Permit Fact Sheet

General Information

Permit Number	WI-0020061-11-0
Permittee Name and Address	VILLAGE OF NEW GLARUS P O Box 399, 319 Second Street, New Glarus, WI 53574
Permitted Facility Name and Address	New Glarus Wastewater Treatment Facility 1301 ELMER ROAD, NEW GLARUS, WISCONSIN
Permit Term	January 01, 2026 to December 31, 2030
Discharge Location	East bank of Little Sugar River. 0.5 mi south of Kubly Rd. bridge. NW ¼ of SE ¼, Section 23, T4N R7E.
Receiving Water	Little Sugar River (Little Sugar River Watershed, SP14 – Sugar-Pecatonica River Basin) in Green County
Stream Flow ($Q_{7,10}$)	3.8 cfs
Stream Classification	Cold Water Community, Exceptional Resource Water, non-public water supply
Discharge Type	Existing, Continuous
Annual Average Design Flow (MGD)	0.46 MGD
Industrial or Commercial Contributors	Links Snacks Inc. (Jack Links), New Glarus Brewing: Hilltop and Riverside, Hoesly's Meats Inc.
Plant Classification	A1 - Suspended Growth Processes; B - Solids Separation; C - Biological Solids/Sludges; P - Total Phosphorus; D - Disinfection; SS - Sanitary Sewage Collection System
Approved Pretreatment Program?	N/A

Facility Description

The plant has mechanical screening as preliminary treatment. A biological selector basin precedes two oxidation ditches with mechanical aerators for enhanced biological phosphorus removal. Aluminum Sulfate (Alum) can be dosed prior to the oxidation ditches and prior to the final clarifiers to provide additional phosphorus removal if necessary. In 2024, a new tertiary filter room was installed. From the two final clarifiers, effluent is pumped to rapid mixing tanks with Alum and polymer addition, prior to flowing to the cloth media tertiary filters. Disinfection is accomplished by ultraviolet light and a cascade aerator provides reaeration prior to discharge to the Little Sugar River. Sludge is thickened by a gravity belt thickener with polymer addition and stored in dedicated sludge storage tank with seasonal land application to DNR approved fields.

The treatment facility serves the community of New Glarus and received wastewater from Links Snack Inc. (Jack Links), New Glarus Brewing – Hilltop, New Glarus Brewing – Riverside, and Hoesly's Meats Inc.

Substantial Compliance Determination

Enforcement During Last Permit: A Notice of Noncompliance (NON) was issued in August of 2020 for a sanitary sewer overflow (SSO) in March of 2020. An NON was issued in October of 2021 for a SSO in December of 2020 and July of 2021. The facility has completed all previously required actions as part of the enforcement process.

After a desk top review of all discharge monitoring reports, CMARs, land application reports, compliance schedule items, and a site visit on July 30, 2025, this facility has been found to be in substantial compliance with their current permit.

Sample Point Descriptions

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
701	0.421 MGD (August 2020 – June 2025 Average)	Influent: 24-hr flow proportional composite samples shall be collected after mechanical screening. An ultrasonic flow meter is located at the Parshall flume.
001	0.330 MGD (August 2020 – June 2025 Average)	Effluent: 24-hr flow proportional composite samples shall be collected prior to UV disinfection. Grab samples for E. coli shall be collected downstream of UV disinfection. DO grab samples shall be collected at the bottom of the cascade aerator. An ultrasonic flow meter is located before the rectangular weir prior to the cascade aerator.
002	95 Dry US Tons (2024 Permit Application)	Aerobically digested, Liquid, Class B. Representative sludge samples shall be collected from the sludge storage tank after mixing.

Permit Requirements

1 Influent – Monitoring Requirements

1.1 Sample Point Number: 701- INFLUENT

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

Changes from Previous Permit:

Influent limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit.

Flow: The sample frequency has changed from "Continuous" to "Daily" for eDMR reporting purposes.

Phosphorus: Monitoring has been removed.

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.

Phosphorus: Monitoring requirements for total phosphorus were initially included in reissued permits to provide better characterization of influent wastewater. Review of phosphorus data submitted during the permit term show fairly consistent trends in influent loading. Therefore, monitoring of influent phosphorus as an operational parameter is removed from the proposed permit. The permittee may elect to continue monitoring influent total phosphorus as an operational parameter, but it is no longer required.

2 Surface Water - Monitoring and Limitations

2.1 Sample Point Number: 001- EFFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Weekly Avg	17 mg/L	3/Week	24-Hr Flow Prop Comp	May - October
BOD5, Total	Weekly Avg	26 mg/L	3/Week	24-Hr Flow Prop Comp	November - April
BOD5, Total	Monthly Avg	17 mg/L	3/Week	24-Hr Flow Prop Comp	May - October
BOD5, Total	Monthly Avg	26 mg/L	3/Week	24-Hr Flow Prop Comp	November - April
BOD5, Total	Weekly Avg	66 lbs/day	3/Week	Calculated	May - October
BOD5, Total	Weekly Avg	95.7 lbs/day	3/Week	Calculated	November - April
BOD5, Total	Monthly Avg	66 lbs/day	3/Week	Calculated	May - October
BOD5, Total	Monthly Avg	95.7 lbs/day	3/Week	Calculated	November - April
Suspended Solids, Total	Weekly Avg	17 mg/L	3/Week	24-Hr Flow Prop Comp	May - October
Suspended Solids, Total	Weekly Avg	26 mg/L	3/Week	24-Hr Flow Prop Comp	November - April
Suspended Solids, Total	Monthly Avg	17 mg/L	3/Week	24-Hr Flow Prop Comp	May - October
Suspended Solids, Total	Monthly Avg	26 mg/L	3/Week	24-Hr Flow Prop Comp	November - April
Suspended Solids,	Weekly Avg	66 lbs/day	3/Week	Calculated	May - October

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Total					
Suspended Solids, Total	Weekly Avg	95.7 lbs/day	3/Week	Calculated	November - April
Suspended Solids, Total	Monthly Avg	66 lbs/day	3/Week	Calculated	May - October
Suspended Solids, Total	Monthly Avg	95.7 lbs/day	3/Week	Calculated	November - April
pH Field	Daily Max	9.0 su	5/Week	Grab	
pH Field	Daily Min	6.0 su	5/Week	Grab	
Dissolved Oxygen	Daily Min	6.0 mg/L	5/Week	Grab	
Nitrogen, Ammonia (NH3-N) Total	Daily Max	6.4 mg/L	3/Week	24-Hr Flow Prop Comp	Year-round
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	6.4 mg/L	3/Week	24-Hr Flow Prop Comp	Year-round
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	8.3 mg/L	3/Week	24-Hr Flow Prop Comp	January
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	8.6 mg/L	3/Week	24-Hr Flow Prop Comp	February, December
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	11 mg/L	3/Week	24-Hr Flow Prop Comp	March
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	12 mg/L	3/Week	24-Hr Flow Prop Comp	April
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	6.4 mg/L	3/Week	24-Hr Flow Prop Comp	May, June, August, September
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	13 mg/L	3/Week	24-Hr Flow Prop Comp	July
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	6.7 mg/L	3/Week	24-Hr Flow Prop Comp	October
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	9.4 mg/L	3/Week	24-Hr Flow Prop Comp	November
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	May - September
E. coli	% Exceedance	10 Percent	Monthly	Calculated	May - September
Phosphorus, Total	Monthly Avg	0.36 mg/L	3/Week	24-Hr Flow Prop Comp	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total	6-Month Avg	0.12 mg/L	3/Week	24-Hr Flow Prop Comp	
Phosphorus, Total	6-Month Avg	0.46 lbs/day	3/Week	Calculated	
Chloride		mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring only in 2029
Temperature Maximum		deg F	Daily	Continuous	
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Annual in rotating quarters. See Nitrogen Series Monitoring section. Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	See Whole Effluent Toxicity (WET) Testing section.
Chronic WET	Monthly Avg	2.3 TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	See Whole Effluent Toxicity (WET) Testing section.

Changes from Previous Permit

Effluent limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit.

Flow: The sample frequency has changed from “Continuous” to “Daily” for eDMR reporting purposes.

pH and Dissolved Oxygen: The sample frequency has changed from “3/Week” to “5/Week”.

Ammonia: The daily maximum and weekly average year-round limits and monthly average limit for May, June, August, and September have changed.

Temperature: The sample frequency has changed from “3/Week” to “Daily” for eDMR reporting purposes.

Chronic WET: A monthly average limit has been included in the permit.

Explanation of Limits and Monitoring Requirements

Detailed discussions of limits and monitoring requirements can be found in the attached water quality-based effluent limits (WQBEL) memo for the New Glarus Wastewater Treatment Facility dated October 13, 2025, prepared by Zainah Masri, and used for this reissuance.

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.

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

Phosphorus: 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, weekly or monthly values. The final effluent limit for phosphorus is expressed as a six-month average. It is also expressed as a monthly average equal to three times the derived WQBEL. This final effluent limit was derived from and complies with the applicable water quality criterion. The six-month average should be averaged during the months of May – October and November – April.

Temperature: The permittee submitted Dissipative Cooling Request dated 11/26/2014 for consideration of relief from temperature limits. The department approved the DC request on 02/11/2015. New Glarus confirmed via email, 10/07/2025, that the DC study still represents current effluent discharge and treatment process. Therefore, no temperature limits are included in the reissued permit. Temperature monitoring is required per the requirements of s. NR 106.59(7), Wis. Adm. Code.

Total Nitrogen Series: 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.

Chronic WET: Reasonable potential is shown for a chronic WET limit using the procedures in s. NR 106.08(6), Wis. Adm. Code.

PFOS &PFOA: NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. Pursuant to s. NR 106.98(3)(b), Wis. Adm. Code, the department evaluated the need for PFOS and PFOA monitoring taking into consideration the presence of potential PFOS or PFOA industrial wastes, remediation sites and other potential sources of PFOS or PFOA. Based on information available at the time the proposed permit was drafted, the department has determined the permittee does not need to sample for PFOS or PFOA in the effluent as part of this permit reissuance. The department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

Monitoring Frequencies: The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term. The sample frequencies for pH and DO were increased from 3/Week to 5/Week and temperature sample

frequency was increased from 3/Week to Daily, specifically to align New Glarus with facilities of similar size and to better capture effluent quality of these operational parameters.

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

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	Fecal Coliform	Injection	Land Application	95

Does sludge management demonstrate compliance? **Yes**

Is additional sludge storage required? **No**

Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? **Yes**

Well#BF910, result 2.95 pCi/L, 9/14/2024
Well#HO691, result 2.12 pCi/L, 5/16/2023

If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in landapplying sludge from this facility

Is a priority pollutant scan required? **No, design flow is less than 5 MGD**

Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.

3.1 Sample Point Number: 002- SLUDGE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Annual	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Annual	Composite	
Phosphorus, Total		Percent	Annual	Composite	
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	
Potassium, Total Recoverable		Percent	Annual	Composite	
Radium 226 Dry Wt		pCi/g	Annual	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Once in 2027
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once in 2027
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS permit sections for more information.
PFAS Dry Wt			Annual	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

Sludge limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit.

The parameter order has changed. Radium and PCB are listed after the List 2 – Nutrients.

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

Explanation of Limits and Monitoring Requirements

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

PFAS: The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA has developed a draft risk assessment to determine future land application rates and released this risk assessment in January of 2025. The department is evaluating this new information. Until a decision is made, the "Interim Strategy for Land Application of Biosolids and Industrial Sludges Containing PFAS" should be followed.

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

4 Schedules

4.1 Land Application Management Plan

A management plan is required for the land application system.

Required Action	Due Date
Land Application Management Plan Submittal: Submit a management plan to optimize the land application system performance and demonstrate compliance with ch. NR 204, Wis. Adm. Code, by the Due Date. This management plan shall 1) specify information on pretreatment processes (if any); 2) identify land application sites; 3) describe site limitations; 4) address vegetative cover management and removal; 5) specify availability of storage; 6) describe the type of transporting and spreading vehicle(s); 7) specify monitoring procedures; 8) track site loading; 9) address contingency plans for adverse weather and odor/nuisance abatement; and 10) include any other pertinent information. Once approved, all landspreading 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.	12/31/2026

Explanation of Schedule

An up-to-date Land Application Management Plan is required that documents how the permittee will manage the land application of biosolids consistent with ch. NR 204, Wis. Adm. Code.

Attachments

Water Quality Based Effluent Limits, dated October 13, 2025

Justification Of Any Waivers From Permit Application Requirements

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

Prepared By: BetsyJo Howe, Wastewater Specialist **Date:** 11/03/2025

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: October 13, 2025

TO: Betsyjo Howe – SCR/Fitchburg

FROM: Zainah Masri – WY/3

SUBJECT: Water Quality-Based Effluent Limitations for the New Glarus Wastewater Treatment Facility WPDES Permit No. WI-0020061-11-0

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 New Glarus Wastewater Treatment Facility in Green County. This municipal wastewater treatment facility (WWTF) discharges to the Little Sugar River located in the Little Sugar Watershed (SP14) Watershed in the Sugar-Pecatonica Basin.

The evaluation of the permit recommendations is discussed in more detail in the attached report.

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

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						1,2
BOD_5 May – October November – April			 17 mg/L 66 lbs/day 26 mg/L 95.7 lbs/day	 17 mg/L 66 lbs/day 26 mg/L 95.7 lbs/day		1
TSS May – October November – April			 17 mg/L 66 lbs/day 26 mg/L 95.7 lbs/day	 17 mg/L 66 lbs/day 26 mg/L 95.7 lbs/day		1
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		6.0 mg/L				1
Ammonia Nitrogen January February March April May – June July August September October November December	 6.4 mg/L 6.4 mg/L 6.4 mg/L 6.4 mg/L 6.4 mg/L 6.4 mg/L 6.4 mg/L 6.4 mg/L 6.4 mg/L 6.4 mg/L 6.4 mg/L		 **6.4 mg/L** **6.4 mg/L** **6.4 mg/L** **6.4 mg/L** **6.4 mg/L** **6.4 mg/L** **6.4 mg/L** **6.4 mg/L** **6.4 mg/L** **6.4 mg/L** **6.4 mg/L**	 8.3 mg/L 8.6 mg/L 11 mg/L 12 mg/L **6.4 mg/L** 13 mg/L **6.4 mg/L** **6.4 mg/L** 6.7 mg/L 9.4 mg/L 8.6 mg/L		3,4
Bacteria						
Final Limit *E. coli*				126 #/100 mL geometric mean		5

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Chloride						6
Phosphorus Final				0.36 mg/L	0.12 mg/L 0.46 lbs/day	7
Temperature						8
TKN, Nitrate+Nitrite, and Total Nitrogen						9
Acute WET						10,11
Chronic WET				2.3 TUc		11,12,13,14

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. The variable daily maximum ammonia nitrogen limit table corresponding to various effluent pH values may be included in the permit in place of the single limit. New Glarus Wastewater Treatment Facility shall notify the Department if the single limit or the variable limits based on effluent pH are preferred. 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**
$6.0 \leq pH \leq 6.1$	72	$7.0 < pH \leq 7.1$	44	$8.0 < pH \leq 8.1$	9.3
$6.1 < pH \leq 6.2$	71	$7.1 < pH \leq 7.2$	39	$8.1 < pH \leq 8.2$	7.6
$6.2 < pH \leq 6.3$	69	$7.2 < pH \leq 7.3$	35	$8.2 < pH \leq 8.3$	6.3
$6.3 < pH \leq 6.4$	67	$7.3 < pH \leq 7.4$	31	$8.3 < pH \leq 8.4$	5.2
$6.4 < pH \leq 6.5$	65	$7.4 < pH \leq 7.5$	27	$8.4 < pH \leq 8.5$	4.3
$6.5 < pH \leq 6.6$	63	$7.5 < pH \leq 7.6$	23	$8.5 < pH \leq 8.6$	3.5
$6.6 < pH \leq 6.7$	60	$7.6 < pH \leq 7.7$	19	$8.6 < pH \leq 8.7$	3.0
$6.7 < pH \leq 6.8$	56	$7.7 < pH \leq 7.8$	16	$8.7 < pH \leq 8.8$	2.5
$6.8 < pH \leq 6.9$	52	$7.8 < pH \leq 7.9$	14	$8.8 < pH \leq 8.9$	2.1
$6.9 < pH \leq 7.0$	48	$7.9 < pH \leq 8.0$	11	$8.9 < pH \leq 9.0$	1.8

4. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
5. Bacteria limits apply during the disinfection season of May through September. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
6. Monitoring at a frequency to ensure that 11 samples are available at the next permit issuance.
7. These are the final WQBELs for phosphorus which became effective July 1, 2024.
8. The facility has previously conducted a DC study in 2015. Temperature and monitoring is recommended throughout the permit term.
9. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen monitoring is recommended for all minor municipal permittees. Sections 283.37(5) and 283.55(1)(e), Wis. Stats, and ss. NR 200.065(1)(g) and NR 200.065(1)(h), Wis. Adm. Codes, provide the authority to request this monitoring during the permit term. Total Nitrogen is the sum of nitrate (NO_3), nitrite (NO_2), and total Kjeldahl nitrogen (TKN) (all expressed as N).

10. After consideration of the guidance provided in the Department's *WET Program Guidance Document* (2022) three acute WET tests are recommended throughout the permit term in the reissued permit. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge. Testing should continue after the permit expiration date (until the permit is reissued). According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), a synthetic (standard) laboratory water may be used as the dilution water and primary control in acute WET tests.
11. If a satisfactory phosphorus chemical SOP is established and implemented at the facility prior to permit reissuance, then acute WET testing can be reduced to 2 tests throughout the permit term and chronic WET testing to 3 tests throughout the permit term in the reissued permit.
12. After consideration of the guidance provided in the Department's *WET Program Guidance Document* (2022) 1 yearly chronic WET tests are recommended in the reissued permit. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge. Testing should continue after the permit expiration date (until the permit is reissued).
13. According to the requirements specified in s. NR 106.08, Wis. Adm. Code, a chronic WET limit is required. The chronic WET limit shall be expressed as 2.3 TUc =100/43 as a monthly average in the effluent limits table of the permit. The Instream Waste Concentration (IWC) to assess chronic test results is 43 %. According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), chronic testing shall be performed using a dilution series of 100%, 75%, 50%, 25% & 12.5% The primary control water used in chronic WET tests conducted on Outfall 001 shall be a grab sample collected from Little Sugar River.
14. A minimum of annual chronic monitoring is required because a chronic WET limit is required. Federal regulations in 40 CFR Part 122.44(i) require that monitoring occur at least once per year when a limit is present.

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

Attachments (4) – Narrative, Thermal Table, Ammonia Nitrogen Calculations and Map

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Attachment #1

Water Quality-Based Effluent Limitations for
New Glarus Wastewater Treatment Facility

WPDES Permit No. WI-0020061-11-0

Prepared by: Zainah Masri – WY/3

PART 1 – BACKGROUND INFORMATION

Facility Description
The plant has mechanical screening as preliminary treatment. A biological selector basin precedes two oxidation ditches with mechanical aerators for enhanced biological phosphorus removal. Aluminum Sulfate (Alum) can be dosed prior to the oxidation ditches and prior to the final clarifiers to provide additional phosphorus removal if necessary. In 2024, a new tertiary filter room was installed. From the two final clarifiers, effluent is pumped to rapid mixing tanks with Alum and polymer addition, prior to flowing to the cloth media tertiary filters. Disinfection is accomplished by ultraviolet light and a cascade aerator provides reaeration prior to discharge to the Little Sugar River. Sludge is thickened by a gravity belt thickener with polymer addition and stored in dedicated sludge storage tank with seasonal land application to DNR approved fields.

The treatment facility serves the community of New Glarus and received wastewater from Links Snack Inc. (Jack Links), New Glarus Brewing – Hilltop, New Glarus Brewing – Riverside, and Hoesly's Meats.

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

Existing Permit Limitations
The current permit, expired on June 30, 2025, and includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						2
BOD_5 May – October November – April			 17 mg/L 66 lbs/day 26 mg/L 95.7 lbs/day	 17 mg/L 66 lbs/day 26 mg/L 95.7 lbs/day		1
TSS May – October November – April			 17 mg/L 66 lbs/day 26 mg/L 95.7 lbs/day	 17 mg/L 66 lbs/day 26 mg/L 95.7 lbs/day		1
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		6.0 mg/L				1

Attachment #1

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Ammonia Nitrogen						3
January	9.3 mg/L		**9.3 mg/L**	8.3 mg/L		
February	9.3 mg/L		**9.3 mg/L**	8.6 mg/L		
March	9.3 mg/L		**9.3 mg/L**	11 mg/L		
April	9.3 mg/L		**9.3 mg/L**	12 mg/L		
May – June	9.3 mg/L		**9.3 mg/L**	**9.3 mg/L**		
July –	9.3 mg/L		**9.3 mg/L**	13 mg/L		
August - September	9.3 mg/L		**9.3 mg/L**	**9.3 mg/L**		
October	9.3 mg/L		**9.3 mg/L**	6.7 mg/L		
November	9.3 mg/L		**9.3 mg/L**	9.4 mg/L		
December	9.3 mg/L		**9.3 mg/L**	8.6 mg/L		
Bacteria						3,4
Interim Limit Fecal Coliform			**656 #/100 mL geometric mean**	400 #/100 mL geometric mean		
Final Limit *E. coli*				126 #/100 mL geometric mean		
Chloride						5
Phosphorus						6
Interim				1.4 mg/L		
Final				0.36 mg/L	0.12 mg/L 0.46 lbs/day	
Temperature						5
TKN, Nitrate+Nitrite, and Total Nitrogen						7
Acute WET						8
Chronic WET						9,10

Footnotes:

1. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.
2. Monitoring Only.
3. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
4. Bacteria limits apply during the disinfection season of May through September. The fecal coliform interim limit will applied until the *E.coli* limit became effective on May 1, 2025. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
5. Monitoring from Jan 1, 2024 to December 31, 2024.
6. The final WQBELs became effective July 1, 2024.
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. Sections 283.37(5) and 283.55(1)(e), Wis. Stats, and ss. NR 200.065(1)(g) and NR 200.065(1)(h), Wis. Adm. Codes, provide the authority to request this monitoring during the

permit term. Total Nitrogen is the sum of nitrate (NO_3), nitrite (NO_2), and total Kjeldahl nitrogen (TKN) (all expressed as N).

8. Acute tests were conducted twice during the permit term in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.
    - Acute: April 1, 2021 - June 30, 2021; July 1, 2024 - September 30, 2024
    - Acute WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the last full calendar year of this permit. For example, the next test would be required in July 1, 2025 - September 30, 2025.
9. Chronic tests were conducted three times during the permit term in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.
    - Chronic: April 1, 2021 - June 30, 2021; October 1, 2023 - December 31, 2023; July 1, 2024 -September 30, 2024
    - Chronic WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the last full calendar year of this permit. For example, the next test would be required in July 1, 2025 September 30, 2025.
10. The IWC for chronic WET was 43%.

Receiving Water Information

- Name: Little Sugar River
- Waterbody Identification Code (WBIC): 880100
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Cold water community, non-public water supply, Exceptional Resource Water above New Glarus. Approximately 0.75 mile downstream, the classification changes to warm water sport fishery.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q_{10} and 7-Q_2 values are from USGS for Station at the SW ¼ , SE ¼ , SEC. 14, T4N-R7E, Green County, 300 feet east of the junction of highways 39/69 in Glarus, where Outfall 001 is located.

  7-Q_{10} = 3.8 cubic feet per second (cfs)

  7-Q_2 = 6.5 cfs

  90-Q_{10} = 5.53 cfs

  Harmonic Mean Flow = 9.26 cfs using a drainage area of 22.4 mi^2. The Harmonic Mean has been estimated based on average flow and the 7-Q10 using an equation from U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991, EPA/505/2-90-001, pgs. 88-89).
- Hardness = 333 mg/L as $CaCO_3$. This value represents the geometric mean of data from January 2001 to July 2024 of the receiving water information from SWAMP found in receiving water WET testing.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%
- Metals data from the Sugar River at Brodhead (SWIMS Station 233001) is used for this evaluation because there is no data available for the Little Sugar River. The Sugar River is within the same ecological landscape so ambient water quality characteristics are expected to be similar. The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations. Background data for calculating effluent limitations for ammonia nitrogen are described later.
- Multiple dischargers: None

- Impaired water status: The Little Sugar River is listed as impaired for total phosphorus approximately 0.75 mile downstream of Outfall 001, where the classification changes to warm water sport fishery.

Effluent Information

- Design flow rate(s):
  Annual average = 0.46 million gallons per day (MGD)
  For reference, the actual average flow from August 2020 to June 2025 was 0.33 MGD.
- Hardness = 297 mg/L as $CaCO_3$. This value represents the geometric mean of four samples collected in June 2024 which were reported on the permit application.
- 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).
- Wastewater source: Domestic wastewater with 4 industrial contributors; New Glarus Brewing – Hilltop, New Glarus Brewing – Riverside which are breweries, and LSI -- Jack Links and Holsey's Meat inc. which are meat producers.
- Water supply: Municipality waterworks and private wells.
- Additives: New Glarus has included 2 additives in the permit application that have the potential to be present in Outfall 001. These additives are listed below:
  - Aluminum Sulfate, Aquachem – Phosphorus Removal
  - Polymer, Aquachem – Phosphorus Removal
  - An additive review is not necessary for any additives where either the toxicity is well documented and understood, can be controlled by a WQBEL, or are not believed to be present in the discharge. This is the case upon initial review of the listed additives and the facility is not requesting increased dosages or use frequencies. Therefore, an additive review is not needed at this time.
- Effluent characterization: This facility is categorized as a minor municipality, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus ammonia, chloride, hardness and phosphorus.
- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2, in the column titled "MEAN EFFL. CONC.". Otherwise, substances with multiple effluent data are shown in the tables below or in their respective parts in this evaluation.

Copper Effluent Data

Sample Date	Copper (µg/L)	Sample Date	Copper (µg/L)	Sample Date	Copper (µg/L)
06/11/2024	21	07/03/2024	29	07/22/2024	17
06/17/2024	26	07/06/2024	15	07/26/2024	20
06/21/2024	18	07/10/2024	24	07/30/2024	18
06/25/2024	20	07/16/2024	18		
1-day P_{99} = 32 µg/L					
4-day P_{99} = 26 µg/L					

Chloride Effluent Data

	Chloride (mg/L)
1-day P_{99}	319
4-day P_{99}	290
30-day P_{99}	273
Mean	264
Std	22
Sample size	17
Range	222 - 294

The following table presents the average concentrations and loadings at Outfall 001 from July 2020 to July 2025 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Parameters with Effluent Limits

	Average Measurement	Average Mass Discharged
BOD_5	1.3 mg/L*	1.8 lbs/day
TSS	2.8 mg/L	7.0 lbs/day
pH field	7.9 s.u.	-
Dissolved Oxygen	9.1 mg/L	-
Ammonia Nitrogen	0.09 mg/L*	-
Fecal Coliform	21 #/100 mL**	-
E. coli	13 #/100 mL**	-
Phosphorus	0.45 mg/L	1.3 lbs/day

*Results below the limit of detection (LOD) were included as zeroes in calculation of average.
** The average measurement for bacteria is calculated as a geometric mean. Values reported below the LOD are replaced with a value of 1 for the calculation of the geometric mean.

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

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

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

Acute Limits based on 1-Q_{10}

Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm. Code. Previously daily maximum limits for toxic substances were calculated as two times the ATC. However, changes to ch. NR 106, Wis. Code, (September 1, 2016)

require the Department to calculate acute limitations using the same mass balance equation as used for other limits along with the 1-Q_{10} receiving water low flow to determine if more restrictive effluent limitations are needed to protect the receiving stream from discharges which may cause or contribute to an exceedance of the acute water quality standards. The mass balance equation is provided below.

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

Where:

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

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

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

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

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

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q_{10} method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is not the case for New Glarus Wastewater Treatment Facility, and the limits are set based on two times the acute toxicity criteria.

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

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 3.04 cfs, (1-Q_{10} (estimated as 80% of 7-Q_{10})), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD.* mg/L	ATC	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P_{99}	1-day MAX. CONC.
Arsenic		340	680	136	<1.1		
Cadmium	297	15	30	6.1	0.11		
Chromium	297	4,397	8,795	1,759	<3.3		
Copper	297	43	87			32	29
Lead	297	306	612	122	<5.4		
Nickel	268	1,080	2,161	432	<4.7		
Zinc	297	312	624	125	26		
Chloride (mg/L)		757	1,514			319	294

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

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

Attachment #1

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 0.95 cfs (¼ of the 7-Q_{10}), as specified in s. NR 106.06(4)(c), Wis. Adm. Code

SUBSTANCE	REF. HARD.* mg/L	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P_{99}
Arsenic		148	2.0	343	69	<1.1	
Cadmium	175	3.8	0.14	8.7	1.7	0.11	
Chromium	301	213	2.0	494	99	<3.3	
Copper	333	29	4.0	62			26
Lead	333	90	-	209	42	<5.4	
Nickel	268	120	-	281	56	<4.7	
Zinc	333	345	-	805	161	26	
Chloride (mg/L)		395	-	922			290

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

Monthly Average Limits based on Wildlife Criteria (WC)

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

Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 2.3 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	-	1,586	317	0.11
Chromium (+3)	3,818,000	2.0	16,236,325	3,247,265	<3.3
Lead	140	-	595	119	<5.4
Nickel	43,000	-	182,861	36,572	<4.7

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 2.3 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	2.0	50	10	<1.1

Conclusions and Recommendations

Based on a comparison of the effluent data and calculated effluent limitations, effluent limitations **are not required but chloride is monitoring is recommended.** Limits and/or monitoring recommendations are made in the paragraphs below:

Copper – Considering available effluent data from the permit application between June 2024 and July 2024 the 1-day P_{99} concentration is 32 µg/L, with a maximum concentration of 29 µg/L. The maximum effluent concentration and the 1-day P_{99} of the effluent data does not exceed the calculated daily

maximum limit, **therefore concentration and mass limits, as well as monthly monitoring, are not required.**

Chloride – Considering available effluent data from the current permit term from February 2024 to December 2024 the 1-day P_{99} chloride concentration is 319 mg/L, and the 4-day P_{99} of effluent data is 290 mg/L.

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

Mercury – The permit application did not require monitoring for mercury because the New Glarus 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 March 2020 to March 2024 was 0.09 mg/kg, with a maximum reported concentration of 0.22 mg/kg. Therefore, **no mercury monitoring is recommended at Outfall 001.**

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code.

Based on the type of discharge, the effluent flow rate, and unavailable PFOS/PFOA monitoring data, as well as unknown levels of PFOS/PFOA in the source water **PFOS and PFOA monitoring is not recommended.**

The Department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

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

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

- Subchapter IV of ch. NR 106, Wis. Adm. Code allows limits based on available dilution instead of limits set to twice the acute criteria.
- Section NR 106.07(3), Wis. Adm. Code requires weekly and monthly average limits for municipal treatment plants.
- The maximum expected effluent pH has changed

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

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

Where:

A = 0.275 and B = 39.0 for a Cold-Water Category 1 fishery, and
pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. A total of 1253 sample results were reported from August 2020 to June 2025 . The maximum reported value was 9.0 s.u. (Standard pH Units). The effluent pH was 8.4 s.u. or less 99% of the time. The 1-day P_{99}, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 8.5 s.u. The mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 8.5 s.u. Therefore, a value of 8.5 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 8.5 s.u. into the equation above yields an ATC = 3.2 mg/L.

Daily Maximum Ammonia Nitrogen Effluent Limitations Calculation Method
In accordance with s. NR 106.32(2), Wis. Adm. Code daily maximum ammonia limitations are calculated using the 1-Q_{10} receiving water low flow if it is determined that the previous method of acute ammonia limit calculation (2×ATC) is not sufficiently protective of the fish and aquatic life. The more restrictive calculated limits shall apply.

The calculated daily maximum ammonia nitrogen effluent limits using the mass balance approach with the 1-Q_{10} (estimated as 80 % of 7-Q_{10}) and the 2×ATC approach are shown below.

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
2×ATC	6.4
1-Q_{10}	17

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

Presented below is a table of daily maximum limitations corresponding to various effluent pH values. Use of this table is not necessarily recommended in the permit, but it is presented herein for informational purposes.

Daily Maximum Ammonia Nitrogen Limits – Cold water

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	72	7.0 < pH ≤ 7.1	44	8.0 < pH ≤ 8.1	9.3
6.1 < pH ≤ 6.2	71	7.1 < pH ≤ 7.2	39	8.1 < pH ≤ 8.2	7.6
6.2 < pH ≤ 6.3	69	7.2 < pH ≤ 7.3	35	8.2 < pH ≤ 8.3	6.3
6.3 < pH ≤ 6.4	67	7.3 < pH ≤ 7.4	31	8.3 < pH ≤ 8.4	5.2
6.4 < pH ≤ 6.5	65	7.4 < pH ≤ 7.5	27	8.4 < pH ≤ 8.5	4.3
6.5 < pH ≤ 6.6	63	7.5 < pH ≤ 7.6	23	8.5 < pH ≤ 8.6	3.5
6.6 < pH ≤ 6.7	60	7.6 < pH ≤ 7.7	19	8.6 < pH ≤ 8.7	3.0
6.7 < pH ≤ 6.8	56	7.7 < pH ≤ 7.8	16	8.7 < pH ≤ 8.8	2.5
6.8 < pH ≤ 6.9	52	7.8 < pH ≤ 7.9	14	8.8 < pH ≤ 8.9	2.1
6.9 < pH ≤ 7.0	48	7.9 < pH ≤ 8.0	11	8.9 < pH ≤ 9.0	1.8

Weekly and Monthly Average Limits based on Chronic Toxicity Criteria (CTC)
The weekly and monthly average ammonia nitrogen limits calculation from the previous memo do not change because there have been no changes in the effluent and receiving water flow rates. The calculations from the previous WQBEL memo are shown in attachment #2.

Although the calculated weekly and monthly average limits did not change, the more restrictive daily limit will cause the limits change due to expression of limits.

Effluent Data
The following table evaluates the statistics based upon ammonia data reported from August 2020 to June 2025.

Ammonia Nitrogen Effluent Data

	Ammonia Nitrogen mg/L
1-day P_{99}	1.2
4-day P_{99}	0.7
30-day P_{99}	0.30
Mean	0.09
Std	0.41
Sample size	1386
Range	<0.05 - 4.14

Ammonia Nitrogen Effluent Data

Ammonia Nitrogen mg/L	January	February	March	April	May – June
1-day P_{99}	2.7	0.7	1.0	0.6	0.6
4-day P_{99}	1.5	0.4	0.5	0.3	0.3
30-day P_{99}	0.67	0.19	0.25	0.15	0.16
Mean*	0.31	0.11	0.13	0.09	0.09
Std	0.63	0.14	0.21	0.12	0.13
Sample size	67	60	67	65	132
Range	<0.05 - 2.8	<0.05 - 0.75	<0.05 - 1.1	<0.05 - 0.76	<0.05 - 0.8

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

Ammonia Nitrogen mg/L	July	August	September	October	November	December
1-day P_{99}	0.1	0.2	3.7	0.1	2.1	2.0
4-day P_{99}	0.1	0.1	2.3	0.1	1.2	1.2
30-day P_{99}	0.07	0.10	0.95	0.08	0.52	0.51
Mean*	0.07	0.08	0.38	0.07	0.25	0.24
Std	0.02	0.04	0.95	0.01	0.48	0.47
Sample size	52	68	64	65	64	65
Range	<0.05 - 0.09	<0.05 - 0.39	<0.05 - 4.1	<0.05 - 0.09	<0.05 - 2.0	<0.05 – 2.0

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

Reasonable Potential

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

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

Expression of Limits

Revisions to ch. NR 106, Wis. Adm. Code, in September 2016 aligned Wisconsin's WQBELs with 40 CFR § 122.45(d), which specifies that effluent limits for continuous dischargers must be expressed as weekly and monthly averages for publicly owned treatment works and as daily maximums and monthly averages for all other dischargers, unless shown to be impracticable. Because a daily maximum ammonia limit is necessary for [facility name], weekly and monthly average limits are also required under this code revision.

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

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

maximum limit unless a more restrictive limit is already determined necessary to protect water quality.

In this case, the recommended daily maximum limits vary with effluent pH, so additional limits should be set equal to the highest recommended limit. Therefore, **a year round weekly average limit of 6.4 mg/L as well as monthly average limit of 6.4 mg/L for May – June and August – September** are **recommended in the permit.**

Conclusions and Recommendations

In summary, after rounding to two significant figures, the following ammonia nitrogen limitations are recommended. No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm Code. Based on the highest reported value over the last permit which was 4.1 mg/L, it appears that the facility will be able to meet the new and more restrictive limit without a compliance schedule.

Final Ammonia Nitrogen Limits

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
January	6.4 mg/L	**6.4 mg/L**	8.3 mg/L
February	6.4 mg/L	**6.4 mg/L**	8.6 mg/L
March	6.4 mg/L	**6.4 mg/L**	11 mg/L
April	6.4 mg/L	**6.4 mg/L**	12 mg/L
May – June	6.4 mg/L	**6.4 mg/L**	**6.4 mg/L**
July	6.4 mg/L	**6.4 mg/L**	13 mg/L
August	6.4 mg/L	**6.4 mg/L**	**6.4 mg/L**
September	6.4 mg/L	**6.4 mg/L**	**6.4 mg/L**
October	6.4 mg/L	**6.4 mg/L**	6.7 mg/L
November	6.4 mg/L	**6.4 mg/L**	9.4 mg/L
December	6.4 mg/L	**6.4 mg/L**	8.6 mg/L

If the daily maximum variable limit table is included in the reissued permit then the current weekly and monthly average limits from the previous permit term would be retained.

PART 4 – PHOSPHORUS

Technology-Based Effluent Limit

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

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

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

Water Quality-Based Effluent Limits (WQBEL)

Revisions to administrative rules regulating phosphorus took effect on December 1, 2010. These rule revisions include additions to s. NR 102.06, Wis. Adm. Code, which establish phosphorus standards for

surface waters. Subchapter III of NR 217, Wis. Adm. Code, establishes procedures for determining WQBELs for phosphorus, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

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

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

$$\text{Limitation} = [(WQC)(Qs+(1-f)\ Qe) - (Qs-f\ Qe)\ (Cs)]/Qe$$

Where:

WQC = 0.075 mg/L for Little Sugar River
Qs = 100% of the 7-Q_2 of 6.5 cfs
Cs = background concentration of phosphorus in the receiving water pursuant to s. NR 217.13(2)(d), Wis. Adm. Code
Qe = effluent flow rate = 0.46 MGD = 0.71 cfs
f = the fraction of effluent withdrawn from the receiving water = 0

Section NR 217.13(2)(d), Wis. Adm. Code, specifies that the background phosphorus concentration used in the limit calculation formula shall be calculated as a median using the procedures specified in s. NR 102.07(1)(b) to (c), Wis. Code. All representative data from the most recent 5 years shall be used, but data from the most recent 10 years may be used if representative of current conditions.

A previous evaluation resulted in a WQBEL of 0.075 mg/L using a background concentration of 0.070 mg/L. Section NR 217.13(2)(d), Wis. Adm. Code, states that the determination of upstream concentrations shall be evaluated at each permit reissuance. Additional data were considered in estimating the background phosphorus concentration.

A review of all available in stream total phosphorus data from May 2002 to October 2002 stored in the Surface Water Integrated Monitoring System database indicates the median background total phosphorus concentration in Little Sugar River at Highway 69 New Glarus (SWIMS station ID 233023) is 0.070 mg/L, just upstream from the point of discharge to Little Sugar River.

SWIMS ID	233023
Station Name	Monitoring station at Little Sugar River at highway 69 New Glarus
Waterbody	Little Sugar River
Sample Count	4 of samples
First Sample	05/20/2002
Last Sample	10/13/2002
Median	0.070 mg/L

Substituting a median value of 0.070 mg/L into the limit calculation equation above, the calculated limit is 0.12 mg/L

Effluent Data
The following table summarizes effluent total phosphorus monitoring data from June 2019 to July 2025.

Total Phosphorus Effluent Data

	Phosphorus mg/L
1-day P_{99}	2.1
4-day P_{99}	1.2
30-day P_{99}	0.67
Mean	0.45
Std	0.43
Sample size	770
Range	<0.02 - 3.14

Reasonable Potential Determination
The calculated WQBEL of 0.12 mg/L is less than the current technology-based limit of 1.0 mg/L, so the **WQBEL must be included in the permit** per s. NR 217.15(2), Wis. Adm. Code.

The discharge has reasonable potential to cause or contribute to an exceedance of the water quality criterion and is currently operating the treatment facility to remove phosphorus and meet the WQBELs. Therefore, **the WQBELs are required to continue in the reissued permit per ss. NR 217.15 and 205.067(5), Wis. Adm. Codes.**

Limit Expression
According to s. NR 217.14(2), Wis. Adm. Code, because the calculated WQBEL is less than or equal to 0.3 mg/L, the effluent limit of 0.12 mg/L may be expressed as a six-month average. If a concentration limitation expressed as a six-month average is included in the permit, a monthly average concentration limitation of 0.36 mg/L equal to three times the WQBEL calculated under s. NR 217.13, Wis. Adm. Code shall also be included in the permit. The six-month average should be averaged during the months of May – October and November – April.

Mass Limits
A mass limit is also required, pursuant to s. NR 217.14(1)(a), Wis. Adm. Code, because the discharge is to a surface water that is to or upstream of a phosphorus impaired water. **This mass limit shall be 0.12 mg/L × 8.34 × 0.46 MGD = 0.46 lbs/day expressed as a six-month average.**

PART 5 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL

Surface water quality standards for temperature took effect on October 1, 2010. These regulations are

detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

In accordance with s. NR 106.53(2)(b), Wis. Adm. Code, the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s. NR 106.53(2)(c), Wis. Adm. Code, the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation. These values were based off actual flow reported from June 2019 to November 2024.

The table below summarizes the maximum temperatures reported during monitoring from January 2024 to December 2024.

Monthly Temperature Effluent Data & Limits

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	53	53	65	114
FEB	54	57	61	92
MAR	56	57	65	101
APR	58	59	64	81
MAY	59	62	71	85
JUN	66	66	73	81
JUL	66	68	70	78
AUG	**69**	70	**68**	85
SEP	**68**	68	**64**	84
OCT	**64**	66	**56**	83
NOV	**62**	63	**59**	101
DEC	54	57	60	100

Reasonable Potential

The New Glarus Wastewater Treatment Facility has submitted a request for consideration of dissipative cooling, referencing a previous dissipative cooling study and a statement that there have not been substantial changes to the facility. Based on this information, **the department has found that it is not necessary to include temperature limits in the reissued permit. Temperature monitoring is recommended** per the requirements of s. NR 106.59(7), Wis. Adm. Code.

Future WPDES Permit Reissuance
Dissipative cooling (DC) requests must be re-evaluated every permit reissuance. The permittee is responsible for submitting an updated DC request prior to permit reissuance. Such a request must either include:

a) A statement by the permittee that there have been no substantial changes in operation of, or thermal loadings to, the treatment facility and the receiving water; or
b) New information demonstrating DC to supplement the information used in the previous DC determination. If significant changes in operation or thermal loads have occurred, additional DC data must be submitted to the Department.

PART 6 – WHOLE EFFLUENT TOXICITY (WET)

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

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. To assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC_{50} (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09(2)(b), Wis. Adm Code.

- Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure. To assure that a discharge is not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid IC_{25} (Inhibition Concentration) greater than the instream waste concentration (IWC), according to s. NR 106.09(3)(b), Wis. Adm Code. The IWC is an estimate of the proportion of effluent to total volume of water (receiving water + effluent). The **IWC of 43%,** shown in the WET Checklist summary below, was calculated according to the following equation, as specified in s. NR 106.03(6), Wis. Adm Code:

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

Where:
Q_e = annual average flow = 0.46 MGD = 0.70 cfs
f = fraction of the Q_e withdrawn from the receiving water = 0
Q_s = ¼ of the 7-Q_{10} = 3.8 cfs ÷ 4 = 0.95 cfs

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

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), receiving water must be used as the dilution water and primary control in

acute and chronic WET tests, unless the use of different dilution water is approved by the Department prior to use. The dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from the receiving water location, upstream and out of the influence of the mixing zone and any other known discharge. The specific receiving water location must be specified in the WPDES permit.

- Shown below is a tabulation of all available WET data for Outfall 001. Efforts are made to ensure that decisions about WET monitoring and limits are made based on representative data, as specified in s. NR 106.08(3), Wis. Adm Code. Data which is not believed to be representative of the discharge was not included in reasonable potential calculations. The table below differentiates between tests used and not used when making WET determinations.

WET Data History

Date Test Initiated	Acute Results LC_{50} %				Chronic Results IC_{25} %				Footnotes or Comments
	C. dubia	Fathead minnow	Pass or Fail?	Used in RP?	*C. dubia*	Fathead Minnow	Pass or Fail?	Use in RP?	
09/17/1996	>100	>100	Pass	No	>95	-	-	No	1
10/21/1997	>100	>100	Pass	No	>95	>95	Pass	No	1
11/03/1999	>100	>100	Pass	No	>100	-	-	No	1
01/29/2001	-	-	-	-	>100	>100	Pass	No	1
06/10/2003	>100	>100	Pass	No	>100	>100	Pass	No	1
08/26/2004	>100	>100	Pass	No	91	>100	Pass	No	1
10/25/2005	>100	>100	Pass	No	>100	>100	Pass	No	2
06/01/2006	-	-	-	-	>100	>100	Pass	No	2
08/31/2010	>100	>100	Pass	No	>100	>100	Pass	No	2
12/06/2011	>100	>100	Pass	Yes	>100	>100	Pass	Yes	-
05/14/2013	-	-	-	-	>100	>100	Pass	Yes	-
10/27/2015	-	-	-	-	>100	>100	Pass	Yes	-
03/22/2016	>100	>100	Pass	No	-	-	-	-	-
05/09/2017	-	-	-	-	>100	>100	Pass	Yes	-
07/25/2018	>100	>100	Pass	No	-	-	-	-	-
12/10/2019	-	-	-	-	>100	>100	Pass	Yes	-
11/28/2023	-	-	-	-	>100	>100	Pass	Yes	-
07/23/2024	>100	>100	Pass	Yes	47	>100	Pass	Yes	-

Footnotes:

1. *Data Not Representative.* Significant changes were made to WET test methods in 2004 and these changes were assumed to be fully implemented by certified labs by no later than June 2005. It may be appropriate to exclude data collected before July 1, 2005, unless 1) it shows repeated toxicity that was never resolved or 2) older data is all that is available, and no significant changes have occurred which obviously make it unrepresentative.
2. *Tests done by S-F Analytical, July 2008 – March 2011.* The DNR has reason to believe that WET tests completed by SF Analytical Labs from July 2008 through March 31, 2011 were not performed using proper test methods. Therefore, WET data from this lab during this period has been disqualified and was not included in the analysis.

- According to s. NR 106.08, Wis. Adm. Code, WET reasonable potential is determined by multiplying the highest toxicity value that has been measured in the effluent by a safety factor, to predict the likelihood (95% probability) of toxicity occurring in the effluent above the applicable WET limit. The safety factor used in the equation changes based on the number of toxicity detects in the dataset. The

fewer detects present, the higher the safety factor, because there is more uncertainty surrounding the predicted value. **WET limits must be given, according to s. NR 106.08(6), Wis. Adm. Code, whenever the applicable Reasonable Potential equation results in a value greater than 1.0.**

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

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

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

Chronic Reasonable Potential = [(TU_c effluent) (B)(IWC)]

Chronic WET Limit Parameters

TUc (maximum) $100/IC_{25}$	**B** (multiplication factor from s. NR 106.08(6)(c), Wis. Adm. Code, Table 4)	IWC
100/47 = 2.1 TU_c	6.2 Based on 1 detect	43%

[(TUc effluent) (B)(IWC)] =5.6 > 1.0

Therefore, reasonable potential is shown for a chronic WET limit using the procedures in s. NR 106.08(6), Wis. Adm. Code, and representative data from December 2011 to July 2024. The WET limit was triggered due the *C. dubia* result from July 23, 2024 of 47%.

Expression of WET limits

Chronic WET limit = [100/43] TU_c = 2.3 TU_c expressed as a monthly average

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

Attachment #1

WET Checklist Summary

	Acute	Chronic
AMZ/IWC	Not Applicable. **0 Points**	IWC = 43 %. **10 Points**
Historical Data	2 tests used to calculate RP. No tests failed. **0 Points**	2 tests used to calculate RP. No tests failed. **0 Points**
Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations. **0 Points**	Same as Acute. **0 Points**
Receiving Water Classification	Cold Water **5 Points**	Same as Acute. **5 Points**
Chemical-Specific Data	Ammonia nitrogen limit carried over from the current permit. Cadmium, Copper, Chloride and Zinc detected. **3 Points**	Ammonia nitrogen limit carried over from the current permit. Cadmium, Copper, Chloride and Zinc detected. **3 Points**
Additives	0 Biocides and 2 Water Quality Conditioners added. Permittee does not have proper P chemical SOPs in place **17 Points**	All additives used more than once per 4 days. **17 Points**
Discharge Category	4 Industrial Contributors. **8 Points**	Same as Acute. **8 Points**
Wastewater Treatment	Secondary or Better **0 Points**	Same as Acute. **0 Points**
Downstream Impacts	No impacts known **0 Points**	Same as Acute. **0 Points**
Total Checklist Points:	**33**	**42**
Recommended Monitoring Frequency (from Checklist):	3 tests during the permit term	1x yearly
Limit Required?	No	Yes Limit = 2.3 TU_c
TRE Recommended? (from Checklist)	No	No

- After consideration of the guidance provided in the Department's *WET Program Guidance Document* (2022) and other information described above, **three acute WET tests during the permit term and 1 yearly chronic WET test is recommended in the reissued permit**. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge. Testing should continue after the permit expiration date (until the permit is reissued).

- If a satisfactory phosphorus chemical SOP is established and implemented at the facility prior to permit reissuance, then acute WET testing can be reduced to 2 tests throughout the permit term and 3 chronic WET tests throughout the permit term the reissued permit.

- According to the requirements specified in s. NR 106.08, Wis. Adm. Code, **a chronic WET limit is required**. **The chronic WET limit shall be expressed as 2.3 TUc =100/43 as a monthly average** in the effluent limits table of the permit.

- **A minimum of annual chronic monitoring is required because a chronic WET limit is required**. Federal regulations in 40 CFR Part 122.44(i) require that monitoring occur at least once per year when a limit is present.

Thermal Table:

Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

						Temp Dates	Flow Dates
Facility:	New Glarus WWTF		**7-Q_{10}:**	3.80	cfs		
Outfall(s):	001		**Dilution:**	25%		**Start:**	01/01/24	06/01/19
Date Prepared:			**f:**	0		**End:**	12/31/24	11/21/24
Design Flow (Qe):	0.46	MGD	**Stream type:**	Cold water community			
Storm Sewer Dist.	0	ft	**Qs:Qe ratio:**	1.3	:1		
			Calculation Needed?	YES			

Month	Water Quality Criteria			Receiving Water Flow Rate (Qs)	Representative Highest Effluent Flow Rate (Qe)		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Ta (default)	Sub-Lethal WQC	Acute WQC		7-day Rolling Average (Qesl)	Daily Maximum Flow Rate (Qea)		Weekly Average	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(cfs)	(MGD)	(MGD)		(°F)	(°F)	(°F)	(°F)
JAN	35	47	68	3.80	0.413	0.444	0	53	53	65	114
FEB	36	47	68	3.80	0.479	0.825	0	54	57	61	92
MAR	39	51	69	3.80	0.511	0.581	0	56	57	65	101
APR	47	57	70	3.80	0.873	1.263	0	58	59	64	81
MAY	56	63	72	3.80	0.531	0.734	0	59	62	71	85
JUN	62	67	72	3.80	0.505	0.711	0	66	66	73	81
JUL	64	67	73	3.80	0.677	1.043	0	66	68	70	78
AUG	63	65	73	3.80	0.422	0.495	0	**69**	70	**68**	85
SEP	57	60	72	3.80	0.442	0.740	0	**68**	68	**64**	84
OCT	49	53	70	3.80	0.709	0.998	0	**64**	66	**56**	83
NOV	41	48	69	3.80	0.407	0.529	0	**62**	63	**59**	101
DEC	37	47	69	3.80	0.459	0.639	0	-	-	60	100

Ammonia nitrogen calculations from the June 16, 2009 WQBEL memo

AMMONIA (as N) LIMITS	**New Glarus**					
CLASSIFICATION:	**COLDWATER COMMUNITY**					
EFFLUENT FLOW (MGD):	0.46					
EFFLUENT FLOW (cfs):	0.712					
MAX. EFFLUENT pH (s.u.):	7.75					
BACKGROUND INFORMATION:						
	Jan	***Feb***	***March***	***April***	***May***	***June***
7-Q_{10} (cfs)	5.3	5.5	7.9	8.6	6.9	5.9
7-Q_2 (cfs)	8.2	8.7	12.2	12.6	10.9	9.6
Ammonia (mg/L)	0.19	0.19	0.19	0.07	0.07	0.06
Temperature (deg C)	5	5	5	9	17	19
pH (std. units)	7.97	7.97	7.97	7.97	8.21	8.21
% of river flow used:	25	25	25	25	100	100
Reference weekly flow:	1.325	1.375	1.975	2.15	6.9	5.9
Reference monthly flow:	1.7425	1.84875	2.5925	2.6775	9.265	8.16
CRITERIA (in mg/L):						
Acute (@ effl. pH):	8.85	8.85	8.85	8.85	8.85	8.85
4-day Chronic (@ backgrd. pH):						
early life stages present	6.35	6.35	6.35	6.35	3.76	3.30
30-day Chronic (@ backgrd. pH)						
early life stages present	2.54	2.54	2.54	2.54	1.50	1.32
Daily maximum	17.70	17.70	17.70	17.70	17.70	17.70
Weekly average						
early life stages present	17.82	18.25	23.44	25.32	39.53	30.20
Monthly average						
early life stages present	8.29	8.64	11.10	11.83	20.17	15.79
	July	***Aug***	***Sept***	***Oct***	***Nov***	***Dec***
7-Q_{10} (cfs)	5.3	5.1	5.1	6.1	6.4	5.6
7-Q_2 (cfs)	8.3	8	8	9.1	9.7	8.6
Ammonia (mg/L)	0.06	0.06	0.06	0.05	0.19	0.19
Temperature (deg C)	20	19	16	9	5	5
pH (std. units)	8.21	8.21	8.21	8.21	7.97	7.97
% of river flow used:	100	100	100	25	25	25
Reference weekly flow:	5.3	5.1	5.1	1.525	1.6	1.4
Reference monthly flow:	7.055	6.8	6.8	1.93375	2.06125	1.8275
Acute (@ effl. pH):	8.85	8.85	8.85	8.85	8.85	8.85
4-day Chronic (@ backgrd. pH):	3.10	3.30	4.01	6.35	6.35	6.35
30-day Chronic (@ backgrd. pH)	1.24	1.32	1.60	2.54	2.54	2.54
Daily maximum	17.70	17.70	17.70	17.70	17.70	17.70
Weekly average	25.72	26.55	32.31	19.85	20.20	18.47
Monthly average	12.93	13.38	16.35	9.31	9.35	8.57

Attachment #4

Site Map: