

Permit Fact Sheet

General Information

Permit Number:	WI-0022021-10-0	
Permittee Name:	Bristol Utility District 1	
Address:	19801 83rd Street	
City/State/Zip:	Bristol WI 53104	
Discharge Location:	Bristol Creek, approximately one mile west of the Des Plaines River.	
Receiving Water:	Bristol Creek (Des Plaines River Watershed, Fox (IL) River Basin) in Kenosha County.	
StreamFlow (Q _{7,10}):	0 cfs	
Stream Classification:	Limited Aquatic Life (LAL) for 0.8 miles, then Warm Water Sport Fishery (WWSF) at confluence of Des Plaines River.	
Discharge Type:	Existing, Continuous	
Design Flow:	Annual Average	0.87 MGD
Significant Industrial Loading?	N/A	
Operator at Proper Grade?	Yes. Advanced - A1; B; C;P; L; SS.	
Approved Pretreatment Program?	N/A	

Facility Description

The Bristol Utility District 1 operates a 0.872 million gallons per day (MGD) activated sludge wastewater treatment facility that serves approximately 2,000 people with no industrial loading. Treatment consists of influent screening, grit removal, mixed liquor aeration, final clarification, and post-aeration before effluent is discharged to Bristol Creek. Ferric sulfate is added after influent screening to aid in phosphorus removal. Biosolids are treated and stored in aerobic digesters before being hauled to another permitted facility. Approximately 98.8 dry U.S. tons of sludge is generated annually.

The Department is tentatively approving coverage under the phosphorus multi discharger variance because the applicant has demonstrated that a major facility upgrade would be required to comply with the phosphorus water quality based effluent limitation, and the applicant meets the economic hardship eligibility criteria delineated in the federally approved variance. In addition, the permitted facility has agreed to comply with the interim limitations that will be included in the WPDES permit and has agreed to reduce the amount of phosphorus entering surface waters by entering into a binding, written agreement with the Department under which the permittee constructs a project or implements a plan to make annual reduction of phosphorus pollution pursuant to s. 283.16(6)(b)2., Wis. Stats. The MDV watershed plan document, dated July 30, 2024, will be incorporated by reference into the reissued permit under tracking code MDV-2024-01.

Substantial Compliance Determination

After a desk top review of all discharge monitoring reports, CMARs, compliance schedule items, and a site visit by Nick Lent on February 27, 2024, this facility has been found to be in substantial compliance with their current permit.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
701	0.33 MGD (2022 Available Data)	INFLUENT: 24-hr flow proportional samples shall be collected at the flume, prior to screening.
001	0.33 MGD (2022 Available Data)	EFFLUENT: 24-hr flow proportional composite samples shall be collected immediately after the Palmer-Bowlus flume, prior to the post aeration basin. Grab samples shall be collected at the exit of the post aeration tank.
002	98.8 dry U.S. Tons (WPDES Application, 2023)	LAND APPLICATION: Aerobically digested liquid sludge, Class B. Grab samples shall be collected from the digester sludge basin while mixing.

1 Influent – Monitoring Requirements

Sample Point Number: 701- INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	3/Week	24-Hr Flow Prop Comp	

Changes from Previous Permit:

Changes highlighted in table above.

Flow Rate: Sample Frequency changed to Daily from Continuous.

Explanation of Limits and Monitoring Requirements

Flow Rate: Sample frequency changed to Daily from Continuous for eDMR reporting purposes.

BOD₅ and Total Suspended Solids: Tracking of BOD₅ and suspended solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in the Standard Requirements section the permit.

2 Surface Water - Monitoring and Limitations

Sample Point Number: 001- EFFLUENT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD ₅ , Total	Weekly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
BOD ₅ , Total	Monthly Avg	20 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	20 mg/L	3/Week	24-Hr Flow Prop Comp	
pH Field	Daily Max	9.0 su	5/Week	Grab	
pH Field	Daily Min	6.0 su	5/Week	Grab	
Dissolved Oxygen	Daily Min	4.0 mg/L	5/Week	Grab	
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit effective May through September starting in 2029 per the Effluent Limitations for E. coli Schedule.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit effective May through September starting in 2029 per the Effluent Limitations for E. coli Schedule. See the E. coli Percent Limit section. Enter the result in the DMR on the last day of the month.

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Nitrogen, Ammonia (NH3-N) Total	Daily Max	7.9 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective October through March.
Nitrogen, Ammonia (NH3-N) Total	Daily Max	8.0 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective April through May.
Nitrogen, Ammonia (NH3-N) Total	Daily Max	8.1 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective June through September.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	7.9 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective October through March.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	4.5 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective April through May.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	2.7 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective June through September
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	3.9 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective for October.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	4.4 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective November through March.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	1.9 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective for April.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	2.0 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective for May.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	1.3 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective June through September.
Phosphorus, Total	Monthly Avg	0.47 mg/L	3/Week	24-Hr Flow Prop Comp	This is an interim MDV limit effective upon permit reissuance. See MDV/Phosphorus sections and schedules.
Phosphorus, Total		lbs/month	Monthly	Calculated	Report the total monthly phosphorus discharged in lbs/month on the last day of the month on the DMR. See Standard Requirements for 'Appropriate Formulas' to calculate the Total Monthly Discharge in lbs/month.
Phosphorus, Total		lbs/yr	Annual	Calculated	Report the sum of the total monthly discharges (for the months that the MDV is in effect) for the calendar year

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
					on the Annual report form.
Chloride		mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring only in 2027.
Temperature Maximum		deg F	3/Week	Continuous	Monitoring only in 2027.
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Annual in rotating quarters. See Nitrogen Series Monitoring section. Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Chronic WET	Monthly Avg	1.0 TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET testing section for more information.

Changes from Previous Permit

Changes highlighted in table above.

Flow Rate: Sample Frequency changed to Daily from Continuous.

Disinfection & E. coli: At the end of the compliance schedule, Disinfection requirements and E. coli limits of 126 #/100 ml as a monthly geometric mean that may not be exceeded and 410 #/100 ml as a daily maximum that may not be exceeded more than 10 percent of the time in any calendar month will apply. Monitoring is not required until the limit becomes effective and the end of the compliance schedule.

Phosphorus MDV- The permittee has applied for a multi-discharger variance (MDV) for phosphorus for this permit term and the application has been approved by the Department. A county payment is required for year 2024. The permittee is required to implement watershed measures in Watershed Plan MDV-2024-01 to reduce the amount of phosphorus entering the receiving water. See the schedules section for more information.

Temperature - One year of monitoring has been added to the permit.

Total Nitrogen Monitoring (TKN, N02+N03 and Total N): Annual monitoring in rotating quarters throughout the permit term was added to the permit.

Explanation of Limits and Monitoring Requirements

Refer to the Water Quality-Based Effluent Limitations (WQBELs) memo for the Bristol Utility District 1 prepared by Nicole Krueger dated May 2, 2024.

Monitoring Frequency: The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Monitoring frequency decisions are based on requirements in s. NR 205.066(1), Wis. Adm. Code, (decisions are case-by-case) and considering the factors in s. NR 210.04 (a) through (e), Wis. Adm. Code, along with recommendations provided in the *Monitoring Frequencies for Individual Wastewater Permits* guidance (April 12, 2021). After evaluation, sampling frequency for all existing parameters was retained from previous permit.

BOD₅, TSS, DO, pH: Standard municipal wastewater requirements for BOD₅, total suspended solids, dissolved oxygen, and pH are included based on ch. NR 210, Wis. Adm. Code, ‘Sewage Treatment Works’ requirements for discharges to fish and aquatic life streams. Tracking of BOD₅ and total suspended solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in the Standard Requirements section of the permit. Chapter NR 102, Wis. Adm. Code, ‘Water Quality Standards for Surface Waters’ also specifies requirements for pH for fish and aquatic life streams.

Flow Rate: Sample frequency changed to Daily from Continuous for eDMR reporting purposes.

Nitrogen, Ammonia: Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Tables 2C and 4B of ch. NR 105, Wis. Adm. Code. Subchapter IV of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for ammonia.

Disinfection & E. coli: Revisions to bacteria surface water quality criteria to protect recreational uses and accompanying E. coli WPDES permit implementation procedures became effective May 1, 2020.

Section NR 102.04(5)(a), Wis. Adm. Code, states that all surface waters shall be suitable for recreational use and meet the E. coli criteria established to protect this use. Section NR 102.04(5)(b), Wis. Adm. Code, states that exceptions to the disinfection requirement can be made if the department determines, in accordance with the procedures specified in s. NR 210.06(3), Wis. Adm. Code, that disinfection is not required to meet water quality criteria. As part of the reissuance process, the requirements for disinfection were reviewed under s. NR 210.06(3), Wis. Adm. Code.

It was determined that the permittee is required to disinfect, during the following months May – September. See WQBEL for further explanation.

Phosphorus- Phosphorus rules became effective December 1, 2010 per NR 217, Wis. Adm. Code, that required the permittee to comply with water quality based effluent limits (WQBELs) for total phosphorus. The final phosphorus WQBELs are 0.225 mg/L expressed as a monthly average, and 0.075 mg/L and 0.54 lbs/day expressed as a six-month average and were to become effective as scheduled unless a variance was granted. For this permit term, the permittee has applied for the Multi-Discharger Variance (MDV) for phosphorus as provided for in s. 283.16, Wis. Stats., and approved by USEPA on February 6, 2017 until February 5, 2027. The

permittee qualifies for the MDV because it is an existing source and a major facility upgrade is needed to comply with the applicable phosphorus WQBELs, thereby creating a financial burden.

An interim limit of 0.47 mg/L, expressed as a monthly average, will become effective immediately at permit reissuance without the need for a compliance schedule.

Conditions of the MDV require the permittee to optimize phosphorus removal throughout the proposed permit term, comply with interim limits and make annual payments to participating county(s) by March 1 of each year (applicable only in 2024) based on the pounds of phosphorus discharged during the previous year in excess of the specified target value. The “price per pound” value is \$50.00 adjusted for CPI annually during the first quarter as defined by s. 283.16(8)(a)2, Wis. Stats and takes effect for reissued permits with effective dates starting April 1. This may differ from the “price per pound” that is public noticed; however, the “price per pound” is set upon reissuance and is applicable for the entire permit term. The participating county(s) uses these payments to implement non-point source (agricultural and urban) phosphorus control strategies at the watershed level.

Total Maximum Daily Load (TMDL) Limitations: TMDL Under Development: A Total Maximum Daily Load (TMDL) is being developed for the Fox (IL) River Basin to address phosphorus and total suspended solids water quality impairments within the TMDL area. This TMDL will likely result in limitations for phosphorus and total suspended solids that must be included in WPDES permits, which may be different than those calculated for this permit reissuance. TMDL-derived limits may be included in lieu of or in addition to the calculated limits upon permit reissuance or modification once the TMDL has been approved by U.S. EPA, according to s. NR 217.16, Wis. Adm. Code.

Chloride: Acute and chronic chloride toxicity criteria for the protection of aquatic life are included in Tables 1 and 5 of ch. NR 105, Wis. Adm. Code. Subchapter VII of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for chloride. Chloride monitoring in the year 2027 was added to the permit to ensure that 11 sample results are available at the next permit issuance to meet the data requirements of s. NR 106.85, Wis. Adm. Code.

Thermal: Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. One year of temperature monitoring in the year 2027 has been added to the permit because it has been more than 10 years since data has been collected.

Total Nitrogen Monitoring (NO₂+NO₃, TKN and Total N)- The Department has included effluent monitoring for Total Nitrogen in the permit through the authority under §§ 283.55(1)(e), Wis. Stats., which allows the department to require the permittee to submit information necessary to identify the type and quantity of any pollutants discharged from the point source, and through s. NR 200.065(1)(h), Wis. Adm. Code, which allows for this monitoring to be collected during the permit term. More information on the justification to include total nitrogen monitoring in wastewater permits can be found in the “Guidance for Total Nitrogen Monitoring in Wastewater Permits” dated October 1, 2019

PFOS and PFOA - NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. Pursuant to s. NR 106.98(3)(b), Wis. Adm. Code, the department evaluated the

need for PFOS and PFOA monitoring taking into consideration the presence of potential PFOS or PFOA industrial wastes, remediation sites and other potential sources of PFOS or PFOA. Based on information available at the time the proposed permit was drafted, the department has determined the permittee does not need to sample the effluent for PFOS or PFOA as part of this permit reissuance. The department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

Chronic Whole Effluent Toxicity (WET): Whole effluent toxicity (WET) testing requirements are determined in accordance with ss. NR 106.08 and NR 106.09 Wis. Adm. Code, as revised in August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at <http://dnr.wi.gov/topic/wastewater/wet.html>). Chronic WET tests are scheduled in the rotating quarters annually as listed in the permit. In accordance with the requirements specified in s. NR 106.08, Wis. Adm. Code, a chronic WET limit is required. A minimum annual chronic WET monitoring is required when a limit is present in accordance with Federal regulations at 40 CFR 122.44(i).

3 Land Application - Monitoring and Limitations

Municipal Sludge Description						
Sample Point	Sludge Class (A or B)	Sludge Type (Liquid or Cake)	Pathogen Reduction Method	Vector Attraction Method	Reuse Option	Amount Reused/Disposed (Dry Tons/Year)
002	B	Liquid	Sludge is hauled to another facility for disposal.			98.8 dry U.S. Tons
Does sludge management demonstrate compliance? Yes.						
Is additional sludge storage required? No.						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? Yes.						
If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in landapplying sludge from this facility						
Is a priority pollutant scan required? No.						

Sample Point Number: 002- Hauled Sludge

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Annual	Composite	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Sample once in 2025. See PCB section.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Sample once in 2025. See PCB section.
Radium 226 Dry Wt		pCi/g	Annual	Composite	
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Annual	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

Changes highlighted in table above.

PCB - Updated monitoring year to 2025.

PFAS – Annual monitoring is included in the permit pursuant s. NR 204.06(2)(b)9, Wis. Adm. Code

Explanation of Limits and Monitoring Requirements

Requirements for municipal sludge are determined in accordance with ch. NR 204, Wis. Adm. Code. Ceiling and high-quality limits for metals in sludge are specified in s. NR 204.07(5), Wis. Adm. Code. Requirements for pathogens are specified in s. NR 204.07(6) and s. NR 204.07(7), Wis. Adm. Code, for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k), Wis. Adm. Code. Radium requirements are addressed in s. NR 204.07(3)(n), Wis. Adm. Code.

PFAS- The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA is currently developing a risk assessment to determine future land application rates and expects to release this risk assessment by the end of 2024. In the interim, the department has developed the “Interim Strategy for Land Application of Biosolids and Industrial Sludges Containing PFAS”.

Collecting sludge data on PFAS concentrations from a wide range of wastewater treatment facilities will help protect public health from exposure to elevated levels of PFAS and determine the department’s implementation of EPA’s recommendations. To quantitate this risk, PFAS sampling has been included in the proposed WPDES permit pursuant to ss. NR 214.18(5)(b) and NR 204.06(2)(b)9, Wis. Adm. Code.

4 Schedules

4.1 Disinfection and Effluent Limitations for E. coli

Required Action	Due Date
Progress Report: The permittee shall submit a progress report on development and submittal of a facility plan for upgrades to meet disinfection requirements and E. coli limits.	06/30/2025
Submit Facility Plan: The permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code for meeting disinfection requirements and complying with E. coli surface water limitations. The permittee may submit an abbreviated facility plan if the Department determines that the modifications are minor.	04/30/2026
Final Plans and Specifications: The permittee shall submit final construction plans to the Department for approval pursuant to ch. NR 108, Wis. Adm. Code, specifying treatment plant upgrades that must be constructed to meet disinfection requirements per s. NR 210.06(1), Wis. Adm. Code, achieve compliance with final E. coli limitations, and a schedule for completing construction of the upgrades by the complete construction date specified below.	03/31/2027
Treatment Plant Upgrade to Meet Limitations: The permittee shall initiate bidding, procurement, and/or construction of the project. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41, Stats., prior to initiating activities defined as construction under ch. NR 108, Wis. Adm. Code. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications.	09/30/2027
Construction Upgrade Progress Report: The permittee shall submit a progress report on construction upgrades.	09/30/2028
Complete Construction: The permittee shall complete construction of wastewater treatment system	03/31/2029

upgrades.	
Achieve Compliance: The permittee shall achieve compliance with final E. coli limitations.	04/30/2029

4.2 Phosphorus Schedule - Continued Optimization

The permittee is required to optimize performance to control phosphorus discharges per the following schedule.

Required Action	Due Date
Optimization: The permittee shall continue to implement the optimization plan as previously approved to optimize performance to control phosphorus discharges. Submit a progress report on optimizing removal of phosphorus by the Due Date.	09/30/2025
Progress Report #2: Submit a progress report on optimizing removal of phosphorus.	09/30/2026
Progress Report #3: Submit a progress report on optimizing removal of phosphorus.	09/30/2027
Progress Report #4: Submit a progress report on optimizing removal of phosphorus.	09/30/2028
Progress Report #5: Submit a progress report on optimizing removal of phosphorus.	09/30/2029

4.3 Phosphorus Payment per Pound to County

The permittee is required to make annual payments for phosphorus reductions to the participating county or counties in accordance with s. 283.16(8), Wis. Stats, and the following schedule. The price per pound will be set at the time of permit reissuance and will apply for the duration of the permit.

Required Action	Due Date
<p>Annual Verification of Phosphorus Payment to County: The permittee shall make a total payment to the participating county or counties approved by the Department by March 1 of each calendar year. The amount due is equal to the following: [(lbs of phosphorus discharged minus the permittee's target value) times (\$53.01 per pound)] or \$640,000, whichever is less. See the payment calculation steps in the Surface Water section.</p> <p>The permittee shall submit Form 3200-151 to the Department by March 1 of each calendar year indicating total amount remitted to the participating counties to verify that the correct payment was made. The first payment verification form is due by the specified Due Date.</p> <p>Note: The applicable Target Value is 0.2 mg/L as defined by s. 283.16(1)(h), Wis. Stats. The "per pound" value is \$50.00 adjusted for CPI.</p>	03/01/2025

4.4 Watershed Project Annual Reports

The permittee is required to submit annual watershed project reports in accordance with the following schedule.

Required Action	Due Date
<p>Annual Watershed Report: Submit an annual report by May 1 of each year that documents:</p> <ol style="list-style-type: none"> 1)The calculated monthly discharge of phosphorus in lbs/month and the calculated monthly target value in lbs/month for the previous calendar year. See the calculation steps in the Surface Water section of this permit. 2)The calculated Annual Offset to be generated by the approved Watershed Plan for the previous calendar year. See the calculation steps in the Surface Water section of this permit. 	05/01/2025

<p>3) Verification that Watershed Plan MDV-2024-01 was implemented as approved and practices are operated and maintained consistent with the approved plan.</p> <p>4) The pounds of phosphorus reduction achieved through the approved Watershed Plan for the previous calendar year.</p> <p>5) The source of the phosphorus reductions with a reference to the approved Watershed Plan used to generate the offset.</p> <p>6) Identification of any non-compliance or failure to implement the approved Watershed Plan.</p> <p>The first report is due by the specified Due Date.</p>	
Annual Watershed Report #2: Submit an annual report (as described above) by May 1.	05/01/2026
Annual Watershed Report #3: Submit an annual report (as described above) by May 1.	05/01/2027
Annual Watershed Report #4: Submit an annual report (as described above) by May 1.	05/01/2028
Annual Watershed Report #5: Submit an annual report (as described above) by May 1.	05/01/2029
<p>Agreement Modification: If the required offset of phosphorus is not generated by the approved Watershed Plan in any year, the permittee shall propose a modification to the binding written agreement or seek alternative compliance or variance options allowed under state law.</p> <p>Note: Failure to propose a modification to achieve compliance with the offset requirements may result in termination of the binding written agreement.</p>	
<p>Continued Coverage: If the permittee intends to seek a renewed variance, an application for the MDV (Multi Discharge Variance) shall be submitted as part of the application for permit reissuance in accordance with s. 283.16(4)(b), Wis. Stats.</p>	

Explanation of Schedules

Disinfection and Effluent Limitations for E. coli

A compliance schedule is included in the permit to provide time for the permittee to investigate options for meeting new effluent E. coli water quality-based effluent limits while coming into compliance with the limits as soon as reasonably possible.

Continued Optimization

Per s. 283.16(6)(a), Wis. Stats. the Department may include a requirement that the permittee optimize the performance of a point source in controlling phosphorus discharges, which may be necessary to achieve compliance with multi-discharger variance interim limits. This compliance schedule requires the permittee to continue to implement the optimization plan that was approved during the previous permit term.

Phosphorus Payment per Pound to County

Subsection 283.16(6)(b), Wis. Stats., requires permittees that have received approval for the multi-discharger variance (MDV) to implement a watershed project that is designed to reduce non-point sources of phosphorus within the HUC 8 watershed in which the permittee is located. The permittee has selected the "Payment to Counties" watershed option described in s. 283.16(8), Wis. Stats. Under this option the permittee shall make a payment to participating county(s) that are calculated based on the amount of phosphorus actually discharged during a calendar year in pounds per year less the amount of phosphorus that would have been discharged had the permittee discharged phosphorus at a target value concentration of 0.2 mg/L. The pounds of phosphorus discharged in excess of the target value is multiplied by a per pound phosphorus charge that will equal \$54.99 per pound. This schedule requires the permittee to submit Form 3200-151 to the Department indicating the total amount remitted to the participating county(s).

Watershed Project Annual Reports

Subsection 283.16(6)(b), Wis. Stats., requires permittees that have received approval for the multi-discharger variance (MDV) to implement a watershed project that is designed to reduce non-point sources of phosphorus within the HUC 8 watershed in which the permittee is located. The permittee has selected the “Watershed Project” watershed option described in s. 283.16(8m), Wis. Stats. Under this option the permittee shall implement a plan that is designed to result in annual reductions from other sources in the basin based on the pounds of phosphorus discharged during the previous year in excess of the specified target value. This schedule requires the permittee to submit annual reports to the Department indicating adherence to the approved watershed plan.

Attachments:

Water Quality Based Effluent Limitations Memo dated March 2, 2024 and prepared by Nicole Krueger.

Multi-Discharger Variance Application, dated January 11, 2024.

Multi-Discharger Variance Evaluation Checklist, dated May 14, 2024.

Multi-Discharger Variance Conditional Approval, dated August 14, 2024.

Expiration Date:

September 29, 2029

Justification Of Any Waivers From Permit Application Requirements

No waivers were requested or granted from permit application requirements.

Prepared By: Melanie Burns, Wastewater Specialist

Date: May 28, 2024

Date Post Fact Check: July 1, 2024, Changes made to listed quarters for WET and Nitrogen series testing to match for streamlined reporting purposes.

Date Post Public Notice:

CORRESPONDENCE/MEMORANDUM

DATE: 05/02/2024 – updated 05/29/2024 for typos

TO: Melanie Burns – SER

FROM: Nicole Krueger – SER *Nicole Krueger*

SUBJECT: Water Quality-Based Effluent Limitations for Bristol Utility District 1
WPDES Permit No. WI-0022021-10

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from Bristol Utility District 1 in Kenosha County. This municipal wastewater treatment facility (WWTF) discharges to Bristol Creek located in the Des Plaines River Watershed in the Fox (IL) River Basin. The evaluation of the permit recommendations is discussed in more detail in the attached report.

Based on our review, the following recommendations are made on a chemical-specific basis at Outfall 001:

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						1
BOD ₅			30 mg/L	20 mg/L		2,3
TSS			30 mg/L	20 mg/L		2,3,4
pH	9.0 s.u.	6.0 s.u.				2
Dissolved Oxygen		4.0 mg/L				2,3
Bacteria						5
<i>E. coli</i>				126 #/100 mL geometric mean		
Ammonia Nitrogen						6
October	7.9 mg/L		7.9 mg/L	3.9 mg/L		
November – March	7.9 mg/L		7.9 mg/L	4.4 mg/L		
April	8.0 mg/L		4.5 mg/L	1.9 mg/L		
May	8.0 mg/L		4.5 mg/L	2.0 mg/L		
June – September	8.1 mg/L		2.7 mg/L	1.3 mg/L		
Phosphorus						4,7
MDV Interim				0.34 mg/L		
Final				0.225 mg/L	0.075 mg/L 0.54 lbs/day	
Chloride						8
TKN, Nitrate+Nitrite, and Total Nitrogen						9
Chronic WET				1.0 TU _c		10,11
Temperature						1

Footnotes:

1. Monitoring only.
2. No changes from the current permit.
3. These limits are required per s. NR 104.02(3)(b), Wis. Adm. Code for a limited aquatic life classification.

4. A Total Maximum Daily Load (TMDL) is being developed for the Fox (IL) River Basin to address total phosphorus water quality impairments within the TMDL area. This TMDL will likely result in limitations for TSS and phosphorus that must be included in WPDES permits, which may be different than those calculated for this reissuance. TMDL-derived limits may be included in lieu of or in addition to the calculated limits upon permit reissuance or modification once the TMDL has been approved by U.S. EPA, according to s. NR 217.16, Wis. Adm. Code.
5. Bacteria limits apply during the disinfection season of May through September. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL. A compliance schedule may be included in the reissued permit to meet these limits.
6. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
7. Under the phosphorus MDV, an interim limit of 0.34 mg/L as a monthly average is recommended. The final WQBELs remain at 0.225 mg/L as a monthly average and 0.075 mg/L and 0.54 lbs/day as six-month averages.
8. Monitoring at a frequency to ensure that 11 samples are available at the next permit issuance.
9. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen monitoring is recommended for all minor municipal permittees. Total Nitrogen is the sum of nitrate (NO₃), nitrite (NO₂), and total kjeldahl nitrogen (TKN) (all expressed as N).
10. Annual chronic WET testing is recommended. The Instream Waste Concentration (IWC) to assess chronic test results is 100%. According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), chronic testing shall be performed using a dilution series of 100%, 75%, 50%, 25% & 12.5% and the dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from Bristol Creek, upstream of the discharge and outside of the mixing zone.
11. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge and should continue after the permit expiration date (until the permit is reissued).

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Nicole Krueger at Nicole.Krueger@wisconsin.gov or Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (3) – Narrative, Map, & 2013 Ammonia Calculations

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Attachment #1
**Water Quality-Based Effluent Limitations for
 Bristol Utility District #1**

WPDES Permit No. WI-0022021-10

Prepared by: Nicole Krueger

PART 1 – BACKGROUND INFORMATION

Facility Description

The Bristol Utility District 1 operates a 0.872 million gallons per day (MGD) activated sludge wastewater treatment facility that serves approximately 2,000 people with no industrial loading. Treatment consists of screening, grit removal, mixed liquor aeration, final clarification, and post-aeration before effluent is discharged to Bristol Creek. Ferric sulfate is added prior to the aeration basins and final clarification to aid in phosphorus removal. Biosolids processes include gravity settling and liquid sludge storage before being hauled to another permitted facility.

Disinfection of the effluent is not required in the current permit. Because the receiving water is designated as recreational use, disinfection would be required per s. NR 102.04(5)(a) Wis. Adm. Code. Considering the factors listed in s. NR 210.06(3) Wis. Adm. Code, Bristol would not be exempt from disinfection.

Attachment #2 is a map of the area showing the approximate location of Outfall 001.

Existing Permit Limitations

The current permit, expiring on July 31, 2024, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						1
BOD ₅			30 mg/L	20 mg/L		2
TSS			30 mg/L	20 mg/L		2
pH	9.0 s.u.	6.0 s.u.				3
Dissolved Oxygen		4.0 mg/L				2
Ammonia Nitrogen						
October	7.9 mg/L		9.2 mg/L	3.9 mg/L		
November – March	7.9 mg/L		10 mg/L	4.4 mg/L		
April	8.0 mg/L		4.5 mg/L	1.9 mg/L		
May	8.0 mg/L		4.5 mg/L	2.0 mg/L		
June – September	8.1 mg/L		2.7 mg/L	1.3 mg/L		
Phosphorus						4
MDV Interim				0.47 mg/L		
Final				0.225 mg/L	0.075 mg/L 0.54 lbs/day	
Chloride						1
Chronic WET				1.0 TUc		5

Footnotes:

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1. Monitoring only.
2. These limits are required per s. NR 104.02(3)(b), Wis. Adm. Code for a limited aquatic life classification.
3. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.
4. Bristol's phosphorus compliance option is the multidischarger variance.
5. Chronic WET testing is required annually. The IWC for chronic WET was 100%.

Receiving Water Information

- Name: Bristol Creek
- Waterbody Identification Code (WBIC): 737350
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Limited aquatic life (LAL) community, non-public water supply. The Des Plaines River, approximately 1 mile downstream of Outfall 001, is classified as a warmwater sport fish (WWSF) classification.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q₁₀ and 7-Q₂ values are estimates from USGS, where Outfall 001 is located.

Bristol Creek (at the LAL classification)
7-Q₁₀ = 0 cfs (cubic feet per second)
7-Q₂ = 0 cfs

Des Plaines River (1 mile downstream of Outfall 001 at the WWSF classification)
7-Q₁₀ = 0 cfs
7-Q₂ = 0 cfs

The Harmonic Mean has been estimated based on average flow and the 7-Q₁₀ using an equation from U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991, EPA/505/2-90-001, pgs. 88-89).

- Hardness = 296 mg/L as CaCO₃. This value represents the geometric mean of data from chronic WET testing from 06/20/2017 – 05/04/2021.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: Not applicable where the receiving water low flows are zero.
- Source of background concentration data: Background concentrations are not included because they do not impact the calculated WQBEL when the receiving water low flows are equal to zero.
- Multiple dischargers: None.
- Impaired water status: The immediate receiving water is 303(d) listed as impaired due to a degraded biological community. The Des Plaines River approximately 1 mile downstream is impaired for total phosphorus which will be addressed in the Fox (IL) River TMDL.

Effluent Information

- Design flow rate(s):
Annual average = 0.872 MGD (Million Gallons per Day)
For reference, the actual average flow from 09/01/2019 – 02/29/2024 was 0.39 MGD.
- Hardness = 357 mg/L as CaCO₃. This value represents the geometric mean of data from the permit reissuance application from 10/26/2023 – 11/06/2023.
- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable –

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this facility does not have an approved Zone of Initial Dilution (ZID).

- Water source: Domestic wastewater with water supply from wells.
- Additives: Ferric sulfate is added for phosphorus removal.
- Effluent characterization: This facility is categorized as a minor municipality, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus ammonia, chloride, hardness and phosphorus.
- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2 below, in the column titled “MEAN EFFL. CONC.”. Otherwise, substances with multiple effluent data are shown in the tables below or in their respective parts in this evaluation.

Effluent Copper Data

Sample Date	Copper µg/L	Sample Date	Copper µg/L	Sample Date	Copper µg/L
10/23/2023	5.9	11/06/2023	4.1	11/20/2023	7
10/26/2023	4.6	11/09/2023	4.8	11/23/2023	3.3
10/30/2023	5.0	11/13/2023	5.6	11/27/2023	5
11/02/2023	5.9	11/16/2023	3.7		
1-day P ₉₉ = 8.0 µg/L					
4-day P ₉₉ = 6.4 µg/L					

Effluent Chloride Data

	Chloride mg/L
1-day P ₉₉	488
4-day P ₉₉	377
30-day P ₉₉	316
Mean	285
Std	70.7
Sample size	54
Range	98 – 420

The following table presents the average concentrations and loadings at Outfall 001 from 09/01/2019 – 02/29/2024 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Parameter Averages with Limits

	Average Measurement
BOD ₅	3.2 mg/L*
TSS	4.9 mg/L*
pH field	7.3 s.u.
Phosphorus	0.21 mg/L
Ammonia Nitrogen	0.10 mg/L*
Dissolved Oxygen	8.7 mg/L

*Results below the level of detection (LOD) were included as zeroes in calculation of average.

**PART 2 – WATER QUALITY-BASED EFFLUENT LIMITATIONS
FOR TOXIC SUBSTANCES – EXCEPT AMMONIA NITROGEN**

Permit limits for toxic substances are required whenever any of the following occur:

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99th percentile (or P₉₉) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

Acute Limits based on 1-Q₁₀

Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm. Code. Previously daily maximum limits for toxic substances were calculated as two times the ATC. However, changes to ch. NR 106, Wis. Code, (September 1, 2016) require the Department to calculate acute limitations using the same mass balance equation as used for other limits along with the 1-Q₁₀ receiving water low flow to determine if more restrictive effluent limitations are needed to protect the receiving stream from discharges which may cause or contribute to an exceedance of the acute water quality standards. The mass balance equation is provided below.

$$\text{Limitation} = \frac{(\text{WQC}) (Q_s + (1-f) Q_e) - (Q_s - f Q_e) (C_s)}{Q_e}$$

Where:

WQC = Acute toxicity criterion or secondary acute value according to ch. NR 105, Wis. Adm. Code.

Q_s = average minimum 1-day flow which occurs once in 10 years (1-day Q₁₀)
if the 1-day Q₁₀ flow data is not available = 80% of the average minimum 7-day flow which occurs once in 10 years (7-day Q₁₀).

Q_e = Effluent flow (in units of volume per unit time) as specified in s. NR 106.06(4)(d), Wis. Adm. Code.

f = Fraction of the effluent flow that is withdrawn from the receiving water, and

C_s = Background concentration of the substance (in units of mass per unit volume) as specified in s. NR 106.06(4)(e), Wis. Adm. Code.

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q₁₀ method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is the case for Bristol.

The following tables list the calculated WQBELs for this discharge along with the results of effluent sampling. All concentrations are expressed in terms of micrograms per Liter (µg/L), except for hardness and chloride (mg/L).

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	REF. HARD.* mg/L	ATC	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P ₉₉	1-day MAX. CONC.
Arsenic		340	340	68.0	1.2		

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SUBSTANCE	REF. HARD.* mg/L	ATC	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P ₉₉	1-day MAX. CONC.
Cadmium	357	124	124	24.9	<0.19		
Chromium	301	4446	4446	889	1.2		
Copper	357	51.6	51.6			8.0	7.0
Lead	356	365	365	72.9	<4.3		
Nickel	268	1080	1080	216	4.5		
Zinc	333	345	345	68.9	17		
Chloride (mg/L)		757	757			488	420

* The indicated hardness may differ from the effluent hardness because the effluent hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the acute criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

** Per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016 consideration of ambient concentrations and 1-Q₁₀ flow rates yields a more restrictive limit than the 2 × ATC method of limit calculation.

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	REF. HARD.* mg/L	CTC	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P ₉₉
Arsenic		152	152	30.4	1.2	
Cadmium	175	3.82	3.82	0.76	<0.19	
Chromium	296	321	321	64.3	1.2	
Copper	296	26.2	26.2			6.4
Lead	296	79.9	79.9	16.0	<4.3	
Nickel	268	169	169	33.8	4.5	
Zinc	296	311	311	62.2	17	
Chloride (mg/L)		395	395			377

* The indicated hardness may differ from the receiving water hardness because the receiving water hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the chronic criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

Monthly Average Limits based on Wildlife Criteria (WC)

The effluent characterization did not include any effluent sampling results for substances for which Wildlife Criteria exist.

Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	HTC	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Cadmium	880	880	176	<0.19
Chromium (+3)	8400000	8400000	1680000	1.2
Lead	2240	2240	448	<4.3
Nickel	110000	110000	22000	4.5

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	HCC	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	40	40	8.0	1.2

In addition to evaluating the need for limits for each individual substance for which HCC exist, s. NR 106.06(8), Wis. Adm. Code, requires the evaluation of the cumulative cancer risk. Because no effluent limits are needed based on HCC, determination of the cumulative cancer risk is not needed per s. NR 106.06(8), Wis. Adm. Code.

Conclusions and Recommendations

Based on a comparison of the effluent data and calculated effluent limitations, effluent limitations are not required for parameters in this section.

Chloride – Considering available effluent data from the current permit term (09/02/2019 – 02/05/2024), the 1-day P₉₉ chloride concentration is 488 mg/L, and the 4-day P₉₉ of effluent data is 377 mg/L.

These effluent concentrations are below the calculated WQBELs for chloride, therefore no effluent limits are needed. **Chloride monitoring is recommended to ensure that 11 sample results are available at the next permit issuance to meet the data requirements of s. NR 106.85, Wis. Adm. Code.**

Mercury – The permit application did not require monitoring for mercury because Bristol is categorized as a minor facility as defined in s. NR 200.02(8), Wis. Adm. Code. In accordance with s. NR 106.145(3)(a)3, Wis. Adm. Code, a minor municipal discharger shall monitor, and report results of influent and effluent mercury monitoring once every three months if, “there are two or more exceedances in the last five years of the high-quality sludge mercury concentration of 17 mg/kg specified in s. NR 204.07(5), Wis. Adm. Code.” A review of the past five years of sludge characteristics data reveals that all the sample results are within expected analytical ranges and well below the 17 mg/kg level. All samples were reported as nondetect (<0.79 - <7.5 mg/kg). **Therefore, no mercury monitoring is recommended at Outfall 001.**

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code. Based on the type of discharge, the effluent flow rate, and known levels of PFOS/PFOA in the source water, **PFOS and PFOA monitoring is not recommended.** The Department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life. The current permit has daily maximum, weekly average and monthly average limits. These limits are re-evaluated at this time due to the following changes:

- Subchapter IV of ch. NR 106, Wis. Adm. Code allows limits based on available dilution instead of limits set to twice the acute criteria.

- The maximum expected effluent pH has changed

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

Daily maximum limitations are based on acute toxicity criteria in ch. NR 105, Wis. Adm. Code, which are a function of the effluent pH and the receiving water classification. The acute toxicity criterion (ATC) for ammonia is calculated using the following equation:

$$ATC \text{ in mg/L} = [A \div (1 + 10^{(7.204 - pH)})] + [B \div (1 + 10^{(pH - 7.204)})]$$

Where:

A = 0.633 and B = 90.0 for Limited Aquatic Life, and
 pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. A total of 1643 sample results were reported from 09/02/2019 – 02/29/2024. The maximum reported value was 9.0 s.u. (Standard pH Units). The effluent pH was 8.2 s.u. or less 99% of the time. The 1-day P₉₉, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 8.0 s.u. The mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 8.0 s.u. Therefore, a value of 8.0 s.u. is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 8.0 s.u. into the equation above yields an ATC = 13 mg/L.

Daily Maximum Ammonia Nitrogen Effluent Limitations Calculation Method

In accordance with s. NR 106.32(2), Wis. Adm. Code daily maximum ammonia limitations are calculated using the the 1-Q₁₀ receiving water low flow if it is determined that the previous method of acute ammonia limit calculation (2×ATC) is not sufficiently protective of the fish and aquatic life. The more restrictive calculated limits shall apply.

The calculated daily maximum ammonia nitrogen effluent limits using the mass balance approach with the 1-Q₁₀ (estimated as 80 % of 7-Q₁₀) and the 2×ATC approach are shown below.

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
2×ATC	26
1-Q ₁₀	13

The 1-Q₁₀ method yields the most stringent limits for Bristol. This limit is greater than the current daily maximum limits. The Department would be unable to increase the limit due to the lack of need as shown via the antidegradation rule (ch. NR 207, Wis. Adm. Code) because the highest reported concentration was 4.3 mg/L during the previous permit term. **No changes are recommended for any of the daily maximum limits for ammonia.**

Weekly and Monthly Average Limits based on Chronic Toxicity Criteria (CTC)

Weekly and monthly average limits are not included in the current permit but are being evaluated here due to changes to ch. NR 106, Wis. Adm. Code. **The weekly and monthly average ammonia nitrogen limits calculation from the previous memo do not change** because there have been no changes in the effluent and receiving water flow rates. The calculations from the previous WQBEL memo are shown in Attachment #3.

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from 09/02/2019 – 02/28/2024, with those results being compared to the calculated limits to determine the need to include ammonia limits in Bristol’s permit for the respective month ranges. That need is determined by calculating 99th upper percentile (or P₉₉) values for ammonia during each of the month ranges and comparing the daily maximum values to the daily maximum limit.

Ammonia Nitrogen Effluent Data

Ammonia Nitrogen mg/L	October	November – March	April	May	June – September
1-day P ₉₉	1.08	1.53	0.88	0.06	0.25
4-day P ₉₉	0.60	0.98	0.50	0.05	0.13
30-day P ₉₉	0.28	0.41	0.22	0.04	0.07
Mean*	0.15	0.14	0.11	0.03	0.04
Std	0.24	0.43	0.20	0.01	0.05
Sample size	65	314	49	54	277
Range	0.012 – 1.0	<0.017 - 4.3	0.017 - 1.03	<0.018 - 0.076	<0.017 - 0.639

*Values lower than the level of detection were substituted with a zero

Based on this comparison, there is no reasonable potential for the discharge to exceed any of the calculated ammonia nitrogen limits.

The permit currently has daily maximum, weekly average, and monthly average limits year-round. Where there are existing ammonia nitrogen limits in the permit, the limits must be retained regardless of reasonable potential, consistent with s. NR 106.33(1)(b), Wis. Adm. Code:

- (b) If a permittee is subject to an ammonia limitation in an existing permit, the limitation shall be included in any reissued permit. Ammonia limitations shall be included in the permit if the permitted facility will be providing treatment for ammonia discharges.

Expression of Limits

Revisions to ch. NR 106, Wis. Adm. Code, in September 2016 aligned Wisconsin’s WQBELs with 40 CFR § 122.45(d), which specifies that effluent limits for continuous dischargers must be expressed as weekly and monthly averages for publicly owned treatment works and as daily maximums and monthly averages for all other dischargers, unless shown to be impracticable.

Sections NR 106.07(3)(e)1., Wis. Adm. Code require WPDES permits contain weekly average and monthly average limitations for municipal dischargers that are equal to the daily maximum limit or the calculated weekly average and monthly average WQBELs, whichever is more restrictive.

Because the weekly average limits for October – March are greater than the daily maximum limit of 7.9 mg/L, the weekly average limit is recommended to be equal to the daily maximum limit.

Conclusions and Recommendations

In summary, after rounding to two significant figures, the following ammonia nitrogen limitations are recommended. No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm

Code. Additional limits to meet the requirements in s. NR 106.07, Wis. Adm Code, are shown below in bold.

Final Ammonia Nitrogen Limits

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
October	7.9	7.9	3.9
November – March	7.9	7.9	4.4
April	8.0	4.5	1.9
May	8.0	4.5	2.0
June – September	8.1	2.7	1.3

PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR BACTERIA

Section NR 102.04(5), Wis. Adm. Code, says that all surface waters shall be suitable for supporting recreational use and shall meet E. coli criteria during the recreation season. Section NR 102.04(5)(b), Wis. Adm. Code, allows the Department to make exceptions when it determines, in accordance with s. NR 210.06(3), Wis. Adm. Code, that wastewater disinfection is not required to meet E. coli limits and protect the recreational use. Section NR 210.06(3), Wis. Adm. Code, tasks the Department with determining the need for disinfection using a site-specific analysis based on potential risk to human or animal health. It sets out the factors that must be considered in determining the necessity to disinfect municipal wastewater or to change the length of the disinfection season.

Bristol had previously been exempted from disinfection based on the limited aquatic life classification of the receiving water. Section NR 210.06(3)(g), Wis. Adm. Code, states that disinfection decisions may be made based on the hydrologic classifications listed in s. NR 104.02(1), Wis. Adm. Code (not on the water quality classifications - i.e., limited forage fish, limited aquatic life - that are defined in s. NR 104.02(3), Wis. Adm. Code). The hydrologic classification for Bristol Creek is listed in ch. NR 104, Wis. Adm. Code, as noncontinuous. Discharges to noncontinuous streams with 7Q₁₀ values < 0.1 cfs usually result in effluent-dominated situations. As noted above, the risk of illness is related to the concentration of E. coli and therefore dilution is an important consideration when considering risk to human health. Since little to no dilution is present in these situations, disinfection should not be exempted based solely on this hydrological classification.

The Department has considered the information required by s.NR 210.06(3), Wis. Adm. Code, and has determined that the discharge cannot meet bacteria limits without disinfection. Section NR 210.06(2)(a)1, Wis. Adm. Code, includes two limits which must be included in permits for facilities which are required to disinfect:

1. The geometric mean of *E. coli* bacteria in effluent samples collected in any calendar month may not exceed 126 counts/100 mL.
2. No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 counts/100 mL.

These limits are required during May through September. It’s recommended that the permit include a compliance schedule to meet these limits.

Attachment #1
PART 5 – PHOSPHORUS

Technology-Based Effluent Limit

Subchapter II of Chapter NR 217, Wis. Adm. Code, requires municipal wastewater treatment facilities that discharge greater than 150 pounds of Total Phosphorus per month to comply with a monthly average limit of 1.0 mg/L, or an approved alternative concentration limit.

Because Bristol currently has a limit below 1.0 mg/L, this limit should be included in the reissued permit. This limit remains applicable unless a more stringent WQBEL is given.

In addition, the need for a WQBEL for phosphorus must be considered.

Water Quality-Based Effluent Limits (WQBEL)

Revisions to administrative rules regulating phosphorus took effect on December 1, 2010. These rule revisions include additions to s. NR 102.06, Wis. Adm. Code, which establish phosphorus standards for surface waters. Subchapter III of NR 217, Wis. Adm. Code, establishes procedures for determining WQBELs for phosphorus, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

Phosphorus criteria in s. NR 102.06, Wis. Adm. Code, do not apply to limited aquatic life waters as described in s. NR 102.06(6)(d), Wis. Adm. Code. These waters were not included in the USGS/WDNR stream and river studies and, therefore, the Department lacked the technical basis to determine and propose applicable criteria. At some time in the future, the Department may adopt phosphorus criteria based on new studies focusing on limited aquatic life waters. The Guidance for Implementing Wisconsin’s Phosphorus Water Quality Standards for Point Source Discharges (2020) suggests that during the interim, WQBELs should be based on the criteria and flow conditions for the next stream segment downstream (or downstream lake or reservoir, if appropriate), because ss. 217.12 and 217.13, Wis. Adm. Code, state that the Department must set WQBELs to protect downstream waters. The discharge location of the wastewater from Bristol is classified as limited aquatic life downstream from the point of discharge downstream to the Des Plaines River. The Des Plaines River is classified for warm water sport fishery uses

Section NR 102.06(3)(a), Wis. Adm. Code, specifically names river segments for which a phosphorus criterion of 0.100 mg/L applies. For other stream segments that are not specified in s. NR 102.06(3)(a), Wis. Adm. Code, s. NR 102.06(3)(b), Wis. Adm. Code, specifies a phosphorus criterion of 0.075 mg/L. The phosphorus criterion of 0.075 mg/L applies for the Des Plaines River.

The conservation of mass equation is described in s. NR 217.13(2)(a), Wis. Adm. Code, for phosphorus WQBELs and includes variables of water quality criterion (WQC), receiving water flow rate (Qs), effluent flow rate (Qe), and upstream phosphorus concentrations (Cs) provided below.

$$\text{Limitation} = [(WQC)(Q_s + (1-f) Q_e) - (Q_s - f Q_e) (C_s)] / Q_e$$

Where:

WQC = 0.075 mg/L for Bristol Creek

Qs = 100% of the 7-Q₂ of 0 cfs

Cs = background concentration of phosphorus in the receiving water pursuant to s. NR 217.13(2)(d), Wis. Adm. Code

Qe = effluent flow rate = 0.872 MGD = 1.35 cfs

f = the fraction of effluent withdrawn from the receiving water = 0

The effluent limit is set equal to criteria because the receiving water flow is equal to zero.

Effluent Data

The following table summarizes effluent total phosphorus monitoring data from 09/02/2019 – 02/28/2024.

Total Phosphorus Effluent Data	
	Phosphorus mg/L
1-day P ₉₉	0.41
4-day P ₉₉	0.30
30-day P ₉₉	0.24
Mean	0.21
Std	0.07
Sample size	705
Range	0.087 - 0.44

Reasonable Potential Determination

The discharge has reasonable potential to cause or contribute to an exceedance of the water quality criterion because the 30-day P₉₉ of reported effluent total phosphorus data is greater than the calculated WQBEL. Therefore, **a WQBEL is required.**

Limit Expression

According to s. NR 217.14(2), Wis. Adm. Code, because the calculated WQBEL is less than or equal to 0.3 mg/L, the effluent limit of 0.075 mg/L may be expressed as a six-month average. If a concentration limitation expressed as a six-month average is included in the permit, a monthly average concentration limitation of 0.225 mg/L, equal to three times the WQBEL calculated under s. NR 217.13, Wis. Adm. Code shall also be included in the permit. The six-month average should be averaged during the months of May – October and November – April.

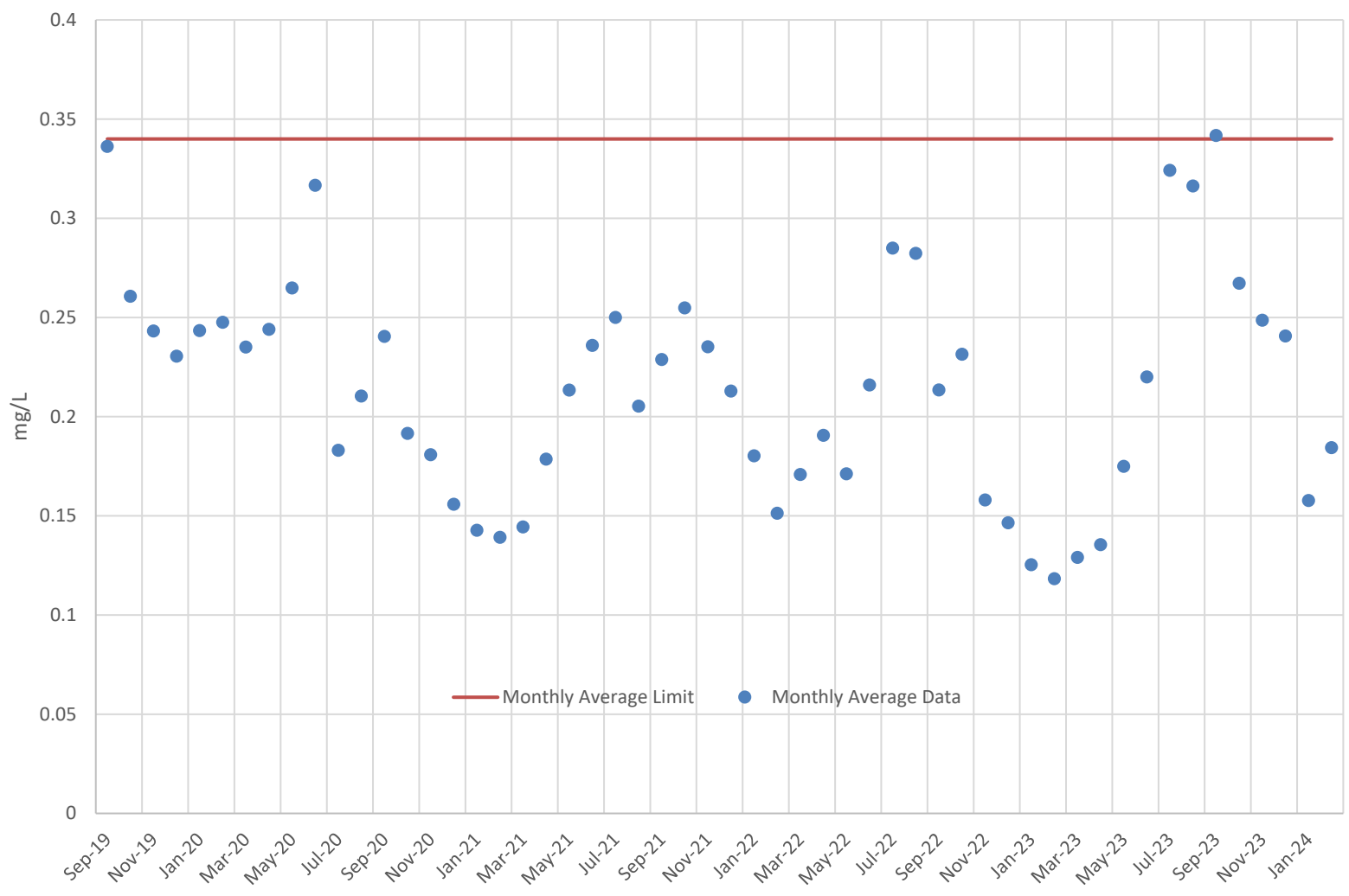
Mass Limits

A mass limit is also required, pursuant to s. NR 217.14(1)(a), Wis. Adm. Code, because the discharge is to a surface water that is to or upstream of a phosphorus-impaired water. **This final mass limit shall be 0.075 mg/L × 8.34 × 0.872 MGD = 0.55 lbs/day expressed as a six-month average.**

Multi-Discharge Variance Interim Limit

With the permit application, Bristol has re-applied for the phosphorus multi-discharger variance (MDV). Conditions of the phosphorus MDV require the facility to comply with an interim phosphorus limit in lieu of meeting the final WQBEL. Typically, the MDV interim limit for the 2nd permit term under the MDV approval is 0.6 mg/L pers. 283.16(6), Wis. Stats. However, Bristol has already been meeting a limit lower than this (0.47 mg/L), so a more stringent limit is recommended per s. 283.16(7), Wis. Stats. The maximum monthly average from the current permit term was 0.342 mg/L. Therefore, the MDV interim limit for the reissued permit is recommended to be 0.34 mg/L as a monthly average. It is recommended the limit become effective immediately in the reissued permit because the facility has demonstrated the ability to achieve this level of phosphorus removal. Data from the current permit term is shown below.

Monthly Average Phosphorus Data



TMDL Under Development

A Total Maximum Daily Load (TMDL) is being developed for the Fox (IL) River Basin for phosphorus. The TMDL will address phosphorus water quality impairments within the basins and provide waste load allocations (WLA) required to meet water quality standards. This TMDL will likely result in phosphorus limitations that must be included in WPDES permits, which may be different than those calculated in this WQBEL memo. TMDL-derived phosphorus limits may be included in lieu of or in addition to the calculated limits upon permit reissuance or modification once the TMDL has been approved by U.S. EPA, according to s. NR 217.16, Wis. Adm. Code.

PART 6 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL

Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106

Attachment #1

(Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

LAL discharge

Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in Chapters NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. The daily maximum effluent temperature limitation shall be 86 °F for discharges to surface waters classified as Limited Aquatic Life according to s. NR 104.02(3)(b)1, Wis. Adm. Code, except for those classified as wastewater effluent channels and wetlands regulated under ch. NR 103 and described in s. NR 106.55(2), Wis. Adm. Code, which has a daily maximum effluent temperature limitation of 120 °F. The 86 °F limit applies because the hydrologic classification is not listed as wetland in ch. NR 104, Wis. Adm. Code.

Reasonable Potential

Based on the available discharge temperature data from 01/03/2011 – 12/28/2011 shown below, the maximum daily effluent temperature reported was 77 °F; therefore, no reasonable potential for exceeding the daily maximum limit exists, and **no limits are recommended. Monitoring is recommended in the reissued permit.**

Monthly Temperature Effluent Data & Limits

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(°F)
JAN	47	47	-	86
FEB	48	49	-	86
MAR	49	50	-	86
APR	54	55	-	86
MAY	62	62	-	86
JUN	68	68	-	86
JUL	77	77	-	86
AUG	74	75	-	86
SEP	71	73	-	86
OCT	69	70	-	86
NOV	61	62	-	86
DEC	56	56	-	86

PART 7 – WHOLE EFFLUENT TOXICITY (WET)

WET testing is used to measure, predict, and control the discharge of toxic materials that may be harmful to aquatic life. In WET tests, organisms are exposed to a series of effluent concentrations for a given time and effects are recorded. Decisions below related to the selection of representative data and the need for WET limits were made according to ss. NR 106.08 and 106.09, Wis. Adm. Code. WET monitoring frequency

Attachment #1

and toxicity reduction evaluation (TRE) recommendations were made using the best professional judgment of staff familiar with the discharge after consideration of the guidance in the *Whole Effluent Toxicity (WET) Program Guidance Document (2022)*.

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. To assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC₅₀ (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09(2)(b), Wis. Adm Code.
- Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure. To assure that a discharge is not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid IC₂₅ (Inhibition Concentration) greater than the instream waste concentration (IWC), according to s. NR 106.09(3)(b), Wis. Adm Code. The IWC is an estimate of the proportion of effluent to total volume of water (receiving water + effluent). The IWC of **100%** shown in the WET Checklist summary below was calculated according to the following equation, as specified in s. NR 106.03(6), Wis. Adm Code:

$$IWC \text{ (as \%)} = Q_e \div \{(1 - f) Q_e + Q_s\} \times 100$$

Where:

- Q_e = annual average flow = 0.872 MGD = 1.35 cfs
- f = fraction of the Q_e withdrawn from the receiving water = 0
- Q_s = ¼ of the 7-Q₁₀ = 0 cfs ÷ 4 = 0 cfs

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), a synthetic (standard) laboratory water may be used as the dilution water and primary control in acute WET tests, unless the use of different dilution water is approved by the Department prior to use. The primary control water must be specified in the WPDES permit.
- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), receiving water must be used as the dilution water and primary control in chronic WET tests, unless the use of different dilution water is approved by the Department prior to use. The dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from the receiving water location, upstream and out of the influence of the mixing zone and any other known discharge. The specific receiving water location must be specified in the WPDES permit.
- Shown below is a tabulation of all available WET data for Outfall 001. Efforts are made to ensure that decisions about WET monitoring and limits are made based on representative data, as specified in s. NR 106.08(3), Wis. Adm Code. Data which is not believed to be representative of the discharge was not included in reasonable potential calculations. The table below differentiates between tests used and not used when making WET determinations. Significant changes were made to WET test methods in 2004 and these changes were assumed to be fully implemented by certified labs by no later than June 2005. Data prior to July 1, 2005 is excluded in this evaluation.

WET Data History

Date Test Initiated	Acute Results LC ₅₀ %				Chronic Results IC ₂₅ %				Footnotes or Comments
	<i>C. dubia</i>	Fathead minnow	Pass or Fail?	Used in RP?	<i>C. dubia</i>	Fathead Minnow	Pass or Fail?	Use in RP?	
02/14/2006	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
06/14/2007	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
08/26/2008	>100	>100	Pass	No	75.15	>100	Pass	No	1

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Date Test Initiated	Acute Results LC ₅₀ %				Chronic Results IC ₂₅ %				Footnotes or Comments
	<i>C. dubia</i>	Fathead minnow	Pass or Fail?	Used in RP?	<i>C. dubia</i>	Fathead Minnow	Pass or Fail?	Use in RP?	
11/06/2008					>100	>100	Pass	No	1
11/18/2008					>100	>100	Pass	No	1
10/08/2009					>100	>100	Pass	No	1
01/26/2010					>100	>100	Pass	No	1
09/18/2012	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
09/23/2014					>100	>100	Pass	Yes	
07/29/2015	>100	>100	Pass	Yes					
02/16/2016					>100	>100	Pass	Yes	
04/18/2017					56.7	>100	Fail	Yes	
06/06/2017					>100	>100	Pass	Yes	
06/20/2017					>100	>100	Pass	Yes	
09/11/2018					>100	>100	Pass	Yes	
01/14/2020					>100	>100	Pass	Yes	
05/04/2021					>100	>100	Pass	Yes	
08/02/2022					>100	>100	Pass	Yes	
10/31/2023					>100	>100	Pass	Yes	
01/30/2024					>100	>100	Pass	Yes	

Footnotes:

1. *Tests done by S-F Analytical, July 2008 – March 2011.* The DNR has reason to believe that WET tests completed by SF Analytical Labs from July 2008 through March 31, 2011 were not performed using proper test methods. Therefore, WET data from this lab during this period has been disqualified and was not included in the analysis.
- According to s. NR 106.08, Wis. Adm. Code, WET reasonable potential is determined by multiplying the highest toxicity value that has been measured in the effluent by a safety factor, to predict the likelihood (95% probability) of toxicity occurring in the effluent above the applicable WET limit. The safety factor used in the equation changes based on the number of toxicity detects in the dataset. The fewer detects present, the higher the safety factor, because there is more uncertainty surrounding the predicted value. **WET limits must be given, according to s. NR 106.08(6), Wis. Adm. Code, whenever the applicable Reasonable Potential equation results in a value greater than 1.0.**

$$\text{Acute Reasonable Potential} = [(TU_a \text{ effluent}) (B)(AMZ)]$$

$$\text{Chronic Reasonable Potential} = [(TU_c \text{ effluent}) (B)(IWC)]$$

According to s. NR 106.08(6)(d), Wis. Adm. Code, TU_a and TU_c effluent values are equal to zero whenever toxicity is not detected (i.e. when the LC₅₀, IC₂₅ or IC₅₀ ≥ 100%).

Acute Reasonable Potential = 0 < 1.0, reasonable potential is not shown, and a limit is not required.

$$\text{Chronic Reasonable Potential} = [(TU_c \text{ effluent}) (B)(IWC)]$$

Chronic WET Limit Parameters

TU_c (maximum) 100/IC ₂₅	B (multiplication factor from s. NR 106.08(6)(c), Wis. Adm. Code, Table 4)	IWC
100/56.7 = 1.76	6.2 Based on 1 detect	100%

[(TU_c effluent) (B)(IWC)] = 11 > 1.0

Therefore, reasonable potential is shown for a chronic WET limit using the procedures in s. NR 106.08(6) and representative data from 02/14/2006 – 01/30/2024.

Expression of WET limits

Chronic WET limit = [100/IWC] TU_c = 1.0 TU_c expressed as a monthly average

The WET checklist was developed to help DNR staff make recommendations regarding WET limits, monitoring, and other related permit conditions. The checklist indicates whether acute and chronic WET limits are needed, based on requirements specified in s. NR 106.08, Wis. Adm. Code. The checklist steps the user through a series of questions, assesses points based on the potential for effluent toxicity, and suggests monitoring frequencies based on points accumulated during the checklist analysis. As toxicity potential increases, more points accumulate, and more monitoring is recommended to ensure that toxicity is not occurring. A summary of the WET checklist analysis completed for this permittee is shown in the table below. Staff recommendations based on best professional judgment are provided below the summary table. For guidance related to reasonable potential and the WET checklist, see Chapter 1.3 of the WET Guidance Document: <https://dnr.wisconsin.gov/topic/Wastewater/WET.html>.

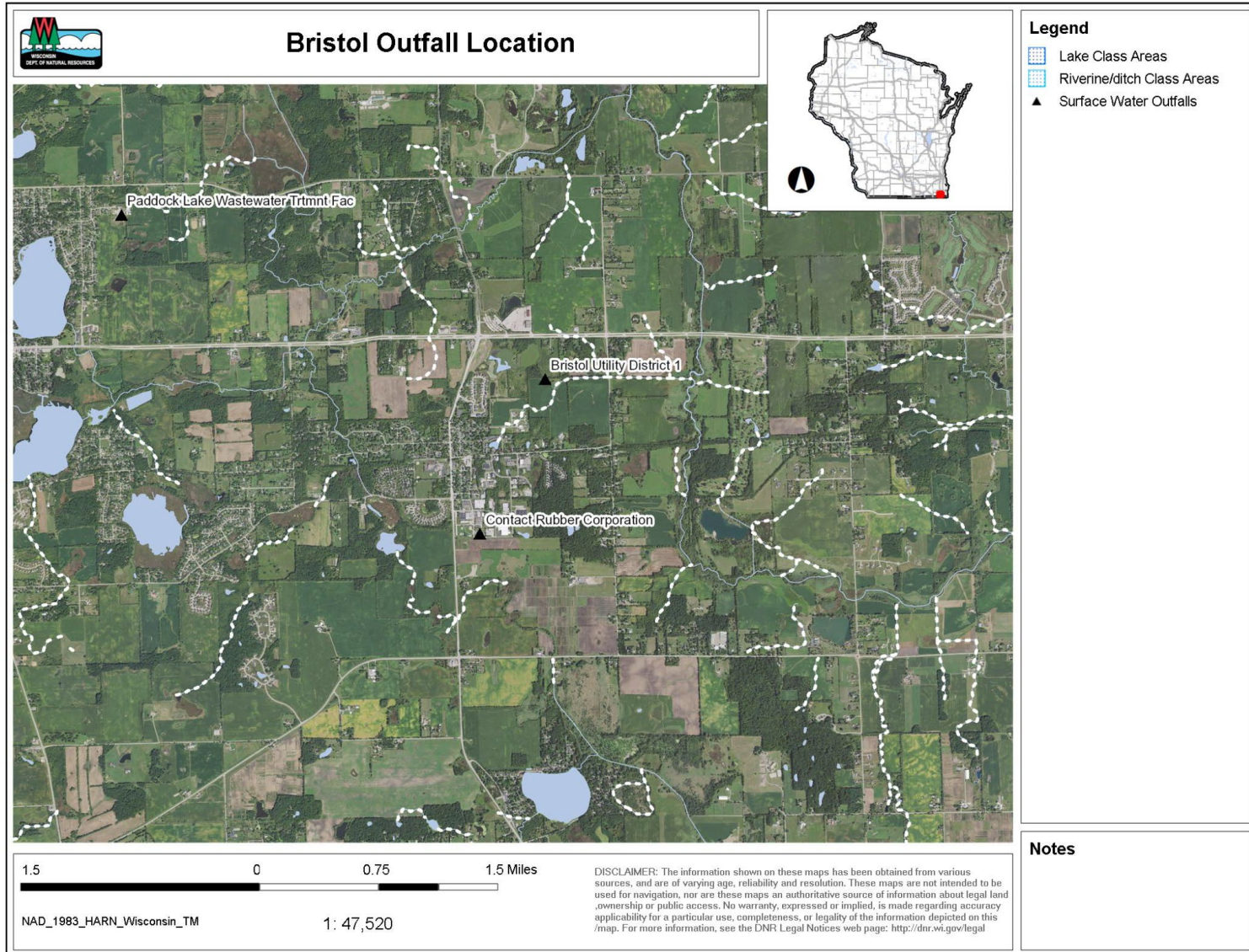
WET Checklist Summary

	Acute	Chronic
AMZ/IWC	Not Applicable. 0 Points	IWC = 100%. 15 Points
Historical Data	4 tests used to calculate RP, over 5 years old. No tests failed. 5 Points	14 tests used to calculate RP. 1 test failed. 0 Points
Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations. 0 Points	Same as Acute. 0 Points
Receiving Water Classification	LAL, less than 4 miles to a warmwater sport fish classification. 5 Points	Same as Acute. 5 Points
Chemical-Specific Data	No reasonable potential for limits based on ATC; Ammonia nitrogen limit carried over from the current permit. Ammonia, arsenic, chloride, copper, nickel, and zinc detected. Additional Compounds of Concern: None. 3 Points	No reasonable potential for limits based on CTC; Ammonia nitrogen limit carried over from the current permit. Ammonia, arsenic, chloride, copper, nickel, and zinc detected. Additional Compounds of Concern: None. 3 Points

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	Acute	Chronic
Additives	1 Water Quality Conditioner added: ferric sulfate. Permittee has proper P chemical SOPs in place. 1 Point	Ferric sulfate used more than once per 4 days. 1 Point
Discharge Category	0 Industrial Contributors. 0 Points	Same as Acute. 0 Points
Wastewater Treatment	Secondary treatment. 0 Points	Same as Acute. 0 Points
Downstream Impacts	No impacts known 0 Points	Same as Acute. 0 Points
Total Checklist Points:	14 Points	24 Points
Recommended Monitoring Frequency (from Checklist):	No WET tests needed	1x/yearly
Limit Required?	No	Yes Limit = 1.0 TU _c
TRE Recommended? (from Checklist)	No	No

- After consideration of the guidance provided in the Department's WET Program Guidance Document (2022) and other information described above, no acute and 1x/annual chronic WET tests are recommended in the reissued permit. Tests should be done in rotating quarters to collect seasonal information about this discharge. WET testing should continue after the permit expiration date (until the permit is reissued).
- According to the requirements specified in s. NR 106.08, Wis. Adm. Code, a chronic WET limit is required. The chronic WET limit shall be expressed as 1.0 TU_c as a monthly average in the effluent limits table of the permit.
- A minimum of annual chronic monitoring is required because a chronic WET limit is required. Federal regulations in 40 CFR Part 122.44(i) require that monitoring occur at least once per year when a limit is present.



Attachment #3
2013 Ammonia Calculations

Weekly average and monthly average limits for Ammonia Nitrogen are based on chronic toxicity criteria.

The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified for Limited Aquatic Life is calculated by the following equation.

$$CTC = E \times \{ [0.0676 \div (1 + 10^{(7.688 - pH)})] + [2.912 \div (1 + 10^{(pH - 7.688)})] \} \times C$$

Where:

pH = the pH (su) of the receiving water,

E = 1.0,

C = $8.09 \times 10^{(0.028 \times (25 - T))}$

T = the temperature of the receiving (°C)

The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified as a Warmwater sport fishery is calculated by the following equation.

$$CTC = E \times \{ [0.0676 \div (1 + 10^{(7.688 - pH)})] + [2.912 \div (1 + 10^{(pH - 7.688)})] \} \times C$$

Where:

pH = the pH (su) of the receiving water,

E = 0.854,

C = the minimum of 2.85 or $1.45 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Present), or

C = $1.45 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Absent), and

T = the temperature (°C) of the receiving water – (Early Life Stages Present), or

T = the maximum of the actual temperature (°C) and 7 - (Early Life Stages Absent)

The 4-Day criterion is simply equal to the 30-Day criterion multiplied by 2.5. The 4-day criteria are used in a mass-balance equation with the 7-Q₁₀ (4-Q₃, if available) to derive weekly average limitations. And the 30-day criteria are used with the 30-Q₅ (estimated as 85% of the 7-Q₂ if the 30-Q₅ is not available) to derive monthly average limitations. The stream flow value is further adjusted to temperature. 100% of the flow is used if the Temperature ≥ 16 °C. Only 25% of the flow is used if the Temperature < 11 °C. And 50% of the flow is used if the Temperature ≥ 11 °C but < 16 °C.

The rules provide a mechanism for less stringent weekly average and monthly average effluent limitations when early life stages (ELS) of critical organisms are absent from the receiving water. This applies only when the water temperature is less than 14.5 °C, during the winter and spring months. Burbot, an early spawning species, are not believed to be present in the Des Plaines River. So “ELS Absent” criteria apply from October through March, and “ELS Present” criteria will apply from April through September.

Since minimal ambient data is available, the “default” values for typical SE Wisconsin streams are used for temperature, pH and background ammonia concentrations, shown in the table below, with the resulting criteria and effluent limitations.

About 0.8 miles downstream from outfall 001, Bristol Creek joins the Des Plaines River, which is classified as a warmwater sportfish community. Because of this, limits for both classifications must be calculated, and the amount of ammonia decay from the outfall to the classification change must be estimated.

Attachment #3

Bristol Creek (Limited Aquatic Life)		Summer	Fall	Winter	Spring
		June – Sept.	October	Nov - March	April & May
Background Information:	7-Q ₁₀ (cfs)	0	0	0	0
	7-Q ₂ (cfs)	0	0	0	0
	Ammonia (mg/L)	0.07	0.09	0.25	0.09
	Temperature (°C)	23	9	3	17
	pH (su)	8.21	7.97	7.97	8.21
	% of Flow used	100	25	25	100
	Reference Weekly Flow (cfs)	0	0	0	0
Reference Monthly Flow (cfs)	0	0	0	0	
Criteria mg/L:	4-Day Chronic	16.68	59.22	87.18	24.56
	30-Day Chronic	6.67	23.69	34.87	9.82
Effluent Limits mg/L:	Weekly Average	16.68	59.22	87.18	24.56
	Monthly Average	6.67	23.69	34.87	9.82

Des Plaines River (Warmwater Sportfish)		Summer	Fall	Winter	Spring
		June – Sept.	October	Oct. - March	April & May
Background Information:	7-Q ₁₀ (cfs)	0	0	0	0
	7-Q ₂ (cfs)	0.39	0.39	0.39	0.39
	Ammonia (mg/L)	0.07	0.09	0.25	0.09
	Temperature (°C)	23	9	3	17
	pH (su)	8.21	7.97	7.97	8.21
	% of Flow used	100	25	25	100
	Reference Weekly Flow (cfs)	0	0	0	0
Reference Monthly Flow (cfs)	0.3315	0.082875	0.082875	0.3315	
Criteria mg/L:	4-Day Chronic				
	Early Life Stages Present	2.55	6.35	6.35	3.76
	Early Life Stages Absent	2.55	9.06	10.31	3.76
	30-Day Chronic				
	Early Life Stages Present	1.02	2.54	2.54	1.50
Early Life Stages Absent	1.02	3.63	4.12	1.50	
Effluent Limitations mg/L:	Weekly Average				
	Early Life Stages Present	2.55	6.35	6.35	3.76
	Early Life Stages Absent		9.06	10.31	
	Monthly Average				
	Early Life Stages Present	1.26	2.69	2.68	1.85
Early Life Stages Absent		3.84	4.36		

Calculations of estimated ammonia decay indicate that the downstream WWSF classification change is limiting year-round. With ammonia decay occurring over the 0.8 miles to the Des Plaines River, the calculated ammonia limits based on the downstream WWSF classification are as follows:

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Months Applicable	Daily Maximum	Weekly Average	Monthly Average
June – September	14.6	2.7	1.3
October	14.1	9.2	3.9
November – March	14.1	10.4	4.4*
April – May	14.3	3.9*	1.9*

*A less stringent limit was given in 2006 due to a calculation error.

Conclusions and Recommendations:

Anti-degradation review: An anti-degradation analysis is needed pursuant to ch. NR 207 for every limitation that is greater than the corresponding limit in the existing WPDES permit. The newly calculated daily maximum limits exceed the current ammonia concentration limitations due to the change in effluent pH. The weekly average limit for November – March is the same as that in the current permit, within rounding to two significant figures.

If these less stringent limits are to be implemented, a need for the less stringent limits must be demonstrated, as specified in NR 207.04. Unless this need is established, the more stringent current limits are recommended for the daily limits and weekly average for November-March, as well as the newly calculated weekly average limits for April – October, and the newly calculated monthly average limits, as seen in the table below. No mass limitations are recommended in accordance with s. NR 106.32(5).

Months Applicable	Daily Maximum	Weekly Average	Monthly Average
June – September	9.9	2.7	1.3
October	9.6	9.2	3.9
November – March	9.5	10	4.4
April & May	9.7	3.9	1.9

Mail Complete Application to:

Wisconsin Department of Natural Resources
 Permits Section-WQ/3
 PO Box 7921
 Madison, WI 53707-7921

**Phosphorus Multi-Discharger
 Variance Application for Municipal
 Facilities - s. 283.16, Wis. Stats.**

Form 3200-150 (R 03/17)

Notice: Pursuant to s. 283.16, Wis. Stats, an owner of an existing permitted wastewater treatment system may apply for a variance to a phosphorus water quality based effluent limits (WQBEL). Complete this form and submit to the Department of Natural Resources (DNR) to request coverage under the multi-discharger variance (MDV) for phosphorus. Personal information collected will be used for administrative purposes and may be provided to requestors to the extent required by Wisconsin's Open Records law [ss. 19.31-19.39, Wis. Stats.]

Facility and Permit Information				Facility Contact Information			
WPDES Permit No. WI- 0 0 2 2 0 2 1				Contact Name Randy Kerkman			
Facility Name Bristol Utility District 1 Wastewater Treatment Plant				Title Village of Bristol Administrator			
Facility Street Address 8101 195th Avenue				Address 19801 83rd Street			
City Bristol	State WI	ZIP Code 53104		City Bristol	State WI	ZIP Code 53104	
Receiving Water Bristol Creek	County Kenosha			Phone No. (incl. area code) (262) 620-1295	Fax Number (262) 857-2136		
Source of Water Supply Groundwater	Average Discharge Flow Rate 0.872 MGD Design Average		Email Address admin@villageofbristol.org				

Variance Request Schedule **Check all that apply:**

1. This variance is being requested at the time of application for permit reissuance pursuant to s. 283.16(4)(b)1, Wis. Stat.
2. This variance is being requested within 60 days after the department reissues or modifies the permit to include a phosphorus WQBEL pursuant to s. 283.16(4)(b)2, Wis. Stat.
3. This variance is being requested from a current WPDES Permit pursuant to 283.16(4)(b)3, Wis. Stat.

Date of Current Permit Issuance: _____

Note: WPDES permit must be issued prior to April 2014.

4. Has the MDV been included in previously issued WPDES Permits?
 Yes
 How many permits has the MDV been approved for? 1
 No

Variance Requirements

5. Has this point source discharge been authorized by a WPDES permit prior to December 1, 2010? Yes No

Note: If no, you are ineligible for the MDV in accordance with s. 283.16(4), Wis. Stat. STOP

6. Has this point source relocated its outfall location since December 1, 2010? Yes No

7. Is the point source located in an eligible MDV county as specified in Appendix H of the MDV Implementation Guidance? Yes No

Note: If no, you are ineligible for the MDV in accordance with s. 283.16(4), Wis. Stat.

8. Does this limit require a major facility upgrade in order to achieve compliance? Yes
 No

Justify:

The proposed WQBEL cannot be met with optimization alone. A major facility upgrade would be required, likely consisting of a new one-stage reactive filtration system, chemical feed improvements, pumping station, and associated supporting infrastructure. For additional details, refer to the July 2018 Final Compliance Alternatives Plan.

Note: If no, you are ineligible for the MDV in accordance with s. 283.16(4), Wis. Stat. STOP. A major facility upgrade means that a facility needs to install new equipment and a new process such as installing filtration or equivalent technology.

9. Phosphorus Water Quality-Based Effluent Limitation from which variance is sought:
 Concentration-based WQBEL pursuant to s. NR 217.13, Wis. Adm. Code
 TMDL mass-based WQBEL pursuant to s. NR 217.16, Wis. Adm. Code

Check all months for which variance is requested:

All months

- | | | | |
|---|---|---|---|
| <input checked="" type="checkbox"/> Jan | <input checked="" type="checkbox"/> Apr | <input checked="" type="checkbox"/> Jul | <input checked="" type="checkbox"/> Oct |
| <input checked="" type="checkbox"/> Feb | <input checked="" type="checkbox"/> May | <input checked="" type="checkbox"/> Aug | <input checked="" type="checkbox"/> Nov |
| <input checked="" type="checkbox"/> Mar | <input checked="" type="checkbox"/> Jun | <input checked="" type="checkbox"/> Sep | <input checked="" type="checkbox"/> Dec |

10. Do you believe these limits could be achieved during the term of the permit? Yes
 No

11. Current effluent quality

Note: Use 30-day P99 if 11 or more representative effluent samples are present. Only include effluent data for those outfall(s) a variance is being requested for.

Outfall Number(s)	Conc. (mg/L)	Number of Samples Results Used	Sample Time Period Used	
1	0.24	455	01/01/2021	11/30/2023

12. Are applicable phosphorus limits currently effective in the WPDES permit more restrictive than 1 mg/L? Yes
 No

Facility Information (provide attachments as necessary)

13. What are the average phosphorus levels within your influent TP concentration? 21 mg/L

14. Has the treatment process at the facility been optimized to maximize its phosphorus removal capabilities?

Yes

Completion date: 07/09/2018

- No, but in process of completing
 No, not yet started

15. Has a facility planning or evaluation study for phosphorus been approved by the Department?

Yes

Approval date: 03/28/2019

No, but in process of completing

No, not yet started

16. Briefly describe the technology that would need to be added to comply with phosphorus limits in your permit:

A new one-stage reactive filtration system including a new pumping station would be required to accommodate the new phosphorus removal process. For additional details, see the Final Compliance Alternatives Plan dated July 9, 2018.

Attach any new or additional information that you would like to provide the Department regarding optimization measures and/or compliance alternatives planning efforts.

Projected Compliance Costs

17. What is the projected net present value cost for complying with the phosphorus WQBELs? \$ 6,548,000

Source of cost projection:

The July 9, 2018, Final Compliance Alternatives Plan identified a cost of \$4.46 million to upgrade the WWTP to comply with the phosphorus WQBEL. This cost was adjusted from first quarter 2018 dollars to a December 2023 value.

Note: If a facility uses projected compliances costs provided in the Economic Impacts Analysis, they must certify that these costs are reasonable for the facility in question. See "projected compliance costs" in Section 2.02 of the MDV Implementation Guidance for details.

18. Has the feasibility of water quality trading or adaptive management been evaluated for the facility? Yes
 No

19. Is the facility eligible for adaptive management or water quality trading? Yes
 No

20. What is the needed offset to comply with AM/WQT? 332 lbs/year
 Unknown at this time

21. Is adaptive management or water quality trading a viable compliance option? Yes
 No

Describe:

Adaptive management or water quality trading is not a viable compliance option because of significant load reduction required to meet the criterion; difficulty in finding offsets/reductions; uncertainties about costs, credit thresholds, and trade ratios; lack of willing partners and stakeholders.

Service Area Information- Provide the following information for each municipality included in the wastewater facility service area.

Municipality Name	County	Population Served	Customer Households Served	Median Household Income (MHI)
Village of Bristol	Kenosha	2,080	993	\$95,015.00

Non-Residential Customers:

Percent of wastewater flow attributed to commercial industrial, large institutional and any other special customer category:

50 %

Describe types of non-domestic wastewater contributions that constitute a significant phosphorus contribution or that significantly affect the capabilities of the treatment facility. Examples include: large food processors, dairies, or industries with unique wastewater.

None

Affordability to Municipal Dischargers

22. What is the projected household user charge, expressed as a percent of MHI, once phosphorus compliance costs are factored in?

1.09 %

Attach supporting information on a separate attachment to this form. The applicant may also provide additional information on impacts to commercial, industrial, or other special customers or any other information regarding affordability.

23. What is the secondary indicator score for the county (counties) in which the service area is located in?

3

*Note: See Appendix A of the MDV Implementation Guidance for details.
 If the service area is located in multiple counties, provide the weighted average value.*

Watershed Project. Select one of the following watershed project options:

Option A. County payment contribution



Option B. Binding, written agreement with the DNR to construct a project or implement a watershed plan.



Submit Form 3200-148 with MDV application

Option C. Binding, written agreement with another entity that is approved by the DNR to construct a project or implement a watershed plan.



Submit Form 3200-148 with MDV application.

Certification

Based on the information provided, I believe that my permitted facility qualifies for coverage under the multi-discharger phosphorus variance based on the requirements of s. Wis. Stat. 283.16 (4), Wis. Stat. I understand that as a condition of the variance, the Department will impose interim limitations and require a watershed project or plan to be completed as part of the phosphorus reduction measures for phosphorus during the term of the variance in accordance with s. Wis. Stat. 283.16(6). I understand that these conditions will be included in the WPDES permit issued to this facility and I agree to comply with all applicable permit conditions for this variance. I hereby certify that the determination in Wis. Stat. 283.16(2)(a) applies to my permitted facility and that my permitted facility cannot otherwise comply with its phosphorus water quality based effluent limitations without a major facility upgrade. To the best of my knowledge, the information in this application is true, accurate, and complete.

Print or type name of person submitting request (Individual must be an Authorized Representative)	Title <i>Administrator</i>
Signature of Official <i>[Handwritten Signature]</i>	Date Signed <i>1/11/2024</i>

Affordability to Municipal Dischargers Analysis

Current Revenues and Rates

Residential Percentage: 50% Projected 2023 percentage
 Typical Quarterly Volume Charge \$0.00
 Typical Quarterly Customer Charge \$176.51 @ \$176.51 per 5/8" meter
 Current Annual Bill \$706

Current Village of Bristol Customers

Current Residential Customers: 924 Based on 2023 data

Current Median Household Income (from WDNR CWF - 2023)

Bristol MHI \$95,015
 Bristol Annual MHI: \$95,015
 1% of MHI \$950
 2% of MHI \$1,900

Costs for Additional Phosphorus Removal

Alternative B (Reactive Filtration -1 stage)

Costs from Final Compliance Alternatives Plan dated July 9, 2018 inflated to December 2023.

CWF Interest Rate: 2.26%
 Capital Cost: \$6,548,000
 Annual Debt with CWF: \$410,000
 Annual O&M: \$199,000
 Total Annual Costs: \$609,000

Projected Impact on Rates

Residential Revenue and Rates Required:

Residential Percent	Residential Revenue Required	Revenue Per Residential Customer	Current Rates	Projected Rates	% of 2018 MHI
50%	\$305,000	\$330	\$706	\$1,036	1.09%

Notice: This checklist is meant to be a tool to help Department of Natural Resources (DNR) staff review municipal and industrial multi-discharger variance (MDV) applications (Forms 3200-149 and 3200-150). Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31-19.39, Wis. Stats.).

Permittee Name

Bristol Utility District #1

WPDES Permit Number WI- 0 0 2 2 0 2 1	County Kenosha
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1. Did the point source apply for the MDV at the appropriate time?	<input checked="" type="radio"/> Yes <input type="radio"/> No. <i>STOP- facility not eligible at this time.</i>	See Questions 1-3.
2. This operation is (check one):	<input type="radio"/> New or relocated outfall. <i>STOP- facility not eligible.</i> <input checked="" type="radio"/> Existing outfall	See Questions 5-6.
3. Is the point source is located in an MDV eligible area?	<input checked="" type="radio"/> Yes <input type="radio"/> No. <i>STOP- facility not eligible.</i>	<i>Apply County information to Appendix H. Additional information provided in Q7 on municipal form & Q7-8 on industrial form.</i>
4. The secondary indicator score for the county (counties) the discharge is located is:	<u>4</u>	<i>See Appendices A-F. If the score is less than 2, stop; the facility is not eligible. See Q23 on municipal form & Q28 on industrial form.</i>
5. Is a major facility upgrade required to comply with phosphorus limits?	<input checked="" type="radio"/> Yes <input type="radio"/> No. <i>STOP- facility not eligible.</i>	See Q8 on municipal form/Q9 on industrial form.
6. List the months where phosphorus limits cannot be achieved during the permit term:	<input checked="" type="checkbox"/> All <input checked="" type="checkbox"/> Jan <input checked="" type="checkbox"/> Apr <input checked="" type="checkbox"/> Jul <input checked="" type="checkbox"/> Oct <input checked="" type="checkbox"/> Feb <input checked="" type="checkbox"/> May <input checked="" type="checkbox"/> Aug <input checked="" type="checkbox"/> Nov <input checked="" type="checkbox"/> Mar <input checked="" type="checkbox"/> Jun <input checked="" type="checkbox"/> Sep <input checked="" type="checkbox"/> Dec	<i>Consider checking with limit calculator. If this does not match information in application, the application should be updated prior to approval.</i>

7. What is the current effluent level achievable?

Outfall Number(s) 001	Conc. (mg/L) 0.24	Method for calculation: <input checked="" type="radio"/> 30-day P99 <input type="radio"/> Other, specify: _____	Does this concur with application? <input checked="" type="radio"/> Yes <input type="radio"/> No, why not: _____	<i>DNR staff should verify the effluent concentration value(s) provided. See Q11 on municipal form & Q12 on industrial form.</i>
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8. What is the appropriate interim limitation(s) for the permit term?
 0.47 mg/L, as a monthly average, pursuant to s. 283.16(7), Wis. Stats.
 Target Value = 0.2 mg/L

Provide Rationale:

The past three years of phosphorus effluent data yield a 30-day P99 value of 0.24 mg/L. However, the 2022 phosphorus optimization report states "The ability to maintain low effluent phosphorus is dependent on the observed flows, especially for facilities without filtration such as Bristol."

Note: See description in Section 2.02 of the MDV implementation guidance. Interim limitations should reflect the "highest attainable condition" for the permittee in question pursuant to s. 283.16(7), Wis. Stat.

<p>9. <i>For Industries Only</i>- Where does the phosphorus in the effluent come from? (check all that apply)</p>	<p><input type="checkbox"/> Process <input type="checkbox"/> Additive Usage <input type="checkbox"/> Water supply</p> <p><i>Can intake credits be given or can the facility use an alternative water supply?</i></p> <p><input type="radio"/> Not feasible <input type="radio"/> Possibly, but further analysis needed <input type="radio"/> Not evaluated at this time</p>	<p><i>See Q14-15 & 19 on industrial form. If the answer is "possibly" or "not evaluated", the schedule section of the MDV permit should contain a requirement to perform this analysis.</i></p>
<p>10. Has this facility optimized?</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> In progress <input type="radio"/> No</p>	<p><i>See Q14 on municipal form & Q16 & 20 on industrial form. Facility must optimize and operate at an optimize treatment level (s. 283.16(6)(a), Wis. Stat.) If no will need compliance schedule.</i></p>
<p>11. Has a facility plan/compliance alternative plan been completed for the facility?</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> In progress <input type="radio"/> No</p>	<p><i>See Q15 on municipal form & Q17 on industrial form.</i></p>
<p>12. What is the projected cost for complying with phosphorus?</p> <p style="text-align: right;">Source:</p>	<p>\$ <u>6,514,073.00</u></p> <p>Updated site-specific cost estimate, April 2024</p>	<p><i>Facility must submit site-specific compliance costs. If cost projections are used from EIA, the permittee must certify that these costs are reasonable for the facility in question. See "projected compliance costs" in Section 2.02 of the MDV Implementation Guidance for details.</i></p>

Comments on planning efforts:

A final compliance alternatives plan was prepared in July of 2018 for the Village of Bristol. The Plan evaluates major facility upgrades, regionalization, and watershed-based approaches for phosphorus compliance. Adaptive management is not recommended. Water quality trading is recommended, following optimization, to achieve final compliance with phosphorus limits. Bristol worked to optimize phosphorus treatment within the facility during the past permit term. Bristol has taken steps to identify potential nonpoint source projects to be utilized as an MDV offset project, which may act as a precursor to full compliance via trading.

<p>13. Are adaptive management and water quality trading viable?</p>	<p><input type="radio"/> Yes <input checked="" type="radio"/> Perhaps. Additional analysis required. <input type="radio"/> No</p>	<p><i>See Q18-21 on municipal form & Q22-25 on industrial form. If additional analyses required, the applicant may need to complete this analysis during the MDV permit term.</i></p>
<p>14. Has the point source met the appropriate primary screener?</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No. <i>STOP- facility not eligible.</i></p>	<p><i>See Q4 of this form in addition to the "eligibility" guidance in Section 2.01 of the MDV Implementation Guidance.</i></p>

Comments on economic demonstration:

The lowest-cost alternative for meeting phosphorus WQBELs requires a capital expense of \$6,514,073.00. O&M increases are projected at \$199,000 annually. Assuming a 2.145% interest rate on a 20-year CWF loan, annual payments would total to \$404,000. With O&M, this cost becomes \$603,000. The residential share of costs is 63%, which results in a residential-borne share of \$380,000. Divided amongst 924 residential households, the per-user cost increase is \$411 annually. Current rates average at \$706 annually, and projected rates are \$1117 annually. This value is 1.08% of the \$103,652 median household income. In Kenosha County with a secondary indicator score of 4, sewer rates at 1% of MHI meet the primary screener. The applicant meets the primary screener.

15. What watershed option was selected?

- County project option. *Complete Section 5.*
- Binding, written agreement with the DNR to construct a project or implement a watershed plan. *Complete Section 4.*
- Binding, written agreement with another person that is approved by the DNR to construct a project or implement a watershed plan. *Complete Section 4.*

Section 4. Watershed Plan Review

16. MDV Plan Number:

Note: This is for tracking purposes. Contact Statewide Phosphorus Implementation Coordinator for the plan number.

To be assigned

17. Did the point source complete Form 3200-148?

- Yes
- No

18. Is the project area in the same HUC 8 watershed as the point of discharge?

- Yes
- No. *STOP- Watershed plan must be updated.*

19. What is the annual offset required?

See Section 2.03 of the MDV implementation guidance. If this value is different from the offset target provided in form 3200-148, the watershed plan should be amended.

0 - 46 lbs/yr

20. Does the plan ensure that the annual load is offset annually?

- Yes
- No. *STOP- Watershed plan must be updated.*

21. Are projects occurring on land owned/operated by a CAFO or within a permitted MS4 boundary?

- Yes. *Work with appropriate DNR staff to ensure projects are not working towards other permit compliance.*
- No.

22. Are other funding sources being used as part of the MDV watershed project?

- Yes. *Work with appropriate DNR staff to ensure that funding sources can be appropriately used in the plan area.*
- No.

23. Do you have any concerns about the watershed project?

Note: Coordinate with other DNR staff as appropriate.

- Yes. *STOP- Watershed plan must be updated.*
- No.

Comments:

2020 would have required 46 lbs/yr offset. Subsequent years were lower. A meaningful nonpoint source offset that buys some operational flexibility above 0.2 mg/L is recommended.

Section 5. Payment to the County(ies)

24. At this time, the appropriate per pound payment is:

\$ _____

See "Payment Calculator" document at

\\central\water\WQWT_PROJECTS\WY_CW_Phosphorus\MDV.

Section 6. Determination

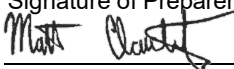
Based on the available information, the MDV application is:

- Approved
- Request for more information
- Denied

Save

Additional Justification (if needed):

A phosphorus offset project will need to be identified and documented via a written plan.

Certification		
Preparer Name	Title	
Matt Claucherty	Water Resources Management Specialist	
Signature of Preparer	<input type="button" value="Sign"/> <input type="button" value="Clear"/>	Date
		5/14/2024

A copy of this completed checklist should be saved in SWAMP, and a notification of the decision should be sent to the Phosphorus Implementation Coordinator.

[Submit to Coordinator...](#)



8/14/2024

Randall Kerkman, Village of Bristol
19801 83rd Street
Bristol, WI 53104

Subject: Conditional approval of a multi-discharger phosphorus variance
Receiving Stream: Bristol Creek in Kenosha County
Permittee: Bristol Utility District 1, WPDES WI-0022021

Dear Mr. Kerkman:

In accordance with s. 283.16 of the Wisconsin Statutes, you have requested coverage under Wisconsin's multi-discharger phosphorus variance for the Bristol Utility District 1 Wastewater Treatment Facility in an application dated 1/11/2024. Wisconsin's multi-discharger phosphorus variance was approved by EPA on February 6, 2017. Coverage under the multi-discharger phosphorus variance may only be granted to an existing source that demonstrates a major facility upgrade is necessary to achieve phosphorus compliance and the upgrade will result in economic hardship as defined in the federally approved variance. The water quality criterion for which you are seeking a variance is contained in s. NR 102.06, Wis. Adm. Code.

After review of the application materials, the Department is tentatively approving coverage under the phosphorus multi discharger variance because the applicant has demonstrated that a major facility upgrade would be required to comply with the phosphorus water quality based effluent limitation, and the applicant meets the economic hardship eligibility criteria delineated in the federally approved variance. In addition, the permitted facility has agreed to comply with the interim limitations that will be included in the WPDES permit, and has agreed to reduce the amount of phosphorus entering surface waters by entering into a binding, written agreement with the Department under which the permittee constructs a project or implements a plan to make annual reduction of phosphorus pollution pursuant to s. 283.16(6)(b)2., Wis. Stats. The MDV watershed plan document, dated 7/30/2024, will be incorporated by reference into the reissued permit under tracking code MDV-2024-01.

Public comment on this decision will be solicited at the time of permit reissuance after which a final decision will be made. The Department appreciates your attention and interest in Wisconsin's multi-discharger phosphorus variance. Should you have further questions regarding this matter, please contact me at (608) 400 – 5596 or by email at matthew.claucherty@wisconsin.gov.

Sincerely,

Matt Clacherty, MDV Point Source Coordinator
Bureau of Water Quality

e-cc Travis Anderson, Strand Associates
 Melanie Burns, WDNR
 Nick Lent, WDNR
 Tim Elkins, EPA Region 5
 Micah Bennett, EPA Region 5