Village of Edgar Public Noticed Permit Fact Sheet

General Information

Permit Number	WI-0021784-11-0
Permittee Name and Address	Village of Edgar, 224 S Third Ave PO Box 67, Edgar, WI 54426-0067
Permitted Facility Name and Address	Edgar Wastewater Treatment Facility, 202 Thomas Hill Road, Edgar, WI
Permit Term	July 01, 2025 to June 30, 2030
Discharge Location	The north bank of Scotch Creek approximately 300 feet east of the Third Avenue Bridge SW1/4 SW1/4, Section 7, T25N R05E, Village of Edgar, Marathon County, WI
Receiving Water	the surface waters of Scotch Creek in the Lower Rib River Watershed of the Upper Wisconsin River Drainage Basin located in Marathon County
Stream Flow ($Q_{7,10}$)	0.06 cfs
Stream Classification	Warm water forage fish, non-public water supply
Discharge Type	Existing, continuous
Annual Average Design Flow (MGD)	0.500 MGD
Industrial or Commercial Contributors	None
Plant Classification	A1 - Suspended Growth Processes; B - Solids Separation; C - Biological Solids/Sludges; P - Total Phosphorus; L - Laboratory; SS - Sanitary Sewage Collection System
Approved Pretreatment Program?	N/A

Facility Description

The Edgar Wastewater Treatment Facility treats domestic wastewater from the Village of Edgar and some domestic holding tank waste. The design flow of the facility is 0.500 million gallons per day (MGD) and the actual annual average flow in 2024 was 0.210 MGD. Treatment includes fine screening, an aerated grit chamber, two primary clarifiers, two aeration basins converted from the preexisting rotating biological contact units and a new 50’ and refurbished 35’ final clarifier. Phosphorus is removed by addition of alum which is added to aerated grit basin and the splitter box prior to final clarification. Further improvements include addition of an influent flow meter, addition of a pump building located directly west of aeration basins new catch basin for hauled in wastes, new lab/office and other changes to piping and electrical components. Effluent is discharged to Scotch Creek. Sludge processing includes aerobic digestion followed by a belt press, cake sludge storage and landspreading on Department approved fields. Influent flow reporting is required this permit term. Significant effluent monitoring and/or limit changes proposed in the upcoming permit term are as follows: 1) the sample frequency for flow has changed, 2) the conditional reapproval of a multi-discharger variance (MDV) for phosphorus, a lowering of the interim MDV limit and a schedule to meet the lower limit, 3) the ammonia limits have been reduced and the ammonia sample frequency increased, 4) addition of acute WET testing, 5) addition of *Escherichia coli* (*E. coli*) limits and a schedule to meet the limit, 6) monitoring for PFOS and PFOA every other month has been added in

accordance with s. NR 106.98(2)(c), Wis. Adm. Code, 7) copper monitoring removed, and 8) temperature monitoring is only required during one year of the permit term instead of the entire permit term. Additionally, to quantitate the risk, PFAS sludge sampling has been included in the permit pursuant to ss. NR214.18(5)(b) and NR 204.06(2)(b)9., Wis. Adm. Code.

Substantial Compliance Determination

Enforcement During Last Permit: A Notice of Noncompliance was issued on 11/08/2023 for violation of Nitrogen, Ammonia Limits ranging from January 2023-September 2023. On July 23rd 2024, the rotating biological contactors were permanently decommissioned and replaced with aeration basins. The RBC decommissioning and other treatment plant upgrades are expected to drop pollutant effluent output and render compliance for the permittee.

After a desk top review of all discharge monitoring reports, CMARs, land app reports, compliance schedule items, and a site visit on 08/14/2024, the Edgar Wastewater Treatment Facility has been found to be in substantial compliance with their current permit.

Compliance determination made by Nick Lindstrom on 09/23/2024.

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	Influent flow monitoring has not historically been required, but has been added as a requirement this permit term	Representative influent samples shall be taken after fine screening but prior to the aerated grit chamber.
001	0.210 MGD (2024)	Representative composite effluent samples shall be taken after final clarification; grab samples shall be taken at the contact basin.
003	243 cubic yards (2024)	Representative sludge samples shall be collected from the sludge storage building and monitored for Lists 1, 2, 3 and 4 and PFAS annually, and once in 2026 for PCBs.

Permit Requirements

1 Influent – Monitoring Requirements

1.1 Sample Point Number: 701- INFLUENT TO PLANT

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

1.1.1 Changes from Previous Permit:

Influent limitations and monitoring requirements were evaluated for this permit term. The only change is the addition of influent flow monitoring/reporting.

1.1.2 Explanation of Limits and Monitoring Requirements

Monitoring of influent flow, BOD5 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.

2 Surface Water - Monitoring and Limitations

2.1 Sample Point Number: 001- EFFLUENT to SCOTCH CREEK

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Daily Max	30 mg/L	3/Week	24-Hr Flow Prop Comp	
BOD5, Total	Monthly Avg	15 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Daily Max	30 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	20 mg/L	3/Week	24-Hr Flow Prop Comp	
Dissolved Oxygen	Daily Min	4.0 mg/L	5/Week	Grab	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
pH Field	Daily Min	6.0 su	Daily	Grab	
pH Field	Daily Max	9.0 su	Daily	Grab	
Nitrogen, Ammonia (NH3-N) Total	Daily Max	28 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies June - March
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	14 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies April & May
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	6.2 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies April & May
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	8.3 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies June - Sept
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	4.3 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies June - Sept
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	18 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies Oct - March
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies Oct - March
E. coli		#/100 ml	Weekly	Grab	Monitoring only May through September annually until the final limit goes into effect per the Effluent Limitations for E. coli Schedule.
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit Effective May through September annually per the Effluent Limitations for E. coli Schedule.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit & monitoring apply May-Sept. See the E. coli Percent Limit section in the permit. Enter the result in the DMR on the last day of the month.
Temperature Maximum		deg F	Daily	Continuous	Monitoring required in 2029
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 Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total	Monthly Avg	0.8 mg/L	3/Week	24-Hr Flow Prop Comp	This is an interim limit effective through 06/30/2027. See the MDV/Phosphorus sections in permit & phosphorus schedules.
Phosphorus, Total	Monthly Avg	0.6 mg/L	3/Week	24-Hr Flow Prop Comp	This is an interim limit effective 07/01/2027. See the MDV/Phosphorus sections in permit & phosphorus schedules.
Phosphorus, Total		lbs/month	Monthly	Calculated	Report the total monthly phosphorus discharged in lbs/month on the last day of the month on the DMR. See Standard Requirements for 'Appropriate Formulas' to calculate the Total Monthly Discharge in lbs/month.
Phosphorus, Total		lbs/yr	Annual	Calculated	Report the sum of the total monthly discharges for the calendar year on the Annual report form.
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	Monitoring required annually in specific quarters. See Nitrogen Series Monitoring section in permit.
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	Quarterly	Calculated	Monitoring required annually in specific quarters. See Nitrogen Series Monitoring section in permit. Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET testing section in permit for specific testing quarters

2.1.1 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.
- **Ammonia Nitrogen**: the ammonia limits reduced and the monitoring frequency increased from weekly to 3/week
- **E. coli-** Escherichia coli (E. coli) monitoring and limits and a schedule has been included to meet the new limits.
- **Temperature** – Monitoring is only required during one year of the permit term instead of the entire permit term, and the sample type changed from multiple grab to continuous.
- **PFOS/PFOA** – monitoring added once every two months and a schedule included associated with this monitoring
- **Phosphorus MDV** - The permittee has reapplied for a multi-discharger variance (MDV) for phosphorus for this permit term and the application has been approved by the Department. The monthly average MDV interim limit will drop from 0.8 mg/L to 0.6 mg/L per a compliance schedule. The permittee is required to report the total amount of phosphorus discharged in lbs/month and lbs/year. By March 1 of each year the permittee shall make a payment to participating county(s) of $66.62 per pound of phosphorus discharged during the previous year in excess of the TMDL derived limit of 1.94 lbs/day, monthly average.
- **Acute WET** – testing required twice during the permit term
- **Copper**: monitoring has been removed

2.1.2 Explanation of Limits and Monitoring Requirements

Detailed discussions of limits and monitoring requirements can be found either below and also in the attached water quality-based effluent limits (WQBEL) memo written by Ben Hartenbower, "Water Quality-Based Effluent Limitations for the Edgar Wastewater Treatment Facility WPDES Permit No. WI-0021784", dated March 18, 2025.

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. After consideration, the only change in monitoring frequency is the increase in the ammonia frequency from weekly to 3/week.

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 and monthly average whenever practicable.

Phosphorus- The Wisconsin River Basin TMDL Waste Load Allocation (WLA) for total phosphorus was approved by the U.S. Environmental Protection Agency on April 26, 2019 and the site-specific criteria (SSC) in Appendix K were adopted by rule in s. NR 102.06(7), Wis. Adm. Code on June 1, 2020 and approved by the U.S. Environmental Protection Agency on July 9, 2020. The approved TMDL SSC WLA limit for phosphorus is 490 lbs/yr, which equates to 1.342 lbs/day (monthly average). For this permit term, the permittee reapplied for the MDV for phosphorus and was approved for the MDV on November 22, 2024. The MDV is provided for in s. 283.16, Wis. Stats. and was approved by USEPA on February 6, 2017 for a 10-year duration. The permittee qualifies for the MDV because it is an existing source and a major facility upgrade is needed to comply with the TMDL limit, thereby creating a financial burden. Edgars's MDV application was conditionally approved by the DNR on November 22, 2024.

Conditions of the MDV require the permittee to optimize phosphorus removal throughout the permit term, comply with interim limits and make annual payments to participating county(s) by March 1 of each year based on the pounds of phosphorus discharged during the previous year in excess of the specified target value. A reopener clause is included in

the permit to address the current MDV's expiration date, as a permit action may be required to update or remove variance provisions if the MDV is altered or unavailable after February 6, 2027.

The "price per pound" value is $50.00 adjusted for CPI annually during the first quarter as defined by s. 283.16(8)(a)2, Wis. Stats and takes effect for reissued permits with effective dates starting April 1. This may differ from the "price per pound" that is public noticed; however, the "price per pound" is set upon reissuance and is applicable for the entire permit term. The participating county(s) uses these payments to implement non-point source phosphorus control strategies at the watershed level.

PFOS and PFOA – NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. At the first reissuance of a WPDES permit after August 1, 2022, the new rule requires WPDES permits for municipal dischargers with an average flow rate less than 1 MGD, to be evaluated on a case-by-case basis to determine if monitoring is required pursuant to s. NR 106.98(2)(c), Wis. Adm. Code. The department evaluated the need for PFOS and PFOA monitoring taking into consideration the presence of potential PFOS or PFOA industrial wastes, remediation sites and other potential sources of PFOS or PFOA. Based on information available at the time the permit was drafted, it was identified that source water has known levels of PFOS/PFOA. Therefore, monitoring once every two months is included. A sample frequency of 1/2 months means one sample is taken during any two-month period. Examples of 1/2 month sample would be every other month (Jan, March, May, etc.) or back-to-back months with a break in between (February & March, May & June, Aug & Sept, etc.). DMR Short Forms will be generated for the following time periods: January-February, March-April, May-June, July-August, September-October, and November-December. At a minimum one sample result will be present on each form.

The initial determination of the need for sampling shall be conducted for up to two years in order to determine if the permitted discharge has the reasonable potential to cause or contribute to an exceedance of the PFOS or PFOA standards under s. NR 102.04(8)(d)1, Wis. Adm. Code.

3 Land Application - Monitoring and Limitations

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
003	B	Cake	Fecal Coliform	Incorporation	Land Application	64 dry US tons
Does sludge management demonstrate compliance? Yes						
Is additional sludge storage required? No						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No						
Is a priority pollutant scan required? No Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

3.1 Sample Point Number: 003- SLUDGE CAKE STORAGE TANK

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Annual	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Annual	Composite	
Phosphorus, Total		Percent	Annual	Composite	
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	
Potassium, Total Recoverable		Percent	Annual	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Once in 2026
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once in 2026
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS

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

3.1.1 Changes from Previous Permit:

Sludge 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.

PFAS –Monitoring is added annually pursuant to or MUNICIPAL s. NR 204.06(2)(b)9., Wis. Adm. Code.

3.1.2 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 has developed a draft risk assessment to determine potential risks associated with land applying residuals which contain PFOA and/or PFOS. The DNR is evaluating this information and may alter the current approach based on this review. 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.

4 Schedules

4.1 Effluent Limitations for E. coli

The permittee shall comply with surface water limitations for E. coli as specified. No later than 14 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance. If a submittal is required, a timely submittal fulfills the notification

Required Action	Due Date
Status Update: The permittee shall submit information within the discharge monitoring report (DMR) comment section documenting the steps taken in preparation for properly monitoring and testing for E. coli including, but not limited to, selected test method and location of sampling.	08/21/2025
Operational Evaluation Report: The permittee shall prepare and submit an Operational Evaluation Report to the Department for review and approval. The report shall include an evaluation of collected effluent data and proposed operational improvements that will optimize efficacy of disinfection at the treatment plant during the period prior to complying with final E. coli limitations and, to the extent possible, enable compliance with the final E. coli limitations. The report shall include a plan and schedule for implementation of the operational improvements. These improvements shall occur as soon as possible, but not later than 01/31/2027. The report shall state whether the operational improvements are expected to result in compliance with the final E. coli limitations. The permittee shall implement the operational improvements in accordance with the approved plan and schedule specified in the Operational Evaluation Report and in no case later than 01/31/2027. If the Operational Evaluation Report concludes that the operational improvements are expected to result in compliance with the final E. coli limitations, the permittee shall comply with the final E. coli limitations by 01/31/2027 and the permittee is not required to comply with subsequent milestones identified below in this compliance schedule (‘Submit Facility Plan’, 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet Limitations', ‘Construction Upgrade Progress Report’, 'Complete Construction', 'Achieve Compliance'). FACILITY PLAN - If the Operational Evaluation Report concludes that operational improvements alone are not expected to result in compliance with the final E. coli limitations, the permittee shall initiate development of a facility plan for meeting final E. coli limitations and comply with the remaining required actions in this schedule of compliance. If the Department disagrees with the conclusion of the report and determines that the permittee can achieve final E. coli limitations using the existing treatment system with only operational improvements, the Department may reopen and modify the permit to include an implementation schedule for achieving the final E. coli limitations sooner than 04/30/2030.	07/31/2026
Submit Facility Plan: If the Operational Evaluation Report concluded that the permittee cannot achieve final E. coli limitations with operational improvements alone, the permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code. The permittee may submit an abbreviated facility plan if the Department determines that the modifications are minor.	01/31/2027
Final Plans and Specifications: The permittee shall submit final construction plans to the Department for approval pursuant to ch. NR 108, Wis. Adm. Code, specifying treatment plant upgrades that must be constructed to achieve compliance with final E. coli limitations and a schedule for completing construction of the upgrades by the complete construction date specified below.	01/31/2028
Treatment Plant Upgrade to Meet Limitations: The permittee shall initiate bidding, procurement, and/or construction of the project. The permittee shall obtain approval of the final construction plans	07/31/2028

and schedule from the Department pursuant to s. 281.41. Stats., prior to initiating activities defined as construction under ch. NR 108, Wis. Adm. Code. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications.	
Construction Upgrade Progress Report: The permittee shall submit a progress report on construction upgrades.	07/31/2029
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades.	01/31/2030
Achieve Compliance: The permittee shall achieve compliance with final E. coli limitations.	04/30/2030

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

4.2 Phosphorus Multi-Discharger Variance Interim Limit (0.6 mg/L)

This compliance schedule requires the permittee to achieve compliance with the specified MDV interim effluent limit in accordance with s. 283.16(6), Wis. Stats., by the due date.

Required Action	Due Date
Report on Effluent Discharges: Submit a report on effluent discharges of phosphorus with conclusions regarding compliance with the 0.6 mg/L monthly average interim phosphorus limit that becomes effective on 07/01/2027.	06/30/2026
Complete Actions: Complete actions identified in the plan and achieve compliance with the monthly average phosphorus limit of 0.6 mg/L. Limit becomes effective 07/01/2027.	06/30/2027

Explanation of Schedule: Subsection 283.16(6), Wis. Stats., establishes required interim phosphorus effluent limits that must be met for multi-discharger variance (MDV) eligibility.

4.3 Phosphorus Payment per Pound to County

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

Required Action	Due Date
Annual Verification of Phosphorus Payment to County: The permittee shall make a total payment to the participating county or counties approved by the Department by March 1 of each calendar year. The amount due is equal to the following: [(lbs of phosphorus discharged minus the permittee's target value) times (66.62 per pound)] or $640,000, whichever is less. See the payment calculation steps in the Surface Water section. The permittee shall submit Form 3200-151 to the Department by March 1 of each calendar year indicating total amount remitted to the participating counties to verify that the correct payment was made. The first payment verification form is due by the specified Due Date. Note: The applicable Target Value is the TMDL derived limit value as defined by s. 283.16(1)(h), Wis. Stats. The "per pound" value is $50.00 adjusted for CPI.	03/01/2026
Annual Verification of Payment #2: Submit Form 3200-151 to the Department indicating total	03/01/2027

amount remitted to the participating counties.	
Annual Verification of Payment #3: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2028
Annual Verification of Payment #4: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2029
Annual Verification of Payment #5: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2030
Continued Coverage: If the permittee intends to seek a renewed variance, an application for the MDV (Multi Discharger Variance) shall be submitted as part of the application for permit reissuance in accordance with s. 283.16(4)(b), Wis. Stats.	
Annual Verification of Payment After Permit Expiration: In the event that this permit is not reissued prior to the expiration date, the permittee shall continue to submit Form 3200-151 to the Department indicating total amount remitted to the participating counties by March 1 each year.	

4.4 Phosphorus Schedule - Continued Optimization

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

Required Action	Due Date
Optimization: The permittee shall continue to implement the optimization plan as previously approved to optimize performance to control phosphorus discharges. Submit a progress report on optimizing removal of phosphorus by the Due Date.	06/30/2026
Progress Report #2: Submit a progress report on optimizing removal of phosphorus.	06/30/2027
Progress Report #3: Submit a progress report on optimizing removal of phosphorus.	06/30/2028
Progress Report #4: Submit a progress report on optimizing removal of phosphorus.	06/30/2029
Progress Report #5: Submit a progress report on optimizing removal of phosphorus.	06/30/2030

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

4.5 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

Explanation of PFOS/PFOA Minimization Plan Determination of Need Schedule: As stated above, NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. S. 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.

Other Comments

Publishing Newspaper: Record-Review, PO Box 677, Abbotsford, WI 54405-0677

Attachments

- Water quality-based effluent limits (WQBEL) memo written by Ben Hartenbower, "Water Quality-Based Effluent Limitations for the Edgar Wastewater Treatment Facility WPDES Permit No. WI-0021784", dated March 18, 2025.
- MDV Evaluation Checklist, completed by Matt Claucherty, dated 11/22/2024
- MDV Conditional Approval Letter, completed by Matt Claucherty, dated 11/22/2024

Justification Of Any Waivers From Permit Application Requirements

No waivers requested or granted as part of this permit reissuance

Prepared By: Holly Heldstab, Wastewater Specialist **Date:** May 7, 2025

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: March 18, 2025

TO: Holly Heldstab – WCR/Eau Claire

FROM: Benjamin Hartenbower – WCR/Eau Claire

SUBJECT: Water Quality-Based Effluent Limitations for the Edgar Wastewater Treatment Facility WPDES Permit No. WI-0021784

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 Edgar Wastewater Treatment Facility in Marathon County. This municipal wastewater treatment facility (WWTF) discharges to Scotch Creek, located in the Lower Rib River 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	30 mg/L			15 mg/L	1,3
TSS	30 mg/L			20 mg/L	1,3
pH	9.0 s.u.	6.0 s.u.			1
Dissolved Oxygen		4.0 mg/L			1,3
Ammonia Nitrogen April - May June - September October - March	 28 mg/L 28 mg/L		 14 mg/L 8.3 mg/L 18 mg/L	 6.2 mg/L 4.3 mg/L 10 mg/L	3
E. Coli				126 #/100 mL geometric mean	4
Temperature					5
PFOS and PFOA					6
Phosphorus LCA Interim Limit HAC Interim Limit TMDL Limit				 0.8 mg/L 0.6 mg/L 1.94 lbs/day	7,8
TKN, Nitrate+Nitrite, and Total Nitrogen					1,9
Acute WET					10

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. These limits are based on the Limited Forage Fish (LFF) community of the immediate receiving water as described in s. NR 104.02(3)(a), Wis. Adm. Code.

4. Bacteria limits apply during the disinfection season of May through September. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
5. Monitoring in the fourth year of the permit term.
6. Monitoring once every two months is required in accordance with s. NR 106.98(2), Wis. Adm. Code.
7. 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.
8. Under the phosphorus MDV, the current interim limit of 0.8 mg/L should be effective upon permit reissuance. A compliance schedule may be included in the permit until the highest attainable condition (HAC) limit of 0.6 mg/L can be met. The final TMDL limit remains at 1.94 lbs/day as a monthly average.
9. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen monitoring is recommended for all minor municipal permittees. Total Nitrogen is the sum of nitrate (NO_3), nitrite (NO_2), and total kjeldahl nitrogen (TKN) (all expressed as N).
10. Two 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 (3) – Narrative, Thermal Table, & Map

PREPARED BY: _____ Date: 03/18/2025

Benjamin Hartenbower, PE,
Water Resources Engineer

E-cc:

Nick Lindstrom, Wastewater Engineer – WCR/Eau Claire
Geisa Bittencourt, Regional Wastewater Supervisor – WCR/Eau Claire
Diane Figiel, Water Resources Engineer – WY/3
Scott Provost, Water Quality Biologist – WCR/Wisconsin Rapids
Nate Willis, Wastewater Engineer – WY/3

Attachment #1

Water Quality-Based Effluent Limitations for the Edgar Wastewater Treatment Facility WPDES Permit No. WI-0021784

Prepared by: Benjamin P. Hartenbower

PART 1 – BACKGROUND INFORMATION

Facility Description:
The Edgar Wastewater Treatment Facility consists of fine screen, grit removal, two primary clarifiers, aeration basins, secondary clarification, phosphorus removal, secondary process-aerobic digestion and belt filter press. The RBC is currently being upgraded to an activated sludge system. Outfall 001 is located 300 ft East of bridge on 3rd Ave, on North bank of the Scotch Creek in the Village of Edgar.

Attachment #3 is a map of the area showing the approximate location of Outfall 001.

Existing Permit Limitations
The current permit, which expired on December 31, 2024, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
Flow Rate					1,2
BOD_5	30 mg/L			15 mg/L	1,3
TSS	30 mg/L			20 mg/L	1,3
pH	9.0 s.u.	6.0 s.u.			1
Dissolved Oxygen		4.0 mg/L			1,3
Ammonia Nitrogen April - May June - September October - March	 34 mg/L		 14 mg/L 11 mg/L 20 mg/L	 6.6 mg/L 5.6 mg/L 12 mg/L	
Copper					2
Temperature					2
Phosphorus Interim MDV Interim				 1.0 mg/L 0.8 mg/L	4
TKN, Nitrate+Nitrite, and Total Nitrogen					2

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. These limits are based on the Limited Forage Fish (LFF) community of the immediate receiving water as described in s. NR 104.02(3)(a), Wis. Adm. Code.
4. Under the phosphorus MDV, a highest attainable condition (HAC) limit of 0.8 mg/L was effective January 1, 2024.

Receiving Water Information

- Name: Scotch Creek
- Waterbody Identification Code (WBIC): 1455600
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Limited Forage Fish (LFF), non-public water supply.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q_{10} and 7-Q_2 values are from USGS for Station 05396060 at Edgar, in Scotch Creek, where Outfall 001 is located.

  7-Q_{10} = 0.06 cfs (cubic feet per second)

  7-Q_2 = 0.35 cfs

  Harmonic Mean Flow = 1.01 cfs using a drainage area of 16.9 mi^2.

  The Harmonic Mean has been estimated based on average flow and the 7-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).
- Downstream Water: Scotch Creek (classification change 6.5 miles downstream at Soda Creek)
- Classification: Warm Water Forage Fish community, non-public water supply.
- Low Flow: The $7Q_{10}$ is from USGS for Station 05396110. The $7Q_{10}$:$7Q_2$ ratio of the upstream USGS Station 05396060 was used to estimate the $7Q_2$ at the confluence with Soda Creek, in Scotch Creek.

  7-Q_{10} = 0.41 cfs

  7-Q_2 = 2.4 cfs
- Hardness = 181 mg/L as $CaCO_3$. This value represents a 93% calculated mix of effluent hardness with the geometric mean of 7 samples collected in Scotch Creek from 10/04/1994 to 10/05/2004.
- Mixing Zone 25%
- Source of background concentration data: Chloride data is from Scotch Creek. Metals data is from the Big Rib River at Goodrich because there is no data available for the Scotch Creek. The Big Rib River is within the same ecological landscape so ambient water quality characteristics are expected to be similar. 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: None
- Impaired water status: This discharge is located within the WI River TMDL for phosphorus.

Effluent Information:

- Design Flow Rates(s):

  Annual Average = 0.500 MGD (Million Gallons per Day)

  For reference, the actual average flow from January 2020 to January 2025 was 0.197 MGD.
- Hardness = 185 mg/L as $CaCO_3$. This value represents the geometric mean of four effluent samples collected from 02/01/2024 to 02/13/2024.
- 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 with water supply from wells.
- Additives: Aluminum Sulfate
- Total Phosphorus Wasteload Allocation: 490 lbs/year = 1.342 lbs/day
- Effluent characterization: This facility is categorized as a minor municipality, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified

in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus Chloride and Hardness. The permit-required monitoring for Ammonia Nitrogen, Copper, Temperature, and Phosphorus from January 2020 to January 2025 is used in this evaluation.

Chemical Specific Effluent Data at Outfall 001

Sample Date	Copper (µg/L)	Sample Date	Chloride (mg/L)
09/06/2018	6	12/09/2010	141
12/06/2018	13	12/16/2010	188
04/04/2019	3	12/23/2010	151
06/13/2019	6	12/29/2010	139
09/05/2019	4	10/28/2016	144
12/05/2019	8	10/31/2016	160
12/03/2020	9	11/03/2016	138
11/11/2021	9	11/06/2016	154
01/18/2023	6	02/05/2024	199
10/10/2023	4	02/09/2024	214
10/23/2024	11	02/13/2024	243
		12/01/2024	181
1-day P_{99}	17 µg/L	1-day P_{99}	265 mg/L
4-day P_{99}	12 µg/L	4-day P_{99}	214 mg/L

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 2020 to January 2025 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
BOD_5	13.3 mg/L
TSS	11.8 mg/L
pH	6.46 s.u.
Dissolved Oxygen	9.04 mg/L
Ammonia Nitrogen	10.46 mg/L
Phosphorus	0.89 mg/L

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 the case for the Edgar Wastewater Treatment Facility.

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

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 0.05 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		362	72	1.2		
Cadmium	185	20.91	0.0115	22.25	4.45	<1		
Chromium (+3)	185	2988	0.3910	3179	636	3		
Copper	185	27.77	0.7950	29.50			17	11
Lead	185	194.04	0.1404	206.45	41.29	<1		
Nickel	185	790.61		841.20	168.24	<9		
Zinc	185	206.44	1.8310	219.54	43.91	60		
Chloride (mg/L)		757	19	804			265	243

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

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 0.02 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		155	31	1.2	
Cadmium	175	3.82	0.0115	3.89	0.78	<1	
Chromium (+3)	181	214	0.3910	218	44	3	
Copper	181	17.16	0.7950	17.48			12
Lead	181	49.56	0.1404	50.52	10.10	<1	
Nickel	181	86.04		87.71	17.54	<9	
Zinc	181	201.81	1.8310	205.68	41.14	60	
Chloride (mg/L)		395	19	402			214

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

Monthly Average Limits based on Wildlife Criteria (WC)

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

Monthly Average Limits based on Human Threshold Criteria (HTC)
RECEIVING WATER FLOW = 0.25 cfs (¼ of the Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HTC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	30-day P_{99}
Cadmium	370.00	0.0115	490.90	98.18	<1	
Chromium (+3)	3818000	0.3910	5065570	1013114	3	
Lead	140.0	0.1404	185.7	37.1	<1	
Nickel	43000		57051	11410	<9	

Monthly Average Limits based on Human Cancer Criteria (HCC)
RECEIVING WATER FLOW = 0.25 cfs (¼ of the Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HCC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	30-day P_{99}
Arsenic	13.30		13.30	2.66	1.2	

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

Conclusions and Recommendations: Based on a comparison of the effluent data and calculated effluent limitations, limits are not required for toxic substances.

Copper – Considering available effluent data from the current permit term (September 2018 to October 2024), the 1-day P_{99} concentration is 17 µg/L, with a maximum concentration of 11 µg/L. The 4-day P_{99} concentration is 12 µg/L. These effluent concentrations are below calculated WQBELs for copper, therefore no effluent limits are needed. Copper monitoring is not recommended because 11 sample results will be required in the next permit application to meet the data requirements of s. NR 106.06, Wis. Adm. Code.

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 water supply produced a PFOS result of 0.97 ng/L and a PFOA result of 59.40 ng/L. The PFOA result is greater than one fifth of the criterion for the substance. Based on the known levels of PFOS/PFOA in the source water, **PFOS and PFOA monitoring is recommended once every two months.**

Mercury – The permit application did not require monitoring for mercury because the Edgar Wastewater Treatment Facility is categorized as a minor facility as defined in s. NR 200.02(8), Wis. Adm. Code. In accordance with s. NR 106.145(3)(a)3., Wis. Adm. Code, a minor municipal discharger shall monitor, and report results of influent and effluent mercury monitoring once every three months if, there are two or more exceedances in the last five years of the high-quality sludge mercury concentration of 17 mg/kg specified in s. NR 204.07(5). A review of the past five years of sludge characteristics data reveals that all the sample results are within expected analytical ranges and well below the 17 mg/kg level. The average concentration in the sludge from 2020 to 2024 was 0.31 mg/kg, with a maximum reported concentration of 0.49 mg/kg. **Therefore, no mercury monitoring is recommended at Outfall 001**.

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.

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

Where:

A = 0.411 and B = 58.4 for a Limited Forage Fishery, and
pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. A total of 1858 sample results were reported from January 2020 to January 2025. The maximum reported value was 7.60 s.u. (Standard pH Units). The effluent pH was 7.30 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 7.19 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 7.16 s.u. Therefore, a value of 7.30 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 7.30 s.u. into the equation above yields an ATC = 26.21 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	52.43
1-Q_{10}	27.84

The 1-Q_{10} method yields the most stringent limits for the Edgar Wastewater Treatment Facility.

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 is calculated by the following equations, according to subchapter IV of NR 106, Wis. Adm. Code.

Limited Forage Fish Community:

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

Where:

pH = the pH (s.u.) of the receiving water,
E = 1.0,
C = the minimum of 3.09 or $3.73 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Present), or
C = $3.73 \times 10^{(0.028 \times (25 - T))}$ – (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)

Warm Water Sport Fish Community:

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

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 not believed to be present in Scotch Creek. So "ELS Absent" criteria apply from October through March, and "ELS Present" criteria will apply from April 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 Lower Rib River Watershed. These values are shown in the table below, with the resulting criteria and effluent limitations.

Weekly and Monthly Ammonia Nitrogen Limits – LFF

		April & May	June - September	October - March
Effluent Flow	Qe (MGD)	0.500	0.500	0.500
Background Information	7-Q_{10} (cfs)	0.06	0.06	0.06
	7-Q_2 (cfs)	0.35	0.35	0.35
	Ammonia (mg/L)	0.07	0.07	0.12
	Average Temperature (°C)	12.5	18.9	6.3
	Maximum Temperature (°C)	15.0	20.6	12.8
	pH (s.u.)	7.57	8.00	7.69
	% of Flow used	50	100	25
	Reference Weekly Flow (cfs)	0.030	0.060	0.015
	Reference Monthly Flow (cfs)	0.149	0.298	0.074
Criteria mg/L	4-day Chronic			
	Early Life Stages Present	13.03	7.75	11.50
	Early Life Stages Absent	29.98	12.46	30.54
	30-day Chronic			
	Early Life Stages Present	5.21	3.10	4.60
	Early Life Stages Absent	11.99	4.98	12.22

Attachment #1

		April & May	June - September	October - March
Effluent Limitations mg/L	Weekly Average			
	Early Life Stages Present	13.5	8.3	
	Early Life Stages Absent			31.1
	Monthly Average			
	Early Life Stages Present	6.2	4.3	
	Early Life Stages Absent			13.4

Weekly and Monthly Ammonia Nitrogen Limits – WWSF (6.5 miles downstream)

		April & May	June - September	October - March
Effluent Flow	Qe (MGD)	0.500	0.500	0.500
Background Information	7-Q_{10} (cfs)	0.41	0.41	0.41
	7-Q_2 (cfs)	2.40	2.40	2.40
	Ammonia (mg/L)	0.07	0.07	0.12
	Average Temperature (°C)	11.7	18.6	3.5
	Maximum Temperature (°C)	14.4	20.6	10.0
	pH (s.u.)	7.40	7.86	7.43
	% of Flow used	50	100	25
	Reference Weekly Flow (cfs)	0.205	0.410	0.103
	Reference Monthly Flow (cfs)	1.020	2.040	0.510
Criteria mg/L	4-day Chronic			
	Early Life Stages Present	11.83	5.03	11.56
	Early Life Stages Absent	11.89	5.03	15.47
	30-day Chronic			
	Early Life Stages Present	4.73	2.01	4.62
	Early Life Stages Absent	4.76	2.01	6.19
Effluent Limitations mg/L	Weekly Average			
	Early Life Stages Present	15.0	7.7	
	Early Life Stages Absent			17.5
	Monthly Average			
	Early Life Stages Present	10.9	7.1	
	Early Life Stages Absent			10.2

Ammonia Decay

The Department must establish limits to protect downstream uses, according to s. NR 106.32(1)(b), Wis. Adm. Code. Ammonia decay may be considered when determining limits at the outfall to protect the downstream classification, according to s. NR 106.32(4)(c), Wis. Adm. Code. Where the calculated limits are more restrictive based on downstream uses, ammonia decay can be considered to determine if these more restrictive limits are needed or if the ammonia will decay before it reaches the point of the classification change.

Ammonia decay rates are dependent on temperature with in-stream nitrification essentially non-existent in the winter. In-stream decay is expected so a first order decay model should be used. Based on the available literature, a decay rate of 0.25 day^{-1} at 20°C has been suggested as a default rate. A temperature correction factor of $\theta = 1.08$ is ($k_{.t} = k_{20}\,\theta^{(T-20)}$). The ammonia nitrogen decay equation is provided below.

$$N_{Limit} = \left(\frac{N_{down}}{EXP(-k_t T)} \right)$$

Where: N_{Limit} = Ammonia limit needed to protect downstream use (mg/L)
N_{down} = Ammonia limit calculated based on downstream classification and flow (mg/L)
$-k_t$ = Ammonia decay rate at background stream temperature (day^{-1})
T = Travel time from outfall to downstream use (day)

The velocity of receiving water is assumed to be 5 miles per day and the distance from the point of discharge to the classification change is approximately 6.5 miles for a travel time of 1.32 days. This equation shows that at the location where the classification change, 70% of the ammonia is remaining June through September, and 84% is remaining April and May. After decay, the limits are increased as shown in the following table.

Ammonia Nitrogen Decay Limits Comparison

	LAL		WWSF		After decay		Current Limits	
Months Applicable	Weekly Average mg/L	Monthly Average mg/L	Weekly Average mg/L	Monthly Average mg/L	Weekly Average mg/L	Monthly Average mg/L	Weekly Average mg/L	Monthly Average mg/L
April & May	13.5	6.2	15.0	10.9	17.7	12.9	14	6.6
June - September	8.3	4.3	7.7	7.1	10.3	9.6	11	5.6
October - March	31.1	13.4	17.5	10.2	17.5	10.2	20	12.0

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from January 2020 to January 2025, with those results being compared to the calculated limits to determine the need to include ammonia limits in the Edgar 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}	15.0	29.7	46.7
4-day P_{99}	9.0	16.4	28.4
30-day P_{99}	6.0	9.4	19.2
Mean	4.7	6.5	15.0
Std	2.9	6.0	9.0
Sample size	44	92	137
Range	0.7 - 10.7	0.2 - 34.7	0.7 - 46.6

Reasonable Potential

The need to include ammonia limits in the Edgar Wastewater Treatment Facility permit is determined by calculating 99th upper percentile (or P_{99}) values for ammonia during the month ranges and comparing those to the calculated limits. Based on this comparison, there is only reasonable potential for the discharge to exceed the calculated ammonia nitrogen limits June through March. However, since the permit currently has weekly and monthly average limits April and May, **the limits must be retained regardless of reasonable potential**, consistent with s. NR 106.33(1)(b), Wis. Adm. Code:

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

Conclusions and Recommendations

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

Final Ammonia Nitrogen Limits

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
April & May		14	6.2
June-September	28	8.3	4.3
October-March	28	18	10

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.

The Edgar Wastewater Treatment Facility had previously been exempted from disinfection based on the limited aquatic life or limited forage fish community classification of the receiving water. Section NR 210.06(3)(g), Wis. Adm. Code, states that disinfection decisions may be made based on the hydrologic classifications listed in s. NR 104.02(1), Wis. Adm. Code (not on the water quality classifications - i.e., limited forage fish, limited aquatic life - that are defined in s. NR 104.02(3), Wis. Adm. Code). The hydrologic classification for Scotch Creek is listed in ch. NR 104, Wis. Adm. Code, as noncontinuous.

Discharges to noncontinuous streams usually result in effluent-dominated situations. The risk of illness is related to the concentration of *E. coli* and therefore dilution is an important consideration when considering risk to human health. Since little to no dilution is present in these situations, disinfection should not be exempted based solely on this hydrological classification.

With a weekly monitoring frequency, 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.

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.

Since the Edgar Wastewater Treatment Facility has phosphorus limits in effect that are more stringent than 1.0 mg/L, the need for a TBEL will not be considered further.

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:

TP Equivalent Effluent Concentration = Daily WLA ÷ (Flow Rate * Conversion Factor)
= 1.342 lbs/day ÷ (0.500 MGD * 8.34)
= 0.32 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.

TP Monthly Average Permit Limit = Daily WLA * Monthly average multiplier
= 1.342 lbs/day * 1.45
= 1.94 lbs/day

The multiplier used in the monthly average calculation was determined according to TMDL implementation guidance. A standard coefficient of variation (CV) of 0.6, along with monitoring frequency, is used to select the multiplier. The current permit specifies phosphorus monitoring as thrice weekly; 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.

Interim Limit – Phosphorus

An interim limit is needed when a compliance schedule is included in the permit to meet the TMDL limits. This limit should reflect a value which the facility is able to currently meet; however, it should also consider the receiving water quality, keeping the water from further impairment. It's recommended that the interim limit be set equal to the current limit 0.8 mg/L, expressed as a monthly average. The following table lists the statistics for effluent phosphorus levels from January 2020 to January 2025 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}	1.43	4.48
4-day P_{99}	1.13	2.75
30-day P_{99}	0.97	1.88
Mean	0.89	1.48
Std	0.19	0.86
Sample Size	797	797
Range	0.2 - 1.4	0.37 - 9.03

Conclusions:

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

- Monthly average Total Phosphorus concentration limit of 0.8 mg/L
- Monthly average Total Phosphorus mass limit of 1.94 lbs/day

Multi-Discharge Variance Interim Limit
With the permit application, the Village of Edgar has re-applied for the phosphorus multi-discharger variance (MDV). Conditions of the phosphorus MDV require the facility to comply with an interim phosphorus limit in lieu of meeting the final WQBEL. The recommended interim limit during the 2nd permit under MDV approval, pursuant to s. 283.16 (6) (a), Wis. Stats., is 0.6 mg/L as a monthly average. A compliance schedule may be appropriate to meet this interim limit but compliance with 0.6 mg/L shall be no later than the end of the reissued permit. The previous interim limit of 0.8 mg/L should not be exceeded during the compliance schedule.

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.

In accordance with s. NR 106.53(2)(b), Wis. Adm. Code, the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s. NR 106.53(2)(c), Wis. Adm. Code, the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation. These values were based off actual flow reported from January 2020 to January 2025.

The table below summarizes the maximum temperatures reported during monitoring from January 2020 to January 2025.

Monthly Temperature Effluent Data & Limits

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	48	49	55	79
FEB	47	48	54	80
MAR	47	48	57	80
APR	50	52	63	81
MAY	57	59	70	84
JUN	63	65	77	85

Attachment #1

				Daily Maximum Effluent Limitation (°F)
JUL	67	68	81	86
AUG	70	71	79	86
SEP	70	70	73	86
OCT	**66**	**66**	**63**	**83**
NOV	**61**	**61**	**54**	**81**
DEC	53	53	55	81

Reasonable Potential
Permit limits for temperature are recommended based on the procedures in s. NR 106.56, Wis. Adm. Code.

- An acute limit for temperature is recommended for each month in which the representative daily maximum effluent temperature for that month exceeds the acute WQBEL. The representative daily maximum effluent temperature is the greater of the following:
  (a) The highest recorded representative daily maximum effluent temperature
  (b) The projected 99th percentile of all representative daily maximum effluent temperatures
- A sub−lethal limitation for temperature is recommended for each month in which the representative weekly average effluent temperature for that month exceeds the weekly average WQBEL. The representative weekly average effluent temperature is the greater of the following:
  (a) The highest weekly average effluent temperature for the month.
  (b) The projected 99th percentile of all representative weekly average effluent temperatures for the month

Comparing the representative highest effluent temperature to the calculated effluent limits determines the reasonable potential of exceeding the effluent limits. The months in which limitations are recommended are shown in bold. Based on this analysis, weekly average temperature maximum limits are necessary for October and November. The complete thermal table used for the limit calculation is attached.

Dissipative Cooling Re-Evaluation
The Village of Edgar has submitted a request for consideration of dissipative cooling. Dissipative cooling was previously approved in June of 2016. The request states that there have been no substantial changes in the operation of, or thermal loadings to, the treatment facility since the previouse dissipative cooling determination. The department has reviewed that request and associated data and believes that the effluent does not have a reasonable potential to cause or contribute to an exceedance of the sub-lethal criterion outside of a small area of mixing and cooling. Therefore, a temperature limit is not recommended at this time. **Effluent monitoring is recommended for the 4th year of the permit term.**

Future WPDES Permit Reissuance
Dissipative cooling requests must be re-evaluated every permit reissuance. The permittee is responsible to submit an updated DC request prior to permit reissuance. Such a request must either include:
a) A statement by the permittee that there have been no substantial changes in operation of, or thermal loadings to, the treatment facility and the receiving water; or
b) New information demonstrating DC to supplement the information used in the previous DC determination. If significant changes in operation or thermal loads have occurred, additional DC data must be submitted to the Department.

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 LC_{50} (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 distance between the outfall and the point where the receiving water becomes a non-variance waterbody (i.e., one that supports a cold water, warm water sport fish, or warm water forage fish community) is greater than four miles. For the Edgar Wastewater Treatment Facility, that distance is approximately 6.5 miles. Given this distance, there is believed to be little potential for chronic toxicity effects in the Warm Water classification change to Scotch Creek associated with the discharge from the Edgar Wastewater Treatment Facility, so the need for chronic WET testing was not considered further.

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), a synthetic (standard) laboratory water may be used as the dilution water and primary control in acute WET tests, unless the use of different dilution water is approved by the Department prior to use. The primary control water must be specified in the WPDES permit.

- 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	Pass or Fail?	Use in RP?	
10/04/1994	>100	>100	Pass	No	>60	>60	Pass	No	1
10/10/1995	>100	>100	Pass	No	>60	>60	Pass	No	1
05/19/1998	>100	>100	Pass	No	>100	>100	Pass	No	1
07/11/2000	>100	>100	Pass	No	>100			No	1
05/02/2002					>100	>100	Pass	No	1
07/10/2003					>100	>100	Pass	No	1
10/05/2004					>100	>100	Pass	No	1
02/08/2007	>100	>100	Pass	Yes	>100	>95.97	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.

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.**

According to s. NR 106.08(6)(d), Wis. Adm. Code, TUa and TUc effluent values are equal to zero whenever toxicity is not detected (i.e. when the LC_{50}, IC_{25} or $IC_{50} \geq 100\%$).

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

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

WET Checklist Summary

	Acute	Chronic
AMZ/IWC	Not Applicable. **0 Points**	Chronic WET not evaluated.
Historical Data	One test used to calculate RP. No tests failed. Data not available in past 5 years. **5 Points**	
Effluent Variability	BOD_5, Ammonia Nitrogen, pH, and Phosphorus exceedances. **5 Points**	
Receiving Water Classification	Variance water > 4 miles to WWSF **0 Points**	
Chemical-Specific Data	Reasonable potential for Ammonia limits based on ATC; (5 pts) Additional Compounds of Concern: none **5 Points**	
Additives	No biocides and one water quality conditioner (1 pt) added. Permittee has proper P chemical SOPs in place. **1 Point**	
Discharge Category	No Industrial Contributors **0 Points**	
Wastewater Treatment	Secondary or Better **0 Points**	
Downstream Impacts	No impacts known. **0 Points**	
Total Checklist Points:	**16 Points**	
Recommended Monitoring Frequency (from Checklist):	2 tests during permit term	
Limit Required?	No	
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, two 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).

Attachment #2

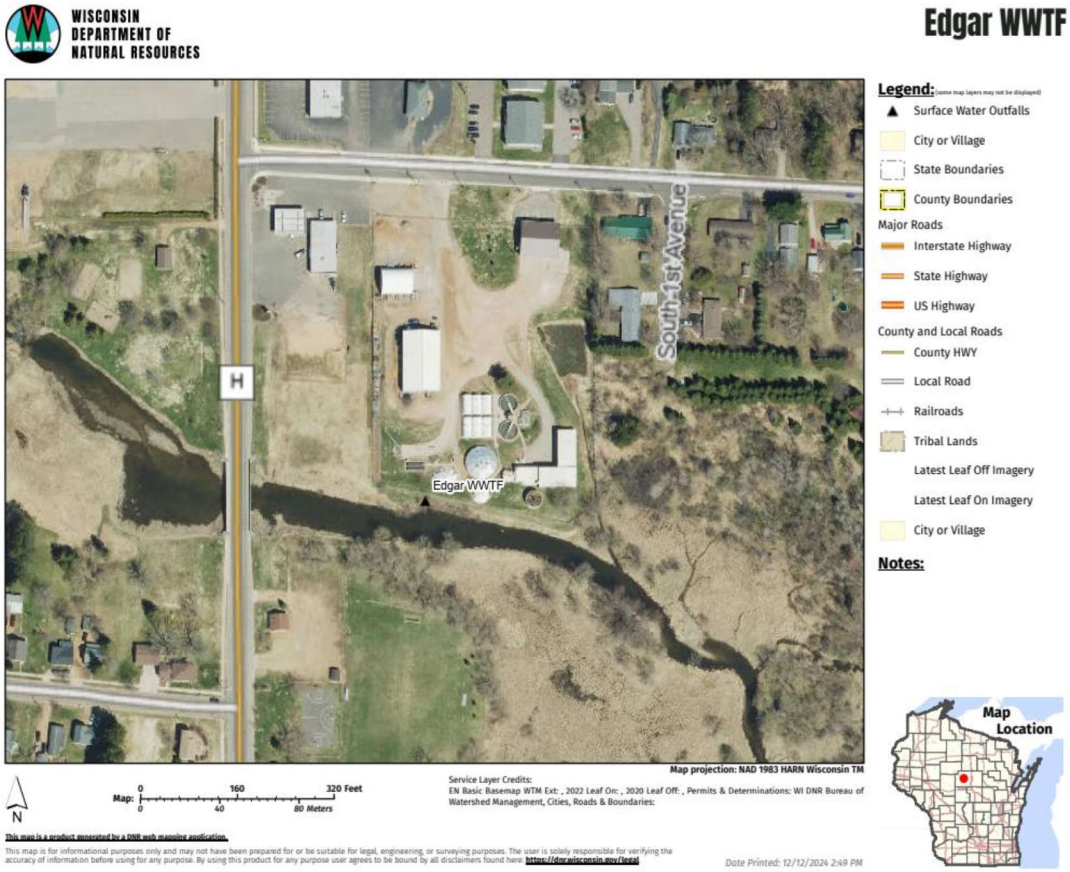
Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

						Temp Dates	Flow Dates
Facility:	Edgar WWTF		**7-Q_{10}:**	0.06	cfs		
Outfall(s):	001		**Dilution:**	25%		**Start:**	01/01/20	01/01/20
Date Prepared:	02/24/2025		**f:**	0		**End:**	01/31/25	01/31/25
Design Flow (Qe):	0.500	MGD	**Stream type:**	Limited forage fish community			
Storm Sewer Dist.	0	ft	**Qs:Qe ratio:**	0.0	:1		
			Calculation Needed?	YES			

Month	Water Quality Criteria			Receiving Water Flow Rate (Qs)	Representative Highest Effluent Flow Rate (Qe)		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Ta (default)	Sub-Lethal WQC	Acute WQC		7-day Rolling Average (Qesl)	Daily Maximum Flow Rate (Qea)		Weekly Average	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(cfs)	(MGD)	(MGD)		(°F)	(°F)	(°F)	(°F)
JAN	37	54	78	0.02	0.280	0.339	0	48	49	55	79
FEB	39	54	79	0.02	0.373	0.444	0	47	48	54	80
MAR	43	57	80	0.02	0.662	0.904	0	47	48	57	80
APR	50	63	81	0.02	0.789	1.013	0	50	52	63	81
MAY	59	70	84	0.02	0.416	0.519	0	57	59	70	84
JUN	64	77	85	0.02	0.539	0.790	0	63	65	77	85
JUL	69	81	86	0.02	0.372	0.430	0	67	68	81	86
AUG	68	79	86	0.02	0.476	0.745	0	70	71	79	86
SEP	63	73	85	0.02	0.309	0.396	0	70	70	73	86
OCT	55	63	83	0.02	0.449	0.742	0	66	66	63	83
NOV	46	54	80	0.02	0.284	0.358	0	61	61	54	81
DEC	40	54	79	0.02	0.170	0.220	0	53	53	55	81

Attachment #3



State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster Street
Box 7921
Madison WI 53707-7921

Tony Evers, Governor

Telephone 608-266-2621
FAX 608-267-3579
TTY Access via relay - 711

WISCONSIN DEPT. OF NATURAL RESOURCES

11/22/2024

Jennifer Lopez, Village Administrator
PO Box 67
Edgar, WI 54426

Subject: Conditional approval of a multi-discharger phosphorus variance
Receiving Stream: Scotch Creek in Marathon County
Permittee: Village of Edgar, WPDES WI-0021784

Dear Ms. Lopez:

In accordance with s. 283.16 of the Wisconsin Statutes, you have requested coverage under Wisconsin's multi-discharger phosphorus variance for the Edgar Wastewater Treatment Facility in an application dated 6/24/2024. Wisconsin's multi-discharger phosphorus variance was approved by EPA on February 6, 2017. Coverage under the multi-discharger phosphorus variance may only be granted to an existing source that demonstrates a major facility upgrade is necessary to achieve phosphorus compliance and the upgrade will result in economic hardship as defined in the federally approved variance. The water quality criterion for which you are seeking a variance is contained in s. NR 102.06, Wis. Adm. Code.

After review of the application materials, the Department is tentatively approving coverage under the phosphorus multi discharger variance because the applicant has demonstrated that a major facility upgrade would be required to comply with the phosphorus water quality based effluent limitation, and the applicant meets the economic hardship eligibility criteria delineated in the federally approved variance. In addition, the permitted facility has agreed to comply with the interim limitations that will be included in the WPDES permit, and has agreed to reduce the amount of phosphorus entering surface waters by making payments to the counties pursuant to s. 283.16(6)(b)1., Wis. Stats.

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

Sincerely,

Matt Claucherty, MDV Point Source Coordinator
Bureau of Water Quality

e-cc

Nick Lindstrom, WDNR
Holly Heldstab, WDNR
Tim Elkins, EPA Region 5
Micah Bennett, EPA Region 5

State of Wisconsin
Department of Natural Resources
Bureau of Water Quality
Permits Section - WQ/3

Multi-Discharger Variance Application Evaluation Checklist

Form 3200-145 (R 5/16)

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

Permittee Name

Village of Edgar

WPDES Permit Number	County
WI- 0 | 0 | 2 | 1 | 7 | 8 | 4	Marathon

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

7. What is the current effluent level achievable?

Outfall Number(s)	Conc. (mg/L)	Method for calculation:	Does this concur with application?	
001	0.99	(•) 30-day P99 ( ) Other, specify:	( ) Yes (•) No, why not: application used smaller data subset	*DNR staff should verify the effluent concentration value(s) provided. See Q11 on municipal form & Q12 on industrial form.*

8. What is the appropriate interim limitation(s) for the permit term?

0.6 mg/L as a monthly average pursuant to s. 283.16(6)(a)2., Wis. Stats.
Target Value = 0.2 mg/L

Provide Rationale:

The past three year's total phosphorus effluent data (11/1/2021 - 10/31/2024, n=471) yield a 30-day P99 value of 0.99 mg/L. This value, or 1.0 mg/L, represents a level currently achievable. A schedule may be needed to achieve the 0.6 mg/L monthly limit, consistent with current planned optimization actions at the facility.

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

Save

9. *For Industries Only*- Where does the phosphorus in the effluent come from? (check all that apply)	☐ Process ☐ Additive Usage ☐ Water supply *Can intake credits be given or can the facility use an alternative water supply?* ◯ Not feasible ◯ Possibly, but further analysis needed ◯ Not evaluated at this time	*See Q14-15 & 19 on industrial form. If the answer is "possibly" or "not evaluated", the schedule section of the MDV permit should contain a requirement to perform this analysis.*
10. Has this facility optimized?	◯ Yes ◉ In progress ◯ No	*See Q14 on municipal form & Q16 & 20 on industrial form. Facility must optimize and operate at an optimize treatment level (s. 283.16(6)(a), Wis. Stat.)If no will need compliance schedule.*
11. Has a facility plan/compliance alternative plan been completed for the facility?	◉ Yes ◯ In progress ◯ No	*See Q15 on municipal form & Q17 on industrial form.*
12. What is the projected cost for complying with phosphorus? Source:	$ 3,647,897.00 Capital costs from final compliance alternatives plan, inflation-adjusted	*Facility must submit site-specific compliance costs. If cost projections are used from EIA, the permittee must certify that these costs are reasonable for the facility in question. See "projected compliance costs" in Section 2.02 of the MDV Implementation Guidance for details.*

Comments on planning efforts:

An October 2016 Final Compliance Alternatives Plan prepared by Strand Associates and submitted on behalf of the Village of Edgar provides planning considerations for the low-level phosphorus limit. The magnitude of load offset and lack of willing landowners rendered water quality trading and adaptive management not viable. Regionalization and site specific criteria are both evaluated and deemed not feasible. Process upgrades to meet a stringent WQBEL for phosphorus are evaluated and provided a site specific cost estimate. Options include reactive media filters and membrane filters. Membrane filtration is used in the economic demonstration below. The MDV application indicates compliance costs are over $8 million, which is not accurate based on the above-referenced report.

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

Comments on economic demonstration:

Costs associated with a major facility upgrade to meet a stringent WQBEL came to $2,772,000.00 capital with $42,400 O&M annually in 2018. These estimated costs are substantially lower than the statewide estimate value for Edgar (EIA Addendum, Appendix G) of $3.9M for capital costs and $97,000 annually for O & M. When applying the ENR construction cost index to 2018 costs, capital costs would be $3,834,507 and additional O&M would be $58,639 annually, as December 2023 dollars. Assuming a 20-year CWFP loan at 2.2% interest, annual payments would be $239,056.28 and total costs would be $297,695.28 with O&M increases. At a 68% residential use rate, residential costs would be $202,432.79 annually. Divided amongst 465 households, future sewer user rate increases would be $435.34 per user. Current rates are $506.84 annually, and projected sewer rates are $942.18 annually. This value is 1.61% of Edgar's $58,500 MHI. In Marathon County with a secondary indicator score of 5, sewer rate projections at 1% of MHI meet the primary screener. The applicant meets the primary screener.

Save

15. What watershed option was selected?

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

Section 4. Watershed Plan Review

16. MDV Plan Number: *Note: This is for tracking purposes. Contact Statewide Phosphorus Implementation Coordinator for the plan number.*	_____
17. Did the point source complete Form 3200-148?	( ) Yes ( ) No
18. Is the project area in the same HUC 8 watershed as the point of discharge?	( ) Yes ( ) No. *STOP- Watershed plan must be updated.*
19. What is the annual offset required? *See Section 2.03 of the MDV implementation guidance. If this value is different from the offset target provided in form 3200-148, the watershed plan should be amended.*	_____
20. Does the plan ensure that the annual load is offset annually?	( ) Yes ( ) No. *STOP- Watershed plan must be updated.*

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

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

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

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

23. Do you have any concerns about the watershed project? *Note: Coordinate with other DNR staff as appropriate.*	( ) Yes. *STOP- Watershed plan must be updated.* ( ) No.

Comments:

Section 5. Payment to the County(ies)

24. At this time, the appropriate per pound payment is: $ 64.75

See "Payment Calculator" document at \\central\water\WQWT_PROJECTS\WY_CW_Phosphorus\MDV.

Section 6. Determination

Based on the available information, the MDV application is:

- (•) Approved
- ( ) Request for more information
- ( ) Denied

Save

Additional Justification (if needed):

Certification	
Preparer Name Matt Claucherty	Title Water Resources Management Specialist
Signature of Preparer Matt Claucherty	Date 11/22/2024

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