Permit Fact Sheet

General Information

Permit Number	WI-0035581-08-0
Permittee Name and Address	Rib Mountain Metropolitan Sewerage District Wausau WI 54401
Permitted Facility Name and Address	Rib Mountain Metropolitan Sewerage District WWTF 151401 Aster Rd, Wausau, WI 54401
Permit Term	July 01, 2025 to June 30, 2030
Discharge Location	West side of the Wisconsin River, downstream of US51
Receiving Water	Wisconsin River in Mosinee Flowage Watershed of the Central Wisconsin River Watershed in Marathon county
Stream Flow ($Q_{7,10}$)	911 cfs
Stream Classification	Warm water sport fish (WWSF) community, non-public water supply
Discharge Type	Existing, continuous
Annual Average Design Flow (MGD)	4.410 MGD
Industrial or Commercial Contributors	Crystal Finishing – Mosinee; Crystal Finishing – Weston; ADC, Applied Laser Technologies
Plant Classification	A1 - Suspended Growth Processes; B - Solids Separation; C - Biological Solids/Sludges; P - Total Phosphorus; D - Disinfection; L - Laboratory; SS - Sanitary Sewage Collection System
Approved Pretreatment Program?	N/A

Facility Description

The Rib Mountain Metropolitan Sewerage District (RMMSD) Wastewater Treatment Facility is a publicly owned treatment works that receives and treats wastewater from the residents and businesses of the Villages of Rothschild, Kronenwetter and Weston, part of the Town of Weston, the Village of Rib Mountain and the City of Mosinee. The annual average design flow of the facility is 4.41 million gallons per day (MGD). Grit and bar screenings are disposed of in a sanitary landfill. The current liquid treatment facilities include influent pumping, raw wastewater screening and grit removal, primary sedimentation, activated sludge treatment with chemical phosphorus removal (polyalminum chloride (PAC)), final clarification, ultraviolet disinfection, and cascade aeration. The solids processing facilities include waste activated sludge thickening by dissolved air floatation, primary and secondary stage anaerobic digestion, and liquid sludge storage.

Substantial Compliance Determination

Enforcement During Last Permit:

The department issued a notice of noncompliance on April 30, 2019, for nitrogen-ammonia total daily limit exceedances. The facility has completed all actions as part of the enforcement process.

After a desk top review of all discharge monitoring reports, CMARs, land application reports, compliance schedule items, and a site inspection on September 19, 2024 by Nick Lindstrom, DNR Wastewater Engineer, this facility has been found to be in substantial compliance with their current permit.

Sample Point Descriptions

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	2.8 MGD (January 2029 to September 2024)	INFLUENT: Representative influent samples shall be collected at the inlet to the aerated grit chamber.
001	2.8 MGD (January 2019 to September 2024)	EFFLUENT: Representative effluent samples shall be collected at the outfall after the UV disinfection channel and prior to discharge to the Wisconsin River.
002	705 US Tons (2023)	SLUDGE: Dissolved air floatation thickened, anaerobically digested, Class B liquid sludge sample shall be collected from the storage tank.
101	N/A	FLIED BLANK: The field blank shall be collected using standard handling procedures every day that mercury samples are collected at influent and effluent.

Permit Requirements

1 Influent – Monitoring Requirements

1.1 Sample Point Number: 701- INFLUENT at GRIT CHAMBER

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Mercury, Total Recoverable		ng/L	Monthly	24-Hr Flow Prop Comp	See 'Mercury Monitoring' permit section.

1.1.1 Changes from Previous Permit:

Influent limitations and monitoring requirements were evaluated for this permit term. The sample frequency for flow has been changed from ‘continuous’ to ‘daily’ for eDMR reporting purposes.

1.1.2 Explanation of Limits and Monitoring Requirements

Monitoring of influent flow, BOD_5 and total suspended solids is required by s. NR 210.04(2), Wis. Adm. Code, to assess wastewater strengths and volumes and to demonstrate the percent removal requirements in s. NR 210.05, Wis. Adm. Code, and in the Standard Requirements section of the permit.

Mercury, Total Recoverable: Mercury monitoring is included in the proposed permit pursuant to s. NR 106.145, Wis. Adm. Code. Required field blanks for Mercury monitoring per ss. NR 106.145(9) and (10), Wis. Adm. Code, requirements. The permittee shall collect a mercury field blank for each set of mercury samples (a set of samples may include a combination of influent, effluent or other samples all collected on the same day).

2 Inplant - Monitoring and Limitations

2.1 Sample Point Number: 101- FIELD BLANK-MERCURY MONITORING

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Mercury, Total Recoverable		ng/L	Monthly	Blank	See 'Mercury Monitoring' permit section.

2.1.1 Changes from Previous Permit:

In-plant limitations and monitoring requirements were evaluated for this permit term and no changes were required in this permit section.

2.1.2 Explanation of Limits and Monitoring Requirements

Mercury Field Blank: Monitoring is included in the permit pursuant to s. NR 106.145, Wis. Adm. Code. Field blanks must meet the requirements under s. NR 106.145(9) and (10), Wis. Adm. Code. The permittee shall collect a mercury field blank for each set of mercury samples (a set of samples may include a combination of influent, effluent or other samples all collected on the same day). Field blanks are required to verify a sample has not been contaminated during collection, transportation or analysis.

3 Surface Water - Monitoring and Limitations

3.1 Sample Point Number: 001- EFFLUENT TO WISCONSIN RIVER

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Weekly Avg	45 mg/L	5/Week	24-Hr Flow Prop Comp	
BOD5, Total	Monthly Avg	30 mg/L	5/Week	24-Hr Flow Prop Comp	
BOD5, Total	Daily Max	1,163 lbs/day	5/Week	Calculated	Limit effective May through October.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Suspended Solids, Total	Weekly Avg	45 mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	5/Week	24-Hr Flow Prop Comp	
pH Field	Daily Min	6.0 su	5/Week	Grab	
pH Field	Daily Max	9.0 su	5/Week	Grab	
Nitrogen, Ammonia Variable Limit		mg/L	3/Week	See Table	Report the calculated variable ammonia limit on the DMR year-round. See 'Daily Maximum Ammonia Limits' permit section.
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	108 mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	108 mg/L	3/Week	24-Hr Flow Prop Comp	
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit effective May through September annually.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit effective May through September annually. See the 'E. coli Percent Limit' permit section. Enter the result in the DMR on the last day of the month.
Phosphorus, Total	Monthly Avg	1.0 mg/L	5/Week	24-Hr Flow Prop Comp	
Phosphorus, Total	Monthly Avg	18.0 lbs/day	5/Week	Calculated	Limit effective January 1, 2026. See TMDL permit section.
Phosphorus, Total		lbs/month	Monthly	Calculated	Calculate the Total Monthly Discharge of phosphorus and report on the last day of the month on the DMR. See TMDL permit section.
Phosphorus, Total		lbs/yr	Monthly	Calculated	Calculate the 12-month rolling sum of total monthly

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					mass of phosphorus discharged and report on the last day of the month on the DMR. See TMDL section below.
Mercury, Total Recoverable	Daily Max	7.0 ng/L	Monthly	Grab	This is an alternative mercury effluent limit. See mercury monitoring and variance permit sections.
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	Quarterly	Calculated	Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
PFOS		ng/L	1/ 2 Months	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need schedule.
PFOA		ng/L	1/ 2 Months	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need schedule.
Acute WET	Daily Max	1.0 TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET permit section.

3.1.1 Changes from Previous Permit

Effluent limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

Flow: The sample frequency for flow has been changed from "continuous" to "daily" for eDMR reporting purposes.

E. coli: Fecal coliform monitoring and limits have been replaced with Escherichia coli (E. coli) monitoring and limits.

Phosphorus TMDL Limits: An interim limit of 1.0 mg/L goes into effect upon reissuance and will remain in effect unless a more stringent limit is required at a future permit issuance by ss. NR 217.13 and NR 217.16(2), Wis. Adm. Code, or the limit is relaxed following procedures outlined in ch. NR 207, Wis. Adm. Code. Discharge effluent concentration (mg/L) shall be reported 5 times per week upon permit reissuance and will be used to calculate amounts reported for mass-based parameters. An additional reporting requirement for lbs/month will be used to calculate the facility's 12-

month rolling sum of total monthly discharge, which can be compared directly to the facility's designated WLA. Final TMDL WLA-based effluent limits of 18 lbs/day as a monthly average will go into effect in accordance with compliance schedule 'TMDL Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus'.

PFOS and PFOA: Every other month monitoring is included in the permit in accordance with s. NR 106.98(2)(a), Wis. Adm. Code.

Acute WET: Daily max limit of 1.0 TUa is included.

3.1.2 Explanation of Limits and Monitoring Requirements

Detailed discussions of limits and monitoring requirements can be found in the attached water quality-based effluent limits (WQBEL) memo dated November 22, 2024.

Monitoring Frequencies- 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 consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term.

Expression of Limits: In accordance with the federal regulation 40 CFR 122.45(d) and s. NR 205.065, Wis. Adm. Code, limits in this permit are to be expressed as weekly average and monthly average limits whenever practicable.

BOD_5, TSS, and pH: Categorical limits and WQBELs are included in the permit as outlined in ch. NR 210, Wis. Adm. Code.

E. coli: E. coli effluent 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 are effective at permit reissuance during the disinfection season of May – September annually. 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. As part of the reissuance process, the requirements for disinfection were reviewed under s. NR 210.06(3), Wis. Adm. Code.

Wisconsin River Total Maximum Daily Load (TMDL): The permitted facility is included within the Wisconsin River Basin Total Maximum Daily Load (TMDL), which was approved by EPA April 26, 2019. The TMDL establishes Waste Load Allocations (WLAs) for point source dischargers and determines the maximum amounts of phosphorus that can be discharged and still protect water quality. The final effluent limits and monitoring expressed in the permit were derived from Site-Specific Criteria (SSC) for Lakes Petenwell, Castle Rock, and Wisconsin originally included in Appendix K of the TMDL report and approved by the U.S. Environmental Protection Agency on July 9, 2020. The permittee's approved SSC-based limits are consistent with the assumptions and requirements of the EPA-approved WLA in the TMDL, which is 13.467 lbs/day for the permitted facility.

The approved TMDL expresses WLAs as lbs/year and lbs/day (maximum annual load divided by 365 days). As outlined in Section 4.6 of the department's *TMDL Development and Implementation Guidance: Integrating the WPDES and Impaired Waters Program*, mass limits must be given in the permit that are consistent with the TMDL WLA and the phosphorus impracticability agreement that was approved by USEPA in 2012 (see NPDES MOA Addendum dated July 12, 2012 at https://apps.dnr.wi.gov/swims/Documents/DownloadDocument?id=167886175). Continuously discharging facilities covered by the WRB TMDL are given monthly average mass limits. If the equivalent effluent concentration is less than or equal to 0.3 mg/L, six-month average mass limits (averaging period of May through October and November through April) are also included. The equivalent effluent concentration of 0.37 mg/L was calculated for the facility, thus, TMDL based mass limits are expressed as a monthly average.

Facilities with WRB TMDL based effluent limits for phosphorus must report the 12-month rolling sum of total monthly discharge (lbs/yr). If reported 12-month rolling sums exceed the facility's max annual WLA, the facility's mass limits

(monthly average and six-month average) may be recalculated using more appropriate CVs or monitoring frequencies when the permit is reissued to bring discharge levels into compliance with the facility's given WLA.

Mercury: Requirements for mercury are included in s. NR 106.145, Wis. Adm. Code. (See http://dnr.wi.gov/topic/Mercury/). The Rib Mountain Metropolitan Sewerage District WWTF applied for a mercury variance, under the provisions of s. NR 106.145, Wis. Adm. Code, with its application for permit reissuance. The previous permit also included a mercury variance. The Department reviewed Rib Mountain's application for a mercury variance. The information supplied in the application supports the request. The proposed permit requires the permittee to implement a Mercury Pollutant Minimization Program (PMP) dated December 18, 2024 and submit annual progress reports each year by January 31st.

Nitrogen Series: The Department has included effluent monitoring for Total Nitrogen in the permit through the authority under s. 283.55(1)(e), Wis. Stats.

PFOS/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. Every other month monitoring is included in the permit in accordance with s. NR 106.98(2)(c), Wis. Adm. Code.

Acute WET: Testing is required during the following quarters:

- October – December 2025
- April – June 2026
- July – September 2027
- January – March 2028
- October – December 2029

4 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	Class B	Liquid	Anaerobic Digestion	Injection when land applied	Land Application	705 US Tons (2023)
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? No						
Is a priority pollutant scan required? No						

4.1 Sample Point Number: 002- LIQUID SLUDGE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Quarterly	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Quarterly	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Quarterly	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Quarterly	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Quarterly	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Quarterly	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Quarterly	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Quarterly	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Quarterly	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Quarterly	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Quarterly	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Quarterly	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Quarterly	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Quarterly	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Quarterly	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Quarterly	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Quarterly	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Quarterly	Composite	
Nitrogen, Total Kjeldahl		Percent	Quarterly	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Quarterly	Composite	
Phosphorus, Total		Percent	Quarterly	Composite	
Phosphorus, Water Extractable		% of Tot P	Quarterly	Composite	
Potassium, Total Recoverable		Percent	Quarterly	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Once in 2028.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once in 2028.
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
PFAS Dry Wt			Annual	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

4.1.1 Changes from Previous Permit:

Sludge limitations and monitoring requirements were evaluated for this permit term and the following changes were made:

PFAS: Monitoring is required annually pursuant to s. NR 204.06(2)(b)9., Wis. Adm. Code.

4.1.2 Explanation of Limits and Monitoring Requirements

Requirements for disposal, including land application of 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). Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07 (7) for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k). Radium requirements are addressed in s. NR 204.07(3)(n).

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 this WPDES permit pursuant to ss. NR 214.18(5)(b) and NR 204.06(2)(b)9., Wis. Adm. Code.

5 Schedules

5.1 Mercury Pollutant Minimization Program

As a condition of the variance to the water quality based effluent limitation(s) for mercury granted in accordance with s. NR 106.145(6), Wis. Adm. Code, the permittee shall perform the following actions.

Required Action	Due Date
Annual Mercury Progress Reports: Submit an annual mercury progress report related to the pollutant minimization activities for the previous year. The annual mercury progress report shall: Indicate which mercury pollutant minimization activities or activities outlined in the Pollutant Minimization Program Plan have been implemented and state which, if any, activities from the Pollutant Minimization Program Plan were not pursued and why; Include an assessment of whether each implemented pollutant minimization activity appears to be effective or ineffective at reducing pollutant discharge concentrations and identify actions planned for the upcoming year; Identification of barriers that have limited program effectiveness and adjustments to the program that	01/31/2026

will be implemented during the next year to help address these barriers; Include an analysis of trends in total effluent mercury concentrations based on mercury sampling; and Include an analysis of how influent and effluent mercury varies with time and with significant loading of mercury. The first annual mercury progress report is to be submitted by the Due Date.	
Annual Mercury Progress Report #2: Submit a mercury progress report, related to the pollutant minimization activities for the previous year, as defined above.	01/31/2027
Annual Mercury Progress Report #3: Submit a mercury progress report, related to the pollutant minimization activities for the previous year, as defined above.	01/31/2028
Annual Mercury Progress Report #4: Submit a mercury progress report, related to the pollutant minimization activities for the previous year, as defined above.	01/31/2029
Final Mercury Report: Submit a final report documenting the success in reducing mercury concentrations in the effluent, as well as the anticipated future reduction in mercury sources and mercury effluent concentrations. The report shall: Summarize mercury pollutant minimization activities that have been implemented during the current permit term and state which, if any, activities from the Pollutant Minimization Program Plan were not pursued and why; Include an assessment of which pollutant minimization activities appear to have been effective or ineffective. Evaluate any needed changes to the pollutant reduction strategy accordingly; Identification of barriers that have limited program effectiveness and adjustments to the program that will be implemented during the next variance term (if applicable) to help address these barriers; Include an analysis of trends in mercury concentrations based on sampling and data during the current permit term; and Include an analysis of how influent and effluent mercury varies with time and with significant loadings of mercury. If the permittee intends to reapply for a mercury variance per s. NR 106.145, Wis. Adm. Code, for the reissued permit, a detailed Pollutant Minimization Program Plan outlining the pollutant minimization activities proposed for the upcoming permit term shall be submitted along with the final report. An updated pollutant minimization plan shall: Include an explanation of why or how each pollutant minimization activity will result in reduced discharge of the target pollutant; Evaluate any new available information on pollutant sources, timing, and concentration to update the mass balance assumptions and expected sources of the pollutant, and Identify any information needs that would help to better determine pollutant sources and make plans to collect that information.	12/31/2029
Annual Mercury Reports After Permit Expiration: In the event that this permit is not reissued by the date the permit expires, the permittee shall continue to submit annual mercury reports for the previous year following the due date of Annual Mercury Progress Reports listed above. Annual Mercury Progress reports shall include the information as defined above.	

5.1.1 Explanation of Schedule

Mercury Pollutant Minimization Program: This schedule is included as a condition of the variance to the water quality-based effluent limitation for mercury granted in accordance with s. NR 106.145(6), Wis. Adm. Code. The schedule requires annual reports to be submitted each year by the due date.

5.2 PFOS/PFOA Minimization Plan Determination of Need

Required Action	Due Date
Report on Effluent Discharge: Submit a report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations. This analysis should also include a comparison to the applicable narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code. This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results.	06/30/2026
Report on Effluent Discharge and Evaluation of Need: Submit a final report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations of data collected over the last 24 months. The report shall also provide a comparison on the likelihood of the facility needing to develop a PFOS/PFOA minimization plan. This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results. The permittee shall also submit a request to the department to evaluate the need for a PFOS/PFOA minimization plan. If the Department determines a PFOS/PFOA minimization plan is needed based on a reasonable potential evaluation, the permittee will be required to develop a minimization plan for Department approval no later than 90 days after written notification was sent from the Department. The Department will modify or revoke and reissue the permit to include PFOS/PFOA minimization plan reporting requirements along with a schedule of compliance to meet WQBELs. Effluent monitoring of PFOS and PFOA shall continue as specified in the permit until the modified permit is issued. If, however, the Department determines there is no reasonable potential for the facility to discharge PFOS or PFOA above the narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code, no further action is required and effluent monitoring of PFOS and PFOA shall continue as specified in the permit.	06/30/2027

5.2.1 Explanation of Schedule

PFOS/PFOA Minimization Plan Determination of Need: As stated above, ch. NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. Section NR 106.98, Wis. Adm. Code, specifies steps to generate data in order to determine the need for reducing PFOS and PFOA in the discharge. Data generated per the effluent monitoring requirements will be used to determine the need for developing a PFOS/PFOA minimization plan. As part of the schedule, the permittee is required to submit two annual Reports on Effluent Discharge.

If the Department determines that a minimization plan is needed, the permit will be modified or revoked/reissued to include additional requirements.

5.3 TMDL Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus

The permittee shall comply with the WQBELs for phosphorus as specified.

Required Action	Due Date
Optimization Plan: The permittee shall prepare an Optimization Plan and submit it for Department approval. The plan shall include an evaluation of collected effluent data, possible source reduction measures and operational improvements to optimize performance to control phosphorus discharges. The plan shall contain a schedule for implementation of the measures and improvements. Once the plan is approved by the Department, the permittee shall take the steps called for in the Optimization Plan and follow the schedule of implementation as approved.	09/30/2025
Achieve Compliance: The permittee shall achieve compliance with the TMDL phosphorus WQBELs.	01/01/2026

5.3.1 Explanation of Schedule

TMDL Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus – This compliance schedule contains the remaining Required Actions from the previous permit in order to achieve compliance with the TMDL-based WQBELs for total phosphorus by January 1, 2026.

Attachments

WQBEL Memo: Water Quality-Based Effluent Limitations for the Rib Mountain Metro Sewage District Wastewater Treatment Facility WPDES Permit No. WI-0035581 by Benjamin Hartenbower, Water Resources Engineer, dated November 22, 2024

Mercury PMP (Pollutant Minimization Program) Plan, dated February 17, 2025

Mercury Variance EPA Data Sheet

Justification Of Any Waivers From Permit Application Requirements

No waivers requested or granted as part of this permit reissuance.

Prepared By: Victoria Ziegler Wastewater Specialist **Date:** December 16, 2024

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: November 22, 2024

TO: Victoria Ziegler – SER/Waukesha

FROM: Benjamin Hartenbower – WCR/Eau Claire

SUBJECT: Water Quality-Based Effluent Limitations for the Rib Mountain Metro Sewerage District Wastewater Treatment Facility
WPDES Permit No. WI-0035581

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 the Rib Mountain Metro Sewerage District Wastewater Treatment Facility in Marathon County. This municipal wastewater treatment facility (WWTF) discharges to the Wisconsin River, located in the Mosinee Flowage Watershed in the Central Wisconsin River Basin. This discharge is included in the Wisconsin River TMDL as approved by EPA on April 26, 2019 with site-specific criteria approved by EPA on July 9, 2020. 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	Footnotes
Flow Rate					1,2
BOD_5 May - October November - April	1163 lbs/day		45 mg/L 45 mg/L	30 mg/L 30 mg/L	1,3
TSS			45 mg/L	30 mg/L	1
pH	9.0 s.u.	6.0 s.u.			1
Ammonia Nitrogen	Variable		**108 mg/L**	**108 mg/L**	4,5
E. Coli				126 #/100 mL geometric mean	6
Mercury				1.3 ng/L	7
PFOS and PFOA					8
Phosphorus TBEL TMDL Limit				 1.0 mg/L 18.0 lbs/day	9
TKN, Nitrate+Nitrite, and Total Nitrogen					10
Acute WET	1.0 TUa				11

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. BOD_5 allocation for the period of May – October based on ch. NR 212, Wis. Adm. Code.

4. The variable daily maximum ammonia nitrogen limit table corresponding to effluent pH values. These limits apply year-round.

Effluent pH s.u.	**Limit mg/L**	**Effluent pH s.u.**	**Limit mg/L**	**Effluent pH s.u.**	**Limit mg/L**
6.0 ≤ pH ≤ 6.1	108	7.0 < pH ≤ 7.1	66	8.0 < pH ≤ 8.1	14
6.1 < pH ≤ 6.2	106	7.1 < pH ≤ 7.2	59	8.1 < pH ≤ 8.2	11
6.2 < pH ≤ 6.3	104	7.2 < pH ≤ 7.3	52	8.2 < pH ≤ 8.3	9.4
6.3 < pH ≤ 6.4	101	7.3 < pH ≤ 7.4	46	8.3 < pH ≤ 8.4	7.8
6.4 < pH ≤ 6.5	98	7.4 < pH ≤ 7.5	40	8.4 < pH ≤ 8.5	6.4
6.5 < pH ≤ 6.6	94	7.5 < pH ≤ 7.6	34	8.5 < pH ≤ 8.6	5.3
6.6 < pH ≤ 6.7	89	7.6 < pH ≤ 7.7	29	8.6 < pH ≤ 8.7	4.4
6.7 < pH ≤ 6.8	84	7.7 < pH ≤ 7.8	24	8.7 < pH ≤ 8.8	3.7
6.8 < pH ≤ 6.9	78	7.8 < pH ≤ 7.9	20	8.8 < pH ≤ 8.9	3.1
6.9 < pH ≤ 7.0	72	7.9 < pH ≤ 8.0	17	8.9 < pH ≤ 9.0	2.6

5. 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.
6. Bacteria limits apply during the disinfection season of May - September. Additional limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
7. This is the water quality-based effluent limitation for mercury. If this limit is included in the permit, a mass limit would also need to be included. An alternative effluent limitation of 7.0 ng/L, as a daily maximum may be included in the permit in place of the water quality-based effluent limit if the mercury variance application that was submitted is approved by EPA.
8. Monitoring once every two months is required in accordance with s. NR 106.98(2), Wis. Adm. Code.
9. The phosphorus mass limit is based on the Total Maximum Daily Load (TMDL) for the Wisconsin River Basin to address phosphorus water quality impairments within the TMDL area. The TMDL was approved by EPA on April 26, 2019 with site-specific criteria approved by EPA on July 9, 2020.
10. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, quarterly total nitrogen monitoring is recommended for all major municipal permittees. Total Nitrogen is the sum of nitrate (NO_3), nitrite (NO_2), and total kjeldahl nitrogen (TKN) (all expressed as N).
11. Annual acute WET tests are recommended in the reissued permit. 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 Benjamin Hartenbower at (715) 225-4705 or Benjamin.Hartenbower@wisconsin.gov or Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (2) – Narrative & Map

PREPARED BY:  Date: 11/22/2024

Benjamin Hartenbower, PE,
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E-cc:

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Attachment #1

Water Quality-Based Effluent Limitations for
the Rib Mountain Metro Sewerage District Wastewater Treatment Facility
WPDES Permit No. WI-0035581

Prepared by: Benjamin P. Hartenbower

PART 1 – BACKGROUND INFORMATION

Facility Description:
The Rib Mountain Metropolitan Sewerage District is a wastewater treatment plant (WWTP) accepts wastewater from Village of Rib Mountain, Village of Weston, Village of Rothschild, Village of Kronenwetter and City of Mosinee as well as hauled wastewater. Outfall 001 is located in the Wisconsin River, west side, downstream of US 51 bridge.

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

Existing Permit Limitations
The current permit, which expired on December 31, 2023, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						1,2
BOD_5 May - October November - April	1163 lbs/day		45 mg/L 45 mg/L	30 mg/L 30 mg/L		1,3
TSS			45 mg/L	30 mg/L		1
pH	9.0 s.u.	6.0 s.u.				1
Ammonia Nitrogen	Variable		**108 mg/L**	**108 mg/L**		4,5
Fecal Coliform May - September			**656 #/100 mL geometric mean**	400 #/100 mL geometric mean		5
Mercury	7 ng/L					6
Phosphorus TBEL TMDL Limit				1.0 mg/L 24.0 lbs/day	8.0 lbs/day	7
TKN, Nitrate+Nitrite, and Total Nitrogen						2
Acute WET						8

Footnotes:

1. 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.
2. Monitoring only.
3. BOD_5 allocation for the period of May – October based on ch. NR 212, Wis. Adm. Code.

4. The variable daily maximum ammonia nitrogen limit table corresponding to effluent pH values. These limits apply year-round.

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
6.0 ≤ pH ≤ 6.1	108	7.0 < pH ≤ 7.1	66	8.0 < pH ≤ 8.1	14
6.1 < pH ≤ 6.2	106	7.1 < pH ≤ 7.2	59	8.1 < pH ≤ 8.2	11
6.2 < pH ≤ 6.3	104	7.2 < pH ≤ 7.3	52	8.2 < pH ≤ 8.3	9.4
6.3 < pH ≤ 6.4	101	7.3 < pH ≤ 7.4	46	8.3 < pH ≤ 8.4	7.8
6.4 < pH ≤ 6.5	98	7.4 < pH ≤ 7.5	40	8.4 < pH ≤ 8.5	6.4
6.5 < pH ≤ 6.6	94	7.5 < pH ≤ 7.6	34	8.5 < pH ≤ 8.6	5.3
6.6 < pH ≤ 6.7	89	7.6 < pH ≤ 7.7	29	8.6 < pH ≤ 8.7	4.4
6.7 < pH ≤ 6.8	84	7.7 < pH ≤ 7.8	24	8.7 < pH ≤ 8.8	3.7
6.8 < pH ≤ 6.9	78	7.8 < pH ≤ 7.9	20	8.8 < pH ≤ 8.9	3.1
6.9 < pH ≤ 7.0	72	7.9 < pH ≤ 8.0	17	8.9 < pH ≤ 9.0	2.6

5. 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.
6. Mercury variance limit.
7. A compliance schedule is in the current permit to meet the TMDL Limits by January 1, 2026.
8. Acute WET testing required: July - Sept 2019, Apr - June 2020, Jan - March 2021, July - Sept 2022, and Jan - March 2023.

Receiving Water Information

- Name: Wisconsin River
- Waterbody Identification Code (WBIC): 1179900
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: USGS for Station 05398000 at Rothschild, WI, in the Wisconsin River

  $7\text{-}Q_{10}$ = 911 cfs
  $7\text{-}Q_{2}$ = 1470 cfs
  $90\text{-}Q_{10}$ = 1250 cfs
  Harmonic Mean Flow = 1921 cfs using a drainage area of 4020.0 mi^2.
  The Harmonic Mean has been estimated based on average flow and the $7\text{-}Q_{10}$ 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 = 54 mg/L as $CaCO_3$. This value represents the geometric mean of 14 samples collected in the Wisconsin River from 11/10/2004 to 07/11/2017.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%
- Source of background concentration data: Chloride data is from the Wisconsin River. Mercury data is from the receiving water intake of the Wisconsin River at WPS Weston. Additional metals data is from the Wisconsin River. The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations. Background data for calculating effluent limitations for ammonia nitrogen are described later.

- Multiple dischargers: There are several other dischargers to the Wisconsin River however they are not in the immediate vicinity and the mixing zones do not overlap. Therefore, the other dischargers do not impact this evaluation.
- Impaired water status: This discharge is located within the WI River TMDL for phosphorus

Effluent Information:

- Design Flow Rates(s):
  Annual Average = 4.410 MGD (Million Gallons per Day)
  For reference, the actual average flow from January 2019 to September 2024 was 2.8 MGD.
- Hardness = 180 mg/L as $CaCO_3$. This value represents the geometric mean of 4 effluent samples collected from 01/23/2023 to 02/02/2023.
- Acute dilution factor used in accordance with s. NR 106.06 (3) (c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water Source: Domestic wastewater from the Village of Rib Mountain, Village of Weston, Village of Rothschild, Village of Kronenwetter, and City of Mosineee with water supply from wells and nondomestic contributions from Crystal Finishing-Mosinee, Crystal Finishing-Weston, and ADC Equipment Innovations, Applied Laser Technologies LLC.
- Additives: poly aluminium chloride for phosphorus treatment
- Total Phosphorus Wasteload Allocation: 4919 lbs/year = 13.467 lbs/day
- Effluent characterization: This facility is categorized as a major municipal, so the permit application required effluent sample analyses for all the "priority pollutants" except for the Dioxins and Furans as specified in s. NR 200.065, Table 1, Wis. Adm. Code. The permit-required monitoring for Ammonia Nitrogen, Mercury, and Phosphorus from January 2019 to September 2024 is used in this evaluation.

Chemical Specific Effluent Data at Outfall 001

	Mercury ng/L
1-day P_{99}	7.52
4-day P_{99}	4.21
30-day P_{99}	2.51
Mean	1.77
Std	1.51
Sample size	69
Range	0.7 - 12

Attachment #1

Chemical Specific Effluent Data at Outfall 001

Sample Date	Copper µg/L	Sample Date	Chloride mg/L
01/23/2023	14	01/23/2023	300
01/25/2023	14	01/25/2023	300
01/30/2023	14	01/30/2023	320
02/02/2023	14	02/02/2023	290
02/06/2023	11		
02/10/2023	9.7		
02/13/2023	12		
02/16/2023	12		
02/20/2023	14		
02/23/2023	11		
03/01/2023	12		
1-day P_{99}	16.58	mean	303
4-day P_{99}	14.44		

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.".

The following table presents the average concentrations and loadings at Outfall 001 from January 2019 to September 2024 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6):

Parameter Averages with Limits

	Average Measurement	Average Mass Discharged
BOD_5	12.3 mg/L	203.55 lbs/day
TSS	7.8 mg/L*	
pH	6.89 s.u.	
Ammonia Nitrogen	21.32 mg/L	
Fecal Coliform	57#/100 mL	
Phosphorus	0.71 mg/L	16.51 lbs/day

*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 P_{99}) 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-Q_{10}

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-Q_{10} 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.

$$\text{Limitation} = \frac{(WQC)\,(Qs + (1-f)\,Qe) - (Qs - f\,Qe)\,(Cs)}{Qe}$$

Where:

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

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

Qe = 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

Cs = 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-Q_{10} method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is not the case for the Rib Mountain Metro Sewerage District Wastewater Treatment Facility and the limits are set based on two times the acute toxicity criteria.

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

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 729 cfs, (1-Q_{10} (estimated as 80% of 7-Q_{10})), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD. mg/L	ATC	MEAN BACK-GRD.	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P_{99}	1-day MAX. CONC.
Arsenic		340	0.802	680	136	<1.1		
Cadmium	180	20.2	0.026	40.4	8.1	<0.19		
Chromium (+3)	180	2916	0.450	5832	1166	<1.1		
Chromium (+6)		16.0		32.0	6.4	3.1		
Copper	180	27.0	1.050	54.0			16.6	14.0
Lead	180	189	0.586	377	75	<4.3		
Mercury		830	2.762	1660			7.52	12.00
Nickel	180	771	1.191	1542	308	<1.2		
Zinc	180	201	2.233	402	80	54.00		
Chloride		757	12.6	1514	303	303		320
Phenol[+]		4460		4460	892	0.02		

* * The 2 × ATC method of limit calculation yields a more restrictive limit than consideration of ambient concentrations and 1-Q_{10} flow rates per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016.

[+] The limit for this substance is based on a secondary value. Acute limits are set equal to the secondary value rather than two times or using the 1-Q_{10} s. NR 106.06(3)(b)2 and s. NR 105.05(2)(f)(6), Wis. Adm Code.

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 228 cfs (¼ of the 7-Q_{10}), as specified in s. NR 106.06(4)(c), Wis. Adm. Code.

SUBSTANCE	REF. HARD.* mg/L	CTC	MEAN BACK-GRD.	MAX. EFFL. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P_{99}
Arsenic		152	0.802	5206	1041	<1.1	
Cadmium	54	1.5	0.026	51.6	10.3	<0.19	
Chromium (+3)	54	80	0.450	2743	549	<1.1	
Chromium (+6)		11.0		377.5	75.5	3.1	
Copper	54	6.1	1.050	176.2			14.4
Lead	54	16	0.586	515	103	<4.3	
Mercury		440	2.762	15034			4.21
Nickel	54	31	1.191	1032	206	<1.2	
Zinc	54	71	2.233	2355	471	54.00	
Chloride		395	12.6	13160	2632	303	
Phenol[+]		248		8519	1704	0.02	

[+] The limit for this substance is based on a secondary value.

Monthly Average Limits based on Wildlife Criteria (WC)
RECEIVING WATER FLOW = 312 cfs (¼ of the 90-Q_{10}), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	WC	MEAN BACK-GRD.	MAX. EFFL. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	30-day P_{99}
Mercury	1.30	2.762	1.30			2.51

Monthly Average Limits based on Human Threshold Criteria (HTC)
RECEIVING WATER FLOW = 480 cfs (¼ of the Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HTC	MEAN BACK-GRD.	MAX. EFFL. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	30-day P_{99}
Antimony	373.0		26630.8	5326.2	0.34	
Cadmium	370.0	0.026	26414.8	5283.0	<0.19	
Chromium (+3)	3818000	0.450	272590540	54518108	<1.1	
Chromium (+6)	7636.0		545181.1	109036.2	3.1	
Lead	140	0.586	9954	1991	<4.3	
Mercury	1.50	2.762	1.50			2.51
Nickel	43000	1.191	3069951	613990	<1.2	
Phenol[+]	2379		169851	33970	0.02	

[+] The limit for this substance is based on a secondary value.

Monthly Average Limits based on Human Cancer Criteria (HCC)
RECEIVING WATER FLOW = 480 cfs (¼ of the Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HCC	MEAN BACK-GRD.	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	30-day P_{99}
Arsenic	13.3	0.802	893.1	178.6	<1.1	
Chloroform	1960		139936	27987	0.54	
1,4-Dichlorobenzene	163		11638	2328	0.14	

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, limits are required for Mercury.

Mercury – The WQBEL for total recoverable mercury is set equal to the most stringent criterion of 1.3 ng/L, according to s. NR 106.06 (6), Wis. Adm. Code, because the background concentration in the receiving water and similar inland streams is known to exceed 1.3 ng/L.

A review of data from January 2019 to September 2024 indicates the 30-day P_{99} is 2.51 ng/L, which is above the wildlife criterion of 1.3 ng/L. Therefore, a mercury effluent limit is required for the Rib Mountain Metro Sewerage District Wastewater Treatment Facility.

Section NR 106.145(4), Wis. Adm. Code, allows for eligibility for an alternative mercury effluent limitation if the permittee applies for an alternative mercury limit, which includes the submittal of a pollutant minimization plan. The Rib Mountain Metro Sewerage District Wastewater Treatment Facility has submitted this application. Section NR 106.145(5), Wis. Adm. Code, specifies that an alternative limitation shall equal the 1-day P_{99} of the effluent data and shall be expressed as a daily maximum concentration. Additionally, an alternative effluent limit for Mercury may not be set greater than a previously established alternative mercury effluent limit unless previous monitoring was not representative of the discharge. The calculated 1-day P_{99} of 7.5 ng/L is greater than the current alternative effluent limit of 7.0 ng/L, therefore, if a variance is granted and approved by US Environmental Protection Agency an **alternative mercury limitation of 7.0 ng/L as a daily maximum is required** for the Rib Mountain Metro Sewerage District Wastewater Treatment Facility.

In the absence of a mercury variance, mass limits and additional concentration limits to meet the expression of limits requirements in s. NR 106.07, Wis. Adm. Code, would be required.

PFOS and PFOA
The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98, Wis. Adm. Code. Monitoring of the effluent produced a PFOS result of 7.42 ng/L and a PFOA result of 7.34 ng/L. Monitoring of the water supply produced a PFOS result of 16.00 ng/L and a PFOA result of 5.10 ng/L. The PFOS result is greater than one fifth of the criterion for the substance. Based on the annual design flow, nondomestic contributions and known levels of PFOS/PFOA in the effluent and source water, **PFOS and PFOA monitoring is recommended once every two months.**

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.
- Section NR 106.07(3), Wis. Adm. Code requires weekly and monthly average limits for municipal treatment plants.
- 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 = 0.411 and B = 58.4 for a Warm Water Sport fishery, and
pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. A total of 1496 sample results were reported from January 2019 to September 2024. The maximum reported value was 7.70 s.u. (Standard pH Units). The effluent pH was 7.40 s.u. or less 99% of the time. The 1-day P_{99}, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 7.75 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 7.71 s.u. Therefore, a value of 7.75 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 7.75 s.u. into the equation above yields an ATC = 13.25 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 1-Q_{10} 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-Q_{10} (estimated as 80 % of 7-Q_{10}) and the 2×ATC approach are shown below.

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
2×ATC	26.51
1-Q_{10}	1421

The 2×ATC method yields the most stringent limits for the Rib Mountain Metro Sewerage District Wastewater Treatment Facility.

The current permit has variable daily maximum effluent limits based on effluent pH. Presented below is a table of daily maximum limitations corresponding to various effluent pH values.

Daily Maximum Ammonia Nitrogen Limits – WWSF

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
6.0 ≤ pH ≤ 6.1	108	7.0 < pH ≤ 7.1	66	8.0 < pH ≤ 8.1	14
6.1 < pH ≤ 6.2	106	7.1 < pH ≤ 7.2	59	8.1 < pH ≤ 8.2	11
6.2 < pH ≤ 6.3	104	7.2 < pH ≤ 7.3	52	8.2 < pH ≤ 8.3	9.4
6.3 < pH ≤ 6.4	101	7.3 < pH ≤ 7.4	46	8.3 < pH ≤ 8.4	7.8
6.4 < pH ≤ 6.5	98	7.4 < pH ≤ 7.5	40	8.4 < pH ≤ 8.5	6.4
6.5 < pH ≤ 6.6	94	7.5 < pH ≤ 7.6	34	8.5 < pH ≤ 8.6	5.3
6.6 < pH ≤ 6.7	89	7.6 < pH ≤ 7.7	29	8.6 < pH ≤ 8.7	4.4
6.7 < pH ≤ 6.8	84	7.7 < pH ≤ 7.8	24	8.7 < pH ≤ 8.8	3.7
6.8 < pH ≤ 6.9	78	7.8 < pH ≤ 7.9	20	8.8 < pH ≤ 8.9	3.1
6.9 < pH ≤ 7.0	72	7.9 < pH ≤ 8.0	17	8.9 < pH ≤ 9.0	2.6

Weekly and Monthly Average Limits based on Chronic Toxicity Criteria (CTC)
The ammonia limit calculation also warrants evaluation of weekly and monthly average limits based on chronic toxicity criteria for ammonia, since those limits relate to the assimilative capacity of the receiving water.

Weekly average and monthly average limits for ammonia nitrogen are based on chronic toxicity criteria in ch. NR 105, Wis. Adm. Code.

The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified as Warm Water Sport Fish Community is calculated by the following equation, according to subchapter IV of NR 106, Wis. Adm. Code.

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

Where:

pH = the pH (s.u.) 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 (ºC) of the receiving water – (Early Life Stages Present), or
T = the maximum of the actual temperature (ºC) and 7 - (Early Life Stages Absent)

The 4-day criterion is equal to the 30-day criterion multiplied by 2.5. The 4-day criteria are used in a mass-balance equation with the 7-Q_{10} (4-Q3, if available) to derive weekly average limitations. And the 30-day criteria are used with the 30-Q_5 (estimated as 85% of the 7-Q_2 if the 30-Q_5 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 ºC, 25% of the flow is used if the Temperature < 11 ºC, and 50% of the flow is used if the Temperature ≥ 11 ºC but < 16 ºC.

Section NR 106.32 (3), Wis. Adm. Code, provides 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 ºC, during the winter and spring months. Based on a review of the DNR Fisheries database, burbot, an early spawning species, are believed to be present in the Wisconsin River. So "ELS Absent" criteria apply from October through December, and "ELS Present" criteria will apply from January through September for a WWSF classification.

The "default" basin assumed values are used for temperature and background ammonia concentrations, because minimum ambient data is available. The values for pH are based on data collected from the Wisconsin River. These values are shown in the table below, with the resulting criteria and effluent limitations.

Weekly and Monthly Ammonia Nitrogen Limits – WWSF

		April & May	June-September	October-March
Effluent Flow	Qe (MGD)	4.410	4.410	4.410
Background Information	7-Q_{10} (cfs)	911	911	911
	7-Q_2 (cfs)	1470	1470	1470
	Ammonia (mg/L)	0.07	0.07	0.14
	Temperature (°C)	15.6	23.9	10.6
	pH (s.u.)	7.66	7.74	7.51
	% of Flow used	50	100	25
	Reference Weekly Flow (cfs)	456	911	228
	Reference Monthly Flow (cfs)	625	1250	312
Criteria mg/L	4-day Chronic			
	Early Life Stages Present	8.75	4.68	10.85
	Early Life Stages Absent	8.75	4.68	14.01
	30-day Chronic			
	Early Life Stages Present	3.50	1.87	4.34
	Early Life Stages Absent	3.50	1.87	5.60
Effluent Limitations mg/L	Weekly Average			
	Early Life Stages Present	588	621	368
	Early Life Stages Absent			
	Monthly Average			
	Early Life Stages Present	318	332	197
	Early Life Stages Absent			

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from January 2019 to September 2024, with those results being compared to the calculated limits to determine the need to include ammonia limits in the Rib Mountain Metro Sewerage District Wastewater Treatment Facility permit for the respective month ranges.

Ammonia Nitrogen Effluent Data

Ammonia Nitrogen mg/L	April & May	June-September	October-March
1-day P_{99}	60.9	52.96	79.17
4-day P_{99}	41.3	30.17	48.1
30-day P_{99}	31.2	18.54	32.44
Mean	26.3	13.44	25.27
Std	10.8	10.54	15.26
Sample size	144	288	395
Range	3 - 55.5	0.28 - 55	1.3 - 75

Based on this comparison, daily limits are required year-round.

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. Because a daily maximum ammonia limit is necessary for the Rib Mountain Metro Sewerage District Wastewater Treatment Facility, weekly and monthly average limits are also required under this code revision.

The methods for calculating limitations for municipal treatment facilities to conform to 40 CFR 122.45(d) are specified in s. NR 106.07(3), Wis. Adm. Code, and are as follows:

> Whenever a daily maximum limitation is determined necessary to protect water quality, a weekly and monthly average limitation shall also be included in the permit and set equal to the daily maximum limit unless a more restrictive limit is already determined necessary to protect water quality.

In this case, the recommended daily maximum limits vary with effluent pH, so additional limits should be set equal to the highest recommended limit. Therefore, **monthly and weekly average limits of 108 mg/L** are recommended in the permit.

Conclusions and Recommendations

In summary, the following ammonia nitrogen limitations are recommended. No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm Code.

Final Ammonia Nitrogen Limits

Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
Variable	**108**	**108**

Attachment #1

PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR BACTERIA

Section NR 102.04(5), Wis. Adm. Code, states 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.

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.

E. coli monitoring is recommended at the same frequency that fecal coliform monitoring is required in the current permit. Because the Rib Mountain Metro Sewerage District Wastewater Treatment Facility permit requires weekly monitoring, the 410 counts/100 mL limit will effectively function as a daily maximum limit unless the facility performs additional monitoring. Any additional monitoring beyond what is required by the permit must also be reported on the DMR as required in the standard requirements section of the permit.

These limits are required during May through September. No changes are recommended to the required disinfection season.

Effluent Data

The Rib Mountain Metro Sewerage District Wastewater Treatment Facility has monitored effluent *E. coli* from August 2022 to June 2023 and a total of 16 results are available. A geometric mean of 126 counts/100 mL was never exceeded, with a maximum monthly geometric mean of 98 counts/100 mL. Effluent data never exceeded 410 counts/100 mL. The maximum reported value was 280 counts/100 mL. Based on this effluent data it appears that the facility can meet new *E. coli* limits and a compliance schedule is not needed in the reissued permit.

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 the Rib Mountain Metro Sewerage District Wastewater Treatment Facility currently has a limit of 1.0 mg/L, this limit should be included in the reissued permit. This limit remains applicable unless a more stringent WQBEL is given.

TMDL Limits – Phosphorus

Total phosphorus (TP) effluent limits in lbs/day are calculated as recommended in the *TMDL Development and Implementation Guidance: Integrating the WPDES and Impaired Waters Programs* (May 2020). The wasteload allocations (WLA) that implement site-specific criteria for Lakes Petenwell, Castle Rock, and Wisconsin are found in Appendix K of the *Total Maximum Daily Loads for Total Phosphorus in the Wisconsin River Basin (WRB TMDL)* report dated April 26, 2019 and are expressed as maximum annual loads (lbs/year) and maximum daily loads (lbs/day). The WLA that implement statewide criteria found in Appendix J of the TMDL report are no longer applicable following approval of these site-specific criteria. The daily WLAs in the WRB TMDL equals the annual WLA divided by the number of days in the year. Therefore, the daily WLA is an annual average. Since the derivation of daily WLAs from annual WLAs does not take effluent variability or monitoring frequency into consideration, maximum daily WLAs from the WRB TMDL should not be used directly as permit effluent limits.

For the reasons explained in the April 30, 2012 paper entitled *Justification for Use of Monthly, Growing Season and Annual Average Periods for Expression of WPDES Permit Limits for Phosphorus Discharges in Wisconsin*, WDNR has determined that the phosphorus WQBELs set equal to WLAs would not be consistent with the assumptions and requirements of the TMDL.

Therefore, limits given to continuously discharging facilities covered by the WRB TMDL are given monthly average mass limits. If the equivalent effluent concentration is less than or equal to 0.3 mg/L, six-month average mass limits are also included. The following equation shows the calculation of equivalent effluent concentration:

$$\text{TP Equivalent Effluent Concentration} = \text{Daily WLA} \div (\text{Flow Rate} * \text{Conversion Factor})$$
$$= 13.467 \text{ lbs/day} \div (4.410 \text{ MGD} * 8.34)$$
$$= 0.37 \text{ mg/L}$$

Since this value is greater than 0.3 mg/L, the WLA should be expressed as a monthly average mass limit for total phosphorus and no six-month average limit is required.

$$\text{TP Monthly Average Permit Limit} = \text{Daily WLA} * \text{Monthly average multiplier}$$
$$= 13.467 \text{ lbs/day} * 1.34$$
$$= 18.0 \text{ lbs/day}$$

The multiplier used in the monthly average calculation was determined according to TMDL implementation guidance. A coefficient of variation was calculated, based on phosphorus mass monitoring data, to be 0.3. The facility is not able to meet the permit limits based on the WLA, so a standard CV of 0.6 is used. This value, along with monitoring frequency, is used to select the multiplier. The current permit specifies phosphorus monitoring as 5/week; if a different monitoring frequency is used, the stated limits should be reevaluated.

The WRB TMDL establishes TP wasteload allocations to reduce the loading in the entire watershed including WLAs to meet water quality standards for tributaries to the Wisconsin River. Therefore, WLA-based WQBELs are protective of immediate receiving waters and TP WQBELs derived according to s. NR 217.13, Wis. Adm. Code are not required.

Since wasteload allocations are expressed as annual loads (lbs/yr), permits with TMDL-derived monthly average permit limits should require the permittee to calculate and report rolling 12-month sums of total monthly loads for TP. Rolling 12-month sums can be compared directly to the annual wasteload allocation. Six-month average limits apply in the periods May – October and November – April.

Effluent Data

The following table lists the statistics for effluent phosphorus levels from January 2019 to September 2024 for informational purposes. In the cases where reporting the mass discharge is not required in the current permit, the mass is calculated using the reported phosphorus concentration and the effluent flow rate for that day.

Total Phosphorus Statistics

	Concentration (mg/L)	Mass Discharge (lbs/day)
1-day P_{99}	1.32	33.95
4-day P_{99}	0.98	24.43
30-day P_{99}	0.80	19.41
Mean	0.71	16.90
Std	0.20	5.59
Sample Size	1497	1427
Range	0.098 - 3.1	1.91 - 79.99

Conclusions:

In summary, the following limits are recommended by this evaluation:

- Total Phosphorus concentration limit of 1.0 mg/L
- Monthly average Total Phosphorus mass limit of 18.0 lbs/day

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 (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.

Due to the amount of upstream flow available for dilution in the limit calculation (Qs:Qe >20:1), the lowest calculated limitation is 120° F (s. NR 106.55(6)(a), Wis. Adm. Code). For activated sludge treatment systems of domestic waste, there is no reasonable potential for the discharge to exceed this limit. **Therefore, no temperature limits or monitoring are recommended.**

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 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 testing is usually not recommended where the ratio of the 7-Q_{10} to the effluent flow exceeds 100:1. For Rib Mountain Metro Sewerage District, that ratio is approximately 134:1. With this amount of dilution, there is believed to be little potential for chronic toxicity effects in the Wisconsin River associated with the discharge from the Rib Mountain Metro Sewerage District WWTF, so the need for chronic WET testing will not be considered further.

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual*, 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.

- 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.

Attachment #1

WET Data History

Date Test Initiated	Acute Results LC_{50} %				Chronic Results IC_{25} %					Footnotes or Comments
	C. dubia	Fathead minnow	Pass or Fail?	Used in RP?	*C. dubia*	Fathead Minnow	Algae (IC_{50})	Pass or Fail?	Use in RP?	
12/06/1994					20.3	45.2		Pass	No	1
02/21/1995					45.1	27.3		Pass	No	1
05/30/1995					46	46.5		Pass	No	1
09/12/1995	>100		Fail	No	51.1	50.3		Pass	No	1
11/28/1995					40.6	25.1		Pass	No	1
02/27/1996					46.4	43.4		Pass	No	1
04/23/1996					20.3	51.4		Pass	No	1
09/17/1996					4.8	44.9		Pass	No	1
03/17/1998	>100	66.7	Fail	No						1
08/25/1998		>100	Fail	No						1
09/22/1998	>100	>100	Pass	No						1
08/15/2000	>100	>100	Pass	No						1
05/15/2001	>100	>100	Pass	No						1
03/12/2002	>100	>100	Pass	No						1
11/02/2004	>100	67	Fail	No	44.7	35.6		Pass	No	1
11/10/2004	>100	>100	Pass	No						1
02/22/2005	>100	>100	Pass	No						1
05/16/2006	>100	**68.7**	Fail	Yes	39.4	40.5		Pass	No	2
06/07/2006	>100	>100	Pass	Yes						
06/14/2006	>100	>100	Pass	Yes						
11/06/2007	>100	>100	Pass	Yes						
01/11/2011	>100	>100	Pass	Yes	36	40.5		Pass	No	2
06/05/2012	>100	100	Pass	Yes	43.5	47.5		Pass	No	2
07/23/2013	>100	>100	Pass	Yes	39.7	36.2		Pass	No	2
10/14/2014	>100	>100	Pass	Yes	>100	>100		Pass	No	2
03/03/2015	>100	>100	Pass	Yes	43.1	38.5		Pass	No	2
04/26/2016	>100	>100	Pass	Yes	78.8	28		Pass	No	2
07/11/2017	>100	>100	Pass	Yes	>100	>100		Pass	No	2
07/31/2019	>100	>100	Pass	Yes						
04/15/2020	>100	>100	Pass	Yes						
03/24/2021	>100	>100	Pass	Yes						
04/26/2023	>100	>100	Pass	Yes						

Footnotes:

1. *Data Not Representative.* 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.
2. *Chronic WET not evaluated*

- 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.

  Acute Reasonable Potential = [(TUa effluent)(B)]

Acute WET Limit Parameters

TUa (maximum) $100/LC_{50}$	**B** (multiplication factor from s. NR 106.08(5)(c), Wis. Adm. Code, Table 4)
100/68.7= 1.46 TUa	6.2 Based on 1 detect

[(TUa effluent) (B)] = 9.0 >1.0

Therefore, reasonable potential is shown for acute WET limits using the procedures in s. NR 106.08(6) and representative data from 2006 to 2023.

Expression of WET limits

Acute WET limit = 1.0 TU_a (daily maximum)

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.

Attachment #1

WET Checklist Summary

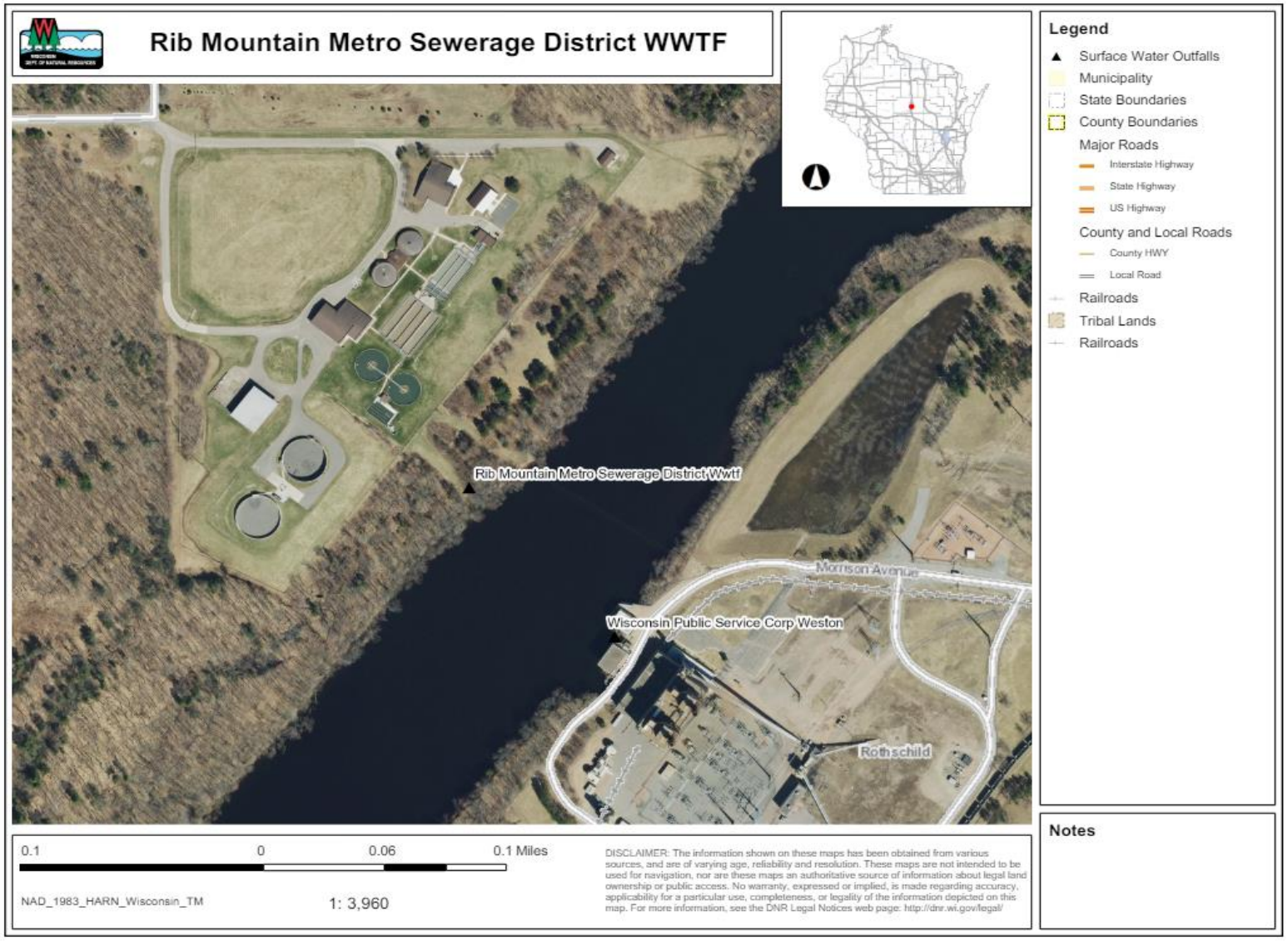
	Acute	Chronic
AMZ/IWC	Not Applicable. **0 Points**	Chronic WET not evaluated.
Historical Data	16 tests used to calculate RP. 1/16 tests failed. **0 Points**	
Effluent Variability	BOD_5, Mercury, Ammonia Nitrogen, pH, and Phosphorus exceedances. **5 Points**	
Receiving Water Classification	Warm Water Sport Fish (WWSF) (5 pts) **5 Points**	
Chemical-Specific Data	Reasonable potential for Ammonia limits based on ATC; (5 pts) Chromium, Copper, Mercury, and Zinc detected. (3 pts) Additional Compounds of Concern: Antimony, Chloroform, Phenol, and 1,4-Dichlorobenzene (2 pts) **10 Points**	
Additives	No biocides and one water quality conditioner (1 pt) added. Permittee has proper P chemical SOPs in place. **1 Point**	
Discharge Category	Four Industrial Contributors (8 pts) **8 Points**	
Wastewater Treatment	Secondary or Better **0 Points**	
Downstream Impacts	No impacts known. **0 Points**	
Total Checklist Points:	**29 Points**	
Recommended Monitoring Frequency (from Checklist):	1x yearly	
Limit Required?	No Limit = 1.0 TU_a	
TRE Recommended? (from Checklist)	No	

- After consideration of the guidance provided in the Department's WET Program Guidance Document (2022) and other information described above, annual acute WET tests are recommended in the reissued permit. 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).

- According to the requirements specified in s. NR 106.08, Wis. Adm. Code, an acute WET limit is required. The acute WET limit shall be expressed as 1.0 TUa as a daily maximum in the effluent limits table of the permit.

- A minimum of annual acute monitoring is required because an acute 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.

- A minimum of annual acute monitoring is recommended because the Rib Mountain Metro Sewerage District Wastewater Treatment Facility is a major municipal discharger with a design flow greater than 1.0 MGD. Federal regulations at 40 CFR Part 122.21(j) require at least 4 acute and chronic WET tests with each permit application on samples collected since the previous reissuance. Therefore, annual monitoring is recommended in the permit term, so that data will be available for the next permit application.


Rib Mountain Metro Sewerage District WWTF
Rib Mountain Metro Sewerage District Wwtf
Morrison Avenue
Wisconsin Public Service Corp Weston
Rothschild
Legend
Surface Water Outfalls
Municipality
State Boundaries
County Boundaries
Major Roads
Interstate Highway
State Highway
US Highway
County and Local Roads
County HWY
Local Road
Railroads
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Rib Mountain Metropolitan Sewerage District

Mercury Pollutant Minimization Plan February 17, 2025

WI-0035581-08-0 Permit Reissuance

1. Background

This PMP has been developed to reduce the level of mercury discharged from the RMMSD Wastewater Treatment Plant (WWTP) to a level closer to or below the proposed water quality based effluent limit of 1.3 nanograms per liter (ng/L). Achieving this level is unlikely without the construction of new treatment systems. RMMSD has applied for a variance from the 1.3 ng/L mercury limit for the next term of the facility's Wisconsin Pollutant Discharge Elimination System (WPDES) permit. The PMP is a requirement of the variance.

Annual reports have been submitted to the Wisconsin Department of Natural Resources (WDNR) to show progress in the minimization program.

A copy of the most recent annual report is attached.

City of Wausau and RMMSD contract with Marathon County Health Department (MCHD) to implement the mercury PMP.

2. Influent and Effluent Mercury Concentrations in Wastewater

According to the United States Environmental Protection Agency (USEPA), the typical influent mercury concentrations at publically owned treatment works are in the 50 to 200 ng/L range. The RMMSD WWTP typically experiences concentrations near the lower end of this window. See the attached annual report for more detailed info on influent and effluent mercury levels.

3. Identification of Sources of Mercury

Dental providers continue to be a primary focus for outreach and education efforts in 2023. Dental providers were mailed a reminder postcard to provide their recycling/disposal information to the Marathon County Health Department. Follow-up reminder phone calls were made to the dental offices that did not provide Marathon County Health Department with any disposal information.

The enclosed Dental Amalgam Separator Installation spreadsheet includes installation data and mercury disposal information. The information provided reflects the information provided to Marathon County by the respective dental offices. All 16 of the dental offices have reported installation of an amalgam separator, and 16 of 16 (100%) dental offices have reported mercury recycling data. A total of 103.4 pounds of dental amalgam waste and containers were recycled from 11 of the 16 dental offices in the RMMSD service area. Five of the remaining dental offices reported that their separators were not in need of replacement during 2023.

The thermometer collection program continues to be implemented as part of the community outreach aspect of the Mercury Reduction Program. In 2023, collection of thermometers was once again made available year around to make the service more convenient to the public. Press releases were issued to remind the public to recycle their mercury thermometers. Seven satellite collection sites were utilized

including, Kronenwetter Municipal Center, Rothschild Village Hall, Rib Mountain Fire Department, Wausau Fire Department, Schofield Municipal Center, Mosinee City Hall, and Marathon County Health Department. Two thermometers were recycled through the exchange locations in 2023.

Additional education and outreach to schools, auto repair and salvage businesses, and HVAC contractors was provided. An updated mercury newsletter was sent in December 2023. No follow up phone calls were received from any of the groups.

Each City, Village and Town Clerk in Marathon County received copies of the Mercury Program newsletter for posting and reference at their respective offices. Clerks were asked to notify our office if they would like the newsletter sent electronically, however, no requests were made.

The Marathon County Public Library and each of the Marathon County satellite libraries received copies of the Mercury Program newsletter with a request to post the newsletter for reference at their respective offices. No calls have been received following distribution of the newsletters.

The Marathon County Health Department mercury website continues to be viewed. However, due to the reconstruction of the Marathon County website in 2023, the number of hits to the MCHD mercury website and the number of unique visits could not be obtained. Also, the updated mercury program newsletter was added to the brochure display area near the Marathon County Health Department laboratory entrance.

Marathon County Health Department continues to promote the use of alternate equipment and materials and encourage the proper disposal of existing mercury-containing items.

4. Categories of Mercury Sources

Other commercial customers in the wastewater service area contributing mercury may include HVAC wholesalers, automotive repair shops, and metal scrap yards. RMMSD plans to continue and expand upon the steps taken in previous PMPs as follows:

a. continue to work with MCHD to maintain the program we have in place

b. Contact newly identified mercury contributors for implementation of BMPs every two years.

c. sample the community stations for mercury in an attempt to narrow the focus of identifying any significant contributors of mercury

d. communicate with septage haulers to see if any of the non-residential waste hauled here to RMMSD may be a significant contributor of mercury

5. Documentation of Source Control and Outcomes

RMMSD through MCHD will continue to document the effectiveness of the PMP efforts with respect to mercury. Monthly sampling and testing of influent and effluent wastewater will be continued. Data will

be prepared annually to evaluate trends in influent and effluent mercury concentrations. Quarterly testing of mercury concentration in biosolids will also continue.

An annual PMP status report will also be prepared and submitted to the WDNR. The annual status report will include a list of the potential mercury sources, a summary of actions taken as part of the PMP, and the wastewater influent, effluent, and biosolids mercury monitoring results.

6. Maintenance of Effluent Quality for Mercury

Maintenance of effluent quality for mercury will be facilitated by:

a. Repeated contacts with customers that represent potential sources of mercury to confirm that BMPs have been implemented and remain in place.

b. Repeated public education through publication of billing notices and publicity of county clean sweep events.

c. Continued operation of the WWTP to optimize treatment for conventional pollutants, which will help optimize mercury removal.

Please contact Eric Donaldson with any questions or comments regarding this PMP plan by phone at 715-359-7852 or by e-mail at eric.rmmsd@ribmountainmetro.com.

Eric Donaldson, PE

Director RMMSD

Rib Mountain Metropolitan Sewerage District (RMMSD)

Addendum to Mercury PMP 2024-2029

Action Item	Detail	Timing/duration
communicate with septage haulers to see if any of the non-residential waste hauled here to RMMSD may be a significant contributor of mercury	Ask haulers if there are any high mercury customers whose wastewater is hauled to RMMSD; if yes, sample wastewater	Annually Sampling frequency, as needed
Sample the community stations for mercury in an attempt to narrow the focus of identifying any significant contributors of mercury	Take a grab sample of each community and have analyzed for mercury twice per year or more often if high results are obtained	Semi Annually
Contact newly identified mercury contributors for implementation of BMPs	Use local media (radio, periodicals, etc) to identify potential new sources, including new chemicals used at the plant or those that discharge process wastewaters.	Every two years or as identified
Monitoring of influent and effluent and sludge	Include data on discharge monitoring reports (DMRs) and annual mercury report to WDNR	Influent (monthly), effluent (monthly), and sludge (quarterly) monitoring per permit requirements
Repeated contacts with customers that represent potential sources of mercury to confirm that BMPs have been implemented and remain in place.	Use/update existing contact list.	Annually
Repeated public education.	Through publication of billing notices and publicity of county clean sweep events.	Annually
Continued operation of the WWTP to optimize treatment for conventional pollutants, which will help optimize mercury removal.	Ongoing search for technology to remove more mercury in plant.	Annually
Continue to evaluate the mercury content of chemicals used in the treatment plant	Based on chemical manufacturers specifications identify potential for mercury addition through wastewater additives.	Ongoing as necessary when any change in chemical(s) used.
If high community sampling results are obtained, contact community.	Share results and ask for potential sources connected to that sample station. When	Annually

	sources are identified, inspect the facility and have the facility reduce mercury by eliminating mercury containing products and/or install BMPs to ensure mercury is reduced. After changes are made, sampling at the businesses lateral will occur to ensure progress is being made. Consider changes to SUO if necessary to get mercury reductions or maintain that reduction.	

Facility Specific Mercury Variance Data Sheet

Directions: Please complete this form electronically. Record information in the space provided. Select checkboxes by double clicking on them. Do not delete or alter any fields. For citations, include page number and section if applicable. Please ensure that all data requested are included and as complete as possible. Attach additional sheets if needed.

Section I: General Information

A. Name of Permittee: Rib Mountain Metropolitan Sewage District WWTF

B. Facility Name: Rib Mountain Metropolitan Sewage District WWTF

C. Submitted by: Wisconsin Department of Natural Resources

D. State: Wisconsin **Substance:** Mercury **Date completed:** December 16, 2024

E. Permit #: WI-0035581-07-0 **WQSTS #:** (EPA USE ONLY)

F. Duration of Variance **Start Date:** July 1, 2025 **End Date:** June 30, 2030

G. Date of Variance Application: May 1, 2023

H. Is this permit a:
☐ **First time submittal for variance**
☒ **Renewal of a previous submittal for variance** *(Complete Section X)*

I. Description of proposed variance:
Rib Mountain Metropolitan Sewage District (RMMSD) wastewater treatment facility (WWTF) has applied for a variance from the mercury wildlife water quality-based criteria limit of 1.3 ng/L. The permittee has submitted an application for an alternative mercury effluent limitation. The application included a pollutant minimization program (PMP) plan for mercury as required under s. NR 106.145(8), Wis. Admin. Code. An alternative mercury effluent limit of 7.0 ng/L has been included in this permit. This is a request for a renewal of a variance EPA approved for the current permit term that had an alternative mercury effluent limit of 7.0 ng/L.

Citation: An alternative mercury effluent limitation under s. NR 106.145, Wis. Adm. Code represents a variance to water quality standards authorized by s. 283.15, Wis. Stats.

J. List of all who assisted in the compilation of data for this form

Name	Email	Phone	Contribution
Victoria Ziegler	Victoria.Ziegler@wisconsin.gov	414-391-8946	Permit Drafter and Variance Coordinator
Nick Lindstrom	Nicholas.Lindstrom@wisconsin.gov	715-492-1787	Compliance Engineer
Ben Hartenbower	Benjamin@Hartenbower@wisconsin.gov	715-225-4705	Parts II D-H and J (Limits Calculator)
Others?			

Section II: Criteria and Variance Information

A. Water Quality Standard from which variance is sought: 1.3 ng/L Wildlife Criterion

B. List other criteria likely to be affected by variance: 1.5 ng/L Human Threshold Criterion

C. Source of Substance:
Dental offices, accidental releases/spills, schools, hospital and/or medical facilities and potentially commercial and industrial businesses.

D. Ambient Substance Concentration: 2.762 ng/L ☒ **Measured** ☐ **Estimated** ☐ **Default** ☐ **Unknown**

E. If measured or estimated, what was the basis? Include citation.
Mean of intake data from WPS Weston (WI-0042765) October 2010-September 2024 (n=175)

F. Average effluent discharge rate: 2.824 MGD **Maximum effluent discharge rate:** 8.454 MGD (03/04/2019)

G. Effluent Substance Concentration: 1-day P_{99} = 7.52 ng/L; 4-day P_{99} = 4.21 ng/L ☒ **Measured** ☐ **Estimated** ☐ **Default** ☐ **Unknown**

30-day P_{99} = 2.51 ng/L
Mean = 1.77 ng/L

H. If measured or estimated, what was the basis? Include Citation. The upper 99th percentile of 1-day, 4-day, and 30-day average discharge concentrations are based on 69 results from January 2019 through September 2024, using the procedures specified in s. NR 106.05(5)(a), Wis. Adm. Code.

I. Type of HAC:
- ☐ **Type 1: HAC reflects waterbody/receiving water conditions**
- ☐ **Type 2: HAC reflects achievable effluent conditions**
- ☒ **Type 3: HAC reflects current effluent conditions**

J. Statement of HAC: The Department has determined the highest attainable condition of the receiving water is achieved through the application of the variance limit in the permit, combined with a permit requirement that the permittee implement its Mercury Pollution Minimization Plan (PMP). Thus, the HAC at commencement of this variance is 7.0 ng/L, which reflects the greatest mercury reduction achievable with the current treatment processes, in conjunction with the implementation of the permittee's Mercury PMP. The current effluent condition is reflective of on-site optimization measure that have already occurred. This HAC determination is based on the economic feasibility of available compliance options for RMMSD WWTF at this time (see Economic Section below). The permittee may seek to renew this variance in the subsequent reissuance of this permit; the Department will reevaluate the HAC in its review of such a request. A subsequent HAC cannot be defined as less stringent than this HAC.

K. Variance Limit : 7.0 ng/L as a daily maximum

L. Level currently achievable (LCA): 7.52 ng/L – The value represents the 1-day P_{99} of available effluent mercury concentration data.

M. What data were used to calculate the LCA, and how was the LCA derived? (*Immediate compliance with LCA is required.)*

Effluent monitoring during January 2019 to September 2024. LCA = 1-day P_{99} calculation as described in s. NR 106.05(5), Wis. Adm. Code.

Citation: s. NR 106.145(5), Wis. Adm. Code.

N. Explain the basis used to determine the variance limit (which must be ≤ LCA). Include citation.
The variance limit = 1 Day P_{99}. The limit is established in accordance with s. NR 106.145(5), Wis. Adm. Code. The calculated 1-day P_{99} of 7.52 ng/L is greater than the current alternative effluent limit of 7.0 ng/L. The alternative effluent limit for mercury may not be set greater than a previously established alternative mercury effluent limit.

O. Select all factors applicable as the basis for the variance provided under 40 CFR 131.10(g). Summarize justification below: ☐ **1** ☐ **2** ☐ **3** ☐ **4** ☐ **5** ☒ **6**

Section NR 106.145(1), Wis. Adm. Code, outlines several findings that justify variances for mercury. The Department intended that this provision be generally applicable to all dischargers of mercury, which produce large volumes of effluent with already extremely low mercury concentrations. The Department considers treating to produce effluent at concentrations to meet the limit to be technically and economically infeasible.

Citation: Assessing the Economic Impacts of the Proposed Ohio EPA Water Rules on the Ohio Economy, April 24, 1997, Ohio Environmental Protection Agency, Division of Surface Water and Foster Wheeler Environmental Corporation and DRI/McGraw-Hill in support of Amended and New Rules in OAC Chapters 3745-1, -2, and -33.

Section III: Location Information

A. Counties in which water quality is potentially impacted: Marathon, Portage, Wood, Adams, Juneau, Sauk, Columbia, Dane, Iowa, Richland Grant and Crawford Counties

B. Receiving waterbody at discharge point: Wisconsin River

C. Flows into which stream/river? Mississippi River **How many miles downstream?** ~250

D. Coordinates of discharge point (UTM or Lat/Long): 44.86282° N / 89.6566° W

E. What are the designated uses associated with this waterbody?
Warm Water Sport Fish (WWSF) community, non-public water supply

F. What is the distance from the point of discharge to the point downstream where the concentration of the substance falls to less than or equal to the chronic criterion of the substance for aquatic life protection?
Ambient mercury concentrations in surface water resulting from the variance will be substantially less than levels that result in direct toxicity to aquatic organisms. EPA's current chronic aquatic life criterion for mercury is 0.9081 µg/L, which is approximately three orders of magnitude greater than the wildlife criteria (0.0013 µg/L). Wisconsin's criteria are 0.44 µg/L and 0.83 µg/L for chronic and acute toxicity, respectively. Therefore, instream concentrations are assumed to be well below the chronic criterion immediately at the point of effluent discharge.

G. **Provide the equation used to calculate that distance** See above.

H. **Identify all other variance permittees for the same substance which discharge to the same stream, river, or waterbody in a location where the effects of the combined variances would have an additive effect on the waterbody: Roughly 30 minutes upstream and downstream**

Permit Number	Facility Name	Facility Location	Variance Limit [µg/L]
WI-0002810	Packaging Corp of America – Tomahawk	Tomahawk, WI	26
WI-0020150	City of Merrill	Merrill, WI	15
WI-0025739	Wausau Water Works WWTF*	Wausau, WI	32
WI-0029572	Stevens Point WWTF*	Stevens Point, WI	4.6
WI-0027995	Plover WWTF	Plover, WI	4.7

- Facilities that currently have a variance but will not include a mercury variance in the reissuance permit (reissued planned for 2025).

Please attach a map, photographs, or a simple schematic showing the location of the discharge point as well as all variances for the substance currently draining to this waterbody on a separate sheet

I. Is the receiving waterbody on the CWA 303(d) list? If yes, please list the impairments below. ☒ **Yes** ☐ **No** ☐ **Unknown**

River Mile	Pollutant	Impairment
237.21 – 268.18	PCBs, Mercury	Contaminated Fish Tissue

Section IV: Pretreatment (complete this section only for POTWs with DNR-Approved Pretreatment Programs. See w:\Variances\Templates and Guidance\Pretreatment Programs.docx)

A. Are there any industrial users contributing mercury to the POTW? If so, please list.
N/A – No pretreatment program

B. Are all industrial users in compliance with local pretreatment limits for mercury? If not, please include a list of industrial users that are not complying with local limits and include any relevant correspondence between the POTW and the industry (NOVs, industrial SRM updates and timeframe, etc)
N/A

C. When were local pretreatment limits for mercury last calculated?
N/A

D. Please provide information on specific SRM activities that will be implemented during the permit term to reduce the industry's discharge of the variance pollutant to the POTW
N/A

Section V: Public Notice

A. Has a public notice been given for this proposed variance? ☒ **Yes** ☐ **No**

B. If yes, was a public hearing held as well? ☒ **Yes** ☐ **No** ☐ **N/A**

C. What type of notice was given?

☒ **Notice of variance included in notice for permit** ☐ **Separate notice of variance**

D. Date of public notice: _____ **Date of hearing:** _____

E. Were comments received from the public in regards to this notice or hearing? *(If yes, please attach on a separate sheet)* ☐ **Yes** ☐ **No**

Section VI: Human Health

A. Is the receiving water designated as a Public Water Supply? ☐ **Yes** ☒ **No**

B. Applicable criteria affected by variance: 1.5 ng/L Human Threshold Criterion

C. Identify any expected impacts that the variance may have upon human health, and include any citations:

- The proposed variance will not adversely affect human health directly through the drinking water.
- Wisconsin's fish consumption advisory program is designed to mitigate the effect of any ambient mercury concentration above the 1.5 ng/L water quality criterion for the protection of the fish-consuming human population by providing advice to the public to guide them on the amount of fish that may be consumed safely.
- Given the lack of wastewater treatment technologies capable of reducing mercury concentrations to achieve a 1.3 ng/L effluent limit, granting a variance in this situation is consistent with protecting the public health, safety and welfare because of the substantial public health and safety benefits of providing wastewater treatment, the continued commitment towards further mercury pollutant minimization, the Wisconsin fish advisory program, and the limited impact of the elevated effluent concentrations given the background mercury concentrations.
- DNR's findings suggest that Hg in walleye from Wisconsin lakes changed in the range of 0.5 to 0.8% per year depending on geographical position in the state during the period of 1982–2005. These trends may reflect geographically differing temporal trends in the amount of Hg deposited to Wisconsin lakes. However, long-term changes in other factors, such as water chemistry, fish growth rates, and lake levels, known to impact Hg bioavailability and accumulation may also be important. (Temporal trends of mercury concentrations in Wisconsin walleye (Sander vitreus), 1982–2005, Paul W. Rasmussen, Candy S. Schrank, Patrick A. Campfield. Ecotoxicology (2007) 16:541–550)

Section VII: Aquatic Life and Environmental Impact

A. Aquatic life use designation of receiving water: Full Fish and Aquatic Life

B. Applicable criteria affected by variance: 1.3 ng/L Wildlife Criterion

C. Identify any environmental impacts to aquatic life expected to occur with this variance, and include any citations:

Not Likely to Adversely Affect

- Ambient mercury concentrations resulting from the variance will be substantially less than levels that result in direct toxicity to aquatic organisms. EPA's current chronic aquatic life criterion for mercury is 0.9081 µg/L, which is approximately three orders of magnitude greater than the wildlife criteria (0.0013 µg/L). Wisconsin's criteria are 0.44 µg/L and 0.83 µg/L for chronic and acute toxicity, respectively.
  - Hine's emerald dragonfly (Somatochlora hineana, endangered)
  - Higgins' Eye mussel (Lampsilis higgnsii, endangered)
  - Winged Mapleleaf mussel (Quadrula fragosa, endangered)
  - Spectaclecase (Cumberlandia monodonta, candidate)
  - Sheepnose (Plethobasus cyphyus, candidate)

- Low trophic level prey where mercury in prey is unlikely to accumulate to toxic levels in the organism.
  - Piping plover (Charadrius melodus, endangered)
  - Eastern massasauga rattlesnake (Sistrurus catenatus catenatus, candidate)

May Affect, Not Likely to Adversely Affect

- Bald eagle (Haliaeetus leucocephalus, Delisted due to Recovery)

Bald eagles consume fish and waterfowl from surface waters, which puts them at risk of exposure to toxic levels of mercury due to bioaccumulation of mercury in their prey organisms. However, despite the potential for exposure, ambient surface water data show that in recent decades, mercury levels have not increased and bald eagle populations have continued to grow. This indicates that current ambient concentrations of mercury and mercury

concentrations in prey organisms do not appear to be limiting recovery of bald eagle populations in Wisconsin. Although this variance will allow permitted dischargers additional time to identify and control sources of mercury in their discharges, the pollutant minimization component of the variances should result in a net reduction in the amount of mercury discharged to Wisconsin surface waters from permitted point sources, further reducing any risk to bald eagles. In addition, the pollutant minimization programs encourage other pollution prevention efforts, which has a beneficial indirect effect of reducing the use and production of products and processes that use or contribute mercury to the environment. These efforts will also benefit bald eagles.

D. List any Endangered or Threatened species known or likely to occur within the affected area, and include any citations:

Because mercury is pervasive, persistent and bio accumulating in the environment we considered all species listed for the entire state of Wisconsin. The following is Federally Endangered, Threatened, Proposed, and Candidate Species in Wisconsin From U.S. Fish and Wildlife Service, Region 3, April 2015

MAMMALS
Canada lynx (T)
Gray wolf (E)
Northern long-eared bat (T)
BIRDS
Kirtland's warbler (E)
Piping plover (E and CH)
Red Knot (T)
Whooping crane - (NEP)
REPTILE
Eastern massasauga rattlesnake (C)
INSECTS
Hine's emerald dragonfly (E)
Karner blue butterfly (E)
Poweshiek skipperling (E and PCH)
CLAMS (Freshwater mussels, Unionids)
Higgins' eye pearlymussel (E)
Sheepnose mussel (E)
Snuffbox (E)
Spectaclecase mussel (E)
Winged mapleleaf mussel (E)

Citation: U.S. Fish & Wildlife Service – Environmental Conservation Online System (http://www.fws.gov/endangered/) and National Heritage Index (http://dnr.wi.gov/topic/nhi/)

Section VIII: Economic Impact and Feasibility

A. Describe the permittee's current pollutant control technologies in the treatment process:
RMMSD treatment includes influent screening and grit removal, primary sedimentation, activated sludge treatment with chemical phosphorus removal (PAC), final clarification, ultraviolet disinfection, and cascade aeration.

B. What modifications would be necessary to comply with the current limits? Include any citations.
The Department did not evaluate what actions or modifications or other changes would be needed to meet limits based on the water quality standard. As discussed below, the Department considers treating to produce effluent at concentrations to meet the limit to be technically and economically infeasible.

Citation: Assessing the Economic Impacts of the Proposed Ohio EPA Water Rules on the Ohio Economy, April 24, 1997, Ohio Environmental Protection Agency, Division of Surface Water and Foster Wheeler Environmental Corporation and DRI/McGraw-Hill in support of Amended and New Rules in OAC Chapters 3745-1, -2, and -33.

C. Identify any expected environmental impacts that would result from further treatment, and include any citations:
See above.

D. Is it technically and economically feasible for this permittee to modify the treatment process to reduce the level of the substance in the discharge? ☐ Yes ☒ No ☐ Unknown

The Department considers treating to produce effluent at concentrations to meet the limit to be technically and economically infeasible.

Citation: Assessing the Economic Impacts of the Proposed Ohio EPA Water Rules on the Ohio Economy, April 24, 1997, Ohio Environmental Protection Agency, Division of Surface Water and Foster Wheeler Environmental Corporation and DRI/McGraw-Hill in support of Amended and New Rules in OAC Chapters 3745-1, -2, and -33.

E. If treatment is possible, is it possible to comply with the limits on the substance? ☐ Yes ☒ No ☐ Unknown

F. If yes, what prevents this from being done? Include any citations.

See above.

G. List any alternatives to current practices that have been considered, and why they have been rejected as a course of action, including any citations:

Any Mercury Treatment Technology would be economically burdensome to municipality. Implementation of a mercury pollutant minimization program designed to reduce mercury influent to the plant has helped reduce mercury effluent concentrations.

Section IX: Compliance with Water Quality Standards

A. Describe all activities that have been, and are being, conducted to reduce the discharge of the substance into the receiving stream. This may include existing treatments and controls, consumer education, promising centralized or remote treatment technologies, planned research, etc. Include any citations.

RMMSD works with Marathon County Health Department on continuous source reduction outreach and education. RMMSD communicates with septage haulers to determine if there is any significant source of mercury. Contact newly identified contributors for implementation of BMPs. Monitor influent and effluent sludge. Repeated contacts with customers that represent potential sources of mercury to confirm that BMPs have been implemented and remain in place. Optimization of WWTP which assists in mercury removal. Continue to evaluate the mercury content of chemicals used in the treatment plant.

B. Describe all actions that the permit requires the permittee to complete during the variance period to ensure reasonable progress towards attainment of the water quality standard. Include any citations.

Per the WPDES Permit, RMMSD is required to perform the following:

- Communicate with septage haulers to see if any of the non-residential waste hauled to RMMSD may be a significant contributor of mercury
- Take a grab sample of each community and have analyzed for mercury twice per year or more often if high results are obtained
- Use local media (radio, periodicals, etc) to identify potential new sources, including new chemicals used at the plant or those that discharge process wastewaters. Contact newly identified mercury contributors for implementation of BMPs
- Monitoring of mercury in influent, effluent, and sludge. Include data on discharge monitoring reports (DMRs) and annual mercury report to WDNR
- Continued contacts with customers that represent potential sources of mercury to confirm that BMPs have been implemented and remain in place.
- Continued public education through publication of billing notices and publicity of county clean sweep events.
- Continued operation of the WWTP to optimize treatment for conventional pollutants, which will help optimize mercury removal. Additionally, continue to research technology to remove more mercury in plant.
- Continue to evaluate the mercury content of chemicals used in the treatment plant
- If high community sampling results are obtained, contact community and ask for potential sources connected to that sample station. When sources are identified, inspect the facility and have the facility reduce mercury by eliminating mercury containing products and/or install BMPs to ensure mercury is reduced. After changes are made, sampling at the businesses lateral will occur to ensure progress is being made. Consider changes to SUO if necessary to get mercury reductions or maintain that reduction.

Section X: Compliance with Previous Permit *(Variance Reissuances Only)*

A. Date of previous submittal: October 8, 2018 **Date of EPA Approval:** November 30, 2018

B. Previous Permit #: WI-0035581-07-0 **Previous WQSTS #:** (EPA USE ONLY)

C. Effluent substance concentration: 30-day p99 2.51ng/L **Variance Limit:** 7.0 ng/L

D. Target Value(s): 1.3 ng/L **Achieved?** ☐ Yes ☒ No ☐ Partial

E. For renewals, list previous steps that were to be completed. Show whether these steps have been completed in compliance with the terms of the previous variance permit. Attach additional sheets if necessary.

Condition of Previous Variance	Compliance
Update the BMP forms for medical facilities: Contact all medical facilities in the wastewater service area regarding programs in place for disposal of mercury waste and spill management.	☒ Yes ☐ No
Contact all dental facilities in the wastewater service area regarding disposal of mercury wastes and programs in place for disposal of mercury wastes; The survey will include a request for documentation regarding maintenance performed on amalgam separators	☒ Yes ☐ No
Contact all schools in the wastewater service area regarding programs in place for disposal of mercury waste, spill management, and mercury elimination efforts: Use/update existing contact list.	☒ Yes ☐ No
Continue to promote the Marathon County household hazardous waste and VSQG drop off sites and schedules: Advertise the program in mailings, billings and newsletters.	☒ Yes ☐ No
Contact all industrial contributors regarding proper disposal of mercury waste and spill management every two years. Conduct mercury sampling on some of the larger industrial contributors that have process wastewaters entering the collection system: Use/update existing contact list. Evaluate how industrial users tribute to mercury load based on the industrial classification and processes, the potential for mercury contributions from chemicals/processes used and selective testing of industrial discharges to the collection system.	☒ Yes ☐ No
Contact newly identified mercury contributors for implementation of BMPs: Use local media (radio, periodicals, etc) to identify potential new sources, including new chemicals used at the plant or those that discharge process wastewaters.	☒ Yes ☐ No
Monitoring of influent and effluent and sludge: Include data on discharge monitoring reports (DMRs) and annual mercury report to WDNR	☒ Yes ☐ No
Repeated contacts with customers that represent	☒ Yes ☐ No

potential sources of mercury to confirm that BMPs have been implemented and remain in place: Use/update existing contact list.	
Repeated public education: Through publication of billing notices and publicity of county clean sweep events.	☒ **Yes** ☐ **No**
Continued operation of the WWTP to optimize treatment for conventional pollutants, which will help optimize mercury removal: Ongoing search for technology to remove more mercury in plant.	☒ **Yes** ☐ **No**
Continue to evaluate the mercury content of chemicals used in the treatment plant: Based on chemical manufacturers specifications identify potential for mercury addition through wastewater additives.	☒ **Yes** ☐ **No**