

Village of Colfax Public Noticed Permit Fact Sheet

General Information

Permit Number:	WI-0023663-11-0
Permittee Name:	Village of Colfax, PO Box 417, Village Hall, Colfax WI 54730
Discharge Location:	Colfax Wastewater Treatment Plant, E8291 County Rd BB, Colfax, WI 54730 SW1/4, SW1/4, Section 8, T29N R11W, Town of Colfax, Dunn County, WI South bank of the Red Cedar River 1200 feet west of the Village of Colfax extreme west boundary
Receiving Water:	the Red Cedar River in the Pine Creek and Red Cedar River Watershed of the Lower Chippewa River Basin in Dunn County
StreamFlow (Q _{7,10}):	260 cfs
Stream Classification:	Warm Water Sport Fish (WWSF) community, non-public water supply
Discharge Type:	Existing, seasonal (fill and draw)
Design Flow:	0.105 MGD Annual Average
Significant Industrial Loading?	Although not a “significant” industrial loading per s. 211.03(19m) Wis. Adm. Code, the permittee has indicated they intend to begin accepting approx. 6,000 gpd of rinse wastewater from the local Grassland Dairy.
Operator at Proper Grade?	Yes
Approved Pretreatment Program?	N/A

Facility Description

The Colfax Wastewater Treatment Facility treats domestic water from the Village of Colfax and potentially 6,000 gpd of rinse water from Grassland Dairy. The plant has an annual design flow of 0.105 million gallons per day (MGD) and had an annual average influent flow of 0.0575 MGD in 2023. Treatment consists of a fine screen in the wet well and a three-cell stabilization pond (primary, secondary and polishing pond). Aluminum sulfate is added to the polishing pond for phosphorus removal. The facility is operated on a fill and draw basis, discharging seasonally in the spring and fall to the Red Cedar River. Significant effluent monitoring and/or limit changes in the upcoming permit term are as follows: 1) the addition of annual monitoring for total nitrogen, nitrite + nitrate nitrogen and total Kjeldahl nitrogen, 2) an increase in the monitoring frequency for BOD, TSS, ammonia, pH and phosphorus, 3) fecal coliform monitoring has been replaced with Escherichia coli (E. coli) monitoring, 4) monitoring for PFOS and PFOA every other month has been added in accordance with s. NR 106.98(2)(c), Wis. Adm. Code, 5) addition of copper monitoring in the fourth year of the permit, and 6) the approved alternate effluent limit for phosphorus dropped from 4.0 mg/L to 3.5 mg/L (monthly average). Clarification language has been added notifying the permittee they must monitor sludge for List 2 nutrients and meet the requirements of List 3 (Pathogen Control) and List 4 (Vector Attraction Reduction) prior to landspreading if they remove sludge from the lagoon(s). Additionally, to quantitate the risk, PFAS sludge sampling has been included in the permit pursuant to ss. NR 214.18(5)(b) and NR 204.06(2)(b)9., Wis. Adm. Code. A schedule has been included requiring the permittee submit a sludge management plan prior to removal and land application of sludge from the pond(s). A schedule has been added

requiring the permittee go through proper plan review to install a permanent chemical addition structure for phosphorus removal & associated safety equipment.

Substantial Compliance Determination

Enforcement During Last Permit: Two Notices of Noncompliance were issued in the previous permit term for Effluent Limit exceedances, Missed Sampling Results, Failure to Report Violation, Failure to Notify Discharge and Failure to Sample Pond Prior to Discharge. The facility created a Standard Operating Procedure to address these issues. This was reviewed and approved by the department.

After a desk top review of all discharge monitoring reports, CMARs, land app reports, compliance schedule items, and a site visit on **11/28/2023**, the Colfax WWTF has been found to be in substantial compliance with their current permit.

Compliance determination entered by Logan Rubeck on 12/5/2023.

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: 0.0575 MGD (2023)	Representative influent samples shall be collected in the wet well prior to the fine screen.
001	Effluent to Red Cedar River: 0.0610 MGD annual average in (2023), 0.1494 MGD average flow during discharge events	Representative effluent samples shall be collected prior to discharge to the Red Cedar River.
002	Pond Sludge: no sludge removed during the last permit term and is not expected this permit term.	Representative composite sludge samples shall be collected in 2025 and monitored for the parameters as listed in the table below. If the permittee plans to remove sludge, they shall monitor sludge for Lists 1, 2, 3 & 4 prior to land application. The Department shall be notified at least 30 days in advance of sludge removal so that appropriate monitoring forms can be provided. Approval of landspreading sites must be completed prior to sludge removal.

1 Influent – Monitoring Requirements

Sample Point Number: 701- INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD ₅ , Total		mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	Weekly	24-Hr Flow Prop Comp	

Changes from Previous Permit:

The sample frequency for flow has been changed from “continuous” to “daily” for eDMR reporting purposes. The sample type for BOD and TSS changed from 24-hour composite to 24-hour flow proportional composite to reflect the permittee’s ability to collect this more representative sample type.

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

Sample Point Number: 001- EFFLUENT TO RED CEDAR RIVER

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD ₅ , Total	Weekly Avg	45 mg/L	Weekly	Grab	
BOD ₅ , Total	Monthly Avg	30 mg/L	Weekly	Grab	
Suspended Solids, Total	Weekly Avg	45 mg/L	Weekly	Grab	
Suspended Solids, Total	Monthly Avg	30 mg/L	Weekly	Grab	
pH Field	Daily Min	6.0 su	5/Week	Grab	
pH Field	Daily Max	9.0 su	5/Week	Grab	

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Nitrogen, Ammonia (NH ₃ -N) Total	Daily Max - Variable	mg/L	2/Week	Grab	Daily maximum limit varies with effluent pH. See ammonia section below for limits.
Nitrogen, Ammonia Variable Limit		mg/L	2/Week	See Table	
E. coli		#/100 ml	2/Month	Grab	Monitoring required May - Sept
PFOS		ng/L	1/ 2 Months	Grab	Monitoring only. See PFOS/PFOA sections below & the associated schedule.
PFOA		ng/L	1/ 2 Months	Grab	
Phosphorus, Total	Monthly Avg	3.5 mg/L	Weekly	Grab	See phosphorus sections below
Phosphorus, Total	Annual Total	320 lbs/yr	Annual	Calculated	
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	Grab	Monitoring required annually in specific quarters. See Nitrogen Series Monitoring section below for more info.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	Grab	
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	
Copper		ug/L	2/Month	Grab	Monitoring required 2/Month in 2028

Changes from Previous Permit

1) the addition of annual monitoring for total nitrogen, nitrite + nitrate nitrogen and total Kjeldahl nitrogen, 2) the monitoring frequency for BOD, TSS, ammonia, pH and phosphorus has increased, 3) fecal coliform monitoring has been replaced with Escherichia coli (E. coli) monitoring, 4) monitoring for PFOS and PFOA every other month has been added in accordance with s. NR 106.98(2)(c), Wis. Adm. Code, 5) the sample frequency for flow has been changed from “continuous” to “daily” for eDMR reporting purposes, 6) addition of copper monitoring in the fourth year of the permit to establish a baseline of data for calculation of limits in the next permit reissuance and 7) the approved alternate effluent limit for phosphorus dropped from 4.0 mg/L to 3.5 mg/L (monthly average).

Explanation of Limits and Monitoring Requirements

The effluent monitoring frequency for all parameters were considered. Monitoring frequencies are based on the size and type of the facility and are established to best characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Requirements in administrative code (NR 108, 205, 210 and 214 Wis. Adm. Code) and Section 283.55, Wis. Stats. were considered, where applicable, when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term. For more information see the March 22, 2021 version of the Bureau of Water Quality Program Guidance Document “Monitoring Frequencies for Individual Wastewater Permits”. Using the criteria previously stated, and also due to limit violations for ammonia, TSS and pH in the last 24 months, the department has determined monitoring frequency increases are appropriate for BOD, TSS, ammonia, pH and phosphorus. BOD, TSS and phosphorus are increasing from

2/month to weekly, ammonia is increasing from 2/month to 2/week and pH is increasing from 2/month to 5/week. These monitoring frequency increases are necessary in order to effectively characterize the effluent quality and variability, and to best determine compliance with effluent limitations.

Limits were determined for Colfax’s existing discharge to the Red Cedar River using chs. NR 102, 104, 105, 106, 207, 210, 212 and 217 of the Wisconsin Administrative Code (where applicable). For additional information on any of the limits see the February 29, 2024 memo from Ben Hartenbower to Holly Heldstab titled “Water Quality-Based Effluent Limitations for the Colfax Wastewater Treatment Facility WPDES Permit No. WI-0023663”.

MUNICIPAL EFFLUENT LIMITS – Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are not required due to the non-continuous nature of the discharge.

BOD, TSS and pH: Monitoring frequency for these parameters have increased in order to effectively characterize the effluent quality and variability, and to best determine compliance with effluent limitations. However, limits for these pollutants correspond to the requirements of the current permit since the facility has not increased the capacity of the wastewater treatment system since the last permit issuance, nor are increases expected during the term of the proposed permit.

Ammonia: Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Tables 2C and 4B of ch. NR 105, Wis. Adm. Code. Subchapter IV of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for ammonia. Daily maximum ammonia limits that vary with effluent pH apply year-round. See table below titled “Variable Daily Maximum Ammonia Limits” for more information. Samples for ammonia shall be collected at the same time as the pH samples.

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
6.0 ≤ pH ≤ 6.1	108	7.3 < pH ≤ 7.4	46	8.6 < pH ≤ 8.7	4.4
6.1 < pH ≤ 6.2	106	7.4 < pH ≤ 7.5	40	8.7 < pH ≤ 8.8	3.7
6.2 < pH ≤ 6.3	104	7.5 < pH ≤ 7.6	34	8.8 < pH ≤ 8.9	3.1
6.3 < pH ≤ 6.4	101	7.6 < pH ≤ 7.7	29	8.9 < pH ≤ 9.0	2.6
6.4 < pH ≤ 6.5	98	7.7 < pH ≤ 7.8	24	9.0 < pH ≤ 9.1	2.3
6.5 < pH ≤ 6.6	94	7.8 < pH ≤ 7.9	20	9.1 < pH ≤ 9.2	2.0
6.6 < pH ≤ 6.7	89	7.9 < pH ≤ 8.0	17	9.2 < pH ≤ 9.3	1.7
6.7 < pH ≤ 6.8	84	8.0 < pH ≤ 8.1	14	9.3 < pH ≤ 9.4	1.6
6.8 < pH ≤ 6.9	78	8.1 < pH ≤ 8.2	11	9.4 < pH ≤ 9.5	1.4
6.9 < pH ≤ 7.0	72	8.2 < pH ≤ 8.3	9.4	9.5 < pH ≤ 9.6	1.3
7.0 < pH ≤ 7.1	66	8.3 < pH ≤ 8.4	7.8	9.6 < pH ≤ 9.7	1.2
7.1 < pH ≤ 7.2	59	8.4 < pH ≤ 8.5	6.4	9.7 < pH ≤ 9.8	1.1
7.2 < pH ≤ 7.3	52	8.5 < pH ≤ 8.6	5.3	9.8 < pH ≤ 9.9	1.1

Disinfection/*E. Coli*/Fecal Coliform: Revisions to bacteria surface water quality criteria to protect recreational uses and accompanying *E. coli* WPDES permit implementation procedures became effective May 1, 2020. The new rule requires that WPDES permits for facilities with required disinfection include monitoring for *E. coli* while facilities are disinfecting during the recreation period and establish effluent limitations for *E. coli* established in s. NR 210.06 (2), Wis. Adm Code. The administrative code rule changes included the following actions: revised the bacteria water quality criteria from fecal coliform to *E. coli* to protect recreation in ch. NR 102, Wis. Adm. Code.; removed fecal coliform criteria for certain individual waters from ch. NR 104, Wis. Adm. Code.; revised permit requirements for publicly and privately owned sewage treatment works in ch. NR 210, Wis. Adm. Code.; and, updated approved analytical methods for bacteria in ch. NR 219, Wis. Adm. Code.

Although disinfection is not required, monitoring for fecal coliform has been required in previous permits. Whenever lagoon detention time is 180 days or longer, no risk is assumed to pose a threat to human and animal health (NR

210.06(3)(h), Wis. Adm. Code) and no disinfection of effluent is required. Although we expect that effluent will be detained in the ponds for a period greater than 180 days, monitoring for *E. coli* is required to confirm.

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 proposed permit was drafted, PFOS/PFOA monitoring is required because of the nondomestic contributions. Therefore, monitoring once every two months is included. 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.

Phosphorus and the Total Maximum Daily Load (TMDL) Derived Limits: Phosphorus requirements are based on the Phosphorus Rules that became effective 12/1/2010 as detailed in NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. NR 217 also specifies WQBELs for discharges of phosphorus to surface waters of the state from publicly and privately owned wastewater facilities and a facility/site that is regulated under NR 216 where the standards in NR151 and 216 are not sufficient to meet phosphorus criteria. WQBELs for phosphorus are needed whenever the discharge contains phosphorus at concentrations or loadings that will cause or contribute to an exceedance of the water quality standards.

Colfax is included within the Tainter Lake/Lake Menomin Total Maximum Daily Load (TMDL), which was approved by EPA September 2012. The TMDL establishes Waste Load Allocations (WLAs) for point source dischargers and determines the maximum amounts of phosphorus that can be discharged and still protect water quality. The WLA for Colfax is 320 lbs/year. On March 8, 2024 the permittee applied for an alternate effluent limit (AEL) for phosphorus. The Department reviewed and approved that request. Therefore, in place of a 1.0 mg/L monthly average technology-based limit, an AEL of 3.5 mg/L (monthly average) is included in the permit based on the 4-day P99. See the April 4, 2024 memo from Ben Hartenbower to Holly Heldstab titled “Alternate Phosphorus Limitation Approval for the Colfax Wastewater Treatment Facility WPDES Permit No. WI-0023663”.

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 it is impracticable to express the phosphorus WQBEL for the permittee as a maximum daily or weekly value. The final effluent limit for phosphorus is expressed as a monthly average. This final effluent limit was derived from and complies with the applicable water quality criterion.

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

- 3rd quarter (July – Sept) 2024
- 2nd quarter (April – June) 2025
- 4th quarter (Oct – Dec) 2026
- 2nd quarter (April – June) 2027
- 3rd quarter (July – Sept) 2028

Copper: Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm Code. Based on a comparison of effluent copper concentration data and calculated effluent limitations, it has been determined that copper effluent limits are not required, however monitoring is required so that adequate copper effluent data is available for calculating limits for the next permit reissuance.

Thermal: Requirements for Temperature are included in NR 102 Subchapter II Water Quality Standards for Temperature and NR 106 Subchapter V Effluent Limitations for Temperature. Thermal discharges must meet the Public Health criterion of 120° F and the Fish & Aquatic Life criteria which are established to protect aquatic communities from lethal and sub-lethal thermal effects. For lagoon treatment systems of domestic waste, there is no reasonable potential for the discharge to exceed this limit, therefore no limits or monitoring is required.

Chloride: Chloride – Acute and chronic chloride toxicity criteria for the protection of aquatic life are included in Tables 1 and 5 of ch. NR 105, Wis. Adm. Code. Subchapter VII of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for chloride. Based on a comparison of effluent chloride concentration data and calculated effluent limitations, it has been determined that neither effluent limits nor monitoring are required.

Whole Effluent Toxicity (WET): Whole effluent toxicity (WET) testing requirements and limits (if applicable) are determined in accordance with ss. NR 106.08 and NR 106.09 Wis. Adm. Code, as revised August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at <http://dnr.wi.gov/topic/wastewater/wet.html>). No WET testing is required because information related to the discharge indicates low to no risk for toxicity.

Mercury: The permit application did not require monitoring for mercury because the Colfax 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), Wis. Adm. Code. A review of the past five years of sludge characteristics data reveals that all the sample results are within expected analytical ranges and well below the 17 mg/kg level. The average concentration in the sludge from 2020 was 0.06 mg/kg. Therefore, no mercury monitoring is required at Outfall 001.

3 Land Application - Monitoring and Limitations

Municipal Sludge Description						
Sample Point	Sludge Class (A or B)	Sludge Type (Liquid or Cake)	Pathogen Reduction Method	Vector Attraction Method	Reuse Option	Amount Reused/Disposed (Dry Tons/Year)
002	B	Liquid	The permittee has never removed sludge from the ponds and does not anticipate removing sludge this permit term.			
Does sludge management demonstrate compliance? Yes						
Is additional sludge storage required? N/A						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No						
Is a priority pollutant scan required? No						

Sample Point Number: 002- STABILIZATION POND SLUDGE

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Once	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Once	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Once	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Once	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Once	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Once	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Once	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Once	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Once	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Once	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Once	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Once	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Once	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Once	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Once	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Once	Composite	
Nitrogen, Total Kjeldahl		Percent	Per Application	Composite	Prior to land app.
Nitrogen, Ammonia (NH3-N) Total		Percent	Per Application	Composite	Prior to land app.
Phosphorus, Total		Percent	Per Application	Composite	Prior to land app.
Phosphorus, Water Extractable		% of Tot P	Per Application	Composite	Prior to land app.
Potassium, Total Recoverable		Percent	Per Application	Composite	Prior to land app.
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
PFOA + PFOS		ug/kg	Once	Calculated	
PFAS Dry Wt			Once	Composite	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

List 2 Nutrient monitoring – Monitoring for list 2 (nutrients) is highly recommended at the same time as the monitoring of List 1 (metals) in year 2 of the permit. Results will assist in the determination of the acres needed for land application of sludge should it be necessary.

Change in form submittal – In prior permit reissuances when it has been noted in the application that sludge would not be removed during the permit term, the department required sampling during the second year of the permit term and the sludge characteristic report (3400-049) would be generated only during that year. Due to moving to electronic submittal of forms via Switchboard, forms 3400-049 (“Characteristics Report”), 3400-052 (“Other Methods of Disposal”) and 3400-055 (“Annual Land Application”) will now be generated by the department and the permittee will be required to submit all three reports each year of the permit term. This change was adopted to provide the permittee flexibility because many lagoon desludging projects can be unexpected, are delayed or staggered over multiple years. Additionally, it is used to officially report that no land application of sludge has occurred, and annual submittal of the forms is required per the standard requirements section.

PFAS – Monitoring for PFAS is required once pursuant s. NR 204.06(2)(b)9., Wis. Adm. Code.

Explanation of Limits and Monitoring Requirements

Requirements for 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.

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

4 Schedules

4.1 Complete Installation of Chemical Feed System

Required Action	Due Date
Submit Plans & Specifications: Permittee shall submit to the Department for approval Plans & Specifications for installation of the chemical feed system and associated components.	09/30/2024
Initiate Installation: Permittee shall initiate installation of the final components of the chemical feed	02/01/2025

system per the Plans & Specifications approved by the Department.	
Complete Installation: Permittee shall complete installation of the final components of the chemical feed system per the Plans & Specifications approved by the Department.	06/01/2025

Explanation of schedule: During a facility inspection on November 28, 2023, it was determined that Colfax was still using the chemical feed system for phosphorus removal from the original pilot project. Due to the “pilot” nature of the project at the time of installation it was not required to receive approval through the department under s. NR 108.03, Wis. Adm. Code. The project has extended beyond the pilot stage and final plans and specifications will need to be submitted to and approved by the Department per Section 281.41, Wis. Stats. And s. NR 108.03, Wis. Adm. Code for continued use.

4.2 PFOS/PFOA Minimization Plan Determination of Need

Required Action	Due Date
<p>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.</p> <p>This report shall include all PFOS and PFOA data collected including any voluntary influent, intake, in-plant, collection system sampling, and blank sample results.</p>	07/01/2025
<p>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.</p> <p>This report shall include all PFOS and PFOA data collected including any voluntary influent, intake, in-plant, collection system sampling, and blank sample results.</p> <p>The permittee shall also submit a request to the department to evaluate the need for a PFOS/PFOA minimization plan.</p> <p>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.</p> <p>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.</p>	07/01/2026

Explanation of PFOA/PFOA 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.

4.3 Sludge Management Plan

Required Action	Due Date
<p>Submit a Sludge Management Plan: The permittee shall submit a management plan for approval if removal of sludge will occur during this permit term. The plan shall demonstrate compliance with ch. NR 204, Wis. Adm. Code and at minimum address 1) How and where is sludge sampled; 2) Available sludge storage details and location(s); 3) How will the sludge be removed with details on volume, characterization and how will the treatment plant continue to function during the drawdown; 4) Describe the type of transportation and spreading vehicles and loading and unloading practices; 5) Identify approved land application sites, apply for needed sites, site limitations, total acres needed and vegetative cover management; 6) Specify record keeping procedures including site loading; 7) Address contingency plans for adverse weather and odor/nuisance abatement; and 8) Include any other pertinent information such as other disposal options that may be used or specifications of any pretreatment processes</p> <p>Once approved, all sludge management activities shall be conducted in accordance with the plan. Any changes to the plan must be approved by the Department prior to implementing the changes. No desludging may occur unless approval from the Department is obtained. Daily logs shall be kept that record where the sludge has been disposed.</p> <p>The plan is due at least 60 days prior to desludging.</p>	

Explanation of Sludge Management Plan Schedule: If the lagoons are to be de-sludged during this permit term, a management plan is needed to show compliance with ch NR 204, Wis. Adm. Code that clearly explains how the sludge will be safely removed, what contingencies are in place, the type of equipment that will be used and how the sludge will be land applied to ensure the proper precautions are in place to prevent any negative impacts to surface water or groundwater.

Special Reporting Requirements

None

Other Comments:

Publishing Newspaper: Colfax Messenger, 511 E Railroad Street, PO Box 517, Colfax, WI, 54730-0517

Attachments:

- Water Quality Based Effluent Limits: February 29, 2024 memo from Ben Hartenbower to Holly Heldstab titled “Water Quality-Based Effluent Limitations for the Colfax Wastewater Treatment Facility WPDES Permit No. WI-0023663”
- Alternate Phosphorus Effluent Limitation Request from the Village of Colfax, dated March 8, 2024
- Alternate Phosphorus Limitation Approval for the Colfax Wastewater Treatment Facility WPDES Permit No. WI-0023663, dated April 4, 2024

Expiration Date:

March 31, 2029

Justification Of Any Waivers From Permit Application Requirements

N/A

Prepared By: Holly Heldstab, Wastewater Specialist

Date: May 1, 2024

CORRESPONDENCE/MEMORANDUM

DATE: February 29, 2024

TO: Holly Heldstab– WCR/Eau Claire

FROM: Benjamin Hartenbower – WCR/Eau Claire

SUBJECT: Water Quality-Based Effluent Limitations for the Colfax Wastewater Treatment Facility
WPDES Permit No. WI-0023663

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 Colfax Wastewater Treatment Facility in Dunn County. This municipal wastewater treatment facility (WWTF) discharges to the Red Cedar River, located in the Pine Creek and Red Cedar River Watershed in the Lower Chippewa River Basin. This discharge is included in the Tainter Lake/Lake Menomin TMDL as approved by EPA. 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	Annual Total	Footnotes
Flow Rate						1,2
BOD ₅			45 mg/L	30 mg/L		1
TSS			45 mg/L	30 mg/L		1
pH	9.0 s.u.	6.0 s.u.				1
Ammonia Nitrogen	Variable					1,3
<i>E. coli</i>						2
PFOS and PFOA						4
Phosphorus TBEL TMDL Limit				1.0 mg/L	320 lbs/yr	5,6
TKN, Nitrate+Nitrite, and Total Nitrogen						7

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. The variable daily maximum ammonia nitrogen limit table corresponding to effluent pH values. These limits apply year-round.

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

4. Monitoring once every two months is required in accordance with s. NR 106.98(2), Wis. Adm. Code.
5. An alternate effluent limit (AEL) for phosphorus may be requested along with a demonstration made in accordance with s. NR 217.04(2)(a)1, Wis. Adm. Code.
6. The phosphorus mass limit is based on the Total Maximum Daily Load (TMDL) for the Tainter Lake/Lake Menomin TMDL to address phosphorus water quality impairments within the TMDL area.
7. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen monitoring is recommended for all minor municipal permittees. Total Nitrogen is the sum of nitrate (NO₃), nitrite (NO₂), and total kjeldahl nitrogen (TKN) (all expressed as N).

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Benjamin Hartenbower at (715) 225-4705 or Benjamin.Hartenbower@wisconsin.gov or Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (2) – Narrative & Map

PREPARED BY:



Benjamin Hartenbower, PE,
Water Resources Engineer

Date: 02/29/2024

E-cc:

Logan Rubek, Wastewater Engineer – WCR/Eau Claire
Geisa Thielen, Regional Wastewater Supervisor – WCR/Eau Claire
Diane Figiel, Water Resources Engineer – WY/3
Chris Willger, Water Quality Biologist – WCR/Eau Claire
Nate Willis, Wastewater Engineer – WY/3

**Water Quality-Based Effluent Limitations for
the Colfax Wastewater Treatment Facility
WPDES Permit No. WI-0023663**

Prepared by: Benjamin P. Hartenbower

PART 1 – BACKGROUND INFORMATION

Facility Description:

The Colfax Wastewater Treatment Plant is a 3-cell stabilization pond (primary, secondary and polishing pond) and is operated on a fill and draw basis. Effluent is discharged seasonally to the Red Cedar River May through November. Aluminum Sulfate Liquid is added to the polishing pond for phosphorous treatment before it discharges to the Red Cedar River.

Disinfection of the effluent is not required based on the conditions of s. NR 210.06(3), Wis. Adm. Code. It should be noted that this may be re-evaluated in the future to ensure the conditions are being met. This re-evaluation could result in requiring disinfection of the effluent at that time.

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

Existing Permit Limitations

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

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Annual Total	Footnotes
Flow Rate						1,2
BOD ₅			45 mg/L	30 mg/L		1
TSS			45 mg/L	30 mg/L		1
pH	9.0 s.u.	6.0 s.u.				1
Ammonia Nitrogen	Variable					3
Fecal Coliform						2
Phosphorus TBEL TMDL Limit				4.0 mg/L	320 lbs/yr	4,5

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.

Attachment #1

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

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

4. The alternative effluent limit (AEL) in accordance with s. NR 217.04(2)(a)1, Wis. Adm. Code
 5. The annual phosphorus limit is for the Tainter Lake/Lake Menomin TMDL.

Receiving Water Information

- Name: The Red Cedar River
- Waterbody Identification Code (WBIC): 2063500
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply.
 Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: USGS for Station 05367500 near Colfax, in the Red Cedar River
 7-Q₁₀ = 260 cfs (cubic feet per second)
 7-Q₂ = 400 cfs
 Harmonic Mean Flow = 534 cfs using a drainage area of 1090 mi².
- Hardness = 84 mg/L as CaCO₃. This value represents the geometric mean of 61 samples collected in Red Cedar River from 04/13/1989 to 09/05/1996.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%
- Source of background concentration data: Chloride data is from the Red Cedar River. Metals data from the Chippewa River at Durand is used for this evaluation because there is no data available for the Red Cedar River and the Chippewa 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: There are several other dischargers to the Red Cedar River however they are not in the immediate vicinity and the mixing zones do not overlap. Therefore, the other dischargers do not impact this evaluation.
- Impaired water status: This discharge is located within the Tainter Lake/Lake Menomin TMDL for phosphorus

Effluent Information:

- Design Flow Rates(s):
Annual Average = 0.105 MGD (Million Gallons per Day)
For reference, the actual average flow from June 2019 to December 2023 during discharge occurrences was 0.123 MGD.
- Hardness = 44 mg/L as CaCO₃. This value represents the geometric mean of 4 effluent samples collected from 10/18/2023 to 10/31/2023.
- Acute dilution factor used in accordance with s. NR 106.06 (3) (c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water Source: Domestic wastewater with water supply from the wells and non-domestic contribution from Grassland Dairy.
- Additives: Aluminum Sulfate and Sodium Hydroxide
- Total Phosphorus Wasteload Allocation: 320 lbs/year
- 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 and Phosphorus from June 2019 to December 2023 is used in this evaluation.

Chemical Specific Effluent Data at Outfall 001

Sample Date	Chloride mg/L	Sample Date	Copper µg/L
10/18/2023	46	10/18/2023	<3
10/23/2023	48	10/23/2023	<3
10/27/2023	44	10/27/2023	<3
10/31/2023	41	10/31/2023	<3
		11/06/2023	<3
		11/10/2023	<3
		11/14/2023	<3
		11/17/2023	<3
		11/20/2023	<3
mean	44.8	mean	<3

“<” means that the pollutant was not detected at the indicated level of detection. The mean concentration was calculated using zero in place of the non-detected results.

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 June 2019 to December 2023 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	9 mg/L
TSS	17.9 mg/L
pH	6.91 s.u.
Ammonia Nitrogen	6.92 mg/L
Phosphorus	1.88 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 P₉₉) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

Acute Limits based on 1-Q₁₀

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

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

Where:

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

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

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

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

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

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q₁₀ method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is not the case for the Village of Colfax Wastewater Treatment Facility and the limits are set based on two times the acute toxicity criteria.

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

Attachment #1

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 208 cfs, (1-Q₁₀ (estimated as 80% of 7-Q₁₀)), 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		339.8		679.6	135.9	<1.0		
Cadmium	44	4.04	0.010	8.1	1.6	<2		
Chromium (+3)	44	924.59	0.500	1849.2	369.8	<3		
Copper	44	7.19	1.210	14.4	2.9	<3		
Lead	44	48.63	0.338	97.3	19.5	<1		
Nickel	44	235.35		470.7	94.1	<8		
Zinc	44	59	1.143	118	23.6	<8		
Chloride		757	9.973	1514	303	45		48

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

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 65.0 cfs (¼ of the 7-Q₁₀), as specified in s. NR 106.06 (4) (c), Wis. Adm. Code

SUBSTANCE	REF. HARD. mg/L	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P ₉₉
Arsenic		152.2		61046	12209.2	<1.0	
Cadmium	84	2.16	0.010	862.4	172.5	<2	
Chromium (+3)	84	114.99	0.500	45921.3	9184.3	<3	
Copper	84	8.95	1.210	3105.7	621.1	<3	
Lead	84	23.78	0.338	9402.7	1880.5	<1	
Nickel	84	45.22		18137.3	3627.5	<8	
Zinc	84	103.8	1.143	41175.9	8235.2	<8	
Chloride		395	9.973	154441	30888	45	

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 = 134 cfs (¼ of 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.
Cadmium	370	0.010	304672	60934	<2
Chromium (+3)	3818000	0.500	3.144E+09	628794363	<3
Lead	140	0.338	115006.5	23001.3	<1
Nickel	43000		35408802	7081760	<8

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 134 cfs (¼ of 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.
Arsenic	13.3		10952	2190.4	<1.0

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.

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98, Wis. Adm. Code. Based on the nondomestic contributions, **PFOS and PFOA monitoring is recommended once every two months.**

Mercury – The permit application did not require monitoring for mercury because the Colfax 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 was 0.06 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 limits. These limits are re-evaluated at this time due to the following changes:

- Subchapter IV of ch. NR 106, Wis. Adm. Code allows limits based on available dilution instead of limits set to twice the acute criteria.
- The maximum expected effluent pH has changed

Daily Maximum Limits based on Acute Toxicity Criteria (ATC):

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

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

Where:

A = 0.411 and B = 58.4 for a Warm Water Sport fishery, and
 pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. A total of 53 sample results were reported from June 2019 to November 2023. The maximum reported value was 8.70 s.u. (Standard pH Units). The 1-day P₉₉, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 9.50 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 9.19 s.u. Therefore, a value of 8.70 s.u. is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 8.70 s.u. into the equation above yields an ATC = 2.20 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-Q₁₀ receiving water low flow if it is determined that the previous method of acute ammonia limit calculation (2×ATC) is not sufficiently protective of the fish and aquatic life. The more restrictive calculated limits shall apply.

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

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
2×ATC	4.41
1-Q ₁₀	2677

The 2×ATC method yields the most stringent limits for the Colfax Wastewater Treatment Facility.

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

Daily Maximum Ammonia Nitrogen Limits – WWSF/WWFF

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

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

The ammonia limit calculation also warrants evaluation of weekly and monthly average limits based on chronic toxicity criteria for ammonia, since those limits relate to the assimilative capacity of the receiving water.

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

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

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

Where:

pH = the pH (s.u.) of the receiving water,

E = 0.854,

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

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

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

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

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

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 °C, during the winter and spring months. Burbot, an early spawning species, are believed to be present in the Red Cedar River. So “ELS Absent” criteria apply from October through December, and “ELS Present” criteria will apply from January through September for a WWSF classification.

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

Weekly and Monthly Ammonia Nitrogen Limits – WWSF

		January- April	May- September	October- December
Effluent Flow	Qe (MGD)	0.105	0.105	0.105
Background Information	7-Q ₁₀ (cfs)	260	260	260
	7-Q ₂ (cfs)	400	400	400
	Ammonia (mg/L)	0.12	0.04	0.13
	Temperature (°C)	8.9	20.6	10.0
	pH (s.u.)	7.67	8.49	8.18
	% of Flow used	25	100	25
	Reference Weekly Flow (cfs)	65	260	65
	Reference Monthly Flow (cfs)	85	340	85
Criteria mg/L	4-day Chronic			
	Early Life Stages Present	9.22	1.88	4.61
	Early Life Stages Absent	13.25	1.88	6.17
	30-day Chronic			
	Early Life Stages Present	3.69	0.75	1.84
	Early Life Stages Absent	5.30	0.75	2.47
Effluent Limitations mg/L	Weekly Average			
	Early Life Stages Present	3652	2941	
	Early Life Stages Absent			2421
	Monthly Average			
	Early Life Stages Present	1873	1488	
	Early Life Stages Absent			1225

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from June 2019 to November 2023, with those results being compared to the calculated limits to determine the need to include ammonia limits in the Colfax Wastewater Treatment Facility permit for the respective month ranges.

Ammonia Nitrogen Effluent Data

Ammonia Nitrogen mg/L	May- September	October- December
1-day P ₉₉	20.80	33.24
4-day P ₉₉	12.10	19.52
30-day P ₉₉	7.70	12.59
Mean	5.70	9.48
Std	4.10	6.52
Sample size	36	17
Range	0.3 - 13.9	0.1 - 19.2

Based on this comparison, daily limits are required.

Conclusions and Recommendations

In summary, the variable daily maximum ammonia nitrogen limit table corresponding to various effluent pH values is recommended to continue as the daily maximum. These limits apply year-round.

PART 4 – WATER QUALITY-BASED Effluent Limitations for BACTERIA

On May 1, 2020, revisions to chs. NR 102 and NR 210, Wis. Adm. Codes, became effective which replace fecal coliform limits with new *Escherichia coli* (*E. coli*) limits for protection of recreational uses. Section NR 210.06(2)(a)1, Wis. Adm. Code, includes two limits which must be included in permits for facilities which are required to disinfect:

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

Disinfection of the effluent is not currently required based on the conditions of s. NR 210.06(3), Wis. Adm. Code. It should be noted that this may be re-evaluated in the future to ensure the conditions are being met. This re-evaluation could result in requiring disinfection of the effluent at that time.

The Colfax Wastewater Treatment Facility permit requires twice monthly fecal monitoring. *E. coli* monitoring is recommended at the same frequency that fecal coliform monitoring is required in the current permit. 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.

This monitoring is required during May through September. No changes are recommended to the required disinfection season.

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.

The Colfax wastewater treatment facility has previously exceeded the 150 lbs. per month threshold and has an alternative effluent limit (AEL) of 4.0 mg/L in the current permit based on the demonstration that 1.0 mg/L is not practically achievable. However, an AEL was not requested again. Without a demonstration made in accordance with s. NR 217.04(2)(a)1, Wis. Adm. Code, **the TBEL of 1.0 mg/L is recommended.**

TMDL Limits – Phosphorus

The phosphorus mass limit is based on the Total Maximum Daily Load (TMDL) for Tainter Lake/Lake Menomin to address phosphorus water quality impairments in the TMDL Area. The Colfax Wastewater Treatment Facility is subject to an individual allocation of 320 pounds per year.

The following table presents the reported annual phosphorus loadings at Outfall 001 from 2019 to 2023 for the Colfax Wastewater Treatment Facility.

Year	Total Phosphorus lb./year
2019	318
2020	116
2021	326
2022	338
2023	518

Due to the noncontinuous discharge schedule, the TMDL limit is best expressed as a total annual discharge limit. This limit should be set equal to the wasteload allocation of **320 lbs/year**.

The current permit for Colfax contains a TMDL-based limit rather than a limit based on s. NR 217.13. The Tainter Lake TMDL is designed to meet an in-lake total phosphorus goal of 59 µg/L. To meet that water quality goal, the lower portions of the Hay and Red Cedar Rivers will need to be below their stream criteria (75 µg/L and 100 µg/L, respectively). The successful implementation of non-point source controls called for in the TMDL coupled with the available dilution will mean that there will be enough assimilative capacity in the Red Cedar River such that the TMDL-based limit would be protective of local water quality. Therefore, it is recommended that the TMDL-based phosphorus WQBEL continue to be included in the reissued permit in lieu of the s. NR 217.13 based limit.

PART 6 –THERMAL

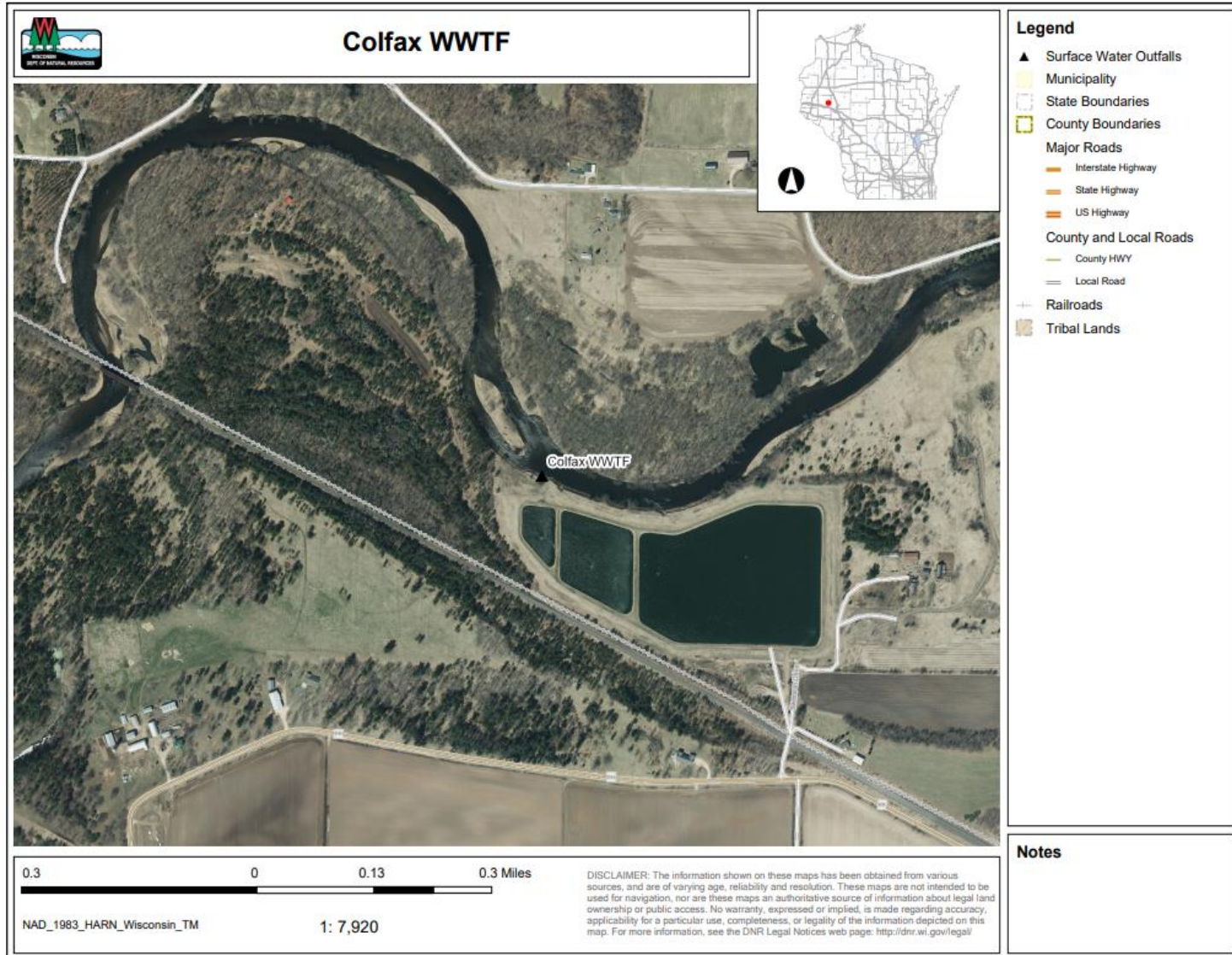
New surface water quality standards for temperature took effect on October 1, 2010. These new regulations are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

Due to the amount of upstream flow available for dilution in the limit calculation ($Q_s:Q_e >20:1$), the lowest calculated limitation is 120° F (s. NR 106.55(6)(a)). For lagoon treatment systems of domestic waste, there is no reasonable potential for the discharge to exceed this limit.

PART 7 – WHOLE EFFLUENT TOXICITY (WET)

WET testing is used to measure, predict, and control the discharge of toxic materials that may be harmful to aquatic life. In WET tests, organisms are exposed to a series of effluent concentrations for a given time and effects are recorded. Decisions below related to the selection of representative data and the need for WET limits were made according to ss. NR 106.08 and 106.09, Wis. Adm. Code. WET monitoring frequency and toxicity reduction evaluation (TRE) recommendations were made using the best professional judgment of staff familiar with the discharge after consideration of the guidance in the *Whole Effluent Toxicity (WET) Program Guidance Document (2022)*.

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. To assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC50 (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09(2)(b), Wis. Adm Code.
- Chronic testing is usually not recommended where the ratio of the 7-Q₁₀ to the effluent flow exceeds 100:1 and acute testing is not typically recommended if the ratio exceeds 1000:1. For the Colfax Wastewater Treatment Facility, that ratio is approximately 1600:1. With this amount of dilution, there is believed to be little potential for acute or chronic toxicity effects in the Red Cedar River associated with the discharge from the Colfax Wastewater Treatment Facility, so the need for acute and chronic WET testing will not be considered further.



DATE: April 4, 2024

TO: Holly Heldstab – WCR/Eau Claire

FROM: Benjamin Hartenbower – WCR/Eau Claire

SUBJECT: Alternate Phosphorus Limitation Approval for the Colfax Wastewater Treatment Facility
WPDES Permit No. WI-0023663

The Colfax Wastewater Treatment Facility discharges to the Red Cedar River. The discharge is located in the Pine Creek and Red Cedar Watershed of the Lower Chippewa River Basin in Dunn County. This discharge is included in the Tainter Lake/Lake Menomin TMDL and has been assigned a Wasteload Allocation (WLA) of 320 lbs/year.

This facility is subject to the s. NR 217.04(1)(a)1, Wis. Adm. Code effluent limit standard and the current permit contains an Alternative Phosphorus Limit (APL) of 4.0 mg/L, in accordance with the provisions of s. NR 217.04(2)(a)1, Wis. Adm. Code. The Village of Colfax has requested continuance of its APL in the reissued permit. With the request, the Village has provided updated information to demonstrate that the 1.0 mg/L total phosphorus effluent standard is not practically achievable at the facility.

The department has determined that continuance of an APL is justified. The discharge levels of phosphorus were evaluated to determine the appropriate APL. The phosphorus discharge concentration over the last five years (June 2018 through November 2023) yields a 4-day P₉₉ of 3.5 mg/L. It is, therefore, recommended that the proposed permit contain an APL of 3.5 mg/L, applied as a monthly average.

Alternative Phosphorus Effluent Limitation Request

Village of Colfax WWTP

Dunn County, WI

COLFA24001 | March 8, 2024



Prepared by:
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Chippewa Falls, WI 54729
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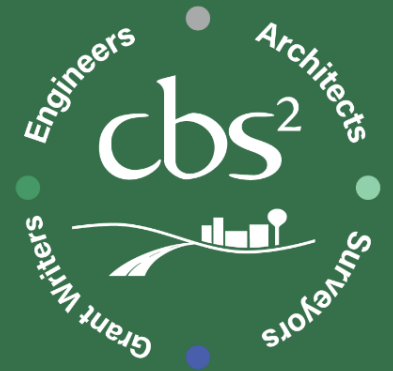


TABLE OF CONTENTS

1	Introduction	1
1.1	Background	1
2	Current Phosphorus Treatment Performance	2
3	Upgrades and Cost-Effective Analysis	3
3.1	Modifications to the Existing Chemical Addition Process	3
3.2	Upgrade Costs	3
3.3	Rate Impacts	4
4	Phosphorus Minimization Plan	4
4.1	Influent phosphorus	4
4.2	Phosphorus Minimization Plan	5
5	Summary	5

TABLE OF FIGURES

FIGURE 1: FLOW CONDITIONS AT THE VILLAGE OF COLFAX WWTP 1
FIGURE 2: TOTAL PHOSPHORUS CONCENTRATIONS FROM THE VILLAGE OF COLFAX WWTP WITH EXISTING AND PROPOSED LIMITATIONS 2

TABLE OF TABLES

TABLE 1: ANNUAL OPERATION AND MAINTENANCE BUDGET INCREASES AS PART OF UPGRADED CHEMICAL ADDITION SYSTEM..... 3
TABLE 2: COST EFFECTIVE ANALYSIS FOR TREATMENT TO 1 MG/L TP 4
TABLE 3: USER RATE DATA FOR THE VILLAGE OF COLFAX..... 4
TABLE 4: PHOSPHORUS OPTIMIZATION SCHEDULE FOR THE VILLAGE OF COLFAX WWTP 5

TABLE OF APPENDICES

APPENDIX A – VILLAGE OF COLFAX WWTP WPDES PERMIT
APPENDIX B – TABLE OF EFFLUENT TOTAL PHOSPHORUS CONCENTRATIONS
APPENDIX C – ESTIMATE OF PROBABLE COSTS
APPENDIX D – 2023 PROPOSED SEWER BUDGET
APPENDIX E – ALTERNATIVE PHOSPHORUS EFFLUENT LIMITATION REQUEST CHECKLIST

1 INTRODUCTION

The Village of Colfax Wastewater Treatment Plant's (WWTP) current WPDES permit will be expiring March 31st, 2024. The Village is pursuing an alternative phosphorus effluent limitation for the next permit cycle due to elevated total phosphorus in the WWTP's effluent during discharge events, and the economic impact of performing upgrades to the existing system to consistently meet more stringent total phosphorus effluent limits. The current WPDES permit is included as **Appendix A**.

1.1 BACKGROUND

The Village of Colfax WWTP is currently rated for an average flow of 0.105 MGD. Wastewater is screened at a separate location before being pumped and transported via force main to the WWTP location. The WWTP consists of three lagoons, two stabilization ponds and a settling pond. The lagoons are mixed using moored floating mixers. Two mixers are included in the first lagoon with a single mixer located in each of the other two lagoons. Aluminum sulfate (alum) solution is gravity fed from a storage tote to the mixer in the final lagoon. Wastewater is mixed with the alum via the mixer to allow alum to react with the dissolved phosphorus. The mixer is stopped, and solids are settled prior to discharge to the Red Cedar River.

Average wastewater flow to the WWTP over the past three years is approximately 0.060 MGD with a max month and peak daily flow rates of 0.071 MGD and 0.141 MGD respectively. The average flow conditions are significantly below the design capacity for the facility and minor seasonal variation can be seen within the data set. Effluent flow rates at the WWTP occur at a higher rate as compared to the influent flows due to the Facility's seasonal discharge events. This information is summarized below in **Figure 1**.

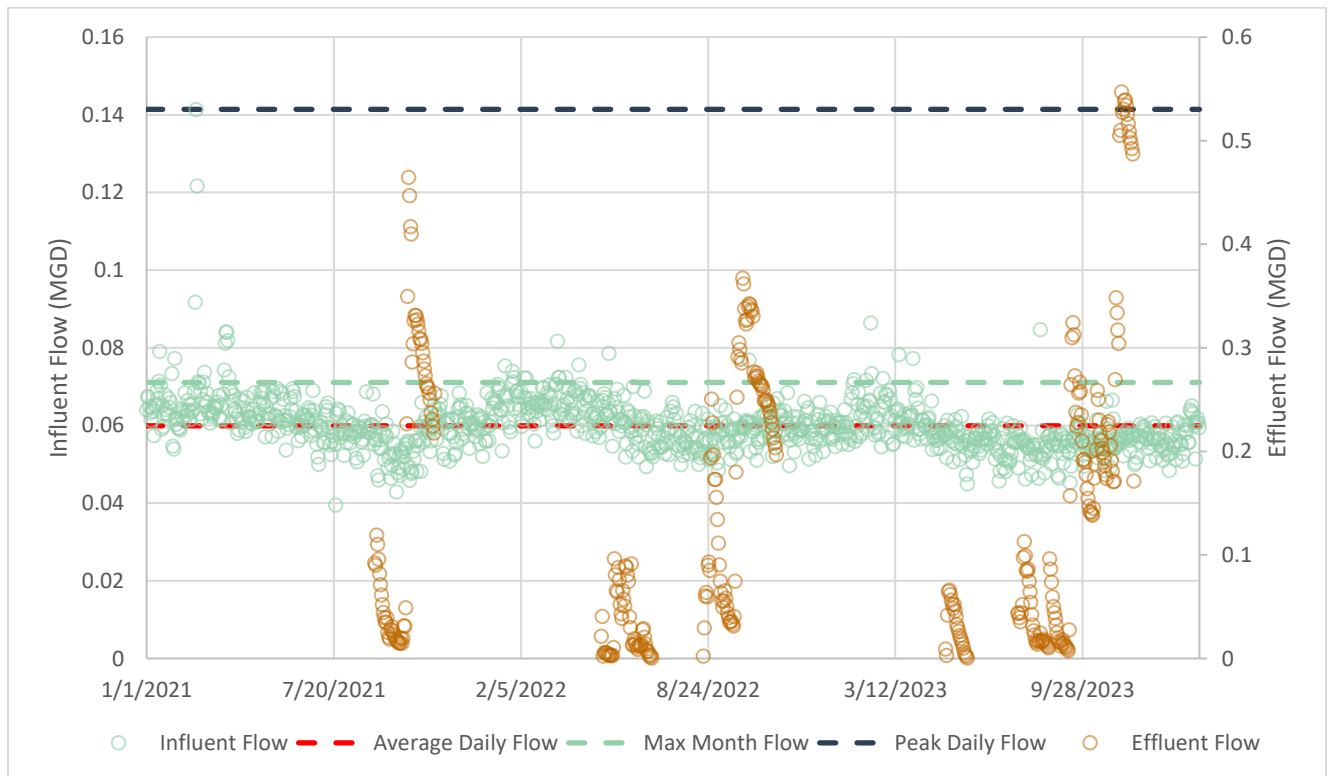


Figure 1: Flow Conditions at the Village of Colfax WWTP

Historically, the WWTP has not had any issues meeting the existing effluent limits included in the Facility's WPDES permit, including the 4 mg/L total phosphorus limit. The Village of Colfax WWTP was not originally designed to treat for total phosphorus. Alum addition to treat for total phosphorus currently consists of a



temporary system, which has been effective at treating phosphorus below 4 mg/L, but this system would be less effective at treating to lower concentrations in its current configuration.

The Wisconsin Department of Natural Resources has indicated the Village of Colfax WWTP would be required to meet a phosphorus limit of 1 mg/L TP for the next permit cycle as a technology-based effluent limit for the facility. Since the current facility configuration is not capable of meeting this limit without making a significant investment into an updated chemical feed system, the Village is pursuing an alternative technology-based phosphorus effluent limitation to be included in the WPDES permit reissuance.

2 CURRENT PHOSPHORUS TREATMENT PERFORMANCE

Overall, the Village of Colfax WWTP is able to successfully meet the existing 4 mg/L alternative technology-based total phosphorus effluent limitation. As seen in **Figure 2**, Total phosphorus concentrations in the WWTP have all remained below the existing limit apart from one sample collected on 9/12/2022. Although effluent concentration at or below 1 mg/L total phosphorus have been tenable at times, effluent concentrations are mostly above the technology-based effluent limitation. A table of the effluent total phosphorus concentrations from the WWTP are included as **Appendix B**.

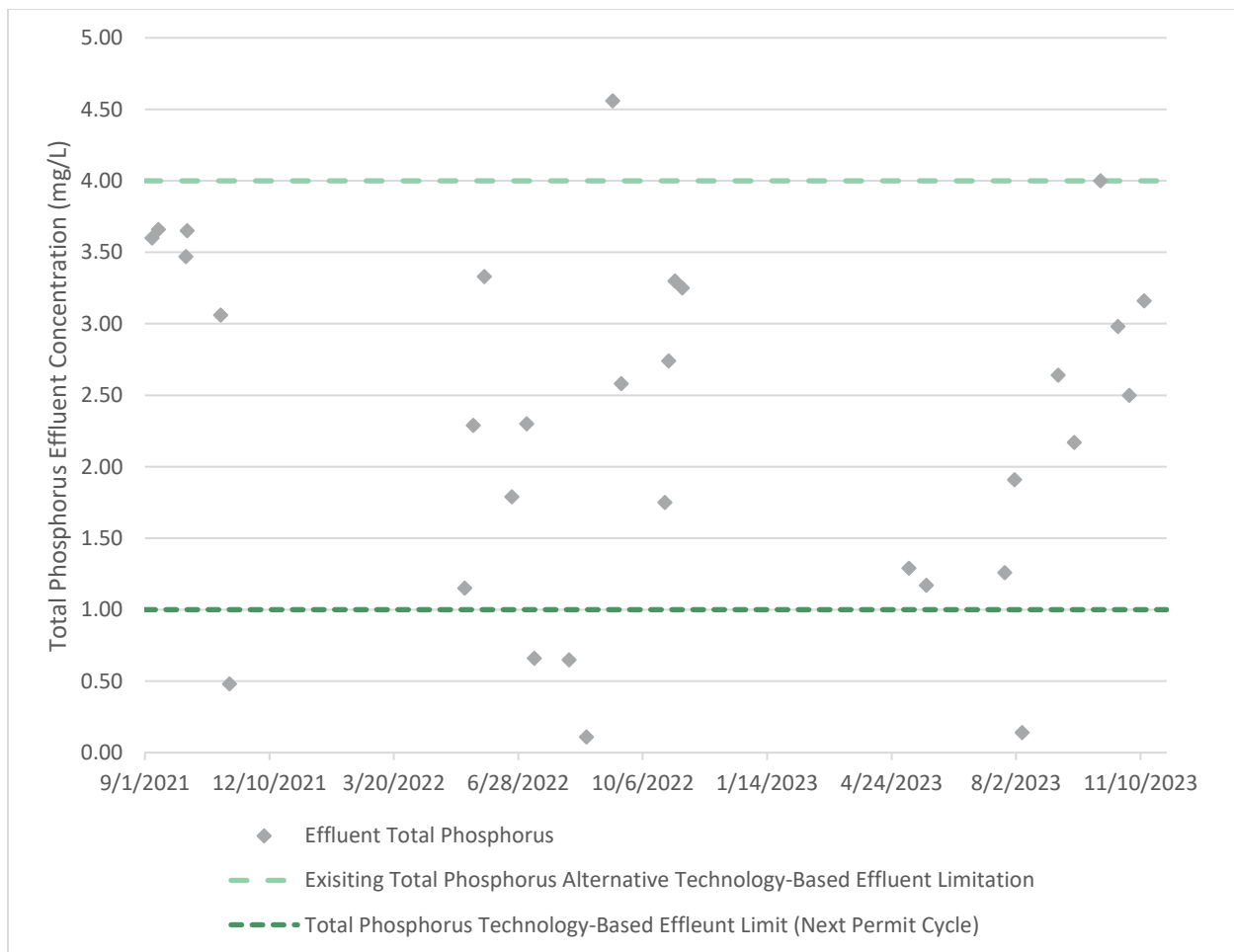


Figure 2: Total Phosphorus Concentrations from the Village of Colfax WWTP with Existing and Proposed Limitations

The Village believes that a continuation of the 4 mg/L total phosphorus effluent limitation is practically achievable with the current WWTP configuration.

3 UPGRADES AND COST-EFFECTIVE ANALYSIS

3.1 MODIFICATIONS TO THE EXISTING CHEMICAL ADDITION PROCESS

Although the current alum addition methodology has been able to effectively maintain total phosphorus concentrations below the permitted limit of 4 mg/L TP with minimal cost impact, additional equipment could be added to the treatment process to allow for more effective treatment of total phosphorus to a concentration of 1 mg/L. New equipment would be required to meet Wisconsin Administrative Code and would be focused on delivering alum to the wastewater more efficiently than the current configuration.

To more reliably treat the elevated total phosphorus concentrations observed in the Colfax WWTP wastewater, additional equipment would be required to upgrade the existing alum addition process. Modification to the existing system would include a new chemical storage building to house chemical/potable water storage tanks, dosing equipment, and safety equipment; a new flash mixing manhole and mixing pump for rapid mixing of the alum solution into the wastewater; new mixer to provide optimal conditions for floc formation; and the associated plumbing to implement these improvements into the existing system.

In the modified configuration, prior to entering the final lagoon, wastewater would be flash mixed in a mixing manhole to optimize contact of alum with the phosphorus in the wastewater. Wastewater would then be transferred to the final lagoon and mixed for floc formation. Following flocculation, mixing would be stopped in the final lagoon to allow flocs to settle prior to discharge.

3.2 UPGRADE COSTS

Total costs of the upgrade the existing alum dosing would include, vertical construction, earthwork, electrical and SCADA, plumbing, process piping, and lagoon modifications. The total cost for upgrades is anticipated to be approximately \$658,000. An estimate of the probable costs can be seen in **Appendix C**.

Operational and Maintenance costs would see an incremental increase as the result of the upgrades. Alum application rates are not anticipated to increase significantly due to the upgrades due to the more efficient dosing method. An increase of one hour per week of maintenance activity is anticipated in addition to the electrical cost of operating the new equipment. The anticipated annual operation and maintenance cost can be seen in **Table 1** below.

Table 1: Annual Operation and Maintenance Budget Increases as Part of Upgraded Chemical Addition System

<u>O&M Item</u>	<u>Annual Cost</u>
Aluminum Sulfate (Already Included in Budget)	-
Maintenance	\$1,560
Power	\$4,910
Total	\$6,470

The Village of Colfax would likely pursue funding through the Wisconsin Department of Natural Resources Clean Water Fund. At the current market rate of 3.9%, annual payments to repay the loan would be approximately \$48,000.

3.3 RATE IMPACTS

In 2023, the Village of Colfax had an expected total revenue of \$211,749, which is largely generated from charging residents for use of the sewer utility. The current user rate for residential service is \$33.79/quarter plus \$5.15 for every 1,000 gallons of water sold to the residence. Upgrading the WWTP to meet an effluent limitation of 1 mg/L TP would require an additional \$54,459 of revenue to be generated. To generate this additional revenue, user sewer rates within the Village would need to be increased by 31.2%. A cost-effective analysis and existing/required user rates are presented in Tables 2 and 3 respectively. Additionally, a Proposed 2023 Sewer Utility Budget is included as **Appendix D**.

Table 2: Cost Effective Analysis for Treatment to 1 mg/L TP

Phosphorus Treatment Capital Cost	\$658,000
CWF Loan Market Rate	3.9%
Term (Years)	20
Annual Payment	\$47,989
Annual O&M Cost Increase	\$6,470
Total Additional Annual Cost	\$54,459
2023 Sewer Utility Annual Income (Commercial/Residential - Fixed)	\$174,323
Current Annual Residential Fixed Rate (\$/User)	\$135.16
Future Annual Residential Fixed Rate (\$/User)	\$177.38
Percent Increase Required	31.2%

Table 3: User Rate Data for the Village of Colfax

Meter Size (Inches)	Type	Number of Users	Frequency	Current Service Charge Per User	Future Service Charge Per User (1 mg/L TP)
5/8 & 3/4	Residential/Commercial/Utility	445	Quarterly	33.79	44.35
1	Commercial/Utility	22	Quarterly	38.61	50.67
1.25	Commercial/Utility	1	Quarterly	43.45	57.02
1.5	Commercial/Utility	1	Quarterly	48.27	63.35
2	Commercial/Utility	7	Quarterly	57.92	76.01
3	Commercial/Utility	4	Quarterly	86.87	114.01
4	Commercial/Utility	4	Quarterly	120.66	158.35

At an anticipated rate increase of 31.2% for the addition of a chemical feed system to treat total phosphorus to a concentration of 1 mg/L

4 PHOSPHORUS MINIMIZATION PLAN

4.1 INFLUENT PHOSPHORUS

Due to the limited need for influent phosphorus data at the WWTP, influent phosphorus samples have not been collected until recently. Total phosphorus samples collected on 2/29/2024 and 3/5/2024 measured concentrations of 9.9 and 4.9 mg/L total phosphorus respectively.

4.2 PHOSPHORUS MINIMIZATION PLAN

In an effort to pursue better phosphorus treatment performance at the Village of Colfax WWTP, several steps will be taken to investigate and minimize influent phosphorus concentrations and optimize the performance of the existing alum dosing system to treat total phosphorus. A summary of these actions are summarized below in **Table 4**.

Table 4: Phosphorus Optimization Schedule for the Village of Colfax WWTP

Action	Target Date
Sample Influent Wastewater for Total Phosphorus Monthly	Monthly Through 2024
Investigate Influent Phosphorus Sources by Collecting Total Phosphorus Samples at Key Locations within the Collection System.	8/30/2024
Perform Bench-Scale Testing for Phosphorus Removal with Various Chemicals/Doses	8/30/2024
Evaluate Mixer Settings and Optimize Mixing/Flocculation	9/27/2024

5 SUMMARY

The Wisconsin Department of Natural Resources has indicated that a new technology-based total phosphorus effluent limitation of 1 mg/L will be included in the Village of Colfax WWTP's WPDES permit reissuance. To meet a 1 mg/L total phosphorus limitation, a significant investment into the WWTP's chemical addition would need to be made. This investment would result in a user rate increase of 31.2% for the residential users. Due to this significant impact on user rates, the Village is proposing an alternative technology-based effluent limitation of 4 mg/L. Over the next year, the Village will implement a phosphorus minimization plan to discover and minimize phosphorus sources within the Village and optimize the performance of the existing alum addition system. A Alternative Phosphorus Effluent Limitation Request Checklist is included with this report at **Appendix E**.

APPENDIX A

VILLAGE OF COLFAX WWTP WPDES PERMIT



WPDES PERMIT

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
**PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE
ELIMINATION SYSTEM**

Colfax Wastewater Treatment Facility

is permitted, under the authority of Chapter 283, Wisconsin Statutes, to discharge from a facility
located at
South 170, Colfax, WI
to

**the Red Cedar River in the Pine Creek and Red Cedar River Watershed
of the Lower Chippewa River Basin in Dunn County**

in accordance with the effluent limitations, monitoring requirements and other conditions set
forth in this permit.

The permittee shall not discharge after the date of expiration. If the permittee wishes to continue to discharge after this expiration date an application shall be filed for reissuance of this permit, according to Chapter NR 200, Wis. Adm. Code, at least 180 days prior to the expiration date given below.

State of Wisconsin Department of Natural Resources
For the Secretary

By


Lacey Hillman
Wastewater Field Supervisor

May 20, 2019
Date Permit Signed/Issued

PERMIT TERM: EFFECTIVE DATE - June 01, 2019

EXPIRATION DATE - March 31, 2024

TABLE OF CONTENTS

1 INFLUENT REQUIREMENTS	1
1.1 SAMPLING POINT(S)	1
1.2 MONITORING REQUIREMENTS	1
1.2.1 <i>Sampling Point 701 - INFLUENT TO PLANT</i>	1
2 SURFACE WATER REQUIREMENTS	2
2.1 SAMPLING POINT(S)	2
2.2 MONITORING REQUIREMENTS AND EFFLUENT LIMITATIONS	2
2.2.1 <i>Sampling Point (Outfall) 001 - EFFLUENT TO RED CEDAR RIVER</i>	2
3 LAND APPLICATION REQUIREMENTS	4
3.1 SAMPLING POINT(S)	4
3.2 MONITORING REQUIREMENTS AND LIMITATIONS	4
3.2.1 <i>Sampling Point (Outfall) 002 - STABILIZATION POND SLUDGE</i>	4
4 SCHEDULES	6
4.1 AMMONIA COMPLIANCE SCHEDULE	6
5 STANDARD REQUIREMENTS	7
5.1 REPORTING AND MONITORING REQUIREMENTS	7
5.1.1 <i>Monitoring Results</i>	7
5.1.2 <i>Sampling and Testing Procedures</i>	7
5.1.3 <i>Recording of Results</i>	7
5.1.4 <i>Reporting of Monitoring Results</i>	7
5.1.5 <i>Compliance Maintenance Annual Reports</i>	8
5.1.6 <i>Records Retention</i>	8
5.1.7 <i>Other Information</i>	9
5.1.8 <i>Reporting Requirements – Alterations or Additions</i>	9
5.2 SYSTEM OPERATING REQUIREMENTS	9
5.2.1 <i>Noncompliance Reporting</i>	9
5.2.2 <i>Flow Meters</i>	10
5.2.3 <i>Raw Grit and Screenings</i>	10
5.2.4 <i>Sludge Management</i>	10
5.2.5 <i>Prohibited Wastes</i>	10
5.2.6 <i>Bypass</i>	10
5.2.7 <i>Scheduled Bypass</i>	10
5.2.8 <i>Controlled Diversions</i>	11
5.2.9 <i>Proper Operation and Maintenance</i>	11
5.2.10 <i>Operator Certification</i>	11
5.3 SEWAGE COLLECTION SYSTEMS	11
5.3.1 <i>Sanitary Sewage Overflows and Sewage Treatment Facility Overflows</i>	11
5.3.2 <i>Capacity, Management, Operation and Maintenance (CMOM) Program</i>	13
5.3.3 <i>Sewer Cleaning Debris and Materials</i>	13
5.4 SURFACE WATER REQUIREMENTS	14
5.4.1 <i>Permittee-Determined Limit of Quantitation Incorporated into this Permit</i>	14
5.4.2 <i>Appropriate Formulas for Effluent Calculations</i>	14
5.4.3 <i>Effluent Temperature Requirements</i>	14
5.4.4 <i>Fill and Draw Systems</i>	15
5.4.5 <i>Visible Foam or Floating Solids</i>	15
5.4.6 <i>Surface Water Uses and Criteria</i>	15
5.4.7 <i>Percent Removal</i>	15
5.5 LAND APPLICATION REQUIREMENTS	15
5.5.1 <i>Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations</i>	15

<i>5.5.2 General Sludge Management Information</i>	<i>15</i>
<i>5.5.3 Sludge Samples</i>	<i>15</i>
<i>5.5.4 Land Application Characteristic Report</i>	<i>16</i>
<i>5.5.5 Calculation of Water Extractable Phosphorus</i>	<i>16</i>
<i>5.5.6 Monitoring and Calculating PCB Concentrations in Sludge</i>	<i>16</i>
<i>5.5.7 Annual Land Application Report</i>	<i>17</i>
<i>5.5.8 Other Methods of Disposal or Distribution Report</i>	<i>17</i>
<i>5.5.9 Approval to Land Apply</i>	<i>17</i>
<i>5.5.10 Soil Analysis Requirements</i>	<i>17</i>
<i>5.5.11 Land Application Site Evaluation</i>	<i>17</i>
6 SUMMARY OF REPORTS DUE	19

1 Influent Requirements

1.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)
701	Representative influent samples shall be collected in the wet well prior to the fine screen.

1.2 Monitoring Requirements

The permittee shall comply with the following monitoring requirements.

1.2.1 Sampling Point 701 - INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Continuous	Continuous	
BOD ₅ , Total		mg/L	Weekly	24-Hr Comp	
Suspended Solids, Total		mg/L	Weekly	24-Hr Comp	

2 Surface Water Requirements

2.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)
001	Representative effluent samples shall be collected prior to discharge to the Red Cedar River. Parameters with sampling frequencies of 2/Month shall be sampled a minimum of one week apart within the month.

2.2 Monitoring Requirements and Effluent Limitations

The permittee shall comply with the following monitoring requirements and limitations.

2.2.1 Sampling Point (Outfall) 001 - EFFLUENT TO RED CEDAR RIVER

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Continuous	Continuous	
BOD ₅ , Total	Monthly Avg	30 mg/L	2/Month	Grab	
BOD ₅ , Total	Weekly Avg	45 mg/L	2/Month	Grab	
Suspended Solids, Total	Monthly Avg	30 mg/L	2/Month	Grab	
Suspended Solids, Total	Weekly Avg	45 mg/L	2/Month	Grab	
pH Field	Daily Max	9.0 su	2/Month	Grab	
pH Field	Daily Min	6.0 su	2/Month	Grab	
Phosphorus, Total	Monthly Avg	4.0 mg/L	2/Month	Grab	See phosphorus subsections below
Phosphorus, Total	Annual Total	320 lbs/yr	Annual	Calculated	
Nitrogen, Ammonia (NH ₃ -N) Total	Daily Max - Variable	mg/L	2/Month	Grab	Monitoring required at permit effective date. Limits effective 04/01/2022. See ammonia subsection below & associated compliance schedule.
Nitrogen, Ammonia Variable Limit		mg/L	2/Month	Grab	
Fecal Coliform		#/100 ml	2/Month	Grab	Monitoring required May-Sept

2.2.1.1 Annual Average Design Flow

The annual average design flow of the permittee's wastewater treatment facility is 0.105 million gallons per day (MGD).

2.2.1.2 Phosphorus Total Maximum Daily Load (TMDL) Limitations

The Tainter Lake TMDL Waste Load Allocation (WLA) for total phosphorus was approved by the U.S. Environmental Protection Agency on September 14, 2012. The approved TMDL WLA limits for total phosphorus are 320 lbs/yr annual total.

2.2.1.3 Cumulative Total Annual Discharge for Phosphorus

Report the cumulative total annual discharge of phosphorus for the calendar year on the monthly discharge monitoring report form in lbs/year. First calculate the “Monthly Average Concentration” in mg/L, then calculate the “Total Monthly Discharge” in lbs/month for the month. Report the sum of the Total Monthly Discharges for the calendar year on the monthly discharge monitoring report form. See formulas below.

Monthly Average Concentration (mg/L) = the sum of all daily results for that week/month/six-month/year, divided by the number of results during that time period.

Total Monthly Discharge (lbs/month): = monthly average concentration (mg/L) x total flow for the month (MG/month) x 8.34.

Total Annual Discharge (lbs/year): = sum of total monthly discharges for the calendar year.

2.2.1.4 Variable Daily Maximum Ammonia Limits

Monitoring for ammonia is required at the permit effective date. Daily maximum limits that vary with effluent pH become effective 04/01/2022 per the associated compliance schedule.

When possible total ammonia (NH₃-N) sampling shall occur on the same day pH levels are monitored. Report the applicable variable limit on the Discharge Monitoring Report (DMR) in the Ammonia Variable Limit column. Note that pH values should be rounded to the 0.1 s.u. before using the table below. For example, if the pH field reading is 8.04, the value of 8.0 should be used. If the pH field reading is 8.06, the value of 8.1 should be used.

Effluent pH s.u.	NH ₃ -N Limit mg/L	Effluent pH s.u.	NH ₃ -N Limit mg/L	Effluent pH s.u.	NH ₃ -N Limit mg/L
6.0 < pH ≤ 6.1	108	7.0 < pH ≤ 7.1	66	8.0 < pH ≤ 8.1	14
6.1 < pH ≤ 6.2	106	7.1 < pH ≤ 7.2	59	8.1 < pH ≤ 8.2	11
6.2 < pH ≤ 6.3	104	7.2 < pH ≤ 7.3	52	8.2 < pH ≤ 8.3	9.4
6.3 < pH ≤ 6.4	101	7.3 < pH ≤ 7.4	46	8.3 < pH ≤ 8.4	7.8
6.4 < pH ≤ 6.5	98	7.4 < pH ≤ 7.5	40	8.4 < pH ≤ 8.5	6.4
6.5 < pH ≤ 6.6	94	7.5 < pH ≤ 7.6	34	8.5 < pH ≤ 8.6	5.3
6.6 < pH ≤ 6.7	89	7.6 < pH ≤ 7.7	29	8.6 < pH ≤ 8.7	4.4
6.7 < pH ≤ 6.8	84	7.7 < pH ≤ 7.8	24	8.7 < pH ≤ 8.8	3.7
6.8 < pH ≤ 6.9	78	7.8 < pH ≤ 7.9	20	8.8 < pH ≤ 8.9	3.1
6.9 < pH ≤ 7.0	72	7.9 < pH ≤ 8.0	17	8.9 < pH ≤ 9.0	2.6

3 Land Application Requirements

3.1 Sampling Point(s)

The discharge(s) shall be limited to land application of the waste type(s) designated for the listed sampling point(s) on Department approved land spreading sites or by hauling to another facility.

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)
002	Representative sludge samples shall be collected once in 2020 and monitored for List 1 and PCBs.

3.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

3.2.1 Sampling Point (Outfall) 002 - STABILIZATION POND SLUDGE

Sludge Management: The permittee shall contact the Department prior to recycling/disposing of any sludge. The permittee shall monitor for the following parameters during the second year of the permit, (2020). Analysis shall be submitted by **January 31, 2021**.

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Once	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Once	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Once	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Once	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Once	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Once	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Once	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Once	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Once	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Once	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Once	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Once	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Once	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Once	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Once	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Once	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	

3.2.1.1 Sludge Analysis for PCBs

The permittee shall analyze the sludge for Total PCBs one time during **2020**. The results shall be reported as "PCB Total Dry Wt". Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code and the conditions specified in Standard Requirements of this permit. PCB results shall be submitted by January 31, following the specified year of analysis.

4 Schedules

4.1 Ammonia Compliance Schedule

This compliance schedule requires the permittee to achieve compliance by the specified date

Required Action	Due Date
Report on Effluent Discharges: Submit a report on effluent discharges of ammonia with conclusions regarding compliance.	03/31/2020
Action Plan: Submit an action plan for complying with the effluent limitation. If construction is required, include plans and specifications with the submittal.	12/31/2020
Initiate Actions: Initiate actions identified in the plan.	04/01/2021
Complete Actions: Complete actions necessary to achieve compliance with the effluent limitations.	04/01/2022

5 Standard Requirements

NR 205, Wisconsin Administrative Code: The conditions in ss. NR 205.07(1) and NR 205.07(2), Wis. Adm. Code, are included by reference in this permit. The permittee shall comply with all of these requirements. Some of these requirements are outlined in the Standard Requirements section of this permit. Requirements not specifically outlined in the Standard Requirement section of this permit can be found in ss. NR 205.07(1) and NR 205.07(2).

5.1 Reporting and Monitoring Requirements

5.1.1 Monitoring Results

Monitoring results obtained during the previous month shall be summarized and reported on a Department Wastewater Discharge Monitoring Report. The report may require reporting of any or all of the information specified below under 'Recording of Results'. This report is to be returned to the Department no later than the date indicated on the form. A copy of the Wastewater Discharge Monitoring Report Form or an electronic file of the report shall be retained by the permittee.

Monitoring results shall be reported on an electronic discharge monitoring report (eDMR). The eDMR shall be certified electronically by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

If the permittee monitors any pollutant more frequently than required by this permit, the results of such monitoring shall be included on the Wastewater Discharge Monitoring Report.

The permittee shall comply with all limits for each parameter regardless of monitoring frequency. For example, monthly, weekly, and/or daily limits shall be met even with monthly monitoring. The permittee may monitor more frequently than required for any parameter.

5.1.2 Sampling and Testing Procedures

Sampling and laboratory testing procedures shall be performed in accordance with Chapters NR 218 and NR 219, Wis. Adm. Code and shall be performed by a laboratory certified or registered in accordance with the requirements of ch. NR 149, Wis. Adm. Code. Groundwater sample collection and analysis shall be performed in accordance with ch. NR 140, Wis. Adm. Code. The analytical methodologies used shall enable the laboratory to quantitate all substances for which monitoring is required at levels below the effluent limitation. If the required level cannot be met by any of the methods available in NR 219, Wis. Adm. Code, then the method with the lowest limit of detection shall be selected. Additional test procedures may be specified in this permit.

5.1.3 Recording of Results

The permittee shall maintain records which provide the following information for each effluent measurement or sample taken:

- the date, exact place, method and time of sampling or measurements;
- the individual who performed the sampling or measurements;
- the date the analysis was performed;
- the individual who performed the analysis;
- the analytical techniques or methods used; and
- the results of the analysis.

5.1.4 Reporting of Monitoring Results

The permittee shall use the following conventions when reporting effluent monitoring results:

- Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 0.1 mg/L, report the pollutant concentration as < 0.1 mg/L.
- Pollutant concentrations equal to or greater than the limit of detection, but less than the limit of quantitation, shall be reported and the limit of quantitation shall be specified.
- For purposes of calculating NR 101 fees, the 2 mg/l lower reporting limits for BOD₅ and Total Suspended Solids shall be considered to be limits of quantitation
- For the purposes of reporting a calculated result, average or a mass discharge value, the permittee may substitute a 0 (zero) for any pollutant concentration that is less than the limit of detection. However, if the effluent limitation is less than the limit of detection, the department may substitute a value other than zero for results less than the limit of detection, after considering the number of monitoring results that are greater than the limit of detection and if warranted when applying appropriate statistical techniques.

5.1.5 Compliance Maintenance Annual Reports

Compliance Maintenance Annual Reports (CMAR) shall be completed using information obtained over each calendar year regarding the wastewater conveyance and treatment system. The CMAR shall be submitted and certified by the permittee in accordance with ch. NR 208, Wis. Adm. Code, by June 30, each year on an electronic report form provided by the Department.

In the case of a publicly owned treatment works, a resolution shall be passed by the governing body and submitted as part of the CMAR, verifying its review of the report and providing responses as required. Private owners of wastewater treatment works are not required to pass a resolution; but they must provide an Owner Statement and responses as required, as part of the CMAR submittal.

The CMAR shall be certified electronically by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The certification verifies that the electronic report is true, accurate and complete.

5.1.6 Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings or electronic data records for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit for a period of at least 3 years from the date of the sample, measurement, report or application. All pertinent sludge information, including permit application information and other documents specified in this permit or s. NR 204.06(9), Wis. Adm. Code shall be retained for a minimum of 5 years.

5.1.7 Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or correct information to the Department.

5.1.8 Reporting Requirements – Alterations or Additions

The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:

- The alteration or addition to the permitted facility may meet one of the criteria for determining whether a facility is a new source.
- The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification requirement applies to pollutants which are not subject to effluent limitations in the existing permit.
- The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use of disposal sites not reported during the permit application process nor reported pursuant to an approved land application plan. Additional sites may not be used for the land application of sludge until department approval is received.

5.2 System Operating Requirements

5.2.1 Noncompliance Reporting

Sanitary sewer overflows and sewage treatment facility overflows shall be reported according to the 'Sanitary Sewer Overflows and Sewage Treatment Facility Overflows' section of this permit.

The permittee shall report the following types of noncompliance by a telephone call to the Department's regional office within 24 hours after becoming aware of the noncompliance:

- any noncompliance which may endanger health or the environment;
- any violation of an effluent limitation resulting from a bypass;
- any violation of an effluent limitation resulting from an upset; and
- any violation of a maximum discharge limitation for any of the pollutants listed by the Department in the permit, either for effluent or sludge.

A written report describing the noncompliance shall also be submitted to the Department's regional office within 5 days after the permittee becomes aware of the noncompliance. On a case-by-case basis, the Department may waive the requirement for submittal of a written report within 5 days and instruct the permittee to submit the written report with the next regularly scheduled monitoring report. In either case, the written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.

A scheduled bypass approved by the Department under the 'Scheduled Bypass' section of this permit shall not be subject to the reporting required under this section.

NOTE: Section 292.11(2)(a), Wisconsin Statutes, requires any person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance to notify the Department of Natural Resources **immediately** of any discharge not authorized by the permit. **The discharge of a hazardous substance that is not authorized by this permit or that violates this permit may be a hazardous substance spill. To report a hazardous substance spill, call DNR's 24-hour HOTLINE at 1-800-943-0003.**

5.2.2 Flow Meters

Flow meters shall be calibrated annually, as per s. NR 218.06, Wis. Adm. Code.

5.2.3 Raw Grit and Screenings

All raw grit and screenings shall be disposed of at a properly licensed solid waste facility or picked up by a licensed waste hauler. If the facility or hauler are located in Wisconsin, then they shall be licensed under chs. NR 500-555, Wis. Adm. Code.

5.2.4 Sludge Management

All sludge management activities shall be conducted in compliance with ch. NR 204 "Domestic Sewage Sludge Management", Wis. Adm. Code.

5.2.5 Prohibited Wastes

Under no circumstances may the introduction of wastes prohibited by s. NR 211.10, Wis. Adm. Code, be allowed into the waste treatment system. Prohibited wastes include those:

- which create a fire or explosion hazard in the treatment work;
- which will cause corrosive structural damage to the treatment work;
- solid or viscous substances in amounts which cause obstructions to the flow in sewers or interference with the proper operation of the treatment work;
- wastewaters at a flow rate or pollutant loading which are excessive over relatively short time periods so as to cause a loss of treatment efficiency; and
- changes in discharge volume or composition from contributing industries which overload the treatment works or cause a loss of treatment efficiency.

5.2.6 Bypass

This condition applies only to bypassing at a sewage treatment facility that is not a scheduled bypass, approved blending as a specific condition of this permit, a sewage treatment facility overflow or a controlled diversion as provided in the sections titled 'Scheduled Bypass', 'Blending' (if approved), 'SSO's and Sewage Treatment Facility Overflows' and 'Controlled Diversions' of this permit. Any other bypass at the sewage treatment facility is prohibited and the Department may take enforcement action against a permittee for such occurrences under s. 283.89, Wis. Stats. The Department may approve a bypass if the permittee demonstrates all the following conditions apply:

- The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance. When evaluating feasibility of alternatives, the department may consider factors such as technical achievability, costs and affordability of implementation and risks to public health, the environment and, where the permittee is a municipality, the welfare of the community served; and
- The bypass was reported in accordance with the Noncompliance Reporting section of this permit.

5.2.7 Scheduled Bypass

Whenever the permittee anticipates the need to bypass for purposes of efficient operations and maintenance and the permittee may not meet the conditions for controlled diversions in the 'Controlled Diversions' section of this permit,

the permittee shall obtain prior written approval from the Department for the scheduled bypass. A permittee's written request for Department approval of a scheduled bypass shall demonstrate that the conditions for bypassing specified in the above section titled 'Bypass' are met and include the proposed date and reason for the bypass, estimated volume and duration of the bypass, alternatives to bypassing and measures to mitigate environmental harm caused by the bypass. The department may require the permittee to provide public notification for a scheduled bypass if it is determined there is significant public interest in the proposed action and may recommend mitigation measures to minimize the impact of such bypass.

5.2.8 Controlled Diversions

Controlled diversions are allowed only when necessary for essential maintenance to assure efficient operation. Sewage treatment facilities that have multiple treatment units to treat variable or seasonal loading conditions may shut down redundant treatment units when necessary for efficient operation. The following requirements shall be met during controlled diversions:

- Effluent from the sewage treatment facility shall meet the effluent limitations established in the permit. Wastewater that is diverted around a treatment unit or treatment process during a controlled diversion shall be recombined with wastewater that is not diverted prior to the effluent sampling location and prior to effluent discharge;
- A controlled diversion does not include blending as defined in s. NR 210.03(2e), Wis. Adm. Code, and as may only be approved under s. NR 210.12. A controlled diversion may not occur during periods of excessive flow or other abnormal wastewater characteristics;
- A controlled diversion may not result in a wastewater treatment facility overflow; and
- All instances of controlled diversions shall be documented in sewage treatment facility records and such records shall be available to the department on request.

5.2.9 Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training as required in ch. NR 114, Wis. Adm. Code, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

5.2.10 Operator Certification

The wastewater treatment facility shall be under the direct supervision of a state certified operator. In accordance with s. NR 114.53, Wis. Adm. Code, every WPDES permitted treatment plant shall have a designated operator-in-charge holding a current and valid certificate. The designated operator-in-charge shall be certified at the level and in all subclasses of the treatment plant, except laboratory. Treatment plant owners shall notify the department of any changes in the operator-in-charge within 30 days. Note that s. NR 114.52(22), Wis. Adm. Code, lists types of facilities that are excluded from operator certification requirements (i.e. private sewage systems, pretreatment facilities discharging to public sewers, industrial wastewater treatment that consists solely of land disposal, agricultural digesters and concentrated aquatic production facilities with no biological treatment).

5.3 Sewage Collection Systems

5.3.1 Sanitary Sewage Overflows and Sewage Treatment Facility Overflows

5.3.1.1 Overflows Prohibited

Any overflow or discharge of wastewater from the sewage collection system or at the sewage treatment facility, other than from permitted outfalls, is prohibited. The permittee shall provide information on whether any of the following conditions existed when an overflow occurred:

- The sanitary sewer overflow or sewage treatment facility overflow was unavoidable to prevent loss of life, personal injury or severe property damage;
- There were no feasible alternatives to the sanitary sewer overflow or sewage treatment facility overflow such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or preventative maintenance activities;
- The sanitary sewer overflow or the sewage treatment facility overflow was caused by unusual or severe weather related conditions such as large or successive precipitation events, snowmelt, saturated soil conditions, or severe weather occurring in the area served by the sewage collection system or sewage treatment facility; and
- The sanitary sewer overflow or the sewage treatment facility overflow was unintentional, temporary, and caused by an accident or other factors beyond the reasonable control of the permittee.

5.3.1.2 Permittee Response to Overflows

Whenever a sanitary sewer overflow or sewage treatment facility overflow occurs, the permittee shall take all feasible steps to control or limit the volume of untreated or partially treated wastewater discharged, and terminate the discharge as soon as practicable. Remedial actions, including those in NR 210.21 (3), Wis. Adm. Code, shall be implemented consistent with an emergency response plan developed under the CMOM program.

5.3.1.3 Permittee Reporting

Permittees shall report all sanitary sewer overflows and sewage treatment overflows as follows:

- The permittee shall notify the department by telephone, fax or email as soon as practicable, but no later than 24 hours from the time the permittee becomes aware of the overflow;
- The permittee shall, no later than five days from the time the permittee becomes aware of the overflow, provide to the department the information identified in this paragraph using department form number 3400-184. If an overflow lasts for more than five days, an initial report shall be submitted within 5 days as required in this paragraph and an updated report submitted following cessation of the overflow. At a minimum, the following information shall be included in the report:
 - The date and location of the overflow;
 - The surface water to which the discharge occurred, if any;
 - The duration of the overflow and an estimate of the volume of the overflow;
 - A description of the sewer system or treatment facility component from which the discharge occurred such as manhole, lift station, constructed overflow pipe, or crack or other opening in a pipe;
 - The estimated date and time when the overflow began and stopped or will be stopped;
 - The cause or suspected cause of the overflow including, if appropriate, precipitation, runoff conditions, areas of flooding, soil moisture and other relevant information;
 - Steps taken or planned to reduce, eliminate and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
 - A description of the actual or potential for human exposure and contact with the wastewater from the overflow;
 - Steps taken or planned to mitigate the impacts of the overflow and a schedule of major milestones for those steps;
 - To the extent known at the time of reporting, the number and location of building backups caused by excessive flow or other hydraulic constraints in the sewage collection system that occurred

concurrently with the sanitary sewer overflow and that were within the same area of the sewage collection system as the sanitary sewer overflow; and

• The reason the overflow occurred or explanation of other contributing circumstances that resulted in the overflow event. This includes any information available including whether the overflow was unavoidable to prevent loss of life, personal injury, or severe property damage and whether there were feasible alternatives to the overflow.

NOTE: A copy of form 3400-184 for reporting sanitary sewer overflows and sewage treatment facility overflows may be obtained from the department or accessed on the department's web site at <http://dnr.wi.gov/topic/wastewater/SSOreport.html>. As indicated on the form, additional information may be submitted to supplement the information required by the form.

- The permittee shall identify each specific location and each day on which a sanitary sewer overflow or sewage treatment facility overflow occurs as a discrete sanitary sewer overflow or sewage treatment facility overflow occurrence. An occurrence may be more than one day if the circumstances causing the sanitary sewer overflow or sewage treatment facility overflow results in a discharge duration of greater than 24 hours. If there is a stop and restart of the overflow at the same location within 24 hours and the overflow is caused by the same circumstance, it may be reported as one occurrence. Sanitary sewer overflow occurrences at a specific location that are separated by more than 24 hours shall be reported as separate occurrences; and
- A permittee that is required to submit wastewater discharge monitoring reports under NR 205.07 (1) (r) shall also report all sanitary sewer overflows and sewage treatment facility overflows on that report.

5.3.1.4 Public Notification

The permittee shall notify the public of any sanitary sewer and sewage treatment facility overflows consistent with its emergency response plan required under the CMOM (Capacity, Management, Operation and Maintenance) section of this permit and s. NR 210.23 (4) (f), Wis. Adm. Code. Such public notification shall occur promptly following any overflow event using the most effective and efficient communications available in the community. At minimum, a daily newspaper of general circulation in the county(s) and municipality whose waters may be affected by the overflow shall be notified by written or electronic communication.

5.3.2 Capacity, Management, Operation and Maintenance (CMOM) Program

- The permittee shall have written documentation of the Capacity, Management, Operation and Maintenance (CMOM) program components in accordance with s. NR 210.23(4), Wis. Adm. Code. Such documentation shall be available for Department review upon request. The Department may request that the permittee provide this documentation or prepare a summary of the permittee's CMOM program at the time of application for reissuance of the WPDES permit.
- The permittee shall implement a CMOM program in accordance with s. NR 210.23, Wis. Adm. Code.
- The permittee shall at least annually conduct a self-audit of activities conducted under the permittee's CMOM program to ensure CMOM components are being implemented as necessary to meet the general standards of s. NR 210.23(3), Wis. Adm. Code.

5.3.3 Sewer Cleaning Debris and Materials

All debris and material removed from cleaning sanitary sewers shall be managed to prevent nuisances, run-off, ground infiltration or prohibited discharges.

- Debris and solid waste shall be dewatered, dried and then disposed of at a licensed solid waste facility.
- Liquid waste from the cleaning and dewatering operations shall be collected and disposed of at a permitted wastewater treatment facility.

- Combination waste including liquid waste along with debris and solid waste may be disposed of at a licensed solid waste facility or wastewater treatment facility willing to accept the waste.

5.4 Surface Water Requirements

5.4.1 Permittee-Determined Limit of Quantitation Incorporated into this Permit

For pollutants with water quality-based effluent limits below the Limit of Quantitation (LOQ) in this permit, the LOQ calculated by the permittee and reported on the Discharge Monitoring Reports (DMRs) is incorporated by reference into this permit. The LOQ shall be reported on the DMRs, shall be the lowest quantifiable level practicable, and shall be no greater than the minimum level (ML) specified in or approved under 40 CFR Part 136 for the pollutant at the time this permit was issued, unless this permit specifies a higher LOQ.

5.4.2 Appropriate Formulas for Effluent Calculations

The permittee shall use the following formulas for calculating effluent results to determine compliance with average concentration limits and mass limits and total load limits:

Weekly/Monthly/Six-Month/Annual Average Concentration = the sum of all daily results for that week/month/six-month/year, divided by the number of results during that time period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Weekly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the week.

Monthly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the month.

Six-Month Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the six-month period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Annual Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the entire year.

Total Monthly Discharge: = monthly average concentration (mg/L) x total flow for the month (MG/month) x 8.34.

Total Annual Discharge: = sum of total monthly discharges for the calendar year.

12-Month Rolling Sum of Total Monthly Discharge: = the sum of the most recent 12 consecutive months of Total Monthly Discharges.

5.4.3 Effluent Temperature Requirements

Weekly Average Temperature – The permittee shall use the following formula for calculating effluent results to determine compliance with the weekly average temperature limit (as applicable): Weekly Average Temperature = the sum of all daily maximum results for that week divided by the number of daily maximum results during that time period.

Cold Shock Standard – Water temperatures of the discharge shall be controlled in a manner as to protect fish and aquatic life uses from the deleterious effects of cold shock. ‘Cold Shock’ means exposure of aquatic organisms to a rapid decrease in temperature and a sustained exposure to low temperature that induces abnormal behavior or physiological performance and may lead to death.

Rate of Temperature Change Standard – Temperature of a water of the state or discharge to a water of the state may not be artificially raised or lowered at such a rate that it causes detrimental health or reproductive effects to fish or aquatic life of the water of the state.

5.4.4 Fill and Draw Systems

The permittee shall notify the Department at least 7 days prior to an anticipated discharge from a fill and draw system. The pond contents shall be sampled prior to any discharge to assure that adequate stabilization has taken place.

5.4.5 Visible Foam or Floating Solids

There shall be no discharge of floating solids or visible foam in other than trace amounts.

5.4.6 Surface Water Uses and Criteria

In accordance with NR 102.04, Wis. Adm. Code, surface water uses and criteria are established to govern water management decisions. Practices attributable to municipal, industrial, commercial, domestic, agricultural, land development or other activities shall be controlled so that all surface waters including the mixing zone meet the following conditions at all times and under all flow and water level conditions:

- a) Substances that will cause objectionable deposits on the shore or in the bed of a body of water, shall not be present in such amounts as to interfere with public rights in waters of the state.
- b) Floating or submerged debris, oil, scum or other material shall not be present in such amounts as to interfere with public rights in waters of the state.
- c) Materials producing color, odor, taste or unsightliness shall not be present in such amounts as to interfere with public rights in waters of the state.
- d) Substances in concentrations or in combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts which are acutely harmful to animal, plant or aquatic life.

5.4.7 Percent Removal

During any 30 consecutive days, the average effluent concentrations of BOD₅ and of total suspended solids shall not exceed 15% of the average influent concentrations, respectively. This requirement does not apply to removal of total suspended solids if the permittee operates a lagoon system and has received a variance for suspended solids granted under NR 210.07(2), Wis. Adm. Code.

5.5 Land Application Requirements

5.5.1 Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations

In the event that new federal sludge standards or regulations are promulgated, the permittee shall comply with the new sludge requirements by the dates established in the regulations, if required by federal law, even if the permit has not yet been modified to incorporate the new federal regulations.

5.5.2 General Sludge Management Information

The General Sludge Management Form 3400-48 shall be completed and submitted prior to any significant sludge management changes.

5.5.3 Sludge Samples

All sludge samples shall be collected at a point and in a manner which will yield sample results which are representative of the sludge being tested, and collected at the time which is appropriate for the specific test.

5.5.4 Land Application Characteristic Report

Each report shall consist of a Characteristic Form 3400-49 and Lab Report. The Characteristic Report Form 3400-49 shall be submitted electronically by January 31 following each year of analysis.

Following submittal of the electronic Characteristic Report Form 3400-49, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report is true, accurate and complete. The Lab Report must be sent directly to the facility's DNR sludge representative or basin engineer unless approval for not submitting the lab reports has been given.

The permittee shall use the following convention when reporting sludge monitoring results: Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 1.0 mg/kg, report the pollutant concentration as < 1.0 mg/kg .

All results shall be reported on a dry weight basis.

5.5.5 Calculation of Water Extractable Phosphorus

When sludge analysis for Water Extractable Phosphorus is required by this permit, the permittee shall use the following formula to calculate and report Water Extractable Phosphorus:

$$\text{Water Extractable Phosphorus (\% of Total P)} = \frac{\text{Water Extractable Phosphorus (mg/kg, dry wt)}}{\text{Total Phosphorus (mg/kg, dry wt)}} \times 100$$

5.5.6 Monitoring and Calculating PCB Concentrations in Sludge

When sludge analysis for "PCB, Total Dry Wt" is required by this permit, the PCB concentration in the sludge shall be determined as follows.

Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with the following provisions and Table EM in s. NR 219.04, Wis. Adm. Code.

- EPA Method 1668 may be used to test for all PCB congeners. If this method is employed, all PCB congeners shall be delineated. Non-detects shall be treated as zero. The values that are between the limit of detection and the limit of quantitation shall be used when calculating the total value of all congeners. All results shall be added together and the total PCB concentration by dry weight reported. **Note:** It is recognized that a number of the congeners will co-elute with others, so there will not be 209 results to sum.
- EPA Method 8082A shall be used for PCB-Aroclor analysis and may be used for congener specific analysis as well. If congener specific analysis is performed using Method 8082A, the list of congeners tested shall include at least congener numbers 5, 18, 31, 44, 52, 66, 87, 101, 110, 138, 141, 151, 153, 170, 180, 183, 187, and 206 plus any other additional congeners which might be reasonably expected to occur in the particular sample. For either type of analysis, the sample shall be extracted using the Soxhlet extraction (EPA Method 3540C) (or the Soxhlet Dean-Stark modification) or the pressurized fluid extraction (EPA Method 3545A). If Aroclor analysis is performed using Method 8082A, clean up steps of the extract shall be performed as necessary to remove interference and to achieve as close to a limit of detection of 0.11 mg/kg as possible. Reporting protocol, consistent with s. NR 106.07(6)(e), should be as follows: If all Aroclors are less than the LOD, then the Total PCB Dry Wt result should be reported as less than the highest LOD. If a single Aroclor is detected then that is what should be reported for the Total PCB result. If multiple Aroclors are detected, they should be summed and reported as Total PCBs. If congener specific analysis is done using Method 8082A, clean up steps of the extract shall be performed as necessary to remove interference and to achieve as close to a limit of detection of 0.003

mg/kg as possible for each congener. If the aforementioned limits of detection cannot be achieved after using the appropriate clean up techniques, a reporting limit that is achievable for the Aroclors or each congener for the sample shall be determined. This reporting limit shall be reported and qualified indicating the presence of an interference. The lab conducting the analysis shall perform as many of the following methods as necessary to remove interference:

3620C – Florisil	3611B - Alumina
3640A - Gel Permeation	3660B - Sulfur Clean Up (using copper shot instead of powder)
3630C - Silica Gel	3665A - Sulfuric Acid Clean Up

5.5.7 Annual Land Application Report

Land Application Report Form 3400-55 shall be submitted electronically by January 31, each year whether or not non-exceptional quality sludge is land applied. Non-exceptional quality sludge is defined in s. NR 204.07(4), Wis. Adm. Code. Following submittal of the electronic Annual Land Application Report Form 3400-55, this form shall be certified electronically via the ‘eReport Certify’ page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The ‘eReport Certify’ page certifies that the electronic report form is true, accurate and complete.

5.5.8 Other Methods of Disposal or Distribution Report

The permittee shall submit electronically the Other Methods of Disposal or Distribution Report Form 3400-52 by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied. Following submittal of the electronic Report Form 3400-52, this form shall be certified electronically via the ‘eReport Certify’ page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The ‘eReport Certify’ page certifies that the electronic report form is true, accurate and complete.

5.5.9 Approval to Land Apply

Bulk non-exceptional quality sludge as defined in s. NR 204.07(4), Wis. Adm. Code, may not be applied to land without a written approval letter or Form 3400-122 from the Department unless the Permittee has obtained permission from the Department to self approve sites in accordance with s. NR 204.06 (6), Wis. Adm. Code. Analysis of sludge characteristics is required prior to land application. Application on frozen or snow covered ground is restricted to the extent specified in s. NR 204.07(3) (l), Wis. Adm. Code.

5.5.10 Soil Analysis Requirements

Each site requested for approval for land application must have the soil tested prior to use. Each approved site used for land application must subsequently be soil tested such that there is at least one valid soil test in the four years prior to land application. All soil sampling and submittal of information to the testing laboratory shall be done in accordance with UW Extension Bulletin A-2100. The testing shall be done by the UW Soils Lab in Madison or Marshfield, WI or at a lab approved by UW. The test results including the crop recommendations shall be submitted to the DNR contact listed for this permit, as they are available. Application rates shall be determined based on the crop nitrogen recommendations and with consideration for other sources of nitrogen applied to the site.

5.5.11 Land Application Site Evaluation

For non-exceptional quality sludge, as defined in s. NR 204.07(4), Wis. Adm. Code, a Land Application Site Request Form 3400-053 shall be submitted to the Department for the proposed land application site. The Department will

evaluate the proposed site for acceptability and will either approve or deny use of the proposed site. The permittee may obtain permission to approve their own sites in accordance with s. NR 204.06(6), Wis. Adm. Code.

6 Summary of Reports Due

FOR INFORMATIONAL PURPOSES ONLY

Description	Date	Page
Ammonia Compliance Schedule -Report on Effluent Discharges	March 31, 2020	6
Ammonia Compliance Schedule -Action Plan	December 31, 2020	6
Ammonia Compliance Schedule -Initiate Actions	April 1, 2021	6
Ammonia Compliance Schedule -Complete Actions	April 1, 2022	6
Compliance Maintenance Annual Reports (CMAR)	by June 30, each year	8
General Sludge Management Form 3400-48	prior to any significant sludge management changes	15
Characteristic Form 3400-49 and Lab Report	by January 31 following each year of analysis	16
Land Application Report Form 3400-55	by January 31, each year whether or not non-exceptional quality sludge is land applied	17
Other Methods of Disposal or Distribution Report Form 3400-52	by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied	17
Wastewater Discharge Monitoring Report	no later than the date indicated on the form	7

Report forms shall be submitted electronically in accordance with the reporting requirements herein. Any facility plans or plans and specifications for municipal, industrial, industrial pretreatment and non industrial wastewater systems shall be submitted to the Bureau of Water Quality, P.O. Box 7921, Madison, WI 53707-7921. All other submittals required by this permit shall be submitted to: West Central Region, 1300 W. Clairemont Ave., Eau Claire, WI 54701

APPENDIX B

TABLE OF EFFLUENT TOTAL PHOSPHORUS CONCENTRATIONS

Sample Date	Effluent Total Phosphorus Concentration (mg/L)
9/7/2021	3.60
9/12/2021	3.66
10/4/2021	3.47
10/5/2021	3.65
11/1/2021	3.06
11/8/2021	0.48
5/16/2022	1.15
5/23/2022	2.29
6/1/2022	3.33
6/23/2022	1.79
7/5/2022	2.3
7/11/2022	0.66
8/8/2022	0.65
8/22/2022	0.11
9/12/2022	4.56
9/19/2022	2.58
10/24/2022	1.75
10/27/2022	2.74
11/1/2022	3.3
11/7/2022	3.25
5/8/2023	1.29
5/22/2023	1.17
7/24/2023	1.26
8/1/2023	1.91
8/7/2023	0.14
9/5/2023	2.64
9/18/2023	2.17
10/9/2023	4.00
10/23/2023	2.98
11/1/2023	2.50
11/13/2023	3.16

APPENDIX C

ESTIMATE OF PROBABLE COSTS

WASTEWATER TREATMENT PLANT
ESTIMATE OF PROBABLE COSTS - ALUM DOSING (1 mg/L TP)

Average Daily Flow: 60,000 gpd
VILLAGE OF COLFAX, WI

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL PRICE
General					
1	General Conditions	1	LS	\$20,000	\$20,000
2	Insurance and Bonding	1	LS	\$18,000	\$18,000
3	Earthwork	500	CY	\$15	\$7,500
4	Erosion Control	1	LS	\$5,000	\$5,000
5	Miscellaneous Metals	1	LS	\$10,000	\$10,000
6	Topsoil Stockpile and Respread, with seeding and fertilizer	1	LS	\$5,000	\$5,000
7	Yard Piping, Valves, Appurtenances, and Manholes	1	LS	\$45,000	\$45,000
8	Dewatering	1	LS	\$10,000	\$10,000
Electrical					
9	Electrical Equipment, Instrumentation and Controls, Installation	1	LS	\$ 65,000	\$65,000
Chemical Dosing Building					
10	Chemical Storage Building	1	LS	\$ 90,000.00	\$90,000
11	Building HVAC	1	LS	\$ 21,000.00	\$21,000
12	Building Plumbing	1	LS	\$ 20,000.00	\$20,000
13	Chemical Dosing Skid	1	LS	\$60,000	\$60,000
14	Chemical Storage Tank w/ Containment	1	LS	\$10,000	\$10,000
15	Potable Water Storage Tank	1	LS	\$1,000	\$1,000
Lagoon Modifications					
16	Repalcement Flocculation Mixer	1	LS	\$50,000	\$50,000
17	Flash Mixer	1	LS	\$10,000	\$10,000
18	Flash Mix Underground Tank	1	LS	\$40,000	\$40,000
CONSTRUCTION SUBTOTAL					\$487,500
Contingency					\$74,000
Engineering					\$88,000
Legal					\$8,000
TOTAL ESTIMATED COST (ROUNDED):					\$658,000

APPENDIX D

PROPOSED 2023 SEWER UTILITY BUDGET

SEWER UTILITY

Account Number	Account Description	2020 BUDGET	2020 REVENUE	2021 BUDGET	2021 ACTUAL	2022 BUDGET	2022 REV 11.22.22	2022 EXPECTED	2023 PROPOSED	Percent change
620-00-46410-000-625	QUARTERLY MAINTENANCE FEE	-23,000	-22,052	-22,000	-22,078	-24,000	-22,499	-22,650	-23,783	-0.91%
620-00-46410-000-631	LATE FEES	-700	0	-500	-738	-700	-997	-1,050	-1,000	42.86%
620-00-46410-000-632	SERVICING CUSTOMER LATERALS	0	0	0	0	0	0	0	0	0.00%
620-00-46410-000-635	INTEREST & DIVIDENDS	-200	-1,119	-500	-326	-200	-208	-234	-220	10.00%
620-00-46410-001-621	FLAT RATE CHARGE-RESIDENT	-108,000	-117,983	-118,000	-115,073	-118,000	-115,351	-115,246	-116,975	-0.87%
620-00-46410-001-631	FORFEITED DISCOUNTS	0	0	0	0	0	0	0	0	0.00%
620-00-46410-001-635	MISC. NON OPERATING INCOME	0	-42	0	-33	0	0	0	0	0.00%
620-00-46410-002-621	FLAT RATE CHARGE-COMMERCIAL	-42,000	-56,882	-54,000	-55,421	-56,500	-55,897	-56,367	-57,348	1.50%
620-00-46410-002-635	MISC. OPERATING REVENUES	0	-265	0	-118	-100	-224	0	-100	0.00%
620-00-46410-003-621	FLAT RATE CHARGE-INDUSTRIAL	-900	-989	-900	-1,103	-1,000	-1,209	-1,299	-1,224	22.40%
620-00-46410-003-635	OTHER REVENUES	-10,000	-12,000	-3,700	0	-1,000	-1,360	-1,822	-1,300	30.00%
620-00-46410-004-621	FLAT RATE CHARGE-PUBLIC AUTH	-18,000	-6,315	-10,000	-7,096	-8,000	-9,562	-9,956	-9,800	22.50%
620-00-46410-004-635	CONTRIBUTIONS/AID OF CONSTRUCT	0	0	0	0	0	0	0	0	0.00%
620-00-49300-000-421	CONTRIBUTIONS/AID OF CONSTRUCT	0	0	0	0	0	0	0	0	0.00%
Total Revenue		-202,800	-217,647	-209,600	-201,986	-209,500	-207,307	-208,624	-211,749	1.07%
		2020 BUDGET	10.20.2020 EXPENSES	2021 PROPOSED	2021 ACTUAL	2022 BUDGET	2022 EXP 11.22.22	2022 EXPECTED	2023 PROPOSED	0.05%
620-00-53610-000-403	DEPRECIATION EXPENSE	57,000	60,123	57,000	61,322	60,000	0	60,000	60,000	0.00%
620-00-53610-000-408	TAXES	0	3,203	0	3,339	0	0	0	0	0.00%
620-00-53610-000-427	INTEREST EXPENSE	6,883	22,377	15,000	22,249	17,500	17,947	24,048	19,276	10.15%
620-00-53610-000-428	AMORT DISC & ISSUE COST	0	0	0	0	0	0	0	0	0.00%
620-00-53610-000-500	PRINCIPAL ON DEBT PAYMENT	0	0	0	0	0	0	0	0	0.00%
620-00-53610-000-819	SEWER-WAGES-PT -RETIREMENT	0	284	0	-3,604	0	0	0	0	0.00%
620-00-53610-000-820	OPERATOR WAGES	26,650	18,473	20,000	20,242	20,000	21,289	25,872	20,000	0.00%
	PW Director-56,639x 25%=11,660		0		0		0		0	0.00%
	FT Laborer 25%*543,680=\$10,920		0		0		0		0	0.00%
620-00-53610-000-821	POWER & FUEL FOR PUMPING	7,500	5,256	7,500	424	6,500	4,515	5,597	6,000	-7.69%
620-00-53610-000-822	FUEL FOR TREATMENT PLANT	2,000	1,220	2,000	1,346	2,000	2,927	2,927	2,500	25.00%
620-00-53610-000-823	CHLORINE	0	0	0	0	0	0	0	0	0.00%
620-00-53610-000-824	PHOSPHORUS REMOVAL CHEMICAL	15,000	12,447	15,000	7,600	12,500	12,159	12,159	12,500	0.00%
620-00-53610-000-825	SLUDGE CONDITIONING CHEMICAL	0	0	0	0	0	0	0	0	0.00%
620-00-53610-000-826	OTHER CHEM. FOR SEWAGE TREATME	0	0	0	0	0	0	0	0	0.00%
620-00-53610-000-827	OTHER OPER. SUPPLIES & EXPENSE	3,000	2,100	3,000	2,733	3,000	2,645	3,000	3,000	0.00%
620-00-53610-000-828	TRANSPORTATION EXPENSES	1,000	-1,822	1,000	448	1,000	749	850	1,000	0.00%
620-00-53610-000-829	RENTS	0	0	0	0	0	0	0	0	0.00%
620-00-53610-000-832	MAINT. OF COLLECTION SYSTEM	1,500	4,147	1,500	37	1,500	1,066	1,395	1,500	0.00%
620-00-53610-000-833	MAINT. TRMT. DISP. PLANT/EQUIP	5,000	1,214	10,000	0	9,000	149	199	4,777	-46.92%
620-00-53610-000-834	MAINT. OF GENERAL PLANT EQUIP	500	238	500	35	500	0	0	8,500	1600.00%
620-00-53610-000-840	BILLING/COLLECTING/ACCOUNTING	0	0	0	0	0	0	0	0	0.00%
620-00-53610-000-841	FLAT RATE INSPECTIONS	100	0	100	0	100	0	0	100	0.00%
620-00-53610-000-842	METER READING	0	0	0	0	0	0	0	0	0.00%
620-00-53610-000-843	UNCOLLECTIBLE ACCOUNTS	0	0	0	0	0	0	0	0	0.00%
620-00-53610-000-850	ADMINISTRATION WAGES	13,000	13,214	14,000	13,479	14,000	12,341	14,369	14,500	3.57%
	ACT 12.5% \$7500/DEPUTY 20%\$6,790		0		0		0		0	0.00%
620-00-53610-000-851	OFFICE SUPPLIES & EXPENSES	1,200	1,811	1,500	1,345	1,500	1,177	1,405	1,500	0.00%
620-00-53610-000-852	OUTSIDE TESTING SERVICE	4,000	3,425	4,000	3,937	4,000	3,560	3,669	4,000	0.00%
620-00-53610-000-853	INSURANCE EXPENSE	10,000	9,268	8,000	10,339	10,000	6,506	8,718	9,000	-10.00%
620-00-53610-000-855	REGULATORY COMMISSION EXPENSE	1,000	628	1,000	560	1,000	561	751	1,000	0.00%
620-00-53610-000-856	MISC. GENERAL EXPENSES	500	2,043	500	2,272	500	165	221	500	0.00%
620-00-53610-000-857	RENTS	0	0	0	0	0	0	0	0	0.00%
620-00-53610-001-822	POWER & FUEL AERATION EQUIPMEN	0	0	0	0	0	0	0	0	0.00%
620-00-53610-001-832	LAGOON MAINTENANCE	12,967	6,949	12,000	13,591	10,000	19,448	20,000	10,000	0.00%
620-00-53610-001-852	OUTSIDE SERVICES EMPLOYED	16,000	17,254	16,000	16,552	14,000	17,095	25,000	16,978	21.27%
620-00-53610-001-854	EMPLOYEE BENEFITS-SS/MEDICARE	2,600	0	2,600	0	2,600	2,410	2,882	2,600	0.00%
620-00-53610-002-832	MAINT. COLLECT. SYSTEM PUMP SY	500	0	500	2,037	0	0	0	1,500	0.00%
620-00-53610-002-854	EMPLOYEE BENEFITS-RETIREMENT	2,400	2,141	2,400	2,276	2,300	2,186	2,616	2,000	-13.04%
620-00-53610-003-854	EMPLOYEE BENEFITS-INSURANCE	11,000	11,208	13,000	10,624	12,000	12,356	14,264	6,518	-45.68%
620-00-53610-004-854	EMPLOYEE BENEFITS-TRAIN/TRAVEL	1,500	40	1,500	2,172	2,500	2,152	1,616	2,500	0.00%
Total Expenses		202,800	197,240	209,600	195,355	208,000	143,403	231,558	211,749	1.80%

APPENDIX E

ALTERNATIVE PHOSPHORUS EFFLUENT LIMITATION CHECKLIST

Alternative Phosphorus Effluent Limitation Request Checklist (May 28, 2002)

This document is intended solely as guidance, and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations, and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

At the time of permit application, permittees applying for an alternative phosphorus limitation should submit this completed checklist together with a cover letter requesting the alternative limit. Please review the Department's [Guidance for Implementing Wisconsin's Phosphorus Water Quality Standards for Point Source Discharges](#). If you do not have Internet access contact your local DNR representative.

If your current permit already contains an alternative limit, you may at this time provide an update of the information needed to justify an alternative limitation. In that case, indicate what changes have occurred that would necessitate a reevaluation, what information you have gained during the last permit term and how that would affect conclusions reached for your previous alternative limit request.

If you wish to apply for an alternative phosphorus limitation you can do so by using one of the following four criteria. Please check the box to indicate the criteria you are applying under.

- I - Where attainment is not practically achievable considering energy, economics and environmental impacts. (Complete Section I below)
- II - Where biological phosphorus removal will result in removal of phosphorus on a mass basis which is comparable to that which would be removed by achieving the 1.0 mg/L effluent standard. (Complete Section II below)
- III. - Where phosphorus deficient wastewaters require the addition of phosphorus to maintain normal treatment system operation to meet other effluent limitations. (Complete Section III below)
- IV. - Where achieving the 1.0 mg/L effluent standard will not result in an environmentally significant improvement in water quality. (See note in Section IV below)

The information described in the checklist must be provided before the Department can make a determination of eligibility and calculate an alternative phosphorus limit. This checklist is provided to help you make sure you have submitted the needed information.

Perform the activities in the order given as you may find that you aren't eligible for an alternative phosphorus limit and completion of the checklist would no longer be necessary.

I Where attainment is not practically achievable considering energy, economics and environmental impacts.

MUNICIPAL

- ✓ Complete a cost-effective analysis for providing treatment to meet a 1.0-mg/L phosphorus limit. See guidance for sample analysis. If your annual residential cost does not increase at least 25% you are probably not eligible for an alternative phosphorus limit. (see guidance)
- ✓ If you find your annual residential cost will increase by at least 25% you must submit a completed cost-effective analysis, a copy of the past years wastewater budget and a report giving your current residential cost, number and type of connections and expected user charge to meet the 1.0 mg/L phosphorus limit.
- ✓ Existing lagoon systems must evaluate the addition of chemical precipitant to lagoon cells to meet the 1.0 mg/L limit. If the limit can be met no alternative limit is given but if the 1.0-mg/L limit cannot be met an alternative limit could be given based on the performance of the chemical addition system.
- ✓ Submit a phosphorus minimization plan. The plan must include:
 - ✓ Data: Accurate flow monitoring, influent and effluent phosphorus data and treatment capabilities;
 - ✓ Sources: Phosphorus loading from each source, processes that contribute phosphorus, actions available to reduce phosphorus and expected phosphorus reduction;
 - ✓ Recommendations: Actions that will be taken and a schedule to implement recommendations.
- ✓ Submit at least 11 effluent phosphorus results. The Department needs at least 11 effluent sample results to calculate an alternative phosphorus limit. The results should be collected after any phosphorus minimization implementation and lagoon chemical addition if applicable.

INDUSTRIAL

- You must demonstrate that the cost/pound of phosphorus removed is significantly more (e.g., twice as much) for the increment of phosphorus removed between that what is considered practically achievable and 1.0 mg/L versus that to achieve practical treatment. If you can not make this demonstration you are probably not eligible for an alternative phosphorus limit. (see guidance)
- If you find your cost/pound of phosphorus removed is significantly more for the increment of phosphorus removed between that what is considered practically achievable and 1.0 mg/L you must submit documentation to this effect. For chemical removal systems this should include a graph comparing effluent concentration to cost/pound removed.
- Existing lagoon systems must evaluate the addition of chemical precipitant to lagoon cells to meet the 1.0 mg/L limit. If the limit can be met no alternative limit is given but if the 1.0-mg/L limit cannot be met an alternative limit could be given based on the performance of the chemical addition system.
- Submit a phosphorus minimization plan. The plan must include:
 - Data: Accurate flow monitoring, influent and effluent phosphorus data and treatment capabilities.
 - Sources: Phosphorus loading from each source, processes that contribute phosphorus, actions available to reduce phosphorus and expected phosphorus reduction. Special attention should be paid to chemical substitutions.
 - Recommendations: Actions that will be taken and a schedule to implement recommendations.
- Specify the discharge concentration that is believed to be “practically achievable”.
- Submit at least 11 effluent phosphorus results. The Department needs at least 11 effluent sample results to calculate an alternative phosphorus limit. The results should be collected

after any phosphorus minimization implementation and lagoon chemical addition if applicable.

II Where biological phosphorus removal will result in removal of phosphorus on a mass basis which is comparable to that which would be removed by achieving the 1.0 mg/L effluent standard.

- Determine if biological removal will result in at least 90% removal of phosphorus that would be removed to meet then 1.0 mg/L limit based upon a mass basis. If this criterion can not be met you are not eligible for an alternative limit.
- Determine the BOD or COD to total phosphorus ratio of the influent. A BOD:TP ratio greater than 10 is suggested for municipal facilities. A COD:TP ratio greater than 35 is suggested for industrial (in particular dairy) facilities. If these ratios are not met phosphorus removal may not be sufficient to meet the criterion and phosphorus minimization may be necessary. In situations where the appropriate ratio is met, it is suggested that minimization be evaluated. When evaluating substitution for phosphorus based chemicals, consider the potential adverse impacts that nitrates (such as from nitric acid) may have on biological removal. Please provide to the Department information on actions taken in the area of phosphorus minimization.
- Submit the following data: average influent and effluent total phosphorus concentration and mass, as well as the monthly average influent and effluent total BOD (or COD), total Nitrogen, pH, effluent ammonia and nitrate/nitrite nitrogen concentration. A minimum of 12 influent and effluent data points that are representative of current conditions for each substance is suggested, preferably over a one-year period.
- Submit data on the proposed/planned phosphorus removal efficiency, phosphorus mass removed and effluent phosphorus concentration for each of the three phosphorus removal options.
 - Biological removal without chemical polishing;
 - Biological removal with chemical polishing;
 - Treatment technology to achieve 1.0 mg/L limit.

III Where phosphorus deficient wastewaters require the addition of phosphorus to maintain normal treatment system operation to meet other effluent limitations.

- Submit the results of a comprehensive study to minimize the amount of phosphorous discharged while allowing efficient operation of the treatment system.
- Submit an evaluation of possible methods to reduce phosphorous discharges and the capital and operating costs associated with utilizing alternative phosphorus minimization strategies.
- Submit an evaluation of the optimization of the phosphorus and other nutrient addition points, metering system, control system and mixing, which includes residual testing at various locations in the treatment system.
- Provide documentation of the process control procedures used to operate the treatment facility and evaluation of the removal efficiencies of phosphorus and other limited parameters at various operating conditions. The process should be controlled to optimize the performance of the treatment system prior to evaluating impacts of various phosphorus addition rates on plant performance.
- Submit an evaluation of the BOD and TSS removal which will be realized at various phosphorus residual concentrations and a recommendation of the minimum phosphorus concentration which will provide proper treatment. It is suggested that, where possible pilot studies be conducted with various phosphorus concentrations prior to making modifications to the treatment plant to reduce the potential for plant upsets.
- Provide a characterization of the phosphorus, BOD and TSS content of the wastewater treatment plant influent and effluent prior to and after minimization efforts.
- Provide the removal efficiencies and costs associated with treatment technologies, which would be necessary to achieve 1 mg/l. The costs shall be compared to overall treatment costs. Additionally, the cost per pound of the total phosphorous removed (on an annual basis or TPW) to reduce the phosphorous from that achievable through minimization to 1 mg/l should be presented.

IV Where achieving the 1.0 mg/L effluent standard will not result in an environmentally significant improvement in water quality.

The type of demonstration required under this option does not lend itself to description in this shortened format. If you apply under this alternative, please consult the Implementation Guidance. In addition, although not discussed in the Guidance, in some situations, land use modeling is being looked at as a possible way to make this type of demonstration.