South Milwaukee Wastewater Treat Facility | 0028819 | Milwaukee | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Sturgeon Bay Utilities WWTF | 0021113 | Door | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Superior Sewage Disposal System | 0025593 | Douglas | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Two Rivers Wastewater Treatment Facility | 0026590 | Manitowoc | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Washburn City of | 0022675 | Bayfield | GREAT LAKES INTERIM LIMIT | 0.600 | Municipal | NO |
| Wisconsin Electric Power Co Oak Creek Elm Rd | 0000914 | Milwaukee | GREAT LAKES INTERIM LIMIT | 0.600 | Power | NO |
| Wisconsin Electric Power Co Port Washington | 0000922 | Ozaukee | GREAT LAKES INTERIM LIMIT | 0.600 | Power | NO |
| Wisconsin Power and Light Edgewater | 0001589 | Sheboygan | GREAT LAKES INTERIM LIMIT | 0.600 | Power | NO |
| Wisconsin University Milwaukee Power Plant | 0040282 | Milwaukee | GREAT LAKES INTERIM LIMIT | 0.600 | NCCW | NO |
| Alma Wastewater Treatment Facility | 0022101 | Buffalo | INDIVIDUAL VARIANCE | 0.100 | Municipal | LIKELY |
| Argyle Wastewater Treatment Facility | 0022225 | Lafayette | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Arpin Wastewater Treatment Facility | 0031267 | Wood | INDIVIDUAL VARIANCE | 0.210 | Municipal | LIKELY |
| Augusta Wastewater Treatment Facility | 0023272 | Eau Claire | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Avoca Wastewater Treatment Facility | 0060151 | Iowa | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Browntown Wastewater Treatment Facility | 0032051 | Green | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Chelsea Sanitary District | 0035718 | Taylor | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |

| Facility Name | Permit Number | County | Phosphorus Planning Outcome | Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent) | MDV Category | Major Facility Upgrade Required? |
|---|---|---|---|---|---|---|
| Clayton Village of | 0036706 | Polk | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Clyman Wastewater Treatment Facility | 0020702 | Dodge | INDIVIDUAL VARIANCE | 0.168 | Municipal | LIKELY |
| Dallas Village of | 0023698 | Barron | INDIVIDUAL VARIANCE | 0.730 | Municipal | LIKELY |
| Dodge Sanitary District No 1 | 0061191 | Trempealeau | INDIVIDUAL VARIANCE | 0.100 | Municipal | LIKELY |
| Gays Mills Wastewater Treatment Facility | 0022268 | Crawford | INDIVIDUAL VARIANCE | 0.100 | Municipal | LIKELY |
| Gibbsville Sanitary District | 0031577 | Sheboygan | INDIVIDUAL VARIANCE | 0.589 | Municipal | LIKELY |
| Glen Flora Village of | 0029963 | Rusk | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Gratiot Wastewater Treatment Facility | 0024139 | Lafayette | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Highland Wastewater Treatment Facility | 0036790 | Iowa | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Kossuth Sanitary District No. 2 WWTF | 0035874 | Manitowoc | INDIVIDUAL VARIANCE | 0.858 | Municipal | LIKELY |
| Lime Ridge Wastewater Treatment Facility | 0036447 | Sauk | INDIVIDUAL VARIANCE | 0.171 | Municipal | LIKELY |
| Merrillan Wastewater Treatment Facility | 0024732 | Jackson | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Milladore Wastewater Treatment Facility | 0022381 | Wood | INDIVIDUAL VARIANCE | 0.366 | Municipal | LIKELY |
| Mindoro San Dist 1 WWTF | 0029106 | La Crosse | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Oakdale Wastewater Treatment Facility | 0031259 | Monroe | INDIVIDUAL VARIANCE | 0.368 | Municipal | LIKELY |
| Ontario Wastewater Treatment Facility | 0020753 | Vernon | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Orfordville Wastewater Treatment Facility | 0021709 | Rock | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Poplar Village of | 0049760 | Douglas | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Potosi-Tennyson Sewage Commission WWTF | 0021547 | Grant | INDIVIDUAL VARIANCE | 0.100 | Municipal | LIKELY |
| Readstown Wastewater Treatment Facility | 0021661 | Vernon | INDIVIDUAL VARIANCE | 0.100 | Municipal | LIKELY |
| Rib Lake Village of | 0029017 | Taylor | INDIVIDUAL VARIANCE | 0.366 | Municipal | LIKELY |
| Rockdale Wastewater Treatment Facility | 0026352 | Dane | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Roxbury Sanitary District #1 WWTF | 0028975 | Dane | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Saxon Sanitary District #1 | 0031704 | Iron | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Siren, Village of | 0028924 | Burnett | INDIVIDUAL VARIANCE | 0.040 | Municipal | LIKELY |
| Soldiers Grove Wastewater Treatment Facility | 0022241 | Crawford | INDIVIDUAL VARIANCE | 0.100 | Municipal | LIKELY |
| South Wayne Wastewater Treatment Facility | 0022292 | Lafayette | INDIVIDUAL VARIANCE | 0.100 | Municipal | LIKELY |
| St Joseph Sanitary District | 0031186 | La Crosse | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |
| Stetsonville, Village of | 0060216 | Taylor | INDIVIDUAL VARIANCE | 0.164 | Municipal | LIKELY |
| Wilton Wastewater Treatment Facility | 0022462 | Monroe | INDIVIDUAL VARIANCE | 0.075 | Municipal | LIKELY |

| Facility Name | Permit Number | County | Phosphorus Planning Outcome | Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent) | MDV Category | Major Facility Upgrade Required? |
|---|---|---|---|---|---|---|
| AFP advanced food products llc | 0039781 | Polk | LAND APPLICATION | NO LIMIT | NCCW | NO |
| Anderson Custom Processing | 0065455 | Dane | LAND APPLICATION | NO LIMIT | Other | NO |
| Archer Daniels Midland Company | 0057592 | Chippewa | LAND APPLICATION | NO LIMIT | NCCW | NO |
| Bay City Village | 0061255 | Pierce | LAND APPLICATION | NO LIMIT | Municipal | NO |
| Deer Park Wastewater Treatment Facility | 0025356 | St. Croix | LAND APPLICATION | 3.500 | Municipal | NO |
| Del Monte Foods Inc - Cambria Plant #108 | 0026620 | Columbia | LAND APPLICATION | 0.000 | Food | NO |
| Foremost Farms USA Clayton | 0003018 | Polk | LAND APPLICATION | NO LIMIT | NCCW | NO |
| Foremost Farms USA Marshfield | 0037982 | Wood | LAND APPLICATION | NO LIMIT | NCCW | NO |
| Green Lake Sanitary District | 0036846 | Green Lake | LAND APPLICATION | 0.082 | Municipal | NO |
| Newton Meats And Sausage | 0042650 | Manitowoc | LAND APPLICATION | 0.048 | NCCW | NO |
| Packerland Whey Products Inc | 0070581 | Kewaunee | LAND APPLICATION | NO LIMIT | Cheese | NO |
| Seneca Foods Corporation Oakfield | 0002267 | Fond Du Lac | LAND APPLICATION | NO LIMIT | Food | NO |
| Weyauwega Star Dairy | 0039527 | Waupaca | LAND APPLICATION | NO LIMIT | NCCW | NO |
| Abbyland Foods Abbotsford Plan | 0057436 | Marathon | MAJOR FACILITY UPGRADE | 0.145 | Food | NO |
| AMPI Jim Falls Division | 0003476 | Chippewa | MAJOR FACILITY UPGRADE | 0.100 | NCCW | NO |
| Appleton Wastewater Treatment Facility | 0023221 | Outagamie | MINOR FACILITY UPGRADE | 0.177 | Municipal | NO |
| Badger State Ethanol LLC | 0062103 | Green | MAJOR FACILITY UPGRADE | 0.092 | NCCW | NO |
| Baldwin Wastewater Treatment Facility | 0026891 | St. Croix | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| BelGioioso Cheese Inc | 0051128 | Brown | MAJOR FACILITY UPGRADE | 0.169 | NCCW | NO |
| Bloomer Wastewater Treatment Facility | 0020575 | Chippewa | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| Bloomfield Village | 0049794 | Walworth | MAJOR FACILITY UPGRADE | 0.082 | Municipal | NO |
| Brookfield, City of | 0023469 | Waukesha | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| Chetek City of | 0021598 | Barron | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| Clear Lake Village of | 0023639 | Polk | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| Coleman Wastewater Treatment Facility | 0022080 | Marinette | MAJOR FACILITY UPGRADE | 0.420 | Municipal | NO |
| Consolidated Koshkonong Sanitary Dist | 0021059 | Rock | MAJOR FACILITY UPGRADE | 0.435 | Municipal | NO |
| Dairyland Power Coop Alma site | 0040223 | Buffalo | MAJOR FACILITY UPGRADE | 0.060 | Power | NO |
| Delafield Hartland Water Pollution Control Commission | 0032026 | Waukesha | MAJOR FACILITY UPGRADE | 0.128 | Municipal | NO |
| Fort Atkinson Wastewater Treatment Facility | 0022489 | Jefferson | MAJOR FACILITY UPGRADE | 0.471 | Municipal | NO |
| Fox West Regional Sewerage Commission | 0024686 | Winnebago | MAJOR FACILITY UPGRADE | 0.140 | Municipal | NO |

| Facility Name | Permit Number | County | Phosphorus Planning Outcome | Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent) | MDV Category | Major Facility Upgrade Required? |
|---|---|---|---|---|---|---|
| Georgia-Pacific Consumer Operations LLC | 0001848 | Brown | MAJOR FACILITY UPGRADE | 0.182 | Paper | NO |
| Georgia-Pacific Consumer Operations LLC | 0001261 | Brown | MAJOR FACILITY UPGRADE | 0.210 | Paper | NO |
| Grassland Dairy Products Inc | 0002984 | Clark | MAJOR FACILITY UPGRADE | 0.075 | Cheese | NO |
| Hartford Water Pollution Control Facility | 0020192 | Washington | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| Heart of the Valley Metro Sewerage District | 0031232 | Outagamie | MAJOR FACILITY UPGRADE | 0.150 | Municipal | NO |
| Holmen Wastewater Treatment Facility | 0024261 | La Crosse | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| Howards Grove Wastewater Trtmt Fac | 0021679 | Sheboygan | MAJOR FACILITY UPGRADE | 0.265 | Municipal | NO |
| Ixonia Utility District #1 WWTF | 0031038 | Jefferson | MAJOR FACILITY UPGRADE | 0.860 | Municipal | NO |
| Jackson (Village) Wastewater Treatment Plant | 0021806 | Washington | MAJOR FACILITY UPGRADE | 0.143 | Municipal | NO |
| Jamestown Sanitary District No 3 WWTF | 0031755 | Grant | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| La Crosse, City of | 0029581 | La Crosse | MAJOR FACILITY UPGRADE | 0.100 | Municipal | NO |
| Lactalis USA Belmont Inc | 0054470 | Lafayette | MAJOR FACILITY UPGRADE | 0.075 | Cheese | NO |
| Little Suamico Sanitary District No 1 | 0031968 | Oconto | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| Mayville Wastewater Treatment Facility | 0024643 | Dodge | MAJOR FACILITY UPGRADE | 0.163 | Municipal | NO |
| McCain Foods USA Inc Plover | 0054518 | Portage | MAJOR FACILITY UPGRADE | 0.316 | Food | NO |
| Medford  City of | 0036731 | Taylor | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| Menomonie Wastewater Treatment Facility | 0024708 | Dunn | MAJOR FACILITY UPGRADE | 0.100 | Municipal | NO |
| Neenah Inc., Neenah Mill | 0037842 | Winnebago | MAJOR FACILITY UPGRADE | 0.246 | Paper | NO |
| Neenah Menasha Sewerage Commission | 0026085 | Winnebago | MAJOR FACILITY UPGRADE | 0.170 | Municipal | NO |
| New Glarus Wastewater Treatment Facility | 0020061 | Green | MAJOR FACILITY UPGRADE | 0.120 | Municipal | NO |
| Newburg Village | 0024911 | Washington | MAJOR FACILITY UPGRADE | 0.500 | Municipal | NO |
| Oshkosh Wastewater Treatment Plant | 0025038 | Winnebago | MAJOR FACILITY UPGRADE | 0.318 | Municipal | NO |
| Random Lake Village | 0021415 | Sheboygan | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| Reedsburg Wastewater Treatment Facility | 0020371 | Sauk | MDV | 0.366 | Municipal | NO |
| Roberts Wastewater Treatment Facility | 0028835 | St. Croix | MAJOR FACILITY UPGRADE | 0.040 | Municipal | NO |
| Saputo Cheese USA Inc Lena | 0027308 | Oconto | MAJOR FACILITY UPGRADE | 0.170 | Cheese | NO |
| Saputo Cheese USA Inc Waupun | 0002003 | Fond Du Lac | MAJOR FACILITY UPGRADE | 0.075 | Cheese | NO |
| Saukville Village Sewer Utility | 0021555 | Ozaukee | MAJOR FACILITY UPGRADE | 0.150 | Municipal | NO |
| Shullsburg Wastewater Treatment Facility | 0028321 | Lafayette | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| Stanley Wastewater Treatment Facility | 0021857 | Chippewa | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |

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|---|---|---|---|---|---|---|
| Sun Prairie Wastewater Treatment Facility | 0020478 | Dane | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| Sussex Wastewater Treatment Facility | 0020559 | Waukesha | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| Transcontinental Menasha | 0026999 | Winnebago | MAJOR FACILITY UPGRADE | 0.351 | NCCW | NO |
| Turtle Lake Village of | 0025631 | Barron | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| Walworth County Metro | 0031461 | Walworth | MAJOR FACILITY UPGRADE | 0.144 | Municipal | NO |
| Waukesha City | 0029971 | Waukesha | MAJOR FACILITY UPGRADE | 0.075 | Municipal | NO |
| Waupun Wastewater Treatment Facility | 0022772 | Dodge | MAJOR FACILITY UPGRADE | 0.068 | Municipal | NO |
| West Bend City | 0025763 | Washington | MAJOR FACILITY UPGRADE | 0.000 | Municipal | NO |
| Abbotsford Wastewater Treatment Facility | 0023141 | Marathon | MDV | 0.163 | Municipal | LIKELY |
| Abrams Sanitary District 1 | 0049859 | Oconto | MDV | 0.075 | Municipal | LIKELY |
| Agropur Inc Luxemburg | 0050237 | Kewaunee | MDV | 0.123 | Cheese | LIKELY |
| Ahlstrom-Munksjo NA Specialty Solutions LLC | 0001473 | Outagamie | MDV | 0.108 | Paper | LIKELY |
| Almena Village of | 0023183 | Barron | MDV | 0.075 | Municipal | LIKELY |
| AMPI Blair Cheese Plant | 0003760 | Trempealeau | MDV | 0.075 | NCCW | LIKELY |
| Appleton Property Ventures LLC | 0000990 | Outagamie | MDV | 0.203 | Paper | LIKELY |
| Auburndale Wastewater Treatment Facility | 0022411 | Wood | MDV | 0.299 | Municipal | LIKELY |
| Bagley Wastewater Treatment Facility | 0060771 | Grant | MDV | 0.1 | Municipal | LIKELY |
| Barneveld Wastewater Treatment Facility | 0029131 | Iowa | MDV | 0.075 | Municipal | LIKELY |
| Belgium Wastewater Treatment Facility | 0023353 | Ozaukee | MDV | 0.577 | Municipal | LIKELY |
| Benton Wastewater Treatment Facility | 0020672 | Lafayette | MDV | 0.075 | Municipal | LIKELY |
| Black Creek Wastewater Treatment Facility | 0021041 | Outagamie | MDV | 0.174 | Municipal | LIKELY |
| Black River Falls WWTF | 0021954 | Jackson | MDV | 0.1 | Municipal | LIKELY |
| Blanchardville Wastewater Treatment Facility | 0021105 | Lafayette | MDV | 0.075 | Municipal | LIKELY |
| Blue River Wastewater Treatment Facility | 0023418 | Grant | MDV | 0.075 | Municipal | LIKELY |
| Bristol Utility District 1 | 0022021 | Kenosha | MDV | 0.075 | Municipal | LIKELY |
| Cadott Wastewater Treatment Facility | 0023515 | Chippewa | MDV | 0.075 | Municipal | LIKELY |
| Cascade Wastewater Treatment Facility | 0031372 | Sheboygan | MDV | 0.100 | Municipal | LIKELY |
| Casco Wastewater Treatment Facility | 0023566 | Kewaunee | MDV | 1.471 | Municipal | LIKELY |
| Cashton Wastewater Treatment Facility | 0020915 | Monroe | MDV | 0.075 | Municipal | LIKELY |
| Cazenovia Wastewater Treatment Facility | 0031801 | Sauk | MDV | 0.334 | Municipal | LIKELY |

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|---|---|---|---|---|---|---|
| Cedar Grove Cheese Factory | 0050245 | Sauk | MDV | 0.075 | Cheese | LIKELY |
| City of Fond du Lac WTRRF | 0023990 | Fond Du Lac | WQT | 0.274 | Municipal | NO |
| Clark County Health Care Center WWTF | 0029700 | Clark | MDV | 0.075 | Other | LIKELY |
| Clinton Wastewater Treatment Facility | 0022039 | Rock | MDV | 0.075 | Municipal | LIKELY |
| Colby City WWTF | 0023655 | Marathon | MDV | 0.138 | Municipal | NO |
| Crystal Lake Sanitary District | 0035114 | Barron | MDV | 0.075 | Municipal | LIKELY |
| Curtiss Wastewater Treatment Facility | 0031445 | Clark | MDV | 0.075 | Municipal | LIKELY |
| Dale Sanitary District No 1 WWTF | 0030830 | Outagamie | MDV | 0.429 | Municipal | LIKELY |
| De Soto Wastewater Treatment Facility | 0029793 | Crawford | MDV | 0.1 | Municipal | LIKELY |
| Dickeyville Wastewater Treatment Facility | 0023817 | Grant | MDV | 0.075 | Municipal | LIKELY |
| Dodgeville Wastewater Treatment Facility | 0026913 | Iowa | MDV | 0.075 | Municipal | LIKELY |
| Domtar - Nekoosa | 0003620 | Wood | MDV | 0.340 | Paper | NO |
| Domtar Paper Co LLC | 0026042 | Marathon | MDV | 0.349 | Paper | NO |
| Dorchester Wastewater Treatment Facility | 0021571 | Clark | MDV | 0.075 | Municipal | LIKELY |
| Downsville Sanitary District #1 WWTF | 0031682 | Dunn | MDV | 0.1 | Municipal | LIKELY |
| Eagle Lake Sewer Utility | 0031526 | Racine | MDV | 0.075 | Municipal | LIKELY |
| East Troy Wastewater Treatment Facility | 0020397 | Walworth | MDV | 0.075 | Municipal | LIKELY |
| Eden Wastewater Treatment Facility | 0030716 | Fond Du Lac | MDV | 0.223 | Municipal | LIKELY |
| Edgar Wastewater Treatment Facility | 0021784 | Marathon | MDV | 0.322 | Municipal | LIKELY |
| Ellsworth Coop Creamery | 0022942 | Pierce | MDV | 0.075 | Cheese | LIKELY |
| Ellsworth Wastewater Treatment Facility | 0021253 | Pierce | MDV | 0.075 | Municipal | LIKELY |
| Ettrick Wastewater Treatment Facility | 0020621 | Trempealeau | MDV | 0.075 | Municipal | LIKELY |
| Fennimore Wastewater Treatment Facility | 0023981 | Grant | MDV | 0.075 | Municipal | LIKELY |
| Fenwood Wastewater Treatment Facility | 0031411 | Marathon | MDV | 0.153 | Municipal | LIKELY |
| Fonks Home Center Inc., Harvest View Estates | 0026689 | Racine | MDV | 0.075 | Municipal | LIKELY |
| Fonks Home Center Inc., Hickory Haven | 0030660 | Racine | MDV | 0.075 | Municipal | LIKELY |
| Foremost Farms USA Chilton | 0027618 | Calumet | MDV | 0.210 | Cheese | LIKELY |
| Foremost Farms USA Lancaster | 0062308 | Grant | MDV | 0.075 | Cheese | LIKELY |
| Foremost Farms USA Plover | 0003859 | Portage | MDV | 0.234 | Cheese | LIKELY |
| Fountain City WWTF | 0024040 | Buffalo | MDV | 0.1 | Municipal | LIKELY |

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|---|---|---|---|---|---|---|
| Galesville Wastewater Treatment Plant | 0021725 | Trempealeau | MDV | 0.075 | Municipal | LIKELY |
| Genoa City Village | 0021083 | Walworth | MDV | 0.075 | Municipal | LIKELY |
| Genoa Wastewater Treatment Facility | 0022284 | Vernon | MDV | 0.100 | Municipal | LIKELY |
| Grande Cheese Co Brownsville | 0050016 | Dodge | MDV | 0.689 | Cheese | LIKELY |
| Grande Cheese Company - Juda | 0063207 | Green | MDV | 0.075 | Cheese | LIKELY |
| Granton Wastewater Treatment Facility | 0020885 | Clark | MDV | 0.075 | Municipal | LIKELY |
| Green Lake Wastewater Treatment Facility | 0021776 | Green Lake | MDV | 0.607 | Municipal | LIKELY |
| Hatfield Sanitary District | 0036641 | Jackson | MDV | 0.1 | Municipal | LIKELY |
| Hazel Green Wastewater Treatment Facility | 0024210 | Grant | MDV | 0.075 | Municipal | LIKELY |
| Hilbert Wastewater Treatment Facility | 0021270 | Calumet | MDV | 0.266 | Municipal | LIKELY |
| Hillsboro Wastewater Treatment Facility | 0020583 | Vernon | MDV | 0.227 | Municipal | LIKELY |
| Hillshire Brands Co. | 0023094 | Outagamie | MDV | 0.206 | Food | LIKELY |
| Hollandale Wastewater Treatment Facility | 0031330 | Iowa | MDV | 0.075 | Municipal | LIKELY |
| Horicon Wastewater Treatment Facility | 0020231 | Dodge | MDV | 0.063 | Municipal | LIKELY |
| Hub Rock Sanitary District #1 WWTF | 0049689 | Richland | MDV | 0.075 | Municipal | LIKELY |
| Hustler Wastewater Treatment Facility | 0032085 | Juneau | MDV | 0.156 | Municipal | LIKELY |
| Independence Wastewater Treatment Plant | 0024287 | Trempealeau | MDV | 0.1 | Municipal | LIKELY |
| Iron Ridge Wastewater Treatment Facility | 0020486 | Dodge | MDV | 0.075 | Municipal | LIKELY |
| Jamestown Sanitary District No 2 WWTF | 0030627 | Grant | MDV | 0.075 | Municipal | LIKELY |
| Jennie O Turkey Store Inc Barron Plant | 0070408 | Barron | MDV | 0.075 | Food | LIKELY |
| Johnsonville LLC | 0001759 | Sheboygan | MDV | 0.056 | Food | LIKELY |
| Junction City Wastewater Treatment Facility | 0028070 | Portage | MDV | 0.367 | Municipal | LIKELY |
| Kendall Wastewater Treatment Facility | 0020516 | Monroe | MDV | 0.249 | Municipal | LIKELY |
| Krakow Sanitary District WWTF | 0028169 | Shawano | MDV | 0.075 | Municipal | LIKELY |
| La Farge Wastewater Treatment Plant | 0024465 | Vernon | MDV | 0.1 | Municipal | LIKELY |
| Lake Mills Wastewater Treatment Facility | 0031194 | Jefferson | MDV | 0.075 | Municipal | LIKELY |
| Lakeland Sanitary District # 1 | 0061387 | Barron | MDV | 0.075 | Municipal | LIKELY |
| Lakeside Foods Inc - Reedsburg | 0057738 | Sauk | MDV | 0.087 | Food | LIKELY |
| Lakeside Foods, Inc. - Belgium Plant | 0000817 | Ozaukee | MDV | 0.746 | Food | LIKELY |
| Lakeview Neurological Rehab Center-Midwest | 0029807 | Racine | MDV | 0.075 | Municipal | LIKELY |

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|---|---|---|---|---|---|---|
| Lancaster Wastewater Treatment Facility | 0024503 | Grant | MDV | 0.075 | Municipal | LIKELY |
| Larsen Winchester SD WWTF | 0031925 | Winnebago | MDV | 0.017 | Municipal | LIKELY |
| Lebanon Sanitary District #1 WWTF | 0031364 | Dodge | MDV | 1.199 | Municipal | LIKELY |
| Lena Wastewater Treatment Facility | 0061361 | Oconto | MDV | 0.075 | Municipal | LIKELY |
| Linden Wastewater Treatment Facility | 0021580 | Iowa | MDV | 0.25 | Municipal | LIKELY |
| Livingston Wastewater Treatment Facility | 0022187 | Grant | MDV | 0.075 | Municipal | LIKELY |
| Lomira Wastewater Treatment Facility | 0020532 | Dodge | MDV | 0.075 | Municipal | LIKELY |
| Luck Village of | 0021482 | Polk | MDV | 0.075 | Municipal | LIKELY |
| Lynn Dairy / Lynn Protein, Inc. | 0051152 | Clark | MDV | 0.075 | Cheese | LIKELY |
| Lyons Sanitary District No 2 | 0031941 | Walworth | MDV | 0.075 | Municipal | LIKELY |
| Maine Wastewater Treatment Facility | 0022136 | Marathon | MDV | 0.361 | Municipal | LIKELY |
| Marathon Water & Sewer Department | 0020273 | Marathon | MDV | 0.366 | Municipal | LIKELY |
| Maribel Wastewater Treatment Facility | 0061051 | Manitowoc | MDV | 0.927 | Municipal | LIKELY |
| Melrose Wastewater Treatment Facility | 0024678 | Jackson | MDV | 0.1 | Municipal | LIKELY |
| Milan S D Wastewater Treatment Facility | 0031500 | Marathon | MDV | 0.162 | Municipal | LIKELY |
| Milk Specialties Global - Adell | 0001236 | Sheboygan | MDV | 0.380 | Cheese | LIKELY |
| Mondovi Wastewater Treatment Facility | 0020591 | Buffalo | MDV | 0.075 | Municipal | LIKELY |
| Morrison Sanitary District No 1 | 0036773 | Brown | MDV | 0.743 | Municipal | LIKELY |
| Mount Calvary Wastewater Treatment Facility | 0035963 | Fond Du Lac | MDV | 0.203 | Municipal | LIKELY |
| Mount Hope Wastewater Treatment Facility | 0020907 | Grant | MDV | 0.075 | Municipal | LIKELY |
| Neillsville Wastewater Treatment Facility | 0021202 | Clark | MDV | 0.075 | Municipal | LIKELY |
| Nekoosa Wastewater Treatment Facility | 0020613 | Wood | MDV | 0.364 | Municipal | LIKELY |
| North Lake Poygan S D WWTF | 0036251 | Winnebago | MDV | 0.532 | Municipal | LIKELY |
| Norwalk Wastewater Treatment Facility | 0024961 | Monroe | MDV | 0.075 | Municipal | LIKELY |
| Onion River Wastewater Commission | 0036811 | Sheboygan | MDV | 0.114 | Municipal | LIKELY |
| Osseo Wastewater Treatment Facility | 0025046 | Trempealeau | MDV | 0.075 | Municipal | LIKELY |
| Owen Wastewater Treatment Facility | 0020940 | Clark | MDV | 0.075 | Municipal | LIKELY |
| Paddock Lake Wastewater TRTMNT FAC | 0025062 | Kenosha | MDV | 0.075 | Municipal | LIKELY |
| Palmyra Wastewater Treatment Facility | 0031020 | Jefferson | MDV | 0.075 | Municipal | LIKELY |
| Patch Grove Wastewater Treatment Facility | 0022705 | Grant | MDV | 0.075 | Municipal | LIKELY |

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|---|---|---|---|---|---|---|
| Phillips City of | 0021539 | Price | MDV | 0.040 | Municipal | LIKELY |
| Pittsville Water And Sewer Dept WWTF | 0020494 | Wood | MDV | 0.092 | Municipal | LIKELY |
| Platteville Wastewater Treatment Facility | 0020435 | Grant | MDV | 0.075 | Municipal | LIKELY |
| Potter Wastewater Treatment Facility | 0029025 | Calumet | MDV | 0.929 | Municipal | LIKELY |
| Poygan Poy Sippi SD 1 WWTF | 0035513 | Winnebago | MDV | 0.332 | Municipal | LIKELY |
| Prescott Wastewater Treatment Facility | 0022403 | Pierce | MDV | 0.100 | Municipal | LIKELY |
| Randolph Wastewater Treatment Facility | 0031160 | Dodge | MDV | 0.075 | Municipal | LIKELY |
| Reedsville Wastewater Treatment Facility | 0021342 | Manitowoc | MDV | 0.251 | Municipal | LIKELY |
| Rewey Wastewater Treatment Facility | 0031569 | Iowa | MDV | 0.075 | Municipal | LIKELY |
| Richland Center Wastewater Treatment Fac | 0020109 | Richland | MDV | 0.075 | Municipal | LIKELY |
| Ridgeway Wastewater Treatment Facility | 0031348 | Iowa | MDV | 0.075 | Municipal | LIKELY |
| Rockland SD1 Wastewater Treatment Facility | 0022802 | Manitowoc | MDV | 0.251 | Municipal | LIKELY |
| Rozellville Sanitary District No 1 | 0029076 | Marathon | MDV | 0.125 | Municipal | LIKELY |
| Rushing Waters Fisheries, Inc | 0002488 | Jefferson | MDV | 0.075 | Fish | LIKELY |
| Salem Lakes, Village | 0031496 | Kenosha | MDV | 0.100 | Municipal | LIKELY |
| Seneca Foods Corporation Gillett | 0000345 | Oconto | MDV | 0.11 | NCCW | LIKELY |
| Sharon Wastewater Treatment Facility | 0022608 | Walworth | MDV | 0.075 | Municipal | LIKELY |
| Spring Green Golf Club Sanitary Dist #2 WWTF | 0028363 | Iowa | MDV | 0.075 | Municipal | LIKELY |
| Spring Valley Wastewater Treatment Facility | 0022373 | Pierce | MDV | 0.075 | Municipal | LIKELY |
| St Cloud Village Utility Commission | 0026867 | Fond Du Lac | MDV | 0.207 | Municipal | LIKELY |
| Stitzer Sanitary District WWTF | 0036285 | Grant | MDV | 0.075 | Municipal | LIKELY |
| Stoddard Wastewater Treatment Facility | 0028304 | Vernon | MDV | 0.100 | Municipal | LIKELY |
| Taylor Wastewater Treatment Facility | 0021881 | Jackson | MDV | 0.075 | Municipal | LIKELY |
| The Procter & Gamble Paper Products Co | 0001031 | Brown | MDV | 0.044 | Paper | LIKELY |
| Theresa Wastewater Treatment Facility | 0022322 | Dodge | MDV | 0.527 | Municipal | LIKELY |
| Thorp Wastewater Treatment Facility | 0025615 | Clark | MDV | 0.075 | Municipal | LIKELY |
| Trempealeau Wastewater Treatment Facility | 0020966 | Trempealeau | MDV | 0.100 | Municipal | LIKELY |
| Twin Lakes Wastewater Treatment Fac | 0021695 | Kenosha | MDV | 0.075 | Municipal | LIKELY |
| Union Center Wastewater Treatment Facility | 0025640 | Juneau | MDV | 0.102 | Municipal | LIKELY |
| Unity Wastewater Treatment Facility | 0060526 | Clark | MDV | 0.059 | Municipal | LIKELY |

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|---|---|---|---|---|---|---|
| Valders Wastewater Treatment Facility | 0021831 | Manitowoc | MDV | 0.258 | Municipal | LIKELY |
| Valley Ridge Clean Water Commission WWTF | 0036854 | Crawford | MDV | 0.100 | Municipal | LIKELY |
| Vesper Wastewater Treatment Facility | 0030309 | Wood | MDV | 0.188 | Municipal | LIKELY |
| Village of Kewaskum | 0021733 | Washington | MDV | 0.110 | Municipal | LIKELY |
| Village of Union Grove | 0028291 | Racine | MDV | 0.075 | Municipal | LIKELY |
| Viola Wastewater Treatment Facility | 0021148 | Vernon | MDV | 0.100 | Municipal | LIKELY |
| Waumandee Sanitary District #1 | 0061646 | Buffalo | MDV | 0.075 | Municipal | LIKELY |
| Wazee Area Wastewater Commission | 0036889 | Jackson | MDV | 0.1 | Municipal | LIKELY |
| Westfield Wastewater Treatment Facility | 0022250 | Marquette | MDV | 0.292 | Municipal | LIKELY |
| Wheatland Estates MHC WI LLC | 0031011 | Kenosha | MDV | 0.1 | Municipal | LIKELY |
| Whitehall Wastewater Treatment Facility | 0030970 | Trempealeau | MDV | 0.075 | Municipal | LIKELY |
| Whitelaw Wastewater Treatment Facility | 0022047 | Manitowoc | MDV | 0.741 | Municipal | LIKELY |
| Whitewater Wastewater Treatment Facil | 0020001 | Walworth | MDV | 0.12 | Municipal | LIKELY |
| Wrightstown Sanitary District No 1 WWTF | 0022438 | Brown | MDV | 0.800 | Municipal | LIKELY |
| Yorkville Sewer Utility District No 1 | 0029831 | Racine | MDV | 0.075 | Municipal | LIKELY |
| Antigo, City of | 0022144 | Langlade | MINOR FACILITY UPGRADE | 0.366 | Municipal | NO |
| Arla Foods Production LLC | 0027197 | Brown | MINOR FACILITY UPGRADE | 1.565 | NCCW | NO |
| Ashippun Sanitary District WWTF | 0031381 | Dodge | MINOR FACILITY UPGRADE | 1.198 | Municipal | NO |
| Bear Creek Wastewater Treatment Facility | 0028061 | Outagamie | MINOR FACILITY UPGRADE | 1.231 | Municipal | NO |
| Briggs Stratton Corporation | 0026514 | Milwaukee | MINOR FACILITY UPGRADE | 0.100 | NCCW | NO |
| Brillion Wastewater Treatment Facility | 0020443 | Calumet | MINOR FACILITY UPGRADE | 0.952 | Municipal | NO |
| Brownsville Wastewater Treatment Facility | 0021601 | Dodge | MINOR FACILITY UPGRADE | 0.689 | Municipal | NO |
| Campbellsport Wastewater Treatment Facility | 0020818 | Fond Du Lac | MINOR FACILITY UPGRADE | 0.570 | Municipal | NO |
| Chilton Wastewater Treatment Facility | 0022799 | Calumet | MINOR FACILITY UPGRADE | 0.167 | Municipal | NO |
| Clarks Mills Sanitary District | 0036030 | Manitowoc | MINOR FACILITY UPGRADE | 0.233 | Municipal | NO |
| Dousman Wastewater Treatment Facility | 0021351 | Waukesha | MINOR FACILITY UPGRADE | 0.128 | Municipal | NO |
| Elroy Wastewater Treatment Facility | 0023931 | Juneau | MINOR FACILITY UPGRADE | 0.339 | Municipal | NO |
| Essity Professional Hygiene North America LLC | 0037389 | Winnebago | MINOR FACILITY UPGRADE | 0.273 | Paper | NO |
| Footville Wastewater Treatment Facility | 0024023 | Rock | MINOR FACILITY UPGRADE | 2.243 | Municipal | NO |

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|---|---|---|---|---|---|---|
| Fredonia Municipal Sewer And Water Utility | 0020800 | Ozaukee | MINOR FACILITY UPGRADE | 1.000 | Municipal | NO |
| Great Lakes Research Institute | 0045942 | Milwaukee | MINOR FACILITY UPGRADE | 0.239 | Fish | NO |
| Hill Point Sanitary District WWTF | 0035483 | Sauk | MINOR FACILITY UPGRADE | 0.328 | Municipal | NO |
| Holland SD 1 Wastewater Treatment Facility | 0028207 | Brown | MINOR FACILITY UPGRADE | 0.797 | Municipal | NO |
| Kerry Biofunctional Ingredients Inc | 0003875 | Marathon | MINOR FACILITY UPGRADE | 0.341 | Cheese | NO |
| Lodi Wastewater Treatment Facility | 0022918 | Columbia | MINOR FACILITY UPGRADE | 0.366 | Municipal | NO |
| Lyndon Station Wastewater Treatment Facility | 0060488 | Juneau | MINOR FACILITY UPGRADE | 0.365 | Municipal | NO |
| Milk Specialties Co, Inc | 0003107 | Grant | MINOR FACILITY UPGRADE | 0.570 | Cheese | NO |
| Mullins Cheese Inc Marshfield | 0053694 | Marathon | MINOR FACILITY UPGRADE | 0.234 | Cheese | NO |
| Necedah Wastewater Treatment Facility | 0020133 | Juneau | MINOR FACILITY UPGRADE | 0.366 | Municipal | NO |
| New Holstein Wastewater Treatment Facility | 0020893 | Calumet | MINOR FACILITY UPGRADE | 0.138 | Municipal | NO |
| North Freedom Wastewater Treatment Facility | 0028011 | Sauk | MINOR FACILITY UPGRADE | 0.366 | Municipal | NO |
| ODells Bay Sanitary District No. 1 | 0036536 | Juneau | MINOR FACILITY UPGRADE | 0.365 | Municipal | NO |
| Phelps Sanitary District #1 | 0029050 | Vilas | MINOR FACILITY UPGRADE | 0.365 | Municipal | NO |
| Prairie Farm  Village of | 0025178 | Barron | MINOR FACILITY UPGRADE | 0.000 | Municipal | NO |
| Rhinelander, City of | 0020044 | Oneida | MINOR FACILITY UPGRADE | 0.389 | Municipal | NO |
| Ripon Wastewater Treatment Facility | 0021032 | Fond du Lac | MINOR FACILITY UPGRADE | 0.306 | Municipal | NO |
| Sartori Company-West Main Building | 0041904 | Sheboygan | MINOR FACILITY UPGRADE | 0.293 | NCCW | NO |
| Sherwood Wastewater Treatment Facility | 0031127 | Calumet | MINOR FACILITY UPGRADE | 0.595 | Municipal | NO |
| Stockbridge Wastewater Treatment Facility | 0021393 | Calumet | MINOR FACILITY UPGRADE | 0.266 | Municipal | NO |
| TA Operating LLC | 0035998 | Columbia | MINOR FACILITY UPGRADE | 0.353 | Municipal | NO |
| Waterloo Wastewater Treatment Facility | 0030881 | Jefferson | MINOR FACILITY UPGRADE | 0.218 | Municipal | NO |
| Wonewoc Wastewater Treatment Facility | 0029688 | Juneau | MINOR FACILITY UPGRADE | 0.365 | Municipal | NO |
| Wrightstown Wastewater Treatment Facility | 0022497 | Brown | MINOR FACILITY UPGRADE | 0.683 | Municipal | NO |
| Amani Sanitary District | 0031861 | Polk | NO LIMIT | NO LIMIT | Municipal | NO |
| Amnicon Foundation | 0026808 | Douglas | NO LIMIT | NO LIMIT | Municipal | NO |
| Applied Material Solutions Inc Burlington | 0065684 | Racine | NO LIMIT | NO LIMIT | Other | NO |
| Arkansaw Wastewater Treatment Facility | 0060232 | Pepin | NO LIMIT | NO LIMIT | Municipal | NO |
| Arlington Wastewater Treatment Facility | 0021512 | Columbia | NO LIMIT | 0.381 | Municipal | NO |
| Aurora Sanitary District # 1 | 0031852 | Florence | NO LIMIT | NO LIMIT | Municipal | NO |

| Facility Name | Permit Number | County | Phosphorus Planning Outcome | Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent) | MDV Category | Major Facility Upgrade Required? |
|---|---|---|---|---|---|---|
| Badger Meter Inc | 0033529 | Milwaukee | NO LIMIT | NO LIMIT | NCCW | NO |
| Bay Valley Foods LLC | 0037702 | Brown | NO LIMIT | NO LIMIT | NCCW | NO |
| BNSF Railway Company | 0070726 | Douglas | NO LIMIT | NO LIMIT | Other | NO |
| Boaz Wastewater Treatment Facility | 0036749 | Richland | NO LIMIT | NO LIMIT | Municipal | NO |
| Bostwick Valley MHP WWTF | 0028908 | La Crosse | NO LIMIT | NO LIMIT | Municipal | NO |
| Brighton Dale Links WWTP | 0060348 | Kenosha | NO LIMIT | NO LIMIT | Municipal | NO |
| Cady Cheese LLC | 0053597 | St. Croix | NO LIMIT | NO LIMIT | Cheese | NO |
| Chaseburg Wastewater Treatment Fac | 0025348 | Vernon | NO LIMIT | NO LIMIT | Municipal | NO |
| Chemtrade Solutions LLC | 0065471 | Winnebago | NO LIMIT | NO LIMIT | Other | NO |
| Columbia Forest Products | 0003735 | Ashland | NO LIMIT | NO LIMIT | Other | NO |
| Crivitz Wastewater Treatment Facility | 0060372 | Marinette | NO LIMIT | NO LIMIT | Municipal | NO |
| Didion Milling Inc - Ethanol Plant | 0066401 | Columbia | NO LIMIT | NO LIMIT | Other | NO |
| Drummond Sanitary District 1 | 0031615 | Bayfield | NO LIMIT | NO LIMIT | Municipal | NO |
| Fall Creek Wastewater Treatment Facility | 0025976 | Eau Claire | NO LIMIT | NO LIMIT | Municipal | NO |
| Ferryville Wastewater Treatment Facility | 0020974 | Crawford | NO LIMIT | NO LIMIT | Municipal | NO |
| Fish, Crystal and Mud Lake Rehabilitation Dist | 0049964 | Dane | NO LIMIT | 0.000 | Other | NO |
| Foremost Farms USA Milan | 0057541 | Marathon | NO LIMIT | NO LIMIT | NCCW | NO |
| Foremost Farms USA Sparta | 0047546 | Monroe | NO LIMIT | NO LIMIT | NCCW | NO |
| Gillett Wastewater Treatment Facility | 0022063 | Oconto | NO LIMIT | NO LIMIT | Municipal | NO |
| Gilman, Village of | 0030937 | Taylor | NO LIMIT | NO LIMIT | Municipal | NO |
| Glidden Sanitary District | 0029599 | Ashland | NO LIMIT | NO LIMIT | Municipal | NO |
| Goodman Veneer and Lumber | 0065269 | Marinette | NO LIMIT | NO LIMIT | Other | NO |
| Graf Creamery | 0001732 | Shawano | NO LIMIT | NO LIMIT | NCCW | NO |
| Grand Geneva Resort & Spa | 0029327 | Walworth | NO LIMIT | NO LIMIT | Municipal | NO |
| Grand View Sanitary District | 0035131 | Bayfield | NO LIMIT | NO LIMIT | Municipal | NO |
| Hormel Foods Corporation | 0025941 | Rock | NO LIMIT | NO LIMIT | NCCW | NO |
| Kimberly Clark Corporation Marinette | 0000540 | Marinette | NO LIMIT | NO LIMIT | Paper | NO |
| Klondike Cheese Corp | 0054241 | Green | NO LIMIT | NO LIMIT | NCCW | NO |
| Knight Town of | 0028941 | Iron | NO LIMIT | NO LIMIT | Municipal | NO |
| Lake Holcombe Sanitary District #1 WWTF | 0028339 | Chippewa | NO LIMIT | NO LIMIT | Municipal | NO |

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|---|---|---|---|---|---|---|
| Lakeside Foods Inc - Eden | 0000485 | Fond du Lac | NO LIMIT | NO LIMIT | Food | NO |
| Lakeside Foods Inc - Manitowoc Plant | 0041475 | Manitowoc | NO LIMIT | NO LIMIT | NCCW | NO |
| Lakeside Foods Inc - Random Lake | 0032760 | Sheboygan | NO LIMIT | NO LIMIT | Food | NO |
| Lakewood Sanitary District No 1 | 0049841 | Oconto | NO LIMIT | NO LIMIT | Municipal | NO |
| Laona Sanitary District #1 | 0028592 | Forest | NO LIMIT | NO LIMIT | Municipal | NO |
| Maiden Rock Wastewater Treatment Facility | 0032361 | Pierce | NO LIMIT | NO LIMIT | Municipal | NO |
| Maple Grove Estates Sanitary District | 0036552 | La Crosse | NO LIMIT | NO LIMIT | Municipal | NO |
| Mellen City of | 0020311 | Ashland | NO LIMIT | NO LIMIT | Municipal | NO |
| Metallics Inc | 0054500 | La Crosse | NO LIMIT | NO LIMIT | Other | NO |
| MHC Rainbow Lake, LLC | 0030481 | Kenosha | NO LIMIT | NO LIMIT | Municipal | NO |
| Midwest Energy Resources Company | 0038946 | Douglas | NO LIMIT | NO LIMIT | Power | NO |
| Mule Hide Mfg. Company | 0003034 | Chippewa | NO LIMIT | NO LIMIT | Paper | NO |
| Northern States Power Co. a Wisconsin Corp. | 0070785 | La Crosse | NO LIMIT | NO LIMIT | NCCW | NO |
| Ogema Sanitary District | 0028461 | Price | NO LIMIT | NO LIMIT | Municipal | NO |
| Payne and Dolan, Inc. - Capitol Sand & Gravel | 0033286 | Dane | NO LIMIT | NO LIMIT | Other | NO |
| Pinewood Properties LLC | 0030911 | La Crosse | NO LIMIT | NO LIMIT | Municipal | NO |
| Port Wing Town Of | 0029670 | Bayfield | NO LIMIT | NO LIMIT | Municipal | NO |
| Premium Waters Inc | 0047147 | Oconto | NO LIMIT | NO LIMIT | Food | NO |
| Radisson Village of | 0060798 | Sawyer | NO LIMIT | NO LIMIT | Municipal | NO |
| Rockland Water Sewer Utilities WWTF | 0028967 | La Crosse | NO LIMIT | NO LIMIT | Municipal | NO |
| School District of Superior | 0035866 | Douglas | NO LIMIT | NO LIMIT | Municipal | NO |
| Sevastopol SD No. 1 WWTF | 0026654 | Door | NO LIMIT | NO LIMIT | Municipal | NO |
| Sheldon Village of | 0025453 | Rusk | NO LIMIT | NO LIMIT | Municipal | NO |
| Sinsinawa Dominicans Inc WWTF | 0030520 | Grant | NO LIMIT | NO LIMIT | Municipal | NO |
| Springside Cheese Corporation | 0053015 | Oconto | NO LIMIT | NO LIMIT | NCCW | NO |
| Suring Wastewater Treatment Facility | 0020877 | Oconto | NO LIMIT | NO LIMIT | Municipal | NO |
| Tony Village of | 0026000 | Rusk | NO LIMIT | NO LIMIT | Municipal | NO |
| UW Madison Charter Street Heating Plant | 0038296 | Dane | NO LIMIT | NO LIMIT | Power | NO |
| Wabeno Sanitary District #1 | 0022012 | Forest | NO LIMIT | NO LIMIT | Municipal | NO |
| Waupaca Foundry Inc Plant 4 | 0043699 | Marinette | NO LIMIT | NO LIMIT | NCCW | NO |

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|---|---|---|---|---|---|---|
| Wausaukee Wastewater Treatment Facility | 0060011 | Marinette | NO LIMIT | NO LIMIT | Municipal | NO |
| Whitecap Mountains Sanitary District | 0031747 | Iron | NO LIMIT | NO LIMIT | Municipal | NO |
| WI DNR Brule River State Fish Hatchery | 0004171 | Douglas | NO LIMIT | NO LIMIT | Fish | NO |
| WI DNR Les Voigt State Fish Hatchery | 0004162 | Bayfield | NO LIMIT | NO LIMIT | Fish | NO |
| WI DNR Peninsula State Park WWTF | 0029343 | Door | NO LIMIT | NO LIMIT | Municipal | NO |
| WI DOC Flambeau Correctional Center | 0030066 | Sawyer | NO LIMIT | NO LIMIT | Municipal | NO |
| WI Electric Power Co Concord Station | 0061441 | Jefferson | NO LIMIT | NO LIMIT | Power | NO |
| Wilson Wastewater Treatment Facility | 0032140 | St. Croix | NO LIMIT | NO LIMIT | Municipal | NO |
| Wisconsin Power and Light Co Columbia Energy Center | 0002780 | Columbia | NO LIMIT | NO LIMIT | Power | NO |
| Wisconsin Public Service Corp Weston | 0042765 | Marathon | NO LIMIT | NO LIMIT | Power | NO |
| Ahlstrom Munksjo NA Specialty Solutions LLC | 0000825 | Outagamie | PLANNING PHASE | 0.226 | Paper | LIKELY |
| Ahlstrom Munksjo NA Specialty Solutions, LLC | 0003026 | Oneida | PLANNING PHASE | 0.330 | Paper | LIKELY |
| Algoma Wastewater Treatment Facility | 0020745 | Kewaunee | PLANNING PHASE | 1.471 | Municipal | NO |
| Amherst Wastewater Treatment Facility | 0023213 | Portage | PLANNING PHASE | 0.362 | Municipal | LIKELY |
| Athens Wastewater Treatment Facility | 0022365 | Marathon | PLANNING PHASE | 0.274 | Municipal | LIKELY |
| Billerud Wisconsin LLC | 0037991 | Wood | PLANNING PHASE | 0.359 | Paper | LIKELY |
| Birnamwood Wastewater Treatment Facility | 0022691 | Shawano | PLANNING PHASE | 0.187 | Municipal | NO |
| Bonduelle USA Inc Fairwater | 0002666 | Fond du Lac | PLANNING PHASE | 0.282 | NCCW | LIKELY |
| Bowler Wastewater Treatment Facility | 0021237 | Shawano | PLANNING PHASE | 0.298 | Municipal | LIKELY |
| Brandon Wastewater Treatment Facility | 0023442 | Fond Du Lac | PLANNING PHASE | 0.651 | Municipal | NO |
| Briess Malt & Ingredients Co | 0066257 | Manitowoc | PLANNING PHASE | 0.046 | Food | LIKELY |
| Butte Des Morts Consolidated SD 1 | 0032492 | Winnebago | PLANNING PHASE | 0.293 | Municipal | LIKELY |
| Caroline SD 1 Wastewater Treatment Facility | 0022829 | Shawano | PLANNING PHASE | 0.108 | Municipal | LIKELY |
| Cedar Grove Wastewater Trtmnt Facil | 0020711 | Sheboygan | PLANNING PHASE | 0.168 | Municipal | NO |
| Chili Wastewater Treatment Facility | 0030961 | Clark | PLANNING PHASE | 0.075 | Municipal | LIKELY |
| Clintonville Wastewater Treatment Facility | 0021466 | Waupaca | PLANNING PHASE | 0.235 | Municipal | LIKELY |
| Dane County Regional Airport | 0048747 | Dane | PLANNING PHASE | 0.075 | Other | LIKELY |
| Darling Ingredients Inc | 0038083 | Green Lake | PLANNING PHASE | 0.018 | NCCW | LIKELY |
| Denmark Wastewater Treatment Facility | 0021741 | Brown | PLANNING PHASE | 0.239 | Municipal | LIKELY |
| Elk Mound Wastewater Treatment Facility | 0023914 | Dunn | PLANNING PHASE | 0.075 | Municipal | LIKELY |

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|---|---|---|---|---|---|---|
| Embarrass Cloverleaf Lakes SD | 0023949 | Waupaca | PLANNING PHASE | 0.198 | Municipal | LIKELY |
| ERCO Worldwide (USA) INC - Port Edwards | 0003565 | Wood | PLANNING PHASE | 0.112 | Other | LIKELY |
| Exceptional Living Centers - Bethel | 0031313 | Wood | PLANNING PHASE | 0.365 | Municipal | LIKELY |
| Fairwater Wastewater Treatment Facility | 0021440 | Fond Du Lac | PLANNING PHASE | 0.247 | Municipal | LIKELY |
| Freedom Sanitary District No 1 | 0020842 | Outagamie | PLANNING PHASE | 0.600 | Municipal | LIKELY |
| Fremont Orihula Wolf River Joint S C | 0026158 | Waupaca | PLANNING PHASE | 0.369 | Municipal | LIKELY |
| Friesland Wastewater Treatment Facility | 0031780 | Columbia | PLANNING PHASE | 0.313 | Municipal | LIKELY |
| GLK Foods, LLC | 0050407 | Outagamie | PLANNING PHASE | 0.130 | NCCW | LIKELY |
| Grande Cheese Company, Cst. Ingredient Div. | 0050547 | Adams | PLANNING PHASE | 0.076 | Cheese | LIKELY |
| Hewitt Sanitary District WWTP | 0031275 | Wood | PLANNING PHASE | 0.184 | Municipal | LIKELY |
| Hortonville Wastewater Treatment Facility | 0022896 | Outagamie | PLANNING PHASE | 0.356 | Municipal | LIKELY |
| Iron River National Fish Hatchery | 0044334 | Bayfield | PLANNING PHASE | 0.110 | Fish | LIKELY |
| Kiel Wastewater Treatment Facility | 0020141 | Manitowoc | PLANNING PHASE | 1.901 | Municipal | NO |
| Kingston Wastewater Treatment Facility | 0036421 | Green Lake | PLANNING PHASE | 0.165 | Municipal | LIKELY |
| Kohler Company | 0000795 | Sheboygan | PLANNING PHASE | 1.061 | Other | NO |
| La Valle Wastewater Treatment Facility | 0028878 | Sauk | PLANNING PHASE | 0.369 | Municipal | LIKELY |
| Lake Tomahawk Township Sanitary District 1 | 0036374 | Oneida | PLANNING PHASE | 0.367 | Municipal | LIKELY |
| Lakeland University | 0029335 | Sheboygan | PLANNING PHASE | 0.208 | Municipal | LIKELY |
| Leach Farms Inc | 0052809 | Waushara | PLANNING PHASE | 0.098 | NCCW | LIKELY |
| Lemberger Landfill Superfund Site | 0049573 | Manitowoc | PLANNING PHASE | 0.075 | Other | LIKELY |
| LignoTech USA, Inc. | 0003450 | Marathon | PLANNING PHASE | 0.096 | Paper | LIKELY |
| Lowell Wastewater Treatment Facility | 0029271 | Dodge | PLANNING PHASE | 1.656 | Municipal | NO |
| Lublin Village of | 0031917 | Taylor | PLANNING PHASE | 0.075 | Municipal | LIKELY |
| Manawa Wastewater Treatment Facility | 0020869 | Waupaca | PLANNING PHASE | 0.239 | Municipal | LIKELY |
| Marion Wastewater Treatment Facility | 0020770 | Waupaca | PLANNING PHASE | 0.306 | Municipal | LIKELY |
| Marshfield Wastewater Treatment Facility | 0021024 | Wood | PLANNING PHASE | 0.238 | Municipal | LIKELY |
| Merrill City of | 0020150 | Lincoln | PLANNING PHASE | 0.366 | Municipal | LIKELY |
| Montello Wastewater Treatment Facility | 0024813 | Marquette | PLANNING PHASE | 0.415 | Municipal | LIKELY |
| Neenah, Inc. Whiting | 0003611 | Portage | PLANNING PHASE | 0.380 | Paper | LIKELY |
| Neshkoro Wastewater Treatment Facility | 0060666 | Marquette | PLANNING PHASE | 0.277 | Municipal | LIKELY |

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|---|---|---|---|---|---|---|
| New London Wastewater Treatment Facility | 0024929 | Waupaca | PLANNING PHASE | 0.324 | Municipal | LIKELY |
| New Organic Digestion LLC | 0044938 | Sheboygan | PLANNING PHASE | 0.118 | NCCW | LIKELY |
| Nichols Wastewater Treatment Facility | 0020508 | Outagamie | PLANNING PHASE | 0.438 | Municipal | LIKELY |
| North Shore Helathcare WWTF | 0029718 | Shawano | PLANNING PHASE | 0.486 | Municipal | NO |
| Oakfield Wastewater Treatment Facility | 0024988 | Fond du Lac | PLANNING PHASE | 0.422 | Municipal | LIKELY |
| Omro Wastewater Treatment Facility | 0025011 | Winnebago | PLANNING PHASE | 0.228 | Municipal | LIKELY |
| Oostburg Wastewater Treatment Facility | 0022233 | Sheboygan | PLANNING PHASE | 0.192 | Municipal | LIKELY |
| Oxford Wastewater Treatment Facility | 0032077 | Marquette | PLANNING PHASE | 0.135 | Municipal | LIKELY |
| Packaging Corporation of America | 0002810 | Lincoln | PLANNING PHASE | 0.220 | Paper | LIKELY |
| Packwaukee Sanitary District No 1 | 0060933 | Marquette | PLANNING PHASE | 0.148 | Municipal | LIKELY |
| Pepin Wastewater Treatment Facility | 0022811 | Pepin | PLANNING PHASE | 0.100 | Municipal | LIKELY |
| Plastics Engineering Company | 0066681 | Sheboygan | PLANNING PHASE | 0.299 | Other | LIKELY |
| Plover Wastewater Treatment Facility | 0027995 | Portage | PLANNING PHASE | 0.205 | Municipal | LIKELY |
| Portage Wastewater Treatment Facility | 0020427 | Columbia | PLANNING PHASE | 0.366 | Municipal | LIKELY |
| Poy Sippi SD Wastewater Treatment Facility | 0031691 | Waushara | PLANNING PHASE | 0.316 | Municipal | LIKELY |
| Princeton Wastewater Treatment Facility | 0022055 | Green Lake | PLANNING PHASE | 0.303 | Municipal | LIKELY |
| Redgranite Wastewater Treatment Facility | 0020729 | Waushara | PLANNING PHASE | 0.459 | Municipal | LIKELY |
| Rib Mountain Metro Sewage District WWTF | 0035581 | Marathon | PLANNING PHASE | 0.366 | Municipal | LIKELY |
| Rio Wastewater Treatment Facility | 0020117 | Columbia | PLANNING PHASE | 0.196 | Municipal | LIKELY |
| Rock Springs Wastewater Treatment Facility | 0029041 | Sauk | PLANNING PHASE | 0.367 | Municipal | LIKELY |
| Rosendale Wastewater Treatment Facility | 0028428 | Fond Du Lac | PLANNING PHASE | 0.359 | Municipal | LIKELY |
| Russell Sanitary District #1 Town of | 0029319 | Lincoln | PLANNING PHASE | 0.369 | Municipal | LIKELY |
| Saputo Cheese USA Inc Reedsburg | 0059404 | Sauk | PLANNING PHASE | 0.064 | NCCW | LIKELY |
| Sartori Company | 0032794 | Langlade | PLANNING PHASE | 0.100 | NCCW | LIKELY |
| Seneca Foods Corporation | 0002160 | Dodge | PLANNING PHASE | 0.075 | NCCW | LIKELY |
| Seymour Wastewater Treatment Facility | 0021768 | Outagamie | PLANNING PHASE | 0.199 | Municipal | LIKELY |
| Shiocton Wastewater Treatment Facility | 0028100 | Outagamie | PLANNING PHASE | 0.279 | Municipal | LIKELY |
| Silver Moon Springs LLC | 0064548 | Langlade | PLANNING PHASE | 0.064 | Fish | LIKELY |
| St Nazianz Wastewater Treatment Facility | 0022195 | Manitowoc | PLANNING PHASE | 0.804 | Municipal | NO |
| Stephensville Sanitary District No 1 | 0032531 | Outagamie | PLANNING PHASE | 0.355 | Municipal | LIKELY |

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|---|---|---|---|---|---|---|
| Stevens Point Wastewater Treatment Facility | 0029572 | Portage | MINOR FACILITY UPGRADE | 0.366 | Municipal | LIKELY |
| Sullivan Twn Sanitary District #1 WWTF | 0031844 | Jefferson | PLANNING PHASE | 0.667 | Municipal | NO |
| Three Lakes Sanitary District #1 | 0022853 | Oneida | PLANNING PHASE | 0.367 | Municipal | LIKELY |
| Tigerton Wastewater Treatment Facility | 0022349 | Shawano | PLANNING PHASE | 0.393 | Municipal | LIKELY |
| Verso Minnesota Wisconsin - Water Renewal Center | 0003468 | Portage | PLANNING PHASE | 0.294 | Paper | LIKELY |
| Waldo Wastewater Utility | 0022471 | Sheboygan | PLANNING PHASE | 0.204 | Municipal | LIKELY |
| Waupaca Wastewater Treatment Facility | 0030490 | Waupaca | PLANNING PHASE | 0.308 | Municipal | LIKELY |
| Wausau Water Works WW Treatment Facility | 0025739 | Marathon | PLANNING PHASE | 0.366 | Municipal | LIKELY |
| Weyauwega Wastewater Treatment Facility | 0020923 | Waupaca | PLANNING PHASE | 0.276 | Municipal | LIKELY |
| Whiting Wastewater Treatment Facility | 0021636 | Portage | PLANNING PHASE | 0.366 | Municipal | LIKELY |
| WI DNR Wild Rose Fish Hatchery | 0022756 | Waushara | PLANNING PHASE | 0.035 | Fish | LIKELY |
| WI DOC Lincoln Hills School | 0026701 | Lincoln | PLANNING PHASE | 0.368 | Municipal | LIKELY |
| Wild Rose Wastewater Treatment Facility | 0060071 | Waushara | PLANNING PHASE | 0.374 | Municipal | LIKELY |
| Winneconne Wastewater Treatment Facility | 0021938 | Winnebago | PLANNING PHASE | 0.430 | Municipal | LIKELY |
| Wisconsin Electric Power Company Germantown | 0042757 | Washington | PLANNING PHASE | 0.300 | Power | LIKELY |
| Wisconsin Rapids WWTF | 0025844 | Wood | PLANNING PHASE | 0.366 | Municipal | LIKELY |
| Wisconsin Veneer and Plywood Inc | 0047929 | Shawano | PLANNING PHASE | 0.070 | Other | LIKELY |
| Wittenberg Wastewater Treatment Facility | 0028444 | Shawano | PLANNING PHASE | 0.330 | Municipal | LIKELY |
| Wolf Treatment Plant | 0028452 | Shawano | PLANNING PHASE | 0.218 | Municipal | LIKELY |
| Burnett Sanitary District #1 WWTF | 0031551 | Dodge | REGIONALIZE | 0.498 | Municipal | NO |
| Maple Island Inc | 0003883 | Taylor | REGIONALIZE | 0.075 | Food | NO |
| Orchard Manor Wastewater Treatment Facility | 30503 | Grant | REGIONALIZE | 0.075 | Municipal | NO |
| Salem Lakes, Village | 0020851 | Kenosha | REGIONALIZE | 0.100 | Municipal | NO |
| SPF North America, Inc. | 0062146 | Buffalo | REGIONALIZE | 0.078 | NCCW | NO |
| Sullivan Wastewater Treatment Facility | 0025585 | Jefferson | REGIONALIZE | 0.075 | Municipal | NO |
| Superior Refining Company- Husky Superior Refinery | 0003085 | Douglas | REGIONALIZE | 0.075 | Other | NO |
| Superior Village of | 0030431 | Douglas | OUTFALL RELOCATION | 1.100 | Municipal | NO |
| Amery City of | 0020125 | Polk | TBEL ONLY | 1.916 | Municipal | NO |
| Boscobel Wastewater Treatment Facility | 0022110 | Grant | TBEL ONLY | 87.000 | Municipal | NO |
| Boyceville Wastewater Treatment Facility | 0060330 | Dunn | TBEL ONLY | 1.000 | Municipal | NO |

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|---|---|---|---|---|---|---|
| Cascades Tissue Group Wisconsin Inc | 0003077 | Eau Claire | TBEL ONLY | 1.900 | Paper | NO |
| Chippewa Falls WWTF | 0023604 | Chippewa | TBEL ONLY | 8.200 | Municipal | NO |
| Christmas Mountain Sanitary District WWTF | 0036064 | Sauk | TBEL ONLY | 1.000 | Municipal | NO |
| Durand Wastewater Treatment Facility | 0030899 | Pepin | TBEL ONLY | 1.000 | Municipal | NO |
| Eastman Wastewater Treatment Facility | 0036765 | Crawford | TBEL ONLY | 2.300 | Municipal | NO |
| Eau Claire Wastewater Treatment Facility | 0023850 | Eau Claire | TBEL ONLY | 1.000 | Municipal | NO |
| Fairchild Wastewater Treatment Fac | 0036200 | Eau Claire | TBEL ONLY | 1.000 | Municipal | NO |
| Flambeau River Papers LLC | 0003212 | Price | TBEL ONLY | 2.610 | Paper | NO |
| Ladysmith City of | 0021326 | Rusk | TBEL ONLY | 19.000 | Municipal | NO |
| Marinette Wastewater Utility | 0026182 | Marinette | TBEL ONLY | 15.750 | Municipal | NO |
| Niagara Wastewater Treatment Facility | 0029467 | Marinette | TBEL ONLY | 72.000 | Municipal | NO |
| Oconto Falls Wastewater Treatment Facility | 0022870 | Oconto | TBEL ONLY | 16.000 | Municipal | NO |
| Oconto Utility Commission WWTF | 0022861 | Oconto | TBEL ONLY | 1.000 | Municipal | NO |
| Osceola Village of | 0025020 | Polk | TBEL ONLY | 1.481 | Municipal | NO |
| Park Falls City of | 0029033 | Price | TBEL ONLY | 2.700 | Municipal | NO |
| Peshtigo Wastewater Treatment Facility | 0030651 | Marinette | TBEL ONLY | 3.390 | Municipal | NO |
| Somerset Wastewater Treatment Facility | 0030252 | St. Croix | TBEL ONLY | 1.883 | Municipal | NO |
| Spring Green Wastewater Treatment Facility | 0060801 | Sauk | TBEL ONLY | 43.600 | Municipal | NO |
| St Croix Falls City of | 0020796 | Polk | TBEL ONLY | 1.131 | Municipal | NO |
| ST Paper LLC | 0000531 | Oconto | TBEL ONLY | 7.350 | Paper | NO |
| Tyco Fire Products LP | 0001040 | Marinette | TBEL ONLY | 1.000 | Other | NO |
| WE Pleasant Prairie Power Plant | 0043583 | Kenosha | TBEL ONLY | 1.000 | Power | NO |
| Westby Coop Creamery | 0070645 | Vernon | TBEL ONLY | 1.000 | Cheese | NO |
| Westby Wastewater Treatment Facility | 0021792 | Vernon | TBEL ONLY | 1.000 | Municipal | NO |
| WI DNR St Croix Falls Hatchery | 0004201 | Polk | TBEL ONLY | 1.000 | Fish | NO |
| Wisconsin Electric Power Company Valley Power | 0000931 | Milwaukee | TBEL ONLY | 1.000 | Power | NO |
| Albany Wastewater Treatment Facility | 0021199 | Green | WATER QUALITY TRADING | 0.000 | Municipal | NO |
| Arcadia Wastewater Treatment Facility | 0023230 | Trempealeau | WATER QUALITY TRADING | 0.100 | Municipal | NO |
| Baker Cheese Factory Inc | 0050521 | Fond du Lac | WATER QUALITY TRADING | 0.573 | Cheese | NO |
| Bangor Wastewater Treatment Facility | 0031224 | La Crosse | WATER QUALITY TRADING | 0.100 | Municipal | NO |

| Facility Name | Permit Number | County | Phosphorus Planning Outcome | Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent) | MDV Category | Major Facility Upgrade Required? |
|---|---|---|---|---|---|---|
| BelGioioso Cheese Inc | 0027201 | Calumet | WATER QUALITY TRADING | 0.323 | Cheese | NO |
| BelGioioso Cheese Inc Chase Plant | 0065579 | Oconto | WATER QUALITY TRADING | 0.075 | Cheese | NO |
| BelGioioso Cheese Inc Freedom Plant | 0066176 | Outagamie | WATER QUALITY TRADING | 0.000 | Cheese | NO |
| Belleville Wastewater Treatment Facility | 0023361 | Dane | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| Belmont Wastewater Treatment Facility | 0020419 | Lafayette | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| Beloit Town Wastewater Treatment Facility | 0026930 | Rock | WATER QUALITY TRADING | 0.201 | Municipal | NO |
| Beloit Wastewater Treatment Facility | 0023370 | Rock | WATER QUALITY TRADING | 0.201 | Municipal | NO |
| Bemis Manufacturing Company Plant D | 0027456 | Sheboygan | WATER QUALITY TRADING | 0.059 | NCCW | NO |
| Bloomington Wastewater Treatment Facility | 0023400 | Grant | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| Brodhead Wastewater Treatment Facility | 0021903 | Green | WATER QUALITY TRADING | 0.100 | Municipal | NO |
| Brooklyn Wastewater Treatment Facility | 0023485 | Green | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| Cassville Wastewater Treatment Facility | 0021423 | Grant | WATER QUALITY TRADING | 0.100 | Municipal | NO |
| Columbus Wastewater Treatment Facility | 0021008 | Dodge | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| Conrath Village of | 0032522 | Rusk | WATER QUALITY TRADING | 1.400 | Municipal | NO |
| Cross Plains Wastewater Treatment Facility | 0020788 | Dane | WATER QUALITY TRADING | 0.310 | Municipal | NO |
| Darlington Wastewater Treatment Facility | 0021016 | Lafayette | WATER QUALITY TRADING | 0.000 | Municipal | NO |
| Eleva Strum Joint Sewerage Commission WWTF | 0064998 | Trempealeau | WATER QUALITY TRADING | 0.100 | Municipal | NO |
| Fontana Walworth WPCC | 0036021 | Walworth | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| Great Lakes Investors LLC WWTF | 0060607 | Jefferson | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| Greenwood Wastewater Treatment Facility | 0020249 | Clark | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| Hawkins Village of | 0024201 | Rusk | WATER QUALITY TRADING | 0.119 | Municipal | NO |
| Janesville Wastewater Utility | 0030350 | Rock | WATER QUALITY TRADING | 0.108 | Municipal | NO |
| Kieler Sanitary District No 1 WWTF | 0029289 | Grant | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| LaGranders Hillside Dairy Inc | 0054364 | Clark | WATER QUALITY TRADING | 0.060 | NCCW | NO |
| Loganville Wastewater Treatment Facility | 0029114 | Sauk | WATER QUALITY TRADING | 0.737 | Municipal | NO |
| Mineral Point Wastewater Treatment Facility | 0024791 | Iowa | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| Monroe Wastewater Treatment Facility | 0020362 | Green | WATER QUALITY TRADING | 0.092 | Municipal | NO |
| Montfort Wastewater Treatment Facility | 0024821 | Grant | WATER QUALITY TRADING | 0.540 | Municipal | NO |
| Monticello Wastewater Treatment Facility | 0024830 | Green | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| Nasco Education LLC | 0058220 | Jefferson | WATER QUALITY TRADING | 0.471 | Fish | NO |

| Facility Name | Permit Number | County | Phosphorus Planning Outcome | Phosphorus Limit (mg/L) (Lowest of TBEL, NR 217.13 WQBEL, or TMDL-equivalent) | MDV Category | Major Facility Upgrade Required? |
|---|---|---|---|---|---|---|
| Norway Tn Sanitary District 1 Wwtf | 0031470 | Racine | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| Phillips Plating Corporation | 0041149 | Price | WATER QUALITY TRADING | 0.040 | Other | NO |
| Prairie du Chien Wastewater Treatment Fac. | 0020257 | Crawford | WATER QUALITY TRADING | 0.015 | Municipal | NO |
| Seneca Foods Corporation Mayville | 0050822 | Dodge | WATER QUALITY TRADING | 0.015 | Food | NO |
| Sextonville Sanitary District #1 WWTF | 0060038 | Richland | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| Slinger Wastewater Treatment Facility | 0020290 | Washington | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| Spencer Wastewater Treatment Facility | 0021521 | Marathon | WATER QUALITY TRADING | 0.177 | Municipal | NO |
| Springfield Clean Water LLC | 0065889 | Dane | WATER QUALITY TRADING | 0.000 | Other | NO |
| Stratford Wastewater Treatment Facility | 0025569 | Marathon | WATER QUALITY TRADING | 0.162 | Municipal | NO |
| Superior Fresh, LLC | 0065200 | Jackson | WATER QUALITY TRADING | 0.000 | Food | NO |
| Viroqua Wastewater Treatment Facility | 0021920 | Vernon | WATER QUALITY TRADING | 0.180 | Municipal | NO |
| VPP Group, LLC | 0052931 | Monroe | WATER QUALITY TRADING | 0.075 | Food | NO |
| Wauzeka Wastewater Treatment Facility | 0022276 | Crawford | WATER QUALITY TRADING | 0.100 | Municipal | NO |
| Watertown Wastewater Treatment Facility | 0028541 | Jefferson | WATER QUALITY TRADING | 0.282 | Municipal | NO |
| West Salem Wastewater Treatment Facility | 0020389 | La Crosse | WATER QUALITY TRADING | 0.100 | Municipal | NO |
| Weyerhaeuser Village of | 0020761 | Rusk | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| WI DNR Bong Recreation Area | 0031887 | Kenosha | WATER QUALITY TRADING | 0.075 | Municipal | NO |
| WI DNR Devils Lake State Park | 0060241 | Sauk | WATER QUALITY TRADING | 0.100 | Other | NO |
| Wisconsin Electric Power Co -Tn of Paris | 0049131 | Kenosha | WATER QUALITY TRADING | 0.075 | Power | NO |
| Wisconsin Whey Protein LLC | 0066371 | Lafayette | WATER QUALITY TRADING | 0.075 | Cheese | NO |
| WPL - Riverside Energy Center | 0061921 | Rock | WATER QUALITY TRADING | 0.000 | Power | NO |

# Appendix B. Secondary Indicator Scores for Municipal POTWs

Last Revised: August 2023

The following table provides the secondary indicator score for municipal POTWs as described in the Final Economic Determination. Please refer to Section 5 of that report for details on each economic metric, why it was selected, and how the scoring process worked. All shaded cells in this table indicate that the cell value exceeds the indicator threshold, and contributes to the secondary indicator value. The total secondary indicator value in the last column of this table provides the secondary indicator total, which is the value used to determine eligibility for the MDV.

| | Personal Current Transfer Receipts Share of Total Income 2021 [1] | Jobs per Square Mile [2] | Population Change 2011 - 2021 [3] | Net Earnings Change 2011-2021 [4] **(2points)** | Job Growth 2011-2021 [5] | Secondary Indicator Score |
|---|---|---|---|---|---|---|
| Adams | 38.2% | 6 | 0.19% | 28.7% | - 0.3% | 6 |
| Ashland | 36.3% | 8 | -0.78% | 25.7% | - 5.6% | 6 |
| Barron | 27.5% | 25 | 2.16% | 30.0% | 1.5% | 6 |
| Bayfield | 30.8% | 3 | 7.59% | 32.5% | 4.1% | 5 |
| Brown | 19.2% | 294 | 9.14% | 37.8% | 7.5% | 2 |
| Buffalo | 27.5% | 6 | -2.55% | 26.9% | - 9.6% | 6 |
| Burnett | 36.4% | 6 | 7.30% | 32.7% | 2.2% | 5 |
| Calumet | 17.0% | 50 | 11.86% | 39.2% | 28.3% | 3 |
| Chippewa | 24.9% | 25 | 6.86% | 38.5% | 13.5% | 4 |
| Clark | 26.1% | 9 | 0.27% | 47.5% | 7.5% | 5 |
| Columbia | 20.6% | 29 | 3.15% | 39.3% | 7.2% | 4 |
| Crawford | 32.0% | 12 | -3.06% | 28.6% | - 7.6% | 6 |
| Dane | 14.0% | 291 | 18.43% | 62.7% | 14.4% | 0 |
| Dodge | 23.9% | 41 | 0.15% | 26.7% | 4.6% | 6 |
| Door | 24.1% | 31 | 8.83% | 41.7% | 5.8% | 5 |
| Douglas | 31.5% | 13 | 0.81% | 32.6% | 2.7% | 6 |
| Dunn | 25.9% | 21 | 3.65% | 30.9% | 5.4% | 5 |
| Eau Claire | 22.0% | 91 | 8.82% | 33.2% | 3.0% | 4 |
| Florence | 26.4% | 2 | 4.98% | 44.3% | 2.2% | 5 |
| Fond du Lac | 23.2% | 65 | 2.16% | 38.8% | 4.6% | 5 |
| Forest | 37.8% | 3 | -0.08% | 29.8% | - 5.1% | 6 |
| Grant | 24.4% | 15 | -0.52% | 40.4% | 1.6% | 6 |
| Green | 20.9% | 26 | 1.58% | 32.3% | 2.6% | 5 |
| Green Lake | 29.0% | 17 | -0.08% | 12.9% | - 10.5% | 6 |
| Iowa | 21.1% | 14 | 0.89% | 36.3% | 0.2% | 5 |
| Iron | 35.5% | 2 | 4.83% | 29.5% | - 1.8% | 5 |
| Jackson | 28.0% | 8 | 2.90% | 17.6% | - 7.0% | 6 |
| Jefferson | 23.0% | 62 | 3.24% | 35.1% | 3.7% | 5 |

| | Personal Current Transfer Receipts Share of Total Income 2021 [1] | Jobs per Square Mile [2] | Population Change 2011 - 2021 [3] | Net Earnings Change 2011-2021 [4] **(2points)** | Job Growth 2011-2021 [5] | Secondary Indicator Score |
|---|---|---|---|---|---|---|
| Juneau | 32.5% | 12 | -0.11% | 25.6% | 0.3% | 6 |
| Kenosha | 21.9% | 263 | 2.07% | 48.0% | 29.1% | 4 |
| Kewaunee | 23.4% | 19 | -0.08% | 25.2% | - 9.3% | 6 |
| La Crosse | 21.4% | 152 | 5.67% | 42.8% | 4.7% | 3 |
| Lafayette | 23.7% | 7 | -1.46% | 22.5% | 7.9% | 5 |
| Langlade | 34.6% | 8 | -2.13% | 26.7% | - 2.4% | 6 |
| Lincoln | 30.1% | 12 | -1.47% | 31.8% | - 3.7% | 6 |
| Manitowoc | 26.6% | 56 | 0.01% | 14.8% | - 2.2% | 5 |
| Marathon | 21.0% | 46 | 3.48% | 40.5% | 5.3% | 4 |
| Marinette | 33.4% | 13 | 0.47% | 31.1% | - 4.0% | 6 |
| Marquette | 32.7% | 9 | 1.55% | 33.9% | 1.5% | 6 |
| Menominee | 39.7% | 5 | 1.23% | 63.5% | - 5.9% | 4 |
| Milwaukee | 27.5% | 1924 | -0.93% | 28.7% | 1.6% | 5 |
| Monroe | 27.4% | 23 | 3.64% | 36.4% | 4.1% | 5 |
| Oconto | 25.8% | 9 | 3.91% | 37.4% | 3.0% | 5 |
| Oneida | 31.1% | 15 | 5.21% | 28.7% | - 1.0% | 5 |
| Outagamie | 18.7% | 168 | 8.30% | 41.1% | 5.9% | 3 |
| Ozaukee | 12.5% | 174 | 6.91% | 31.7% | 6.4% | 3 |
| Pepin | 27.7% | 10 | -1.46% | 35.1% | 1.0% | 6 |
| Pierce | 20.0% | 19 | 3.16% | 39.5% | - 0.1% | 5 |
| Polk | 27.9% | 18 | 2.50% | 38.2% | 5.0% | 6 |
| Portage | 23.7% | 42 | 0.50% | 37.4% | 5.6% | 6 |
| Price | 36.0% | 4 | -0.21% | 13.0% | - 8.4% | 6 |
| Racine | 24.1% | 222 | 1.41% | 27.4% | 1.3% | 5 |
| Richland | 30.2% | 10 | -4.22% | 29.5% | - 3.7% | 6 |
| Rock | 25.3% | 93 | 3.02% | 42.3% | 9.8% | 4 |
| Rusk | 33.4% | 5 | -3.61% | 49.2% | - 1.7% | 6 |
| St. Croix | 15.8% | 43 | 13.45% | 56.5% | 16.8% | 1 |
| Sauk | 21.0% | 29 | 7.26% | 67.3% | - 3.5% | 2 |
| Sawyer | 34.6% | 8 | 8.61% | 31.7% | - 1.9% | 5 |
| Shawano | 29.0% | 24 | -1.74% | 32.0% | - 1.6% | 6 |
| Sheboygan | 21.4% | 83 | 2.79% | 35.1% | 4.9% | 4 |
| Taylor | 27.1% | 8 | -3.48% | 33.4% | 0.6% | 6 |
| Trempealeau | 27.4% | 17 | 6.55% | 28.3% | - 6.4% | 5 |
| Vernon | 28.0% | 11 | 3.68% | 33.9% | 1.1% | 5 |
| Vilas | 32.1% | 10 | 7.70% | 45.6% | 8.2% | 4 |
| Walworth | 20.6% | 78 | 3.51% | 48.2% | 9.8% | 2 |

| | Personal Current Transfer Receipts Share of Total Income 2021 [1] | Jobs per Square Mile [2] | Population Change 2011 - 2021 [3] | Net Earnings Change 2011-2021 [4] **(2points)** | Job Growth 2011-2021 [5] | Secondary Indicator Score |
|---|---|---|---|---|---|---|
| Washburn | 35.6% | 7 | 4.70% | 34.0% | 0.2% | 5 |
| Washington | 17.7% | 133 | 4.34% | 35.1% | 11.0% | 2 |
| Waukesha | 14.2% | 446 | 5.08% | 38.9% | 8.3% | 2 |
| Waupaca | 29.3% | 25 | -0.14% | 24.7% | - 6.7% | 6 |
| Waushara | 31.9% | 10 | -0.06% | 24.0% | 3.4% | 6 |
| Winnebago | 21.5% | 214 | 2.89% | 34.7% | 3.0% | 4 |
| Wood | 28.2% | 46 | -0.52% | 23.8% | - 3.3% | 6 |
| Threshold | U.S. = 21.7% | WI =51.7 | 1/2 U.S = 3.2% | U.S = 49.4% | 1/2 U.S = 7.1% | |

[1] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.

[2] Jobs from WI DWD Quarterly Census of Employment and Wages; land area from U.S. Census Bureau, County Quick Facts.

[3] WI DOA Demographic Services Center; www.doa.state.wi.us/demographics.

[4] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.

[5] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.

# Appendix C. Secondary Indicator Scores for Cheese Manufacturers

*Last Revised: August 2023*

The following table provides the secondary score for cheese manufacturers as described in the Final Economic Determination. Please refer to Section 5 of that report for details on each economic metric, why it was selected, and how the scoring process worked. All shaded cells in this table indicate that the cell value exceeds the indicator threshold, and contributes to the secondary indicator value. The total secondary indicator value in the last column of this table provides the secondary indicator total, which is the value used to determine eligibility for the MDV.

*Note: This information will be updated as new information becomes available.*

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Adams | $ 51,878.00 | 38.2% | 6 | 0.19% | 28.7% | - 0.3% | | 7 |
| Ashland | $ 55,070.00 | 36.3% | 8 | -0.78% | 25.7% | - 5.6% | | 7 |
| Barron | $ 55,256.00 | 27.5% | 25 | 2.16% | 30.0% | 1.5% | | 7 |
| Bayfield | $ 62,859.00 | 30.8% | 3 | 7.59% | 32.5% | 4.1% | | 6 |
| Brown | $ 68,799.00 | 19.2% | 294 | 9.14% | 37.8% | 7.5% | | 3 |
| Buffalo | $ 61,167.00 | 27.5% | 6 | -2.55% | 26.9% | - 9.6% | | 7 |
| Burnett | $ 55,890.00 | 36.4% | 6 | 7.30% | 32.7% | 2.2% | | 6 |
| Calumet | $ 78,453.00 | 17.0% | 50 | 11.86% | 39.2% | 28.3% | 3.55% | 5 |
| Chippewa | $ 63,172.00 | 24.9% | 25 | 6.86% | 38.5% | 13.5% | | 5 |
| Clark | $ 57,547.00 | 26.1% | 9 | 0.27% | 47.5% | 7.5% | 3.75% | 8 |
| Columbia | $ 73,786.00 | 20.6% | 29 | 3.15% | 39.3% | 7.2% | | 4 |
| Crawford | $ 54,526.00 | 32.0% | 12 | -3.06% | 28.6% | - 7.6% | | 7 |
| Dane | $ 78,452.00 | 14.0% | 291 | 18.43% | 62.7% | 14.4% | | 0 |
| Dodge | $ 66,403.00 | 23.9% | 41 | 0.15% | 26.7% | 4.6% | 2.95% | 9 |
| Door | $ 63,856.00 | 24.1% | 31 | 8.83% | 41.7% | 5.8% | | 6 |
| Douglas | $ 59,688.00 | 31.5% | 13 | 0.81% | 32.6% | 2.7% | | 7 |
| Dunn | $ 64,420.00 | 25.9% | 21 | 3.65% | 30.9% | 5.4% | | 6 |
| Eau Claire | $ 64,777.00 | 22.0% | 91 | 8.82% | 33.2% | 3.0% | | 5 |
| Florence | $ 52,143.00 | 26.4% | 2 | 4.98% | 44.3% | 2.2% | | 6 |
| Fond du Lac | $ 66,390.00 | 23.2% | 65 | 2.16% | 38.8% | 4.6% | | 6 |
| Forest | $ 51,959.00 | 37.8% | 3 | -0.08% | 29.8% | - 5.1% | | 7 |
| Grant | $ 58,289.00 | 24.4% | 15 | -0.52% | 40.4% | 1.6% | 18.94% | 9 |
| Green | $ 70,267.00 | 20.9% | 26 | 1.58% | 32.3% | 2.6% | 2.09% | 7 |
| Green Lake | $ 60,597.00 | 29.0% | 17 | -0.08% | 12.9% | -10.5% | | 7 |
| Iowa | $ 73,716.00 | 21.1% | 14 | 0.89% | 36.3% | 0.2% | | 5 |
| Iron | $ 48,908.00 | 35.5% | 2 | 4.83% | 29.5% | - 1.8% | | 6 |
| Jackson | $ 59,422.00 | 28.0% | 8 | 2.90% | 17.6% | - 7.0% | | 7 |
| Jefferson | $ 71,735.00 | 23.0% | 62 | 3.24% | 35.1% | 3.7% | | 5 |

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Juneau | $ 58,561.00 | 32.5% | 12 | -0.11% | 25.6% | 0.3% | | 7 |
| Kenosha | $ 70,073.00 | 21.9% | 263 | 2.07% | 48.0% | 29.1% | | 4 |
| Kewaunee | $ 72,328.00 | 23.4% | 19 | -0.08% | 25.2% | - 9.3% | | 6 |
| La Crosse | $ 62,817.00 | 21.4% | 152 | 5.67% | 42.8% | 4.7% | | 4 |
| Lafayette | $ 65,009.00 | 23.7% | 7 | -1.46% | 22.5% | 7.9% | | 6 |
| Langlade | $ 53,313.00 | 34.6% | 8 | -2.13% | 26.7% | - 2.4% | | 7 |
| Lincoln | $ 61,363.00 | 30.1% | 12 | -1.47% | 31.8% | - 3.7% | | 7 |
| Manitowoc | $ 61,454.00 | 26.6% | 56 | 0.01% | 14.8% | - 2.2% | | 6 |
| Marathon | $ 67,940.00 | 21.0% | 46 | 3.48% | 40.5% | 5.3% | | 5 |
| Marinette | $ 55,694.00 | 33.4% | 13 | 0.47% | 31.1% | - 4.0% | | 7 |
| Marquette | $ 55,386.00 | 32.7% | 9 | 1.55% | 33.9% | 1.5% | | 7 |
| Menominee | $ 54,940.00 | 39.7% | 5 | 1.23% | 63.5% | - 5.9% | | 5 |
| Milwaukee | $ 54,793.00 | 27.5% | 1924 | -0.93% | 28.7% | 1.6% | | 6 |
| Monroe | $ 63,061.00 | 27.4% | 23 | 3.64% | 36.4% | 4.1% | | 6 |
| Oconto | $ 68,426.00 | 25.8% | 9 | 3.91% | 37.4% | 3.0% | | 6 |
| Oneida | $ 62,660.00 | 31.1% | 15 | 5.21% | 28.7% | - 1.0% | | 6 |
| Outagamie | $ 72,695.00 | 18.7% | 168 | 8.30% | 41.1% | 5.9% | | 3 |
| Ozaukee | $ 86,915.00 | 12.5% | 174 | 6.91% | 31.7% | 6.4% | | 3 |
| Pepin | $ 63,015.00 | 27.7% | 10 | -1.46% | 35.1% | 1.0% | | 7 |
| Pierce | $ 78,341.00 | 20.0% | 19 | 3.16% | 39.5% | - 0.1% | | 5 |
| Polk | $ 67,878.00 | 27.9% | 18 | 2.50% | 38.2% | 5.0% | | 7 |
| Portage | $ 65,550.00 | 23.7% | 42 | 0.50% | 37.4% | 5.6% | | 7 |
| Price | $ 52,052.00 | 36.0% | 4 | -0.21% | 13.0% | - 8.4% | | 7 |
| Racine | $ 67,224.00 | 24.1% | 222 | 1.41% | 27.4% | 1.3% | | 6 |
| Richland | $ 56,089.00 | 30.2% | 10 | -4.22% | 29.5% | - 3.7% | | 7 |
| Rock | $ 65,518.00 | 25.3% | 93 | 3.02% | 42.3% | 9.8% | | 5 |
| Rusk | $ 51,978.00 | 33.4% | 5 | -3.61% | 49.2% | - 1.7% | | 7 |
| St. Croix | $ 91,320.00 | 15.8% | 43 | 13.45% | 56.5% | 16.8% | | 1 |
| Sauk | $ 67,702.00 | 21.0% | 29 | 7.26% | 67.3% | - 3.5% | 30.16% | 5 |
| Sawyer | $ 53,011.00 | 34.6% | 8 | 8.61% | 31.7% | - 1.9% | | 6 |
| Shawano | $ 59,767.00 | 29.0% | 24 | -1.74% | 32.0% | - 1.6% | | 7 |
| Sheboygan | $ 65,352.00 | 21.4% | 83 | 2.79% | 35.1% | 4.9% | 0.94% | 5 |
| Taylor | $ 56,350.00 | 27.1% | 8 | -3.48% | 33.4% | 0.6% | | 7 |
| Trempealeau | $ 64,336.00 | 27.4% | 17 | 6.55% | 28.3% | - 6.4% | | 6 |
| Vernon | $ 57,933.00 | 28.0% | 11 | 3.68% | 33.9% | 1.1% | | 6 |
| Vilas | $ 56,837.00 | 32.1% | 10 | 7.70% | 45.6% | 8.2% | | 5 |
| Walworth | $ 69,382.00 | 20.6% | 78 | 3.51% | 48.2% | 9.8% | | 2 |
| Washburn | $ 54,550.00 | 35.6% | 7 | 4.70% | 34.0% | 0.2% | | 6 |

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Washington | $ 85,574.00 | 17.7% | 133 | 4.34% | 35.1% | 11.0% | | 2 |
| Waukesha | $ 94,310.00 | 14.2% | 446 | 5.08% | 38.9% | 8.3% | | 2 |
| Waupaca | $ 65,070.00 | 29.3% | 25 | -0.14% | 24.7% | - 6.7% | | 7 |
| Waushara | $ 57,224.00 | 31.9% | 10 | -0.06% | 24.0% | 3.4% | | 7 |
| Winnebago | $ 63,938.00 | 21.5% | 214 | 2.89% | 34.7% | 3.0% | | 5 |
| Wood | $ 57,996.00 | 28.2% | 46 | -0.52% | 23.8% | - 3.3% | | 7 |
| Threshold | US= $69,021 | U.S. = 21.7% | WI =51.7 | 1/2 U.S = 3.2% | U.S = 49.4% | 1/2 U.S = 7.1% | | |

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2016-2021; Table B19013 Inflation-Adjusted Median Household Income.
[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[3] Jobs from WI DWD Quarterly Census of Employment and Wages; land area from U.S. Census Bureau, County Quick Facts.
[4] WI DOA Demographic Services Center; www.doa.state.wi.us/demographics.
[5] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[7] Wage values from U.S. Dept. of Commerce, Census Bureau; County Business Patterns.
Thresholds provided by the University of Massachusetts Donahue Institute.

# Appendix D. Secondary Indicator Scores for Food Processors

*Last Revised: August 2023*

The following table provides the secondary indicator score for food processors as described in the Final Economic Determination. Please refer to Section 5 of that report for details on each economic metric, why it was selected, and how the scoring process worked. All shaded cells in this table indicate that the cell value exceeds the indicator threshold, and contributes to the secondary indicator value. The total secondary indicator value in the last column of this table provides the secondary indicator total, which is the value used to determine eligibility for the MDV.

*Note: This information will be updated as new information becomes available.*

**Table 9. Food Processors' Secondary Indicators**

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Adams | $ 51,878.00 | 38.2% | 6 | 0.19% | 28.7% | - 0.3% | | 7 |
| Ashland | $ 55,070.00 | 36.3% | 8 | -0.78% | 25.7% | - 5.6% | | 7 |
| Barron | $ 55,256.00 | 27.5% | 25 | 2.16% | 30.0% | 1.5% | 4.83% | 9 |
| Bayfield | $ 62,859.00 | 30.8% | 3 | 7.59% | 32.5% | 4.1% | | 6 |
| Brown | $ 68,799.00 | 19.2% | 294 | 9.14% | 37.8% | 7.5% | | 3 |
| Buffalo | $ 61,167.00 | 27.5% | 6 | -2.55% | 26.9% | - 9.6% | | 7 |
| Burnett | $ 55,890.00 | 36.4% | 6 | 7.30% | 32.7% | 2.2% | | 6 |
| Calumet | $ 78,453.00 | 17.0% | 50 | 11.86% | 39.2% | 28.3% | | 3 |
| Chippewa | $ 63,172.00 | 24.9% | 25 | 6.86% | 38.5% | 13.5% | | 5 |
| Clark | $ 57,547.00 | 26.1% | 9 | 0.27% | 47.5% | 7.5% | | 6 |
| Columbia | $ 73,786.00 | 20.6% | 29 | 3.15% | 39.3% | 7.2% | | 4 |
| Crawford | $ 54,526.00 | 32.0% | 12 | -3.06% | 28.6% | - 7.6% | | 7 |
| Dane | $ 78,452.00 | 14.0% | 291 | 18.43% | 62.7% | 14.4% | | 0 |
| Dodge | $ 66,403.00 | 23.9% | 41 | 0.15% | 26.7% | 4.6% | | 7 |
| Door | $ 63,856.00 | 24.1% | 31 | 8.83% | 41.7% | 5.8% | | 6 |
| Douglas | $ 59,688.00 | 31.5% | 13 | 0.81% | 32.6% | 2.7% | | 7 |
| Dunn | $ 64,420.00 | 25.9% | 21 | 3.65% | 30.9% | 5.4% | | 6 |
| Eau Claire | $ 64,777.00 | 22.0% | 91 | 8.82% | 33.2% | 3.0% | | 5 |
| Florence | $ 52,143.00 | 26.4% | 2 | 4.98% | 44.3% | 2.2% | | 6 |
| Fond du Lac | $ 66,390.00 | 23.2% | 65 | 2.16% | 38.8% | 4.6% | | 6 |
| Forest | $ 51,959.00 | 37.8% | 3 | -0.08% | 29.8% | - 5.1% | | 7 |
| Grant | $ 58,289.00 | 24.4% | 15 | -0.52% | 40.4% | 1.6% | | 7 |
| Green | $ 70,267.00 | 20.9% | 26 | 1.58% | 32.3% | 2.6% | | 5 |
| Green Lake | $ 60,597.00 | 29.0% | 17 | -0.08% | 12.9% | -10.5% | | 7 |
| Iowa | $ 73,716.00 | 21.1% | 14 | 0.89% | 36.3% | 0.2% | | 5 |
| Iron | $ 48,908.00 | 35.5% | 2 | 4.83% | 29.5% | - 1.8% | | 6 |
| Jackson | $ 59,422.00 | 28.0% | 8 | 2.90% | 17.6% | - 7.0% | | 7 |

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Jefferson | $ 71,735.00 | 23.0% | 62 | 3.24% | 35.1% | 3.7% | | 5 |
| Juneau | $ 58,561.00 | 32.5% | 12 | -0.11% | 25.6% | 0.3% | | 7 |
| Kenosha | $ 70,073.00 | 21.9% | 263 | 2.07% | 48.0% | 29.1% | | 4 |
| Kewaunee | $ 72,328.00 | 23.4% | 19 | -0.08% | 25.2% | - 9.3% | | 6 |
| La Crosse | $ 62,817.00 | 21.4% | 152 | 5.67% | 42.8% | 4.7% | | 4 |
| Lafayette | $ 65,009.00 | 23.7% | 7 | -1.46% | 22.5% | 7.9% | | 6 |
| Langlade | $ 53,313.00 | 34.6% | 8 | -2.13% | 26.7% | - 2.4% | | 7 |
| Lincoln | $ 61,363.00 | 30.1% | 12 | -1.47% | 31.8% | - 3.7% | | 7 |
| Manitowoc | $ 61,454.00 | 26.6% | 56 | 0.01% | 14.8% | - 2.2% | | 6 |
| Marathon | $ 67,940.00 | 21.0% | 46 | 3.48% | 40.5% | 5.3% | | 5 |
| Marinette | $ 55,694.00 | 33.4% | 13 | 0.47% | 31.1% | - 4.0% | | 7 |
| Marquette | $ 55,386.00 | 32.7% | 9 | 1.55% | 33.9% | 1.5% | | 7 |
| Menominee | $ 54,940.00 | 39.7% | 5 | 1.23% | 63.5% | - 5.9% | | 5 |
| Milwaukee | $ 54,793.00 | 27.5% | 1924 | -0.93% | 28.7% | 1.6% | | 6 |
| Monroe | $ 63,061.00 | 27.4% | 23 | 3.64% | 36.4% | 4.1% | | 6 |
| Oconto | $ 68,426.00 | 25.8% | 9 | 3.91% | 37.4% | 3.0% | | 6 |
| Oneida | $ 62,660.00 | 31.1% | 15 | 5.21% | 28.7% | - 1.0% | | 6 |
| Outagamie | $ 72,695.00 | 18.7% | 168 | 8.30% | 41.1% | 5.9% | 1.04% | 5 |
| Ozaukee | $ 86,915.00 | 12.5% | 174 | 6.91% | 31.7% | 6.4% | 11.31% | 5 |
| Pepin | $ 63,015.00 | 27.7% | 10 | -1.46% | 35.1% | 1.0% | | 7 |
| Pierce | $ 78,341.00 | 20.0% | 19 | 3.16% | 39.5% | - 0.1% | | 5 |
| Polk | $ 67,878.00 | 27.9% | 18 | 2.50% | 38.2% | 5.0% | | 7 |
| Portage | $ 65,550.00 | 23.7% | 42 | 0.50% | 37.4% | 5.6% | | 7 |
| Price | $ 52,052.00 | 36.0% | 4 | -0.21% | 13.0% | - 8.4% | | 7 |
| Racine | $ 67,224.00 | 24.1% | 222 | 1.41% | 27.4% | 1.3% | | 6 |
| Richland | $ 56,089.00 | 30.2% | 10 | -4.22% | 29.5% | - 3.7% | | 7 |
| Rock | $ 65,518.00 | 25.3% | 93 | 3.02% | 42.3% | 9.8% | | 5 |
| Rusk | $ 51,978.00 | 33.4% | 5 | -3.61% | 49.2% | - 1.7% | | 7 |
| St. Croix | $ 91,320.00 | 15.8% | 43 | 13.45% | 56.5% | 16.8% | | 1 |
| Sauk | $ 67,702.00 | 21.0% | 29 | 7.26% | 67.3% | - 3.5% | 4.61% | 5 |
| Sawyer | $ 53,011.00 | 34.6% | 8 | 8.61% | 31.7% | - 1.9% | | 6 |
| Shawano | $ 59,767.00 | 29.0% | 24 | -1.74% | 32.0% | - 1.6% | | 7 |
| Sheboygan | $ 65,352.00 | 21.4% | 83 | 2.79% | 35.1% | 4.9% | 0.58% | 5 |
| Taylor | $ 56,350.00 | 27.1% | 8 | -3.48% | 33.4% | 0.6% | | 7 |
| Trempealeau | $ 64,336.00 | 27.4% | 17 | 6.55% | 28.3% | - 6.4% | | 6 |
| Vernon | $ 57,933.00 | 28.0% | 11 | 3.68% | 33.9% | 1.1% | | 6 |
| Vilas | $ 56,837.00 | 32.1% | 10 | 7.70% | 45.6% | 8.2% | | 5 |
| Walworth | $ 69,382.00 | 20.6% | 78 | 3.51% | 48.2% | 9.8% | | 2 |

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Washburn | $ 54,550.00 | 35.6% | 7 | 4.70% | 34.0% | 0.2% | | 6 |
| Washington | $ 85,574.00 | 17.7% | 133 | 4.34% | 35.1% | 11.0% | | 2 |
| Waukesha | $ 94,310.00 | 14.2% | 446 | 5.08% | 38.9% | 8.3% | | 2 |
| Waupaca | $ 65,070.00 | 29.3% | 25 | -0.14% | 24.7% | - 6.7% | | 7 |
| Waushara | $ 57,224.00 | 31.9% | 10 | -0.06% | 24.0% | 3.4% | | 7 |
| Winnebago | $ 63,938.00 | 21.5% | 214 | 2.89% | 34.7% | 3.0% | | 5 |
| Wood | $ 57,996.00 | 28.2% | 46 | -0.52% | 23.8% | - 3.3% | | 7 |
| Threshold | US= $69,021 | U.S. = 21.7% | WI =51.7 | 1/2 U.S = 3.2% | U.S = 49.4% | 1/2 U.S = 7.1% | | |

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2016-2021; Table B19013 Inflation-Adjusted Median Household Income.
[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[3] Jobs from WI DWD Quarterly Census of Employment and Wages; land area from U.S. Census Bureau, County Quick Facts.
[4] WI DOA Demographic Services Center; www.doa.state.wi.us/demographics.
[5] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[7] Wage values from U.S. Dept. of Commerce, Census Bureau; County Business Patterns.
Thresholds provided by the University of Massachusetts Donahue Institute.

# Appendix E. Secondary Indicator Scores for the Paper Industry

*Last Revised: August 2023*

The following table provides the secondary indicator score for paper industries as described in the Final Economic Determination. Please refer to Section 5 of that report for details on each economic metric, why it was selected, and how the scoring process worked. All shaded cells in this table indicate that the cell value exceeds the indicator threshold, and contributes to the secondary indicator value. The total secondary indicator value in the last column of this table provides the secondary indicator total, which is the value used to determine eligibility for the MDV.

*Note: This information will be updated as new information becomes available.*

**Table 10 Paper Industry Secondary Indicators**

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Adams | $ 51,878.00 | 38.2% | 6 | 0.19% | 28.7% | - 0.3% | | 7 |
| Ashland | $ 55,070.00 | 36.3% | 8 | -0.78% | 25.7% | - 5.6% | | 7 |
| Barron | $ 55,256.00 | 27.5% | 25 | 2.16% | 30.0% | 1.5% | | 7 |
| Bayfield | $ 62,859.00 | 30.8% | 3 | 7.59% | 32.5% | 4.1% | | 6 |
| Brown | $ 68,799.00 | 19.2% | 294 | 9.14% | 37.8% | 7.5% | 2.31% | 5 |
| Buffalo | $ 61,167.00 | 27.5% | 6 | -2.55% | 26.9% | - 9.6% | | 7 |
| Burnett | $ 55,890.00 | 36.4% | 6 | 7.30% | 32.7% | 2.2% | | 6 |
| Calumet | $ 78,453.00 | 17.0% | 50 | 11.86% | 39.2% | 28.3% | | 3 |
| Chippewa | $ 63,172.00 | 24.9% | 25 | 6.86% | 38.5% | 13.5% | | 5 |
| Clark | $ 57,547.00 | 26.1% | 9 | 0.27% | 47.5% | 7.5% | | 6 |
| Columbia | $ 73,786.00 | 20.6% | 29 | 3.15% | 39.3% | 7.2% | | 4 |
| Crawford | $ 54,526.00 | 32.0% | 12 | -3.06% | 28.6% | - 7.6% | | 7 |
| Dane | $ 78,452.00 | 14.0% | 291 | 18.43% | 62.7% | 14.4% | | 0 |
| Dodge | $ 66,403.00 | 23.9% | 41 | 0.15% | 26.7% | 4.6% | | 7 |
| Door | $ 63,856.00 | 24.1% | 31 | 8.83% | 41.7% | 5.8% | | 6 |
| Douglas | $ 59,688.00 | 31.5% | 13 | 0.81% | 32.6% | 2.7% | | 7 |
| Dunn | $ 64,420.00 | 25.9% | 21 | 3.65% | 30.9% | 5.4% | | 6 |
| Eau Claire | $ 64,777.00 | 22.0% | 91 | 8.82% | 33.2% | 3.0% | | 5 |
| Florence | $ 52,143.00 | 26.4% | 2 | 4.98% | 44.3% | 2.2% | | 6 |
| Fond du Lac | $ 66,390.00 | 23.2% | 65 | 2.16% | 38.8% | 4.6% | | 6 |
| Forest | $ 51,959.00 | 37.8% | 3 | -0.08% | 29.8% | - 5.1% | | 7 |
| Grant | $ 58,289.00 | 24.4% | 15 | -0.52% | 40.4% | 1.6% | | 7 |
| Green | $ 70,267.00 | 20.9% | 26 | 1.58% | 32.3% | 2.6% | | 5 |
| Green Lake | $ 60,597.00 | 29.0% | 17 | -0.08% | 12.9% | -10.5% | | 7 |
| Iowa | $ 73,716.00 | 21.1% | 14 | 0.89% | 36.3% | 0.2% | | 5 |
| Iron | $ 48,908.00 | 35.5% | 2 | 4.83% | 29.5% | - 1.8% | | 6 |

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Jackson | $ 59,422.00 | 28.0% | 8 | 2.90% | 17.6% | - 7.0% | | 7 |
| Jefferson | $ 71,735.00 | 23.0% | 62 | 3.24% | 35.1% | 3.7% | | 5 |
| Juneau | $ 58,561.00 | 32.5% | 12 | -0.11% | 25.6% | 0.3% | | 7 |
| Kenosha | $ 70,073.00 | 21.9% | 263 | 2.07% | 48.0% | 29.1% | | 4 |
| Kewaunee | $ 72,328.00 | 23.4% | 19 | -0.08% | 25.2% | - 9.3% | | 6 |
| La Crosse | $ 62,817.00 | 21.4% | 152 | 5.67% | 42.8% | 4.7% | | 4 |
| Lafayette | $ 65,009.00 | 23.7% | 7 | -1.46% | 22.5% | 7.9% | | 6 |
| Langlade | $ 53,313.00 | 34.6% | 8 | -2.13% | 26.7% | - 2.4% | | 7 |
| Lincoln | $ 61,363.00 | 30.1% | 12 | -1.47% | 31.8% | - 3.7% | | 7 |
| Manitowoc | $ 61,454.00 | 26.6% | 56 | 0.01% | 14.8% | - 2.2% | | 6 |
| Marathon | $ 67,940.00 | 21.0% | 46 | 3.48% | 40.5% | 5.3% | 0.45% | 5 |
| Marinette | $ 55,694.00 | 33.4% | 13 | 0.47% | 31.1% | - 4.0% | | 7 |
| Marquette | $ 55,386.00 | 32.7% | 9 | 1.55% | 33.9% | 1.5% | | 7 |
| Menominee | $ 54,940.00 | 39.7% | 5 | 1.23% | 63.5% | - 5.9% | | 5 |
| Milwaukee | $ 54,793.00 | 27.5% | 1924 | -0.93% | 28.7% | 1.6% | | 6 |
| Monroe | $ 63,061.00 | 27.4% | 23 | 3.64% | 36.4% | 4.1% | | 6 |
| Oconto | $ 68,426.00 | 25.8% | 9 | 3.91% | 37.4% | 3.0% | | 6 |
| Oneida | $ 62,660.00 | 31.1% | 15 | 5.21% | 28.7% | - 1.0% | | 6 |
| Outagamie | $ 72,695.00 | 18.7% | 168 | 8.30% | 41.1% | 5.9% | 13.88% | 5 |
| Ozaukee | $ 86,915.00 | 12.5% | 174 | 6.91% | 31.7% | 6.4% | | 3 |
| Pepin | $ 63,015.00 | 27.7% | 10 | -1.46% | 35.1% | 1.0% | | 7 |
| Pierce | $ 78,341.00 | 20.0% | 19 | 3.16% | 39.5% | - 0.1% | | 5 |
| Polk | $ 67,878.00 | 27.9% | 18 | 2.50% | 38.2% | 5.0% | | 7 |
| Portage | $ 65,550.00 | 23.7% | 42 | 0.50% | 37.4% | 5.6% | 3.58% | 9 |
| Price | $ 52,052.00 | 36.0% | 4 | -0.21% | 13.0% | - 8.4% | | 7 |
| Racine | $ 67,224.00 | 24.1% | 222 | 1.41% | 27.4% | 1.3% | | 6 |
| Richland | $ 56,089.00 | 30.2% | 10 | -4.22% | 29.5% | - 3.7% | | 7 |
| Rock | $ 65,518.00 | 25.3% | 93 | 3.02% | 42.3% | 9.8% | | 5 |
| Rusk | $ 51,978.00 | 33.4% | 5 | -3.61% | 49.2% | - 1.7% | | 7 |
| St. Croix | $ 91,320.00 | 15.8% | 43 | 13.45% | 56.5% | 16.8% | | 1 |
| Sauk | $ 67,702.00 | 21.0% | 29 | 7.26% | 67.3% | - 3.5% | | 3 |
| Sawyer | $ 53,011.00 | 34.6% | 8 | 8.61% | 31.7% | - 1.9% | | 6 |
| Shawano | $ 59,767.00 | 29.0% | 24 | -1.74% | 32.0% | - 1.6% | | 7 |
| Sheboygan | $ 65,352.00 | 21.4% | 83 | 2.79% | 35.1% | 4.9% | | 5 |
| Taylor | $ 56,350.00 | 27.1% | 8 | -3.48% | 33.4% | 0.6% | | 7 |
| Trempealeau | $ 64,336.00 | 27.4% | 17 | 6.55% | 28.3% | - 6.4% | | 6 |
| Vernon | $ 57,933.00 | 28.0% | 11 | 3.68% | 33.9% | 1.1% | | 6 |
| Vilas | $ 56,837.00 | 32.1% | 10 | 7.70% | 45.6% | 8.2% | | 5 |

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Walworth | $ 69,382.00 | 20.6% | 78 | 3.51% | 48.2% | 9.8% | | 2 |
| Washburn | $ 54,550.00 | 35.6% | 7 | 4.70% | 34.0% | 0.2% | | 6 |
| Washington | $ 85,574.00 | 17.7% | 133 | 4.34% | 35.1% | 11.0% | | 2 |
| Waukesha | $ 94,310.00 | 14.2% | 446 | 5.08% | 38.9% | 8.3% | | 2 |
| Waupaca | $ 65,070.00 | 29.3% | 25 | -0.14% | 24.7% | - 6.7% | | 7 |
| Waushara | $ 57,224.00 | 31.9% | 10 | -0.06% | 24.0% | 3.4% | | 7 |
| Winnebago | $ 63,938.00 | 21.5% | 214 | 2.89% | 34.7% | 3.0% | | 5 |
| Wood | $ 57,996.00 | 28.2% | 46 | -0.52% | 23.8% | - 3.3% | 28.23% | 9 |
| Threshold | US= $69,021 | U.S. = 21.7% | WI =51.7 | 1/2 U.S = 3.2% | U.S = 49.4% | 1/2 U.S = 7.1% | | |

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2016-2021; Table B19013 Inflation-Adjusted Median Household Income.
[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[3] Jobs from WI DWD Quarterly Census of Employment and Wages; land area from U.S. Census Bureau, County Quick Facts.
[4] WI DOA Demographic Services Center; www.doa.state.wi.us/demographics.
[5] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.

[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[7] Wage values from U.S. Dept. of Commerce, Census Bureau; County Business Patterns.
Thresholds provided by the University of Massachusetts Donahue Institute.

# Appendix F. Secondary Screeners for Aquaculture

*Last Revised: August 2023*

The following table provides the secondary indicator score for aquaculture facilities as described in the Final Economic Determination. Please refer to Section 5 of that report for details on each economic metric, why it was selected, and how the scoring process worked. All shaded cells in this table indicate that the cell value exceeds the indicator threshold, and contributes to the secondary indicator value. The total secondary indicator value in the last column of this table provides the secondary indicator total, which is the value used to determine eligibility for the MDV.

**Table 11. Aquaculture Secondary Indicators**

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Adams | $ 51,878.00 | 38.2% | 6 | 0.19% | 28.7% | - 0.3% | | 7 |
| Ashland | $ 55,070.00 | 36.3% | 8 | -0.78% | 25.7% | - 5.6% | | 7 |
| Barron | $ 55,256.00 | 27.5% | 25 | 2.16% | 30.0% | 1.5% | | 7 |
| Bayfield | $ 62,859.00 | 30.8% | 3 | 7.59% | 32.5% | 4.1% | | 6 |
| Brown | $ 68,799.00 | 19.2% | 294 | 9.14% | 37.8% | 7.5% | | 3 |
| Buffalo | $ 61,167.00 | 27.5% | 6 | -2.55% | 26.9% | - 9.6% | | 7 |
| Burnett | $ 55,890.00 | 36.4% | 6 | 7.30% | 32.7% | 2.2% | | 6 |
| Calumet | $ 78,453.00 | 17.0% | 50 | 11.86% | 39.2% | 28.3% | | 3 |
| Chippewa | $ 63,172.00 | 24.9% | 25 | 6.86% | 38.5% | 13.5% | | 5 |
| Clark | $ 57,547.00 | 26.1% | 9 | 0.27% | 47.5% | 7.5% | | 6 |
| Columbia | $ 73,786.00 | 20.6% | 29 | 3.15% | 39.3% | 7.2% | | 4 |
| Crawford | $ 54,526.00 | 32.0% | 12 | -3.06% | 28.6% | - 7.6% | | 7 |
| Dane | $ 78,452.00 | 14.0% | 291 | 18.43% | 62.7% | 14.4% | | 0 |
| Dodge | $ 66,403.00 | 23.9% | 41 | 0.15% | 26.7% | 4.6% | | 7 |
| Door | $ 63,856.00 | 24.1% | 31 | 8.83% | 41.7% | 5.8% | | 6 |
| Douglas | $ 59,688.00 | 31.5% | 13 | 0.81% | 32.6% | 2.7% | | 7 |
| Dunn | $ 64,420.00 | 25.9% | 21 | 3.65% | 30.9% | 5.4% | | 6 |
| Eau Claire | $ 64,777.00 | 22.0% | 91 | 8.82% | 33.2% | 3.0% | | 5 |
| Florence | $ 52,143.00 | 26.4% | 2 | 4.98% | 44.3% | 2.2% | | 6 |
| Fond du Lac | $ 66,390.00 | 23.2% | 65 | 2.16% | 38.8% | 4.6% | | 6 |
| Forest | $ 51,959.00 | 37.8% | 3 | -0.08% | 29.8% | - 5.1% | | 7 |
| Grant | $ 58,289.00 | 24.4% | 15 | -0.52% | 40.4% | 1.6% | | 7 |
| Green | $ 70,267.00 | 20.9% | 26 | 1.58% | 32.3% | 2.6% | | 5 |
| Green Lake | $ 60,597.00 | 29.0% | 17 | -0.08% | 12.9% | -10.5% | | 7 |
| Iowa | $ 73,716.00 | 21.1% | 14 | 0.89% | 36.3% | 0.2% | | 5 |
| Iron | $ 48,908.00 | 35.5% | 2 | 4.83% | 29.5% | - 1.8% | | 6 |

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Jackson | $ 59,422.00 | 28.0% | 8 | 2.90% | 17.6% | - 7.0% | | 7 |
| Jefferson | $ 71,735.00 | 23.0% | 62 | 3.24% | 35.1% | 3.7% | | 5 |
| Juneau | $ 58,561.00 | 32.5% | 12 | -0.11% | 25.6% | 0.3% | | 7 |
| Kenosha | $ 70,073.00 | 21.9% | 263 | 2.07% | 48.0% | 29.1% | | 4 |
| Kewaunee | $ 72,328.00 | 23.4% | 19 | -0.08% | 25.2% | - 9.3% | | 6 |
| La Crosse | $ 62,817.00 | 21.4% | 152 | 5.67% | 42.8% | 4.7% | | 4 |
| Lafayette | $ 65,009.00 | 23.7% | 7 | -1.46% | 22.5% | 7.9% | | 6 |
| Langlade | $ 53,313.00 | 34.6% | 8 | -2.13% | 26.7% | - 2.4% | | 7 |
| Lincoln | $ 61,363.00 | 30.1% | 12 | -1.47% | 31.8% | - 3.7% | | 7 |
| Manitowoc | $ 61,454.00 | 26.6% | 56 | 0.01% | 14.8% | - 2.2% | | 6 |
| Marathon | $ 67,940.00 | 21.0% | 46 | 3.48% | 40.5% | 5.3% | | 5 |
| Marinette | $ 55,694.00 | 33.4% | 13 | 0.47% | 31.1% | - 4.0% | | 7 |
| Marquette | $ 55,386.00 | 32.7% | 9 | 1.55% | 33.9% | 1.5% | | 7 |
| Menominee | $ 54,940.00 | 39.7% | 5 | 1.23% | 63.5% | - 5.9% | | 5 |
| Milwaukee | $ 54,793.00 | 27.5% | 1924 | -0.93% | 28.7% | 1.6% | | 6 |
| Monroe | $ 63,061.00 | 27.4% | 23 | 3.64% | 36.4% | 4.1% | | 6 |
| Oconto | $ 68,426.00 | 25.8% | 9 | 3.91% | 37.4% | 3.0% | | 6 |
| Oneida | $ 62,660.00 | 31.1% | 15 | 5.21% | 28.7% | - 1.0% | | 6 |
| Outagamie | $ 72,695.00 | 18.7% | 168 | 8.30% | 41.1% | 5.9% | | 3 |
| Ozaukee | $ 86,915.00 | 12.5% | 174 | 6.91% | 31.7% | 6.4% | | 3 |
| Pepin | $ 63,015.00 | 27.7% | 10 | -1.46% | 35.1% | 1.0% | | 7 |
| Pierce | $ 78,341.00 | 20.0% | 19 | 3.16% | 39.5% | - 0.1% | | 5 |
| Polk | $ 67,878.00 | 27.9% | 18 | 2.50% | 38.2% | 5.0% | | 7 |
| Portage | $ 65,550.00 | 23.7% | 42 | 0.50% | 37.4% | 5.6% | | 7 |
| Price | $ 52,052.00 | 36.0% | 4 | -0.21% | 13.0% | - 8.4% | | 7 |
| Racine | $ 67,224.00 | 24.1% | 222 | 1.41% | 27.4% | 1.3% | | 6 |
| Richland | $ 56,089.00 | 30.2% | 10 | -4.22% | 29.5% | - 3.7% | | 7 |
| Rock | $ 65,518.00 | 25.3% | 93 | 3.02% | 42.3% | 9.8% | | 5 |
| Rusk | $ 51,978.00 | 33.4% | 5 | -3.61% | 49.2% | - 1.7% | | 7 |
| St. Croix | $ 91,320.00 | 15.8% | 43 | 13.45% | 56.5% | 16.8% | | 1 |
| Sauk | $ 67,702.00 | 21.0% | 29 | 7.26% | 67.3% | - 3.5% | | 3 |
| Sawyer | $ 53,011.00 | 34.6% | 8 | 8.61% | 31.7% | - 1.9% | | 6 |
| Shawano | $ 59,767.00 | 29.0% | 24 | -1.74% | 32.0% | - 1.6% | | 7 |
| Sheboygan | $ 65,352.00 | 21.4% | 83 | 2.79% | 35.1% | 4.9% | | 5 |
| Taylor | $ 56,350.00 | 27.1% | 8 | -3.48% | 33.4% | 0.6% | | 7 |
| Trempealeau | $ 64,336.00 | 27.4% | 17 | 6.55% | 28.3% | - 6.4% | | 6 |
| Vernon | $ 57,933.00 | 28.0% | 11 | 3.68% | 33.9% | 1.1% | | 6 |
| Vilas | $ 56,837.00 | 32.1% | 10 | 7.70% | 45.6% | 8.2% | | 5 |

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Capital Costs as a % of Payroll [7] **(2 points)** | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|---|
| Walworth | $ 69,382.00 | 20.6% | 78 | 3.51% | 48.2% | 9.8% | | 2 |
| Washburn | $ 54,550.00 | 35.6% | 7 | 4.70% | 34.0% | 0.2% | | 6 |
| Washington | $ 85,574.00 | 17.7% | 133 | 4.34% | 35.1% | 11.0% | | 2 |
| Waukesha | $ 94,310.00 | 14.2% | 446 | 5.08% | 38.9% | 8.3% | | 2 |
| Waupaca | $ 65,070.00 | 29.3% | 25 | -0.14% | 24.7% | - 6.7% | | 7 |
| Waushara | $ 57,224.00 | 31.9% | 10 | -0.06% | 24.0% | 3.4% | | 7 |
| Winnebago | $ 63,938.00 | 21.5% | 214 | 2.89% | 34.7% | 3.0% | | 5 |
| Wood | $ 57,996.00 | 28.2% | 46 | -0.52% | 23.8% | - 3.3% | | 7 |
| Threshold | US= $69,021 | U.S. = 21.7% | WI =51.7 | 1/2 U.S = 3.2% | U.S = 49.4% | 1/2 U.S = 7.1% | | |

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2016-2021; Table B19013 Inflation-Adjusted Median Household Income.
[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[3] Jobs from WI DWD Quarterly Census of Employment and Wages; land area from U.S. Census Bureau, County Quick Facts.
[4] WI DOA Demographic Services Center; www.doa.state.wi.us/demographics.
[5] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[7] Wage values from U.S. Dept. of Commerce, Census Bureau; County Business Patterns.
Thresholds provided by the University of Massachusetts Donahue Institute.

# Appendix G. Secondary Indicator Scores for NCCW and Industrial Discharges in the "Other" Category

*Last Revised: August 2023*

The following table provides the secondary indicator score for facilities considered to be NCCW or "other" as described in the Final Economic Determination. Please refer to Section 5 of that report for details on each economic metric, why it was selected, and how the scoring process worked. All shaded cells in this table indicate that the cell value exceeds the indicator threshold, and contributes to the secondary indicator value. The total secondary indicator value in the last column of this table provides the secondary indicator total, which is the value used to determine eligibility for the MDV.

**Table 12. Secondary Indicators for NCCW and Industrial Discharges in the "Other" Category**

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|
| Adams | $ 51,878.00 | 38.2% | 6 | 0.19% | 28.7% | - 0.3% | 7 |
| Ashland | $ 55,070.00 | 36.3% | 8 | -0.78% | 25.7% | - 5.6% | 7 |
| Barron | $ 55,256.00 | 27.5% | 25 | 2.16% | 30.0% | 1.5% | 7 |
| Bayfield | $ 62,859.00 | 30.8% | 3 | 7.59% | 32.5% | 4.1% | 6 |
| Brown | $ 68,799.00 | 19.2% | 294 | 9.14% | 37.8% | 7.5% | 3 |
| Buffalo | $ 61,167.00 | 27.5% | 6 | -2.55% | 26.9% | - 9.6% | 7 |
| Burnett | $ 55,890.00 | 36.4% | 6 | 7.30% | 32.7% | 2.2% | 6 |
| Calumet | $ 78,453.00 | 17.0% | 50 | 11.86% | 39.2% | 28.3% | 3 |
| Chippewa | $ 63,172.00 | 24.9% | 25 | 6.86% | 38.5% | 13.5% | 5 |
| Clark | $ 57,547.00 | 26.1% | 9 | 0.27% | 47.5% | 7.5% | 6 |
| Columbia | $ 73,786.00 | 20.6% | 29 | 3.15% | 39.3% | 7.2% | 4 |
| Crawford | $ 54,526.00 | 32.0% | 12 | -3.06% | 28.6% | - 7.6% | 7 |
| Dane | $ 78,452.00 | 14.0% | 291 | 18.43% | 62.7% | 14.4% | 0 |
| Dodge | $ 66,403.00 | 23.9% | 41 | 0.15% | 26.7% | 4.6% | 7 |
| Door | $ 63,856.00 | 24.1% | 31 | 8.83% | 41.7% | 5.8% | 6 |
| Douglas | $ 59,688.00 | 31.5% | 13 | 0.81% | 32.6% | 2.7% | 7 |
| Dunn | $ 64,420.00 | 25.9% | 21 | 3.65% | 30.9% | 5.4% | 6 |
| Eau Claire | $ 64,777.00 | 22.0% | 91 | 8.82% | 33.2% | 3.0% | 5 |
| Florence | $ 52,143.00 | 26.4% | 2 | 4.98% | 44.3% | 2.2% | 6 |
| Fond du Lac | $ 66,390.00 | 23.2% | 65 | 2.16% | 38.8% | 4.6% | 6 |
| Forest | $ 51,959.00 | 37.8% | 3 | -0.08% | 29.8% | - 5.1% | 7 |
| Grant | $ 58,289.00 | 24.4% | 15 | -0.52% | 40.4% | 1.6% | 7 |
| Green | $ 70,267.00 | 20.9% | 26 | 1.58% | 32.3% | 2.6% | 5 |
| Green Lake | $ 60,597.00 | 29.0% | 17 | -0.08% | 12.9% | -10.5% | 7 |
| Iowa | $ 73,716.00 | 21.1% | 14 | 0.89% | 36.3% | 0.2% | 5 |

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|
| Iron | $ 48,908.00 | 35.5% | 2 | 4.83% | 29.5% | - 1.8% | 6 |
| Jackson | $ 59,422.00 | 28.0% | 8 | 2.90% | 17.6% | - 7.0% | 7 |
| Jefferson | $ 71,735.00 | 23.0% | 62 | 3.24% | 35.1% | 3.7% | 5 |
| Juneau | $ 58,561.00 | 32.5% | 12 | -0.11% | 25.6% | 0.3% | 7 |
| Kenosha | $ 70,073.00 | 21.9% | 263 | 2.07% | 48.0% | 29.1% | 4 |
| Kewaunee | $ 72,328.00 | 23.4% | 19 | -0.08% | 25.2% | - 9.3% | 6 |
| La Crosse | $ 62,817.00 | 21.4% | 152 | 5.67% | 42.8% | 4.7% | 4 |
| Lafayette | $ 65,009.00 | 23.7% | 7 | -1.46% | 22.5% | 7.9% | 6 |
| Langlade | $ 53,313.00 | 34.6% | 8 | -2.13% | 26.7% | - 2.4% | 7 |
| Lincoln | $ 61,363.00 | 30.1% | 12 | -1.47% | 31.8% | - 3.7% | 7 |
| Manitowoc | $ 61,454.00 | 26.6% | 56 | 0.01% | 14.8% | - 2.2% | 6 |
| Marathon | $ 67,940.00 | 21.0% | 46 | 3.48% | 40.5% | 5.3% | 5 |
| Marinette | $ 55,694.00 | 33.4% | 13 | 0.47% | 31.1% | - 4.0% | 7 |
| Marquette | $ 55,386.00 | 32.7% | 9 | 1.55% | 33.9% | 1.5% | 7 |
| Menominee | $ 54,940.00 | 39.7% | 5 | 1.23% | 63.5% | - 5.9% | 5 |
| Milwaukee | $ 54,793.00 | 27.5% | 1924 | -0.93% | 28.7% | 1.6% | 6 |
| Monroe | $ 63,061.00 | 27.4% | 23 | 3.64% | 36.4% | 4.1% | 6 |
| Oconto | $ 68,426.00 | 25.8% | 9 | 3.91% | 37.4% | 3.0% | 6 |
| Oneida | $ 62,660.00 | 31.1% | 15 | 5.21% | 28.7% | - 1.0% | 6 |
| Outagamie | $ 72,695.00 | 18.7% | 168 | 8.30% | 41.1% | 5.9% | 3 |
| Ozaukee | $ 86,915.00 | 12.5% | 174 | 6.91% | 31.7% | 6.4% | 3 |
| Pepin | $ 63,015.00 | 27.7% | 10 | -1.46% | 35.1% | 1.0% | 7 |
| Pierce | $ 78,341.00 | 20.0% | 19 | 3.16% | 39.5% | - 0.1% | 5 |
| Polk | $ 67,878.00 | 27.9% | 18 | 2.50% | 38.2% | 5.0% | 7 |
| Portage | $ 65,550.00 | 23.7% | 42 | 0.50% | 37.4% | 5.6% | 7 |
| Price | $ 52,052.00 | 36.0% | 4 | -0.21% | 13.0% | - 8.4% | 7 |
| Racine | $ 67,224.00 | 24.1% | 222 | 1.41% | 27.4% | 1.3% | 6 |
| Richland | $ 56,089.00 | 30.2% | 10 | -4.22% | 29.5% | - 3.7% | 7 |
| Rock | $ 65,518.00 | 25.3% | 93 | 3.02% | 42.3% | 9.8% | 5 |
| Rusk | $ 51,978.00 | 33.4% | 5 | -3.61% | 49.2% | - 1.7% | 7 |
| St. Croix | $ 91,320.00 | 15.8% | 43 | 13.45% | 56.5% | 16.8% | 1 |
| Sauk | $ 67,702.00 | 21.0% | 29 | 7.26% | 67.3% | - 3.5% | 3 |
| Sawyer | $ 53,011.00 | 34.6% | 8 | 8.61% | 31.7% | - 1.9% | 6 |
| Shawano | $ 59,767.00 | 29.0% | 24 | -1.74% | 32.0% | - 1.6% | 7 |
| Sheboygan | $ 65,352.00 | 21.4% | 83 | 2.79% | 35.1% | 4.9% | 5 |
| Taylor | $ 56,350.00 | 27.1% | 8 | -3.48% | 33.4% | 0.6% | 7 |
| Trempealeau | $ 64,336.00 | 27.4% | 17 | 6.55% | 28.3% | - 6.4% | 6 |
| Vernon | $ 57,933.00 | 28.0% | 11 | 3.68% | 33.9% | 1.1% | 6 |

| | Median Household Income [1] | Personal Current Transfer Receipts Share of Total Income 2021 [2] | Jobs per Square Mile [3] | Population Change 2011 - 2021 [4] | Net Earnings Change 2011-2021 [5] **(2points)** | Job Growth 2011-2021 [6] | Secondary Indicator Score |
|---|---|---|---|---|---|---|---|
| Vilas | $ 56,837.00 | 32.1% | 10 | 7.70% | 45.6% | 8.2% | 5 |
| Walworth | $ 69,382.00 | 20.6% | 78 | 3.51% | 48.2% | 9.8% | 2 |
| Washburn | $ 54,550.00 | 35.6% | 7 | 4.70% | 34.0% | 0.2% | 6 |
| Washington | $ 85,574.00 | 17.7% | 133 | 4.34% | 35.1% | 11.0% | 2 |
| Waukesha | $ 94,310.00 | 14.2% | 446 | 5.08% | 38.9% | 8.3% | 2 |
| Waupaca | $ 65,070.00 | 29.3% | 25 | -0.14% | 24.7% | - 6.7% | 7 |
| Waushara | $ 57,224.00 | 31.9% | 10 | -0.06% | 24.0% | 3.4% | 7 |
| Winnebago | $ 63,938.00 | 21.5% | 214 | 2.89% | 34.7% | 3.0% | 5 |
| Wood | $ 57,996.00 | 28.2% | 46 | -0.52% | 23.8% | - 3.3% | 7 |
| Threshold | US= $69,021 | U.S. = 21.7% | WI =51.7 | 1/2 U.S = 3.2% | U.S = 49.4% | 1/2 U.S = 7.1% | |

[1] U.S. Dept. of Commerce, Census Bureau, American Community Survey 2016-2021; Table B19013 Inflation-Adjusted Median Household Income.
[2] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[3] Jobs from WI DWD Quarterly Census of Employment and Wages; land area from U.S. Census Bureau, County Quick Facts.
[4] WI DOA Demographic Services Center; www.doa.state.wi.us/demographics.
[5] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.
[6] U.S. Dept. of Commerce, Bureau of Economic Analysis, Personal Income Summary Table CAINC4; http://www.bea.gov/.

# Appendix H. Primary Screener Thresholds for Industrial Dischargers

*Last Revised: December, 2023*

Table 13 below provides the thresholds for determining if a specific industry is in the top 75% of dischargers incurring costs within their category. This is one of two primary screeners that can be used to justify the substantial impacts of individual industries to qualify for the MDV. The other primary screening metric for industries is based on the geographic distribution of compliance costs within each category. Specifically, an industry must be located in a county that is within the top 75% of counties incurring costs for that category in order to meet this primary screener. The counties that meet this threshold for each category are provided in Table 14.

These values may be re-evaluated to determine if updates are needed based on new information gathered during the triennial standards review process.

**Table 13: Industrial primary screener thresholds based on 75th percentile of dischargers incurring costs within each category.**

| Industrial Category | 75% Threshold for Dischargers |
|---|---|
| **Cheese Manufacturing** | $ 2,193,000 |
| **Food Processing** | $ 2,635,000 |
| **Paper** | $ 8,028,000 |
| **Aquaculture** | $ 9,970,000 |
| **NCCW** | $ 2,119,000 |
| **Other Industrial Discharges** | $ 1,139,000 |

**Table 14: Industrial primary screener thresholds based on 75th percentile of counties incurring costs within each category.**

| | Cheese Manufacturing | Food Processing | Paper | Aquaculture | NCCW | Other Industrial Discharges |
|---|---|---|---|---|---|---|
| **Adams** | | | | | | |
| **Ashland** | | | | | | |
| **Barron** | | X | | | | |
| **Bayfield** | | | | X | | |
| **Brown** | | | X | | | |
| **Buffalo** | | | | | | |
| **Burnett** | | | | | | |
| **Calumet** | X | | | | | |
| **Chippewa** | | | | | | |
| **Clark** | | | | | | X |

| | Cheese Manufacturing | Food Processing | Paper | Aquaculture | NCCW | Other Industrial Discharges |
|---|---|---|---|---|---|---|
| **Columbia** | | | | | | |
| **Crawford** | | | | | | |
| **Dane** | | | | | | |
| **Dodge** | X | X | | | | |
| **Door** | | | | | | |
| **Douglas** | | | | | | |
| **Dunn** | | | | | | |
| **Eau Claire** | | | | | | |
| **Florence** | | | | | | |
| **Fond du Lac** | | | | | | |
| **Forest** | | | | | | |
| **Grant** | X | | | | | |
| **Green** | | | | | | |
| **Green Lake** | | | | | X | |
| **Iowa** | | | | | | |
| **Iron** | | | | | | |
| **Jackson** | | | | | | |
| **Jefferson** | | | | | | |
| **Juneau** | | | | | | |
| **Kenosha** | | | | | | |
| **Kewaunee** | X | | | | | |
| **La Crosse** | | | | | | |
| **Lafayette** | | | | | | |
| **Langlade** | | | | X | X | |
| **Lincoln** | | | X | | | |
| **Manitowoc** | | | | | | |
| **Marathon** | | | | | | |
| **Marinette** | | | | | | |
| **Marquette** | | | | | | |
| **Menominee** | | | | | | |
| **Milwaukee** | | | | | | |

| | Cheese Manufacturing | Food Processing | Paper | Aquaculture | NCCW | Other Industrial Discharges |
|---|---|---|---|---|---|---|
| **Monroe** | | | | | | |
| **Oconto** | | X | | | | |
| **Oneida** | | | X | | | |
| **Outagamie** | | X | X | | X | |
| **Ozaukee** | | X | | | | |
| **Pepin** | | | | | | |
| **Pierce** | X | | | | | |
| **Polk** | | | | | | |
| **Portage** | X | | | | | |
| **Price** | | | | | | |
| **Racine** | | | | | | |
| **Richland** | | | | | | |
| **Rock** | | | | | | |
| **Rusk** | | | | | | |
| **St. Croix** | | | | | | |
| **Sauk** | X | | | | X | |
| **Sawyer** | | | | | | |
| **Shawano** | | | | | | |
| **Sheboygan** | X | X | | | | |
| | | | | | | |
| **Trempealeau** | | | | | X | |
| **Vernon** | | | | | | |
| **Vilas** | | | | | | |
| **Walworth** | | | | | | |
| **Washburn** | | | | | | |
| **Washington** | | | | | | |
| **Waukesha** | | | | | | |
| **Waupaca** | | | | | | |
| **Waushara** | | | | X | | |
| **Winnebago** | | | | | | |
| **Wood** | | | X | | X | |

# Appendix I. Categorical Eligibility by County

*Last Revised: January, 2016*

Table 15 provides the list of categories that may be eligible for the MDV by county in accordance with the MDV justification and demonstration. If a point source is not listed to be in an eligible area, they do not qualify for the MDV, and should consider an alternative compliance option or an individual variance request. For example, municipal WWTFs, cheese manufacturing, and NCCW are the only potentially eligible point sources for the MDV in Adams County.

In addition to being in potentially eligible MDV areas, point sources must also meet the primary and secondary indicators to demonstrate substantial impacts in accordance with the Final Economic Determination and s. 283.16(2)(b)4, Wis. Stats.

**Table 15: Potentially eligible MDV areas by discharge category.**

| | *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 | |

# Appendix J. Phosphorus Treatment Technology Evaluation

Assessment of Reasonably Available & Cost-Effective Phosphorus Treatment Technology

Wisconsin Department of Natural Resources

5/30/2023

This assessment is required pursuant to Section 283.16(3)(b) of the Wisconsin Statutes as part of the phosphorus multi-discharger variance reauthorization

## Background

Elevated phosphorus concentrations in Wisconsin's surface waters have long been recognized as the driving force behind eutrophication, with impacts including diminished aquatic biodiversity and excessive plant or algal growth leading to impairment of a number of human uses such as drinking water or recreational use. Formal regulation of phosphorus began in Wisconsin in 1992 for wastewater point source discharges requiring many Wisconsin Pollutant Discharge Elimination System (WPDES) permit holders to comply with technology-based effluent limits (TBELs), typically set equal to 1.0 mg/L (NR 217 Subchapter II, Wis. Adm. Code).

To further protect human health and welfare from excess phosphorus pollution in surface water, revisions to Wisconsin's Phosphorus Water Quality Standards (WQS) were adopted on December 1, 2010. These revisions established a maximum allowable phosphorus numerical concentration in Wisconsin's waters, which are codified in s. NR 102.06, Wis. Adm. Code. The rule also created phosphorus standard implementation procedures for WPDES permits contained in Ch. NR 217, Wis. Adm. Code. Since December 2010, the Department of Natural Resources (DNR) has been evaluating the need for phosphorus Water Quality-Based Effluent Limits (WQBELs) in WPDES permits to comply with these standards. Many point sources face low-level phosphorus limitations as a result of these WQS. In many cases, these phosphorus WQBELs are set equal to the receiving water's applicable phosphorus criterion.

Compliance with these restrictive WQBELs frequently requires substantial capital investments, yet treatment may only target a small fraction of the total phosphorus loading entering many Wisconsin surface waters. Nonpoint source phosphorus loadings frequently contribute the majority of phosphorus to Wisconsin's surface waters.

The concept of a multi-discharger variance (MDV) for phosphorus is established in s. 283.16, Wis. Stats., to address the above challenges and provide point sources, specifically municipal and industrial wastewater treatment facilities, with another avenue for minimizing the economic hardship associated with low-level phosphorus limits while addressing nonpoint sources. The MDV was initially approved by the Environmental Protection Agency (EPA) on February 6, 2017, for a 10-year period. Accordingly, the variance is valid until February 2027. As part of requesting that EPA reapprove the variance for an additional time period beyond February 2027, DNR must evaluate reasonably available and cost-effective phosphorus treatment technology, in accordance with s. 283.16(3)(b) Wis. Stats.

## Introduction

The process to establish a justification for the MDV, as provided in statute at s. 283.16(2), Wis. Stats., requires the Department of Administration (DOA) to determine "whether attaining the water quality standard for phosphorus… would cause substantial and widespread adverse social and economic impacts on a statewide basis." This initial determination was completed by DOA on October 6, 2015, and serves as the initial foundational basis for the MDV's variance justification in accordance with 40 CFR §131.10(g)(6). The initial determination is available for download using the following link:

https://dnr.wisconsin.gov/sites/default/files/topic/Wastewater/Attachment_01_-_Wisconsins_Final_Economic_Determination.pdf

Prior to requesting that EPA renew the MDV for an additional period of time, DOA and DNR must follow the procedures at s. 283.16(3), Wis. Stats. – "Review of Findings and Requirements of Variance". This process is centered around the preparation of a report that would evaluate whether the initial October 2015 determination currently remains accurate.

This document seeks to fulfill the requirements of s. 283.16(3)(b), Wis. Stats. by providing the following information for DOA's updated economic determination:

- A determination of whether technology is reasonably available for point sources to comply with effluent limitations for phosphorus that are more stringent than 0.8 mg/L – 0.5 mg/L*.
- A determination of whether technology is reasonably available for any category of point sources to comply with effluent limitations for phosphorus that are more stringent than 0.8 mg/L – 0.5 mg/L*.
- A determination of whether any technology that is reasonably available for compliance with effluent limitations for phosphorus that are more stringent than 0.8 mg/L – 0.5 mg/L* is cost effective.

**Statue refers to the interim effluent limitations applicable under s. 283.16(6)(a), Wis. Stats. which range from 0.8 mg/L to 0.5 mg/L, depending on how many permit terms a facility has received MDV coverage.*

The determinations listed above serve to inform the MDV renewal effort via evaluation of the current state of phosphorus treatment technology. Whether the initial economic determination remains accurate must be evaluated in context of readily available and cost-effective treatment technology. As new treatment technology is developed, or current treatment technology is improved, the new or improved treatment may more readily facilitate compliance with lower effluent limits than possible in the past. If such new and readily available technology was also cost effective and affordable, then attaining the water quality standard for phosphorus may no longer cause substantial and widespread adverse social and economic impacts on a statewide basis, and continuation of the MDV would not be justified.

The determination made in this document is also referenced in the language of s. 283.16(3)(cm), Wis. Stats., which authorizes DNR to apply lower interim limits on a statewide or categorical basis if they are specified in the updated economic determination report. To apply lower interim limits to all dischargers or to a category of dischargers statewide, there would need to be a finding that new treatment technology is reasonably available and cost effective that would enable compliance with lower effluent limitations. It is important to note that s. 283.16(7), Wis. Stats. authorizes DNR to apply more stringent effluent limitations on a permit-specific basis when granting MDV coverage. This means that when existing treatment technology achieves greater phosphorus treatment than the suggested 0.8 mg/L – 0.5 mg/L interim limits, that level of treatment can be recognized by assigning a lower interim limit in the permit.

In summary, the analysis contained in this document has the following objectives:

1. Evaluate currently available and cost-effective phosphorus treatment technology as a component of the updated economic determination.

2. If determined appropriated, recommend lower interim limits for phosphorus.

Information supporting the initial determination was provided in supplemental reports developed by ARCADIS, Sycamore Advisors, and University of Massachusetts Donahue Institute. These firms were contracted to provide key economic information to support the initial 2015 determination. The reports included a Final Economic Impact Analysis (dated 12/29/2015) and an Addendum to the Economic Impact Analysis (dated 4/24/2015). These reports will be referred to in this document as the "EIA Report". The full EIA Report is available for download using the following link:

https://dnr.wisconsin.gov/sites/default/files/topic/Wastewater/Attachment_02_-_Phosphorus_Economic_Impact_Analysis_Report_and_Addendum.pdf

Within the EIA Report, ARCADIS estimated compliance costs for all WPDES permit holders who were expected to be subject to low phosphorus WQBELs. Cost estimates relied on a set of assumptions that

defined what treatment technology would commonly be required to meet phosphorus WQBELs on a consistent basis. To structure the assessment, the 592 evaluated municipal and industrial wastewater treatment facilities were divided into three groups based on their final WQBEL for total phosphorus:

- >0.5 to 1 mg/L
- >0.1 to 0.5 mg/L
- less than or equal to 0.1 mg/L

Facilities were also grouped by basic treatment type – either lagoon or mechanical plant. This provided a set of assumptions to inform what equipment is likely to already be in place at a given facility. Table 1 and Table 2 below show which additional treatment process and associated components are needed to meet the various WQBEL ranges. Preexisting process components may vary between specific facilities.

Table 1: EIA Report Table 2-3 Summarized (Processes Required for Phosphorus Removal for Mechanical WWTPs)

| Treatment Level | Treatment Process | Main Process Components at Mechanical Plants |
|---|---|---|
| TP >0.5 – 1 mg/L | • Multi-point chemical precipitation | • Chemical Building<br>• Chemical Storage<br>• Chemical Feed System<br>• Piping, Valves, and Appurtenances<br>• Sludge Storage Tank<br>• Sludge Dewatering Facility (Paper Mills) |
| TP >0.1 – 0.5 mg/L | • Multi-point chemical precipitation<br>• Sand filtration | • Filter Feed Pumps<br>• Sand Filter<br>• Chemical Building<br>• Chemical Storage<br>• Chemical Feed System<br>• Piping, Valves, and Appurtenances<br>• Filter Building<br>• Filter Backwash Pumps<br>• Sludge Storage Tank<br>• Sludge Dewatering Facility (Paper Mills) |
| TP ≤ 0.1 mg/L | • Multi-point chemical precipitation<br>• Dual-stage sand filtration | • Filter Feed Pumps<br>• Dual-Stage Sand Filters<br>• Chemical Building<br>• Chemical Storage<br>• Chemical Feed System<br>• Piping, Valves, and Appurtenances<br>• Filter Building<br>• Filter Backwash Pumps<br>• Sludge Storage Tank<br>• Sludge Dewatering Facility (Paper Mills) |

Table 2: EIA Report Table 2-4 Summarized (Processes Required for Phosphorus Removal in Lagoon Systems)

| Treatment Level Target | Treatment Process | Main Process Components Added for P Removal at Lagoons |
|---|---|---|
| TP >0.5 – 1 mg/L | • Multi-point chemical precipitation<br>• Clarification | • Clarification Feed Pump Station<br>• Chemical Building<br>• Chemical Storage<br>• Chemical Feed System<br>• Piping, Valves, and Appurtenances<br>• Clarifier, Mechanisms, and Pumps<br>• Sludge Dewatering Facility (Paper Mills) |
| TP >0.1 – 0.5 mg/L | • Multi-point chemical precipitation<br>• Clarification<br>• Sand filtration | • Clarification Feed Pump Station<br>• Chemical Building<br>• Chemical Storage<br>• Chemical Feed System<br>• Piping, Valves, and Appurtenances<br>• Clarifier, Mechanisms, and Pumps<br>• Filter Building<br>• Filter Feed Pumps<br>• Filter Backwash Pumps<br>• Sand Filter<br>• Sludge Dewatering Facility (Paper Mills) |
| TP ≤ 0.1 mg/L | • Multi-point chemical precipitation<br>• Clarification<br>• Dual-stage sand filtration | • Clarification Feed Pump Station<br>• Chemical Building<br>• Chemical Storage<br>• Chemical Feed System<br>• Piping, Valves, and Appurtenances<br>• Clarifier, Mechanisms, and Pumps<br>• Filter Building<br>• Filter Feed Pumps<br>• Filter Backwash Pumps<br>• Dual-Stage Sand Filters<br>• Sludge Dewatering Facility (Paper Mills) |

To generate compliance cost estimates for each facility, the above list of treatment components were assigned costs based on multiple vendor quotes. General cost components (such as mobilization, site work, instrumentation and control work, electrical work, HVAC work, plumbing work, etc.) were estimated as percentages of the equipment cost. Cost curves were then developed for each category of discharger. Site-specific compliance cost estimates in the EIA report are based on these cost curves. For

more information on the technology evaluation and capital, operational, and maintenance cost development, see section 2 of the EIA Report.

The WQBEL and facility type categories mentioned above serve as benchmarks for evaluating reasonably available and cost-effective treatment technology. For both mechanical plants and lagoons, the 0.5 mg/L – 1.0 mg/L limit category aligns with the interim effluent limitations specified at s. 283.16(6)(a), Wis. Stats., (0.5 mg/L – 0.8 mg/L). Limits in this range are generally assumed to be met with chemical addition, but may also be met with biological phosphorus removal under the right circumstances. These types of treatment are sometimes referred to as "traditional" phosphorus removal and have been proven to be readily available and cost effective in most cases. Under certain conditions, these types of treatment can reliably achieve effluent total phosphorus levels lower than 0.5 mg/L. Part of the analysis contained in this document will evaluate if these types of readily available and cost-effective technology will, on a statewide or categorical basis, achieve effluent limits lower than 0.5 mg/L.

For both mechanical plants and lagoons, the EIA report assumed that effluent limits lower than 0.5 mg/L require some form of tertiary filtration. This type of equipment is considered to be a "major facility upgrade" as most municipal plants are designed as secondary treatment plants and the associated cost was the main factor which led to the initial determination that achieving the water quality standard was not feasible due to substantial/widespread economic impacts. Tertiary filtration is a technology that is readily available, however it may not be feasible to install at facilities due to capital and operational costs. For the purposes of this analysis, it is assumed that tertiary filtration is not evaluated in the context of interim effluent limits that would apply while covered under the variance. In nearly all cases, when it is feasible for a facility to install tertiary filtration, that facility would not be eligible for MDV coverage. The updated economic determination document will assess the present-day affordability of tertiary filtration. Should tertiary filtration be found to be affordable in the updated economic determination, the initial economic determination would no longer be accurate.

An additional scenario that could impact the initial determination is the case in which new treatment technology is now currently available that is affordable and effective at achieving commonly applied phosphorus WQBELs. Any newly available technology will be explored in this document. Additionally, this document will explore any advances or refinements in currently available technology that would commonly allow lower effluent limits to be achieved without a major facility upgrade.

## Traditional Phosphorus Treatment Technology

Phosphorus treatment technology that has been used over previous decades (most often to achieve phosphorus TBELs) is referred to as "traditional". Facilities meeting discharge thresholds defined in s. NR 217.04(1)(a) Wis. Adm. Code typically have some form of traditional phosphorus removal currently in place.

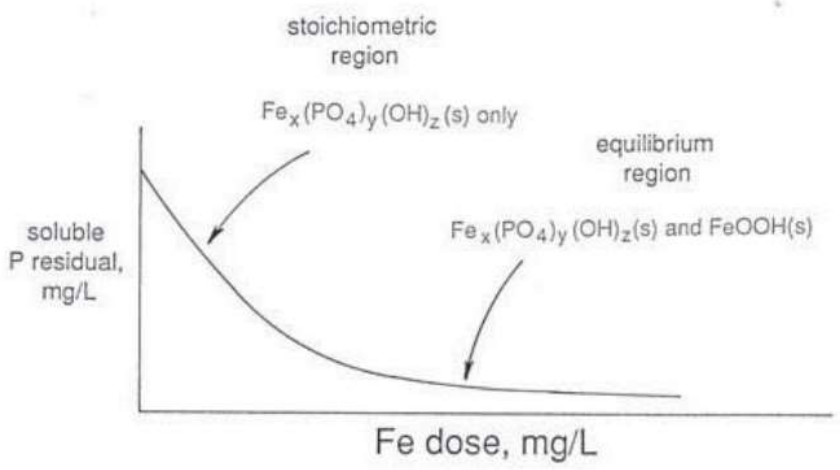
### *Chemical Phosphorus Removal*

Chemical phosphorus removal is the process of injecting chemicals, typically metal salts, into wastewater during the treatment process. Chemicals act as precipitants or coagulants which cause dissolved and particulate phosphorus to more readily settle and be removed as waste sludge. Typical chemicals used are alum (aluminum sulfate), ferric chloride, and ferrous sulfate/chloride.

When metal ions, iron or aluminum, are added to wastewater two primary precipitates form: an insoluble metal phosphate and an insoluble metal hydroxide. For a given metal, the formation of these precipitates is governed by the wastewater alkalinity and soluble orthophosphate concentration in the wastewater, as well as their equilibrium solubility at a given pH. Each phosphorus removal chemical (metal salt) has an optimum pH range for precipitating out the phosphorus as a metal phosphate.

To achieve low effluent phosphorus limits, increasingly larger doses of metal salts are required to remove additional phosphorus. Eventually, chemical equilibrium will be reached with no further reduction in effluent phosphorus.

Figure 1: Typical Fe dose versus soluble P residual curve.




Actual chemical usage depends on the competing reactions and wastewater characteristics such as pH, alkalinity, and very fine particulate materials (colloids). Wastewater characteristics and competing chemical reactions in the wastewater between the metal salt and phosphorus will result in the need for increased metal salt addition above what was calculated.

Within the treatment train of a mechanical plant, a flocculation zone should provide sufficient detention time (15 to 20 minutes) to complete the reaction. Gentle mixing promotes flocculation. The enlarged center feed well on a flocculating clarifier provides such a flocculation zone. For the continuous dosing in a lagoon, chemicals can be added to the beginning of the last pond or lagoon where the precipitation reaction and settling can occur. The chemical should be added where good chemical mixing with the wastewater can be achieved, such as the upstream manhole prior to the last pond or just before an aerator. For batch dosing of aluminum sulfate (alum) in fill and draw systems, some operators use a small motorboat and manually apply the alum where the propellor can provide the mixing.

Excessive I/I can cause peak flow rates that reduce the detention time in the treatment plant. Reduced detention time can directly affect phosphorus removal by inhibiting flocculation and settling. Phosphorus is removed from the treatment plant with the waste activated sludge, therefore solids carryover from overloaded clarifiers will increase effluent phosphorus.

### *Trends in Chemical Phosphorus Removal Since 2015*

Chemical removal of phosphorus has been employed at an increasing number of facilities throughout Wisconsin, driven by the need to meet interim limits for those facilities covered under the MDV, an individual phosphorus variance, or by the ability to achieve final phosphors WQBELs by adding chemical treatment. Several innovations in chemical treatment have grown from the need to employ the process at additional facilities. Many of the facilities adopting chemical feed were not initially designed to work with the process, but have achieved satisfactory results.

The EIA Report assumed that all lagoon facilities would need to install a clarifier to facilitate chemical phosphorus removal to achieve phosphorus effluent quality between 0.5 mg/L and 1.0 mg/L (Table 2). However, based on many recent chemical feed installations at lagoon facilities across the state, the need to add a clarifier is the exception rather than the norm. Most lagoon facilities are able to achieve flocculation and settling within the existing lagoon(s). While this approach results in additional sludge accumulation and more frequent sludge removal requirements for the lagoons, avoiding the capital cost of an additional clarifier has helped keep chemical addition affordable for most lagoon facilities.

New chemical compounds are gaining popularity across the state. In addition to the traditionally used aluminum sulfate and ferric chloride, there are now options including polyaluminum chloride (PAC) or cerium-based products branded with trade names such as RE-300 or Sorb-x. These compounds have shown faster flocculation and settling in some cases, and claim to produce a lower-volume, higher-density sludge. The increased efficacy of chemical phosphorus removal has allowed a limited number of facilities to achieve much lower effluent phosphorus concentrations than the EIA Report's suggested 0.5 mg/L lower limit for chemical addition.

With newly-installed chemical feed systems, coupled with MDV offset requirements that provide a financial impetus for reducing effluent phosphorus concentrations, some facilities have pushed the upper limits of acceptable chemical feed rates. From a chemical cost perspective, optimal doses are found at a breakpoint where the chemical reaction becomes less efficient, requiring much greater amount of chemical input per unit of effluent phosphorus removed. Operators will typically attempt to dose near, or somewhere below this optimum rate. An additional consideration is the point at which unreacted chemical is carried through in final effluent. When this happens, localized impacts related to toxicity of effluent may occur, as observed in recent failed whole effluent toxicity tests at facilities experimenting with dosage rates. The chemical feed rate associated with toxic effluent is currently thought to be above the economically-optimal breakpoint. Should effluent toxicity occur at below-optimal feed rates, this could limit the viability of certain types of chemicals or the use of such chemicals at certain types of facilities.

### *Enhanced Biological Phosphorus Removal*

Enhanced biological phosphorus removal (EBPR) is a process that uses alternating anaerobic and aerobic zones to provide an environment that encourages the growth of phosphorus-accumulating organisms (PAOs). These organisms store excess polyphosphate in their cell mass, settle as sludge, and phosphorus is removed with the waste sludge.

The effectiveness of EPBR is tied, in part, to influent waste characteristics. The success of removing phosphorus biologically depends upon the amount of organic material, expressed as either biological

oxygen demand or chemical oxygen demand in the influent wastewater entering the facility. An adequate amount of organic material must be available to support PAOs. Volatile fatty acids, in particular, encourage growth and uptake of phosphorus. Inflow and infiltration (I/I) of clear water into the collection system can dilute the organic matter in the raw wastewater resulting in an insufficient supply of volatile fatty acids. Higher flow rates associated with I/I can reduce the hydraulic detention time in the EBPR process, reducing treatment efficacy. For these reasons, EBPR may not be compatible with every facility.

### *Trends in Enhanced Biological Phosphorus Removal Since 2015*

Biological phosphorus removal has been optimized over several decades of widespread implementation. There are many types of EBPR systems. Some of the more common types are anaerobic/oxic (A/O), anaerobic/anoxic/oxic (A2/O), modified Bardenpho, University of Cape Town (UCT and modified UCT), and various oxidation ditch designs. These well-established BPR enhancements have demonstrated phosphorus removal efficacy to below 0.5 mg/L in some applications. However, recent advances in EBPR do not serve to make it as widely applicable or reliable as chemical treatment. As stated in the EIA Report: "*…the applicability of BPR is often a site specific decision due to wastewater characteristics, and was not considered as part of this evaluation*." Such limitations have not been overcome by new advances in EBPR technology.

### *Combination Biological – Chemical Phosphorus Removal*

Some facilities have achieved a high level of phosphorus removal by employing chemical phosphorus treatment following an EBPR process. By having chemical treatment, it also reduces the fluctuating efficiencies of a EBPR system especially during wet weather events.

## New and Emerging Phosphorus Treatment Technology

As low phosphorus limits are more commonly assigned to industries and publicly owned treatment works (POTWs) (both statewide and nationwide), there is an increasing need for phosphorus treatment technology that is economical, simple to operate, and sustainable from an inputs and energy efficiency perspective. Innovations may originate within academia, government agencies, or via private enterprise. Managers and operators at industries and POTWs may also drive innovation. The availability and scalability of any new technology may impact treatment expectations from a variance perspective, especially if a new improvement is found to be applicable and cost effective on a statewide basis.

There are many barriers to widespread adoption of new treatment technology including profitability/marketability, perceived or actual risk for end users, and the regulatory approval process. The diversity of Wisconsin dischargers also makes a widespread novel phosphorus treatment solution less likely. While benefits may be focused on one category of dischargers (which could be reflected in this analysis), within categories there exists a broad range of influent flow and physical/chemical wastewater characteristics, existing treatment processes, and site-specific limitations such as hydraulics or plant footprint. New technology will need to adapt in the face of these barriers if it is to see widespread adoption.

### *Algae-based Treatment Systems*

One class emerging of technologies showing promise for nutrient removal are algae-based systems. Certain species of algae can uptake significant portions of dissolved phosphorus from a waste stream.

These may be employed in suspended or fixed-growth configurations. The Clearas process is a fixed growth system that has been shown to achieve very low effluent phosphorus concentrations and have the ability to treat soluble nonreactive phosphorus species, which pass through most other treatment systems.

Clearas relies on an extensive network of glass tubes to grow algae, and effluent from this system is passed through a tertiary filtration system to separate treated wastewater from algae and other particulates. Therefore, this type of system is typically more expensive than traditional tertiary filtration and will not be cost effective or affordable in all cases.

### *Absorptive Media Systems*

Media coated with a reactive surface such as iron oxide facilitates sorption of dissolved phosphorus from the waste stream. Coated sand filtration (also termed reactive sand filtration) was the assumed required technology used to meet low-level phosphorus effluent limits in the initial economic demonstration. The cost estimates assumed an intensive filtration approach, which uses tanks containing filtration media. Such treatment technology constitutes a major facility upgrade and was deemed not affordable for many industries and POTWs.

The concept of absorptive media has been explored in less-intensive formats than the reactive filtration process described above. Filter beds of naturally occurring or manufactured material can remove phosphorus from effluent; however, are not practical to use at full scale for extended periods of time, due to the need to replace media once its absorptive capacity is exhausted.

### *Ion Exchange Treatment*

Phosphorus may be removed from water via an ion exchange resin, as is currently employed in some point-of-use water conditioning systems. For wastewater applications, limited selectivity toward phosphorus due to the presence of competing anions interferes with treatment efficacy. Some initial work has been performed using selective exchange materials such as iron-based hydroxide compounds which could enhance phosphorus removal. Other barriers to using this treatment technology at full scale include fouling of media surfaces, leaching of media compounds into treated effluent, and excessive use of regeneration chemicals.

### *Constructed Wetlands*

Constructed wetlands may be an appealing treatment option in a rural setting where additional land can be acquired to meet sizing requirements. However, treatment wetlands have not been proven to achieve consistent results below 0.5 mg/L. Wetlands may only uptake a discrete amount of phosphorus based on vegetation growth or sorption to sediments or other media. Removing vegetation from a wetland on a regular basis is commonly feasible, though may remove only a small mass of phosphorus. Larger removal may be achieved by removing and replacing the substrate or media; however, this process is costly and not practical at the scale required for wastewater treatment facilities. Wetlands may also release previously-trapped phosphorus under certain conditions, decreasing their reliability for meeting phosphorus effluent limits.

### *Side Stream Processes*

Some facilities in the state have experience with removing phosphorus from side streams such as return activated sludge or decant. Struvite precipitation has been widely investigated in this stream and is now being applied full scale with companies such as Ostara and Multiform Harvest. Precipitation of struvite recovers most of the PO4-P and a portion of N from the side stream, with the main objective of preventing struvite formation in other process components. Another technology developed for this stream is partial nitritation and Anammox. These side stream processes are not typically installed for the sole purpose of achieving low phosphorus effluent limits.

## Observed Performance of Phosphorus Treatment Technology Amongst Wisconsin Dischargers

Information regarding the availability of improved treatment technology can be obtained by conducting a review of Wisconsin facilities, treatment technology presently used, and quality of effluent achieved for each treatment type. Facilities covered under the MDV provide a particularly relevant group to review for the following reasons:

- Facilities covered under the MDV are required to have some form of phosphorus treatment technology installed to meet interim limits.
- Facilities covered under the MDV have not undergone a major upgrade to meet a low-level phosphorus limit.
- Offset requirements of the MDV create a strong impetus to remove as much phosphorus as possible from the waste stream.

The following table was created by evaluating discharge data from the 2021 calendar year and identifying those MDV-covered facilities that achieved the highest effluent quality with regards to phosphorus concentrations. Annual average phosphorus concentrations were calculated, and the maximum monthly average value for the calendar year was identified. Those shown on the list have a monthly average maximum value below 0.5 mg/L, indicating that the technology used could potentially comply with an interim limit set below this level. Recent optimization reports (required under the MDV pursuant to s. 283.16(6)(a) Wis. Stats.) were referenced for each facility to determine what optimization or treatment measures were employed to achieve highly effective phosphorus removal.

Of the 119 facilities that had MDV coverage in 2021, 23 facilities achieved effluent quality that would enable compliance with lower interim effluent limits than 0.5 mg/L. POTWs were strongly represented in the list of top performers. Only three industrial dischargers were amongst the top performers: a cheese manufacturer, aquaculture operation, and paper mill.

| Facility Name | Annual Average Phosphorus Concentration (mg/L) | Maximum Monthly Average Phosphorus Concentration (mg/L) | Facility Type | Treatment Process | Treatment / Optimization Notes |
|---|---|---|---|---|---|
| The Procter & Gamble Paper Products Co. | 0.03 | 0.04 | Mechanical | Polymer Addition | Ensured process inputs had no phosphorus |
| Belgium Wastewater Treatment Facility | 0.11 | 0.14 | Mechanical | Chemical | Switched from ferric chloride to alternative aluminum coagulant (Hyper+Ion®) |
| Casco Wastewater Treatment Facility | 0.09 | 0.16 | Mechanical | Chemical | Began using chemical – the facility also has older tertiary sand filters |
| Viroqua Wastewater Treatment Facility | 0.15 | 0.19 | Mechanical | Biological | Minimized digester decant side stream. |
| Hustler Wastewater Treatment Facility | 0.19 | 0.19 | Lagoon | Chemical | Treated lagoon with granular aluminum sulfate before discharge |
| Abbotsford Wastewater Treatment Facility | 0.17 | 0.23 | Mechanical | Chemical | Ferric chloride feed rate optimized |
| Ettrick Wastewater Treatment Facility | 0.16 | 0.25 | Mechanical | Chemical | Added ferric chloride after RBC, before final clarifier |
| Bristol Utility District 1 | 0.20 | 0.25 | Mechanical | Chemical | Two dosage points for ferrous sulfate; possibly achieving biological treatment in basins as well |
| Fond du Lac WTRRF | 0.21 | 0.26 | Mechanical | Biological + Chemical | Optimized biological treatment in various ways |
| Ridgeway Wastewater Treatment Facility | 0.21 | 0.30 | Mechanical | Chemical | Optimized flow-based ferric chloride feed rates |
| Village of Union Grove | 0.19 | 0.32 | Mechanical | Chemical | Switched from ferric chloride to poly aluminum chloride |
| Platteville Wastewater Treatment Facility | 0.23 | 0.33 | Mechanical | Chemical | Installed an orthophosphate analyzer and updated chemical feed controls |
| Spring Valley Wastewater Treatment Facility | 0.20 | 0.34 | Mechanical | Chemical | Dosing aluminum sulfate at proper levels |
| Eagle Lake Sewer Utility | 0.22 | 0.35 | Mechanical | Chemical | Using polyaluminum chloride |
| Watertown Wastewater Treatment Facility | 0.34 | 0.36 | Mechanical | Biological + Chemical | -Ferric chloride added after BPR |
| Thorp Wastewater Treatment Facility | 0.34 | 0.40 | Lagoon | Chemical | Switched from alum to ferric chloride |
| Cadott Wastewater Treatment Facility | 0.19 | 0.41 | Mechanical | Biological + Chemical | Alum can be added at three dosing points |
| Onion River Wastewater Commission | 0.30 | 0.42 | Mechanical | Chemical | Began using orthophosphate analyzer to adjust chemical feed rates |
| Nekoosa Wastewater Treatment Facility | 0.39 | 0.44 | Mechanical | Chemical | Minor adjustments in chemical feed equipment and moved the dosing point to final clarifiers |
| Fonks Home Center Inc., Harvest View | 0.25 | 0.44 | Mechanical | Chemical | Refining feed rates of polyaluminimum chloride |
| City of Phillips | 0.30 | 0.47 | Mechanical | Biological + Chemical | Greater focus on source reduction, I&I, and evaluation of hauled waste |
| Agropur Inc Luxemburg | 0.30 | 0.47 | Mechanical | Biological | Refinements in BPR (manage COD, F:M ratio, and HRT) |

## Discussion

The general technology review contained in this document provides insight into phosphorus treatment technology (both traditional and new/emerging) that has the potential to be employed throughout the state.

Traditional phosphorus removal has been, and will continue to be, used to meet phosphorus limits (interim and final) across the state. The long-standing nature of these technologies has created efficiencies such as widespread training and promotion (as with EBPR) or supply chains and refinements in the specific products used (as with chemical treatment). These technologies are available to and cost effective for most facilities.

Emerging/new technologies rarely have the benefit of the efficiencies cited above, making their adoption more costly and time consuming from a planning perspective. Many of the technologies reviewed are effective in small-scale tests, but have limitations that prevent scaling up to full pilot tests or longer term uses. Some of the novel technologies reviewed have been designed with the performance goal of achieving a 1.0 mg/L effluent phosphorus concentration to align with regulations that are more commonplace nationwide. To be competitive in Wisconsin (and relevant for this report), a new treatment technology would need to consistently achieve effluent phosphorus below 0.5 mg/L or be implemented at a much lower cost than traditional phosphorus treatment.

The performance review provides insight into the treatment technologies that are actually being implemented at facilities across the state. Nearly all of these facilities are employing some form of traditional phosphorus removal. For chemical phosphorus removal, factors leading to highly effective treatment include use of advanced chemicals and a treatment train that allows for substantial settling following chemical addition. Factors leading to success in biological phosphorus removal include correct influent properties, as well as having staff know-how and the ability to manipulate the treatment process to achieve phosphorus release and uptake.

### *Categories of Dischargers*

The MDV focuses on seven major discharger categories present in Wisconsin for the economic determination. The categories are: POTWs, dairy, food processors, aquaculture, paper, noncontact cooling water and other. The feasibility of meeting phosphorus WQBELs was evaluated for each category as part of the EIA report and final determination. The EIA report did not assume that treatment equipment requirements varied greatly between categories. The main distinction made between categories focused on paper mills due to greater chemical quantity requirements at paper mills, which can substantially increase O&M costs.

As part of the 5-year HAC review for the current MDV, all facilities granted coverage under the MDV were evaluated based on assigned interim limits,  actual effluent phosphorus concentrations achieved within the first year of MDV coverage and the most recent year of MDV coverage (2021) (Table 3). This evaluation indicates that affordable and feasible treatment employed at aquaculture, paper manufacturers, and food processors is capable of achieving lower effluent phosphorus concentrations than the suggested 0.5 mg/L – 1.0 mg/L. However, this dataset only encompasses results from one aquaculture facility, two paper manufacturers, and three food processors. These numbers are too

limited to make categorical, widespread determinations. For comparison purposes, the EIA report evaluated 10 aquaculture facilities, 17 paper manufacturers, and 14 food processors.

Table 4: Observed interim limits and average effluent concentrations by category

| Facility Type | Average LCA Interim Limit (mg/L) | Average HAC Interim Limit (mg/L) | MDV Year-1 Average Concentration (mg/L) | MDV Most Recent Concentration (mg/L) |
|---|---|---|---|---|
| Municipal POTWs | 3.73 | 0.87 | 1.37 | 0.83 |
| Food Processors[1] | 1.54 | 0.79 | 0.42 | 0.40 |
| Paper Manufacturers[1] | N/A | 0.40 | 0.27 | 0.26 |
| Dairy Industry[1] | 1.21 | 0.80 | 0.78 | 0.53 |
| Aquaculture[1] | N/A | 0.65 | 0.34 | 0.08 |

*1- effluent data includes January – June 2021 (partial year) due to small sample size*

### *Variability within Categories of Dischargers*

The highest degree of variability observed for any one category of dischargers covered under the MDV is for POTWs. Large POTWs include Fond du Lac, Watertown, and Platteville. These provide a stark contrast to small lagoon systems such as Rewey, Stitzer Sanitary District, or Hub Rock Sanitary District. When comparing the types of treatment that may be installed to achieve lower phosphors effluent limits, these differences present a challenging scenario for making recommendations that would apply to an entire category. Industrial facilities also vary greatly within categories, as demonstrated between large dairy facilities and small artisan cheese manufacturers.

The EIA Report suggested broad classes of treatment technology that could be employed at all facilities. When evaluating further refinements to these treatment technologies to achieve higher levels of performance, it becomes evident that differences between facilities confound the evaluation. For example, roughly 22 facilities were able to achieve effluent phosphorus concentrations below 0.5 mg/L due to highly effective chemical phosphorus removal. The factors leading to this success could be cited as: a) high hydraulic retention time to achieve settling; b) influent phosphorus with high dissolved reactive constituents; c) stable flows due to a well-maintained collection system. While these factors are present at some facilities, others have low and variable hydraulic retention times due to I&I, or influent high in soluble nonreactive phosphorus that would preclude achieving effluent quality better than 0.5 mg/L. In this case, important site-specific factors preclude further cost-effective optimization.

### *Site-specific interim limits*

As previously mentioned, the department has the ability to set interim limits based on existing performance, which can be lower than the 0.5 – 0.8 mg/L suggested in s. 283.16(6)(a) Wis. Stats. Pursuant to s. 283.16(7) Wis. Stats., a lower interim limit would be required if the interim limits specified under s. 283.16(6)(a) Wis. Stats. are not considered the highest attainable condition for a point source. This determination can be made on a categorical basis or for a specific point source at the time the point source's WPDES permit is reissued, modified, or revoked and reissued.

The flexibility to set a site-specific interim limit consistent with highest attainable condition has been exercised regularly throughout the implementation of the MDV. Of the 119 facilities covered under the MDV in 2021, 22 of them received an interim limit lower than the suggested values at s. 283.16(6)(a) Wis. Stats based on site-specific performance and wastewater characteristics. The use of lower, site-specific interim limits is expected to increase during second permit terms of MDV coverage. After completing one permit term of optimization and offset requirements, many facilities will have demonstrated greater levels of phosphorus removal than was shown prior to the first MDV permit term. In these cases, DNR proposes interim limits consistent with a facility's highest attainable condition, and may be set at 0.5, 0.4, or 0.3 mg/L as a monthly average, for example.

## Determination

As required under s. 283.16(3)(b) Wis. Stats., the Department of Natural Resources provides the following determinations to the Department of Administration for the economic reevaluation of the multi-discharger variance.

*1. A determination of whether technology is reasonably available for point sources to comply with effluent limitations for phosphorus that are more stringent than those in sub. (6) (a).*

There exists technology that is reasonably available which would enable compliance with effluent limits lower than the 0.8 mg/L – 0.5 mg/L as contained in s. 283.16(6)(a), Wis. Stats. Examples of this technology include enhanced biological phosphorus removal, optimized chemical phosphorus removal, or a combination of these two treatment technologies.

*2. A determination of whether technology is reasonably available for any category of point sources to comply with effluent limitations for phosphorus that are more stringent than those in sub. (6) (a).*

There is no specific category of point sources for which technology is reasonably available to enable compliance with effluent limits lower than the 0.8 mg/L – 0.5 mg/L as contained in s. 283.16(6)(a), Wis. Stats. Variability between point sources is too great to make any categorical determination. However, lower interim limits can be applied on a site-specific basis, which is the most appropriate way to ensure HAC for all MDV-authorized discharges given the variability between dischargers.

*3. A determination of whether any technology that is reasonably available for compliance with effluent limitations for phosphorus that are more stringent than those in sub. (6) (a) is cost effective.*

Technology that is reasonably available to meet lower than the 0.8 mg/L – 0.5 mg/L as contained in s. 283.16(6)(a), Wis. Stats. is not commonly cost effective. Under 20% of facilities covered under the MDV have been able to consistently achieve effluent phosphorus concentrations lower than 0.5 mg/L. Those that have achieved a high level of performance have been able to do so because site-specific factors made treatment to this level cost effective.

*4. The results of the most recent review under sub. (3m) (a).*

The Department of Natural Resources completed all aspects of the 5-year Highest Attainable Condition Review of the MDV on February 4, 2022. It is available for download at the following link:

https://dnr.wisconsin.gov/topic/Wastewater/phosphorus/implementation.html