City of Elroy Public Noticed Permit Fact Sheet

General Information

Permit Number:	WI-0023931-09-0
Permittee Name:	City of Elroy, 1717 Omaha St., Elroy WI 53929
Discharge Location:	Elroy Wastewater Treatment Facility, 150 Lake St., Elroy, WI, 53929 SW1/4 SW1/4, Section 33, T15N R02E, Juneau County, City of Elroy, WI
Receiving Water:	the Baraboo River, located in the Seymour Creek and Upper Baraboo River Watershed of the Lower Wisconsin River Basin in Juneau County
StreamFlow ($Q_{7,10}$):	9.6 cfs
Stream Classification:	Warmwater Sportfish, Non-public water supply
Discharge Type:	Existing, continuous
Design Flow:	0.333 MGD Annual Average
Significant Industrial Loading?	None
Operator at Proper Grade?	Yes
Approved Pretreatment Program?	N/A

Facility Description

The Elroy Wastewater Treatment Facility treats domestic and commercial wastewater from the City of Elroy, and industrial wastewater from Brunner Manufacturing (a plating company that has its own pretreatment). The annual average design flow is 0.333 million gallons per day (MGD) and the actual annual average effluent flow in 2023 was 0.152 MGD. Wastewater treatment involves fine screening, grit removal, activated sludge by use of an oxidation ditch and final clarification. Prior to final clarification, ferric chloride is added to treat for phosphorus removal (added in 2020). The effluent is disinfected via ultraviolet light prior to discharge over a cascade aerator to the Baraboo River. Sludge is treated by aerobic digestion and stored as a liquid until it is landspread on DNR approved agricultural fields. No major operational changes occurred during the last permit term. Significant effluent monitoring and/or limit changes proposed in the upcoming permit term are as follows: 1) fecal coliform monitoring and limits replaced with *Escherichia coli* (*E. coli*) monitoring and limits. 2) acute WET testing requirement removed, 3) chronic WET limit added and testing increased to annually, 4) flow frequency changed from continuous to daily for eDMR reporting purposes, 5) temperature monitoring added for one year, and 6) the total phosphorus concentration limit was removed. Radium monitoring of the sludge is no longer required, however, to quantitate 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.

Substantial Compliance Determination

After a desktop review of all discharge monitoring reports, land application reports, compliance schedule items, and a site visit on 8/6/2024, The permittee has been found to be in substantial compliance with their current WPDES permit.

Enforcement During Last Permit: No enforcement during last permit term. After a desktop review of all discharge monitoring reports, land application reports, compliance schedule items, and a site visit on 8/6/2024, the permittee has been found to be in substantial compliance with their current WPDES permit.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
701	Influent: 0.156 (2023)	Representative influent samples shall be collected after the pista grit. The samples should not include supernatant from decanting the aerobic digester.
001	Effluent to Baraboo River: 0.152 MGD (2023)	Representative effluent samples shall be collected after the final clarifier and before UV disinfection for all parameters other than E. coli. Representative grab samples for E. coli shall be collected after UV disinfection and prior to cascade aeration.
002	382,125 gallons landspread in 2023	Representative liquid sludge samples shall be collected from the storage tank and monitored for Lists 1, 2, 3 & 4 and PFAS annually and once in 2026 for PCBs.

1 Influent – Monitoring Requirements

Sample Point Number: 701- INFLUENT TO PLANT

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

Changes from Previous Permit:

Influent limitations and monitoring requirements were evaluated for this permit term and no changes were required.

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- DISCHARGE TO BARABOO RIVER

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	
BOD5, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
pH Field	Daily Min	6.0 su	Daily	Grab	
pH Field	Daily Max	9.0 su	Daily	Grab	
Nitrogen, Ammonia Variable Limit		mg/L	3/Week	See Table	Look up the variable ammonia limit from the 'Variable Ammonia Limitation' table and report the variable limit in the Ammonia Variable Limit column on the eDMR.
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	3/Week	24-Hr Flow Prop Comp	Report the daily maximum Ammonia result in the Nitrogen, Ammonia (NH3-N) Total column of the eDMR. See Ammonia Limitation Section.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	70 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies April-May
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	31 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies April-May

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	76 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies June-Sept
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	34 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies June-Sept
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	53 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies Oct-March
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	24 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies Oct-March
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit & monitoring apply May-Sept
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit & monitoring apply May-Sept. See the E. coli Percent Limit section in permit. Enter the result in the DMR on the last day of the month.
Temperature Maximum		deg F	3/Week	Multiple Grab	Monitoring required in 2028. See temp section in permit for more info.
Phosphorus, Total		mg/L	3/Week	24-Hr Flow Prop Comp	See TMDL section in permit
Phosphorus, Total	Monthly Avg	1.36 lbs/day	3/Week	Calculated	
Phosphorus, Total		lbs/month	Monthly	Calculated	Calculate the Total Monthly Discharge of phosphorus and report on the last day of the month on the DMR. See TMDL section in permit.
Phosphorus, Total		lbs/yr	Monthly	Calculated	Calculate the 12-month rolling sum of total monthly mass of phosphorus discharged and report on the last day of the month on the DMR. See TMDL section in permit.
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Monitoring required annually in specific quarters. See Nitrogen Series Monitoring section
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	in permit.
Chronic WET	Monthly Avg	5.6 TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET testing section in permit

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: 1) Fecal coliform monitoring and limits replaced with Escherichia coli (E. coli) monitoring and limits. 2) acute WET testing requirement removed, 3) chronic WET limit added and testing increased from twice/permit term to annually, 4) flow changed from continuous to daily for eDMR reporting purposes, 5) temperature monitoring added for one year, and 6) the total phosphorus concentration limit was removed. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

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 written by Ben Hartenbower dated September 19, 2024.

Monitoring Frequencies- The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term. Using the criteria previously stated, the department has increased the ammonia monitoring from 2/week to 3/week.

MUNICIPAL EFFLUENT LIMITS – In accordance with the federal regulation 40 CFR 122.45(d), and to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, limits in this permit are to be expressed as weekly average and monthly average limits whenever practicable.

BOD5, Total Suspended Solids and pH- Categorical limits and WQBELs are included in the permit as outlined in ch. NR 210, Wis. Adm. Code. The effluent limitations for BOD5, Total Suspended Solids and pH are carried over from the previous permit and are not subject to change at this time because the receiving water characteristics have not changed.

Ammonia: Water quality-based effluent limitations were evaluated for Ammonia Nitrogen based upon water quality criteria in ch. NR 105 (as revised March 2004), including acute toxicity criteria (ATC) and chronic toxicity criteria (CTC). Effluent limitations for ammonia are calculated using the procedures in s. NR 106.32, Wis. Adm. Code and are shown in the WQBEL memo dated 09/19/2024 referenced above. In addition to weekly and monthly average ammonia limits that vary by month, daily maximum ammonia limits that vary with effluent pH apply year-round. See table below for more information. pH sampling shall occur on the same day total ammonia (NH3-N) sampling occurs.

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
$6.0 \leq pH \leq 6.1$	108	$7.0 < pH \leq 7.1$	66	$8.0 < pH \leq 8.1$	14
$6.1 < pH \leq 6.2$	106	$7.1 < pH \leq 7.2$	59	$8.1 < pH \leq 8.2$	11
$6.2 < pH \leq 6.3$	104	$7.2 < pH \leq 7.3$	52	$8.2 < pH \leq 8.3$	9.4
$6.3 < pH \leq 6.4$	101	$7.3 < pH \leq 7.4$	46	$8.3 < pH \leq 8.4$	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

Disinfection/Fecal Coliform/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.

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 degrees F and the Fish & Aquatic Life criteria which are established to protect aquatic communities from lethal and sub-lethal thermal effects. One year of temperature monitoring is required in 2028 to establish a baseline of data to determine reasonable potential for the next reissuance.

Phosphorus- Chapter NR 217, Wis. Adm. Code. specifies WQBELs (water quality based effluent limits) for discharges of phosphorus to surface waters of the state. 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.

Elroy is included within the Wisconsin River Basin (WRB) total maximum daily load (TMDL), which was approved by EPA April 26, 2019. The TMDL establishes Waste Load Allocations (WLAs) for point source dischargers and determines the maximum amount of phosphorus that can be discharged and still protect water quality. The final effluent limits and monitoring expressed in the permit were derived from Site-Specific Criteria (SSC) for Lakes Petenwell, Castle Rock, and Wisconsin originally included in Appendix K of the TMDL report and approved by the U.S. Environmental Protection Agency on July 9, 2020.

The permittee's approved SSC-based WLA for this permittee is 344 lbs/yr and results in a calculated phosphorus mass limit of 1.36 lbs/day. The 12-month rolling sum of total monthly phosphorus (lbs/yr) shall be reported each month for direct comparison to the facility's WLA. T

The approved TMDL expresses WLAs as lbs/year and lbs/day (maximum annual load divided by 365 days). As outlined in Section 4.6 of the department's TMDL Development and Implementation Guidance: Integrating the WPDES and Impaired Waters Program, mass limits must be given in the permit that are consistent with the TMDL WLA and the phosphorus impracticability agreement that was approved by USEPA in 2012 (see NPDES MOA Addendum dated July 12, 2012 at https://prodoasint.dnr.wi.gov/swims/downloadDocument.do?id=167886175). 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 limits for phosphorus are expressed as a monthly average. This final effluent limits were derived from and comply with the applicable water quality criterion.

Facilities with WRB TMDL based effluent limits for phosphorus must report the 12-month rolling sum of total monthly discharge (lbs/yr). If reported 12-month rolling sums exceed the facility's max annual WLA, the facility's mass limits (monthly average) may be recalculated using more appropriate CVs or monitoring frequencies when the permit is reissued to bring discharge levels into compliance with the facility's given WLA.

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:

- 1st quarter (Jan – March) 2025
- 2nd quarter (April – June) 2026
- 4th quarter (Oct – Dec) 2027
- 3rd quarter (July – Sept) 2028
- 1st quarter (Jan – March) 2029

Whole Effluent Toxicity- 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). A monthly avg chronic WET limit of 5.6 TU_c applies and chronic WET tests are required annually in the following quarters:

- 1st quarter (Jan – March) 2025
- 2nd quarter (April – June) 2026
- 4th quarter (Oct – Dec) 2027
- 3rd quarter (July – Sept) 2028
- 1st quarter (Jan – March) 2029

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

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	50 dry US tons
Does sludge management demonstrate compliance? Yes						
Is additional sludge storage required? No						

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)**
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No						
Is a priority pollutant scan required? No Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

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	
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	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total		Percent	Annual	Composite	
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	
Potassium, Total Recoverable		Percent	Annual	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Once in 2026
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once in 2026
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS 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: 1) Monitoring for PFAS has been added once pursuant s. NR 204.06(2)(b)9., Wis. Adm. Code. 2) Radium monitoring removed because there were no radium testing results from groundwater monitoring of the municipal wells that were above 2.0 pCi/liter. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements".

Explanation of Limits and Monitoring Requirements

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

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

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

Other Comments:

Publishing Newspaper: Juneau Star Times, 201 E. State St., Mauston, WI 53948

Attachments:

Water Quality Based Effluent Limits: September 19, 2024 memo from Ben Hartenbower to Holly Heldstab titled "Water Quality-Based Effluent Limitations for the Elroy Wastewater Treatment Facility WPDES Permit No. WI-0023931"

Expiration Date:

12/31/2029

Justification Of Any Waivers From Permit Application Requirements

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

Prepared By: Holly Heldstab, Wastewater Specialist **Date:** 11/04/2024