

Permit Fact Sheet

General Information

Permit Number	WI-0031461-09-0
Permittee Name and Address	Walworth County Metro 975 W. Walworth Ave, Delavan, WI 53115
Permitted Facility Name and Address	Walworth County Metro 975 W Walworth Ave
Permit Term	October 01, 2026 to September 30, 2031
Discharge Location	Approximately 1,400 feet downstream from County Road P bridge, on the south bank of Turtle Creek. (Lat: -88.66115°W Long: 42.63692°N)
Receiving Water	Turtle Creek in Turtle Creek Watershed of Lower Rock River Basin in Walworth County
Stream Flow (Q _{7,10})	6.9 cfs
Stream Classification	Warm Water Sport Fish (WWSF), non-public water supply
Discharge Type	Existing and Continuous
Annual Average Design Flow (MGD)	7 MGD
Industrial or Commercial Contributors	10 Categorical and 8 Non-Categorical Industries.
Plant Classification	Advanced - A1 - Suspended Growth Processes; B - Solids Separation; C - Biological Solids/Sludges; P - Total Phosphorus; D - Disinfection; L - Laboratory; SS - Sanitary Sewage Collection System
Approved Pretreatment Program?	Yes

Facility Description

Walworth County Metropolitan Sewerage District (“WalCoMet”) receives wastewater via four force mains. Preliminary treatment includes biofilter media odor control with the option to add iron salts at the headworks, fine screening, and grit removal by a pista grit system. Primary clarification is by four rectangular clarifiers. Primary effluent gravity flows to a splitter box to divide the flow and RAS to the activated sludge process, and five final clarifiers. Ferric chloride and a polymer is used on the secondary effluent for phosphorus removal. Tertiary disc filtration was installed in 2024 to comply with phosphorus limits. Effluent is disinfected seasonally using UV and aerated before discharge to Turtle Creek. Waste sludge is thickened with a rotary drum thickener and anaerobically digested. The biosolids are stored onsite until land applied to Department approved agricultural sites. Offsite sludge storage is also available when necessary.

Substantial Compliance Determination

Enforcement During Last Permit: 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 app reports, compliance schedule items, and a site visit on July 24, 2025, this facility has been found to be in substantial compliance with their current permit.

Compliance determination made by Nick Lent, Compliance Engineer on December 19, 2025.

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	3.55 MGD (2025)	INFLUENT: 24-hour flow proportional composite samples shall be collected from the influent channel before mechanical screening. Flow is monitored by a Parshall flume flow monitor with level transmitter prior to primary clarification.
001	N/A – effluent flow not monitored in previous permit.	EFFLUENT: 24-hour flow proportional composite samples shall be collected after filters and after UV disinfection. Grab samples shall be taken after UV disinfection and post-aeration.
002	700 Tons (2025 Permit Application)	Anaerobically digested, Liquid, Class B biosolids. Representative samples shall be taken from the piping connected to the homogenously mixed tank.
003	N/A	Anaerobically digested, Liquid, Class B biosolids after extended-term uncovered storage. Representative samples shall be taken from the storage tank after mixing. Discharge does not regularly occur from this outfall. The permittee shall notify the Department at the beginning of any quarter that sludge from outfall 003 would be sampled and land applied.
101	N/A	FIELD BLANK: Sample point for reporting results of mercury field blanks collected using standard sample handling procedures.

Permit Requirements

1 Influent – Monitoring Requirements

1.1 Sample Point Number: 701- INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids,		mg/L	5/Week	24-Hr Flow	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Total				Prop Comp	
Cadmium, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See Influent Metals - Composite Sample section.
Chromium, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See Influent Metals - Composite Sample section.
Copper, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See Influent Metals - Composite Sample section.
Lead, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See Influent Metals - Composite Sample section.
Nickel, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See Influent Metals - Composite Sample section.
Zinc, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	See Influent Metals - Composite Sample section.
Mercury, Total Recoverable		ng/L	Monthly	24-Hr Flow Prop Comp	See Mercury Monitoring section.

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: The 'Influent Metals – Composite Sample' permit section has been removed from the permit. Samples collected for the influent metals requirements shall be one 24-Hr Flow Proportional Composite sample per month.

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 Inplant - Monitoring and Limitations

2.1 Sample Point Number: 101- Mercury field blank

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

Changes from Previous Permit:

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

Explanation of Limits and Monitoring Requirements

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

3 Surface Water - Monitoring and Limitations

3.1 Sample Point Number: 001- EFFLUENT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
BOD5, Total	Weekly Avg	10 mg/L	5/Week	24-Hr Flow Prop Comp	March-November
BOD5, Total	Weekly Avg	14 mg/L	5/Week	24-Hr Flow Prop Comp	December-February
BOD5, Total	Monthly Avg	10 mg/L	5/Week	24-Hr Flow Prop Comp	March-November
BOD5, Total	Monthly Avg	14 mg/L	5/Week	24-Hr Flow Prop Comp	December-February
Suspended Solids, Total	Weekly Avg	10 mg/L	5/Week	24-Hr Flow Prop Comp	March-November
Suspended Solids, Total	Weekly Avg	14 mg/L	5/Week	24-Hr Flow Prop Comp	December-February
Suspended Solids, Total	Monthly Avg	10 mg/L	5/Week	24-Hr Flow Prop Comp	March-November
Suspended Solids, Total	Monthly Avg	14 mg/L	5/Week	24-Hr Flow Prop Comp	December-February
Suspended Solids, Total	Weekly Avg	618 lbs/day	5/Week	Calculated	January, March, May, July, October, December
Suspended Solids, Total	Weekly Avg	684 lbs/day	5/Week	Calculated	February
Suspended Solids, Total	Weekly Avg	641 lbs/day	5/Week	Calculated	April, June, September, November
Suspended Solids, Total	Weekly Avg	574 lbs/day	5/Week	Calculated	August
Suspended Solids, Total	Monthly Avg	468 lbs/day	5/Week	Calculated	January, March, May, July, October, December
Suspended Solids, Total	Monthly Avg	519 lbs/day	5/Week	Calculated	February

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Suspended Solids, Total	Monthly Avg	485 lbs/day	5/Week	Calculated	April, June, September, November
Suspended Solids, Total	Monthly Avg	434 lbs/day	5/Week	Calculated	August
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Dissolved Oxygen	Daily Min	7.0 mg/L	Daily	Grab	
Nitrogen, Ammonia (NH3-N) Total	Daily Max	8.2 mg/L	5/Week	24-Hr Flow Prop Comp	January-December
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	8.2 mg/L	5/Week	24-Hr Flow Prop Comp	January-March, October-December
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	7.5 mg/L	5/Week	24-Hr Flow Prop Comp	April
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	7.0 mg/L	5/Week	24-Hr Flow Prop Comp	May
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	5.0 mg/L	5/Week	24-Hr Flow Prop Comp	June
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	4.3 mg/L	5/Week	24-Hr Flow Prop Comp	July
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	4.5 mg/L	5/Week	24-Hr Flow Prop Comp	August
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	6.4 mg/L	5/Week	24-Hr Flow Prop Comp	September
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	6.0 mg/L	5/Week	24-Hr Flow Prop Comp	January
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	6.8 mg/L	5/Week	24-Hr Flow Prop Comp	February
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	6.9 mg/L	5/Week	24-Hr Flow Prop Comp	March
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	3.5 mg/L	5/Week	24-Hr Flow Prop Comp	April
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	4.1 mg/L	5/Week	24-Hr Flow Prop Comp	May
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	3.6 mg/L	5/Week	24-Hr Flow Prop Comp	June
Nitrogen, Ammonia	Monthly Avg	2.4 mg/L	5/Week	24-Hr Flow	July, August

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
(NH3-N) Total				Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	3.0 mg/L	5/Week	24-Hr Flow Prop Comp	September
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	3.9 mg/L	5/Week	24-Hr Flow Prop Comp	October
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	4.8 mg/L	5/Week	24-Hr Flow Prop Comp	November
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	4.7 mg/L	5/Week	24-Hr Flow Prop Comp	December
E. coli	Geometric Mean - Monthly	126 #/100 ml	2/Week	Grab	May-September
E. coli	% Exceedance	10 Percent	Monthly	Calculated	May-September. See the E. coli Percent Limit section below. Enter the result in the DMR on the last day of the month.
Phosphorus, Total	Monthly Avg	0.8 mg/L	5/Week	24-Hr Flow Prop Comp	
Phosphorus, Total	Monthly Avg	15.4 lbs/day	5/Week	Calculated	January
Phosphorus, Total	Monthly Avg	18.4 lbs/day	5/Week	Calculated	February
Phosphorus, Total	Monthly Avg	15.1 lbs/day	5/Week	Calculated	March
Phosphorus, Total	Monthly Avg	14.9 lbs/day	5/Week	Calculated	April
Phosphorus, Total	Monthly Avg	12.7 lbs/day	5/Week	Calculated	May
Phosphorus, Total	Monthly Avg	12.3 lbs/day	5/Week	Calculated	June
Phosphorus, Total	Monthly Avg	8.51 lbs/day	5/Week	Calculated	July
Phosphorus, Total	Monthly Avg	7.01 lbs/day	5/Week	Calculated	August
Phosphorus, Total	Monthly Avg	6.92 lbs/day	5/Week	Calculated	September
Phosphorus, Total	Monthly Avg	7.84 lbs/day	5/Week	Calculated	October
Phosphorus, Total	Monthly Avg	9.79 lbs/day	5/Week	Calculated	November
Phosphorus, Total	Monthly Avg	12.2 lbs/day	5/Week	Calculated	December
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Nitrogen, Total		mg/L	Quarterly	Calculated	Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Chloride		mg/L	4/Month	24-Hr Flow Prop Com	Monitoring only in 2030. Sampling shall be done on four consecutive days one week per month.
Cadmium, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Com	
Chromium, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Com	
Copper, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Com	
Lead, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Com	
Nickel, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Com	
Zinc, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Com	See Metals Analysis Section
Mercury, Total Recoverable		ng/L	Monthly	Grab	See Mercury Monitoring Section
PFOS		ng/L	1/ 2 Months	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need schedule.
PFOA		ng/L	1/ 2 Months	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need schedule.
Temperature Maximum		deg F	3/Week	Continuous	Monitoring only in 2030
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annually in rotating quarters. See Whole Effluent Toxicity (WET) Testing section.
Chronic WET	Monthly Avg	1.2 rTUc	See Listed	24-Hr Flow	Annually in rotating quarters. See Whole

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
			Qtr(s)	Prop Comp	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.

- **E. coli**- Monitoring frequency updated.
- **Phosphorus** – Monitoring frequency updated.
- **Chloride** – Monitoring frequency updated.
- **PFOS and PFOA** – Monitoring once every two months is included in the permit in accordance with s. NR 106.98(2)(b), Wis. Adm. Code.
- **Chronic WET** – Limit added.

Explanation of Limits and Monitoring Requirements

Detailed discussions of limits and monitoring requirements can be found in the attached water quality-based effluent limits (WQBEL) memo dated October 31, 2025.

Monitoring Frequencies- The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term. Changes have been made to the monitoring frequencies for E. coli and Phosphorus to align with the standard for facilities of this design flow. Considering effluent data from the current permit, chloride monitoring was changed to 4 times per month for one year.

Monitoring frequencies for BOD, TSS, and Ammonia will remain at the minimum monitoring frequency as WalCoMet historically does not have limit exceedances in these categories and has a clean compliance record.

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 Chronic WET.

PFOS and PFOA – NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. At the first reissuance of a WPDES permit after August 1, 2022, the new rule requires WPDES permits for major municipal dischargers with an average flow rate greater than 1 MGD but less than 5 MGD, at a minimum sample effluent once every two-months for PFOS and PFOA pursuant s. NR 106.98(2)(b), Wis. Adm. Code.

A sample frequency of 1/2 months means one sample is taken during any two-month period. Examples of 1/2 month sample would be every other month (Jan, March, May, etc.) or back-to-back months with a break in between (February & March, May & June, Aug & Sept, etc.). DMR Short Forms will be generated for the following time periods: January-February, March-April, May-June, July-August, September-October, and November-December. At a minimum one sample result will be present on each form.

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

Whole Effluent Toxicity (WET) - 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 1.2 TUC as a monthly average.

TMDL - A total maximum daily load (TMDL) was developed for the Rock River Basin to determine the maximum amounts of phosphorus and sediment that can be discharged to protect and improve water quality. The Rock River Basin's TMDL was approved by the Environmental Protection Agency (EPA) on September 28, 2011. These final effluent limits were derived from and comply with the applicable water quality criterion and is consistent with the assumptions and requirements of the EPA-approved wasteload allocation (WLA) for the Rock River. The entire report can be found at: <https://dnr.wisconsin.gov/topic/TMDLs/RockRiver/index.html>. The proposed permit includes limitations and requirements necessary to implement the recommendations of the TMDL.

- **Suspended Solids, Total:** The TMDL mass limits are in addition to the concentration limit for suspended solids. The approved total suspended solids TMDL limits for this permittee are expressed as weekly average and monthly average effluent limits and were already effective during the previous permit term.
- **Phosphorus:** Wasteload allocations specified in TMDLs are expressed as WQBELs (water quality based effluent limits). The WLA-derived WQBELs are consistent with the assumptions and requirements of the approved Rock River TMDL. The approved total phosphorus TMDL limits for this permittee are expressed as monthly average effluent limits and were already effective during the previous permit term.

4 Land Application - Monitoring and Limitations

Municipal Sludge Description						
Sample Point	Sludge Class (A or B)	Sludge Type (Liquid or Cake)	Pathogen Reduction Method	Vector Attraction Method	Reuse Option	Amount Reused/Disposed (Dry Tons/Year)
002	B	Liquid	Anaerobic Digestion	Incorporation	Land Application	700
003	B	Liquid	Anaerobic Digestion	Incorporation	Land Application	N/A
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						
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? Yes						
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.						

4.1 Sample Point Number: 002- Anaerobic Liquid Sludge

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Quarterly	Grab	
Arsenic Dry Wt	Ceiling	75 mg/kg	Quarterly	Grab	
Arsenic Dry Wt	High Quality	41 mg/kg	Quarterly	Grab	
Cadmium Dry Wt	Ceiling	85 mg/kg	Quarterly	Grab	
Cadmium Dry Wt	High Quality	39 mg/kg	Quarterly	Grab	
Copper Dry Wt	Ceiling	4,300 mg/kg	Quarterly	Grab	
Copper Dry Wt	High Quality	1,500 mg/kg	Quarterly	Grab	
Lead Dry Wt	Ceiling	840 mg/kg	Quarterly	Grab	
Lead Dry Wt	High Quality	300 mg/kg	Quarterly	Grab	
Mercury Dry Wt	Ceiling	57 mg/kg	Quarterly	Grab	
Mercury Dry Wt	High Quality	17 mg/kg	Quarterly	Grab	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Quarterly	Grab	
Nickel Dry Wt	Ceiling	420 mg/kg	Quarterly	Grab	
Nickel Dry Wt	High Quality	420 mg/kg	Quarterly	Grab	
Selenium Dry Wt	Ceiling	100 mg/kg	Quarterly	Grab	
Selenium Dry Wt	High Quality	100 mg/kg	Quarterly	Grab	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Quarterly	Grab	
Zinc Dry Wt	High Quality	2,800 mg/kg	Quarterly	Grab	
Nitrogen, Total Kjeldahl		Percent	Quarterly	Grab	
Nitrogen, Ammonium (NH ₄ -N) Total		Percent	Quarterly	Grab	
Phosphorus, Total		Percent	Quarterly	Grab	
Phosphorus, Water Extractable		% of Tot P	Quarterly	Grab	
Potassium, Total Recoverable		Percent	Quarterly	Grab	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Grab	Once in 2027
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Grab	Once in 2027
Radium 226 Dry Wt		pCi/g	Annual	Grab	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
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.
Municipal Sludge Priority Pollutant Scan			Once	Grab	As specified in ch. NR 215.03 (1-4), Wis. Adm. Code

Changes from Previous Permit:

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

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

Municipal Sludge Priority Pollutant Scan – Added to the permit per ch. NR 204.06(2)(b)(6), 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) Wis. Adm. Code. Requirements for pathogens are specified in s. NR 204.07(6) Wis. Adm. Code and in s. NR 204.07 (7) Wis. Adm. Code for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k) Wis. Adm. Code. Radium requirements are addressed in s. NR 204.07(3)(n) Wis. Adm. Code.

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.

4.2 Sample Point Number: 003- Offsite storage

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Quarterly	Grab	
Arsenic Dry Wt	Ceiling	75 mg/kg	Quarterly	Grab	
Arsenic Dry Wt	High Quality	41 mg/kg	Quarterly	Grab	
Cadmium Dry Wt	Ceiling	85 mg/kg	Quarterly	Grab	
Cadmium Dry Wt	High Quality	39 mg/kg	Quarterly	Grab	
Copper Dry Wt	Ceiling	4,300 mg/kg	Quarterly	Grab	
Copper Dry Wt	High Quality	1,500 mg/kg	Quarterly	Grab	
Lead Dry Wt	Ceiling	840 mg/kg	Quarterly	Grab	
Lead Dry Wt	High Quality	300 mg/kg	Quarterly	Grab	
Mercury Dry Wt	Ceiling	57 mg/kg	Quarterly	Grab	
Mercury Dry Wt	High Quality	17 mg/kg	Quarterly	Grab	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Quarterly	Grab	
Nickel Dry Wt	Ceiling	420 mg/kg	Quarterly	Grab	
Nickel Dry Wt	High Quality	420 mg/kg	Quarterly	Grab	
Selenium Dry Wt	Ceiling	100 mg/kg	Quarterly	Grab	
Selenium Dry Wt	High Quality	100 mg/kg	Quarterly	Grab	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Quarterly	Grab	
Zinc Dry Wt	High Quality	2,800 mg/kg	Quarterly	Grab	
Nitrogen, Total Kjeldahl		Percent	Quarterly	Grab	
Nitrogen, Ammonium (NH ₄ -N) Total		Percent	Quarterly	Grab	
Phosphorus, Total		Percent	Quarterly	Grab	
Phosphorus, Water Extractable		% of Tot P	Quarterly	Grab	
Potassium, Total Recoverable		Percent	Quarterly	Grab	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Grab	Once in 2027
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Grab	Once in 2027
Radium 226 Dry Wt		pCi/g	Annual	Grab	
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
					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. See additional explanation of limits under “Explanation of Limits and Monitoring Requirements” below.

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

Explanation of Limits and Monitoring Requirements

Sampling and Monitoring of parameters from Sample Point 003 are only required when discharge occurs to this outfall.

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) Wis. Adm. Code. Requirements for pathogens are specified in s. NR 204.07(6) Wis. Adm. Code and in s. NR 204.07 (7) Wis. Adm. Code for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k) Wis. Adm. Code. Radium requirements are addressed in s. NR 204.07(3)(n) Wis. Adm. Code.

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

5 Schedules

5.1 PFOS/PFOA Minimization Plan Determination of Need

Required Action	Due Date
Report on Effluent Discharge: Submit a report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations. This analysis should also include a comparison to the applicable narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code. This report shall include all additional PFOS and PFOA data that may be collected including any	09/30/2027

influent, intake, in-plant, collection system sampling, and blank sample results.	
Report on Effluent Discharge and Evaluation of Need: Submit a final report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations of data collected over the last 24 months. The report shall also provide a comparison on the likelihood of the facility needing to develop a PFOS/PFOA minimization plan. This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results. The permittee shall also submit a request to the department to evaluate the need for a PFOS/PFOA minimization plan. If the Department determines a PFOS/PFOA minimization plan is needed based on a reasonable potential evaluation, the permittee will be required to develop a minimization plan for Department approval no later than 90 days after written notification was sent from the Department. The Department will modify or revoke and reissue the permit to include PFOS/PFOA minimization plan reporting requirements along with a schedule of compliance to meet WQBELs. Effluent monitoring of PFOS and PFOA shall continue as specified in the permit until the modified permit is issued. If, however, the Department determines there is no reasonable potential for the facility to discharge PFOS or PFOA above the narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code, no further action is required and effluent monitoring of PFOS and PFOA shall continue as specified in the permit.	09/30/2028

Explanation of Schedule

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

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

5.2 Land Application Management Plan

A management plan is required for the land application system.

Required Action	Due Date
Land Application Management Plan Submittal: Submit an update to the 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.	09/30/2027

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 10/31/2025

Justification Of Any Waivers From Permit Application Requirements

No waivers requested or granted as part of this permit reissuance

Prepared By: Marissa Fleege Wastewater Specialist

Date: 06/02/2026

Date Modified Post Fact Check: 8/18/2026

Date Modified Post Public Notice:

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 10/31/2025

TO: Amanda Perdzock – WY/3

FROM: Nicole Krueger – SER *Nicole Krueger*

SUBJECT: Water Quality-Based Effluent Limitations for the Walworth County Metropolitan Sewerage District
WPDES Permit No. WI-0031461-09

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 Walworth County Metropolitan Sewerage District in Walworth County. This municipal wastewater treatment facility (WWTF) discharges to the Turtle Creek, located in the Turtle Creek Watershed in the Lower Rock River Basin. This discharge is included in the Rock River Total Maximum Daily Load (TMDL) as approved by EPA on 09/28/2011.

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
BOD ₅ Dec – Feb Mar – Nov			14 mg/L 10 mg/L	14 mg/L 10 mg/L		1,3
TSS Dec – Feb Mar – Nov			14 mg/L 10 mg/L TMDL	14 mg/L 10 mg/L TMDL		1,3,4
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		7.0 mg/L				1
Ammonia Nitrogen January February March April May June July August September October November December	8.2 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L		8.2 mg/L 8.2 mg/L 8.2 mg/L 7.5 mg/L 7.0 mg/L 5.0 mg/L 4.3 mg/L 4.5 mg/L 6.4 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L	6.0 mg/L 6.8 mg/L 6.9 mg/L 3.5 mg/L 4.1 mg/L 3.6 mg/L 2.4 mg/L 2.4 mg/L 3.0 mg/L 3.9 mg/L 4.8 mg/L 4.7 mg/L		1,3
<i>E. coli</i> May – September				126#/100 mL geometric mean		5
Phosphorus				0.8 mg/L		1,4

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
				TMDL		
TKN, Nitrate+Nitrite, and Total Nitrogen						6
Chloride						7
Mercury						1,2
PFOS and PFOA						8
Temperature						1,2
Acute WET						9,10
Chronic WET				1.2 TUc		9,10

Footnotes:

1. No changes from the current permit.
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. The TSS and phosphorus mass limits, shown below, are based on the Total Maximum Daily Load (TMDL) for the Rock River Basin.

Month	Monthly Average TSS Effluent Limit (lbs/day)	Weekly Average TSS Effluent Limit (lbs/day)	Monthly Average TP Effluent Limit lbs/day
January	468	618	15.4
February	519	684	18.4
March	468	618	15.1
April	485	641	14.9
May	468	618	12.7
June	485	641	12.3
July	468	618	8.51
August	434	574	7.01
September	485	641	6.92
October	468	618	7.84
November	485	641	9.79
December	468	618	12.2

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. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, quarterly total nitrogen monitoring is recommended for all municipal major 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 (NO₃), nitrite (NO₂), and total Kjeldahl nitrogen (TKN) (all expressed as N).
7. Monitoring only at a frequency of 4x/month for one year on consecutive days.

8. PFOS and PFOA monitoring is recommended at a frequency of once every two months in accordance with s. NR 106.98(2), Wis. Adm. Code.
9. Annual acute and chronic WET testing is recommended. The Instream Waste Concentration (IWC) to assess chronic test results is 86%. 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 Turtle Creek.
10. 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).

Continued monitoring for total recoverable cadmium, chromium, copper, lead, nickel and zinc is also required because WalCoMet operates a local pretreatment program for the many industries that discharge to the treatment facility.

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

Attachments (4) – Narrative, Outfall Map, 2014 Ammonia Calculations, & Thermal Table

PREPARED BY: Nicole Krueger, Water Resources Engineer – SER

E-cc: Nick Lent, Wastewater Engineer – SER
 Tim Ryan, Regional Wastewater Supervisor – SER
 Diane Figiel, Water Resources Engineer – WY/3
 Nate Willis, Wastewater Engineer – WY/3

Attachment #1
**Water Quality-Based Effluent Limitations for
Walworth County Metro**

WPDES Permit No. WI-0031461-09

Prepared by: Nicole Krueger

PART 1 – BACKGROUND INFORMATION

Facility Description

Walworth County Metropolitan Sewerage District (“WalCoMet”) underwent a facility upgrade in 2009, increasing the average annual design flow from 5.75 MGD to 7.00 MGD. All wastewater is pumped to the facility via three force mains. Preliminary treatment includes biofilter media odor control with the option to add iron salts at the headworks, fine screening, rag removal, and grit removal by a piston grit system. Primary clarification is by four rectangular clarifiers. Primary effluent gravity flows to a splitter box to divide the flow and RAS to the activated sludge process, and five final clarifiers. Ferric chloride and a polymer is used on the secondary effluent for phosphorus removal. Tertiary disc filtration was installed in 2024 to comply with phosphorus limits. Effluent is disinfected seasonally using UV and aerated before discharge to Turtle Creek. Waste sludge is thickened with a rotary drum thickener and anaerobically digested. The biosolids are stored both on and offsite until applied to agricultural sites approved by the Department.

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

Existing Permit Limitations

The current permit, expiring on 12/31/2025, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
BOD ₅ Dec – Feb Mar – Nov			14 mg/L 10 mg/L	14 mg/L 10 mg/L		1,2,3
TSS Dec – Feb Mar – Nov			14 mg/L 10 mg/L TMDL	14 mg/L 10 mg/L TMDL		1,2,3,4
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		7.0 mg/L				1,2
Ammonia Nitrogen January February March April May June July	8.2 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L 8.2 mg/L		8.2 mg/L 8.2 mg/L 8.2 mg/L 7.5 mg/L 7.0 mg/L 5.0 mg/L 4.3 mg/L	6.0 mg/L 6.8 mg/L 6.9 mg/L 3.5 mg/L 4.1 mg/L 3.6 mg/L 2.4 mg/L		3

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Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
August	8.2 mg/L		4.5 mg/L	2.4 mg/L		
September	8.2 mg/L		6.4 mg/L	3.0 mg/L		
October	8.2 mg/L		8.2 mg/L	3.9 mg/L		
November	8.2 mg/L		8.2 mg/L	4.8 mg/L		
December	8.2 mg/L		8.2 mg/L	4.7 mg/L		
<i>E. coli</i> May – September				126#/100 mL geometric mean		5
Phosphorus				0.8 mg/L TMDL		4
TKN, Nitrate+Nitrite, and Total Nitrogen						6
Chloride						6
Mercury						6
Temperature						6
Acute WET						7
Chronic WET						7

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. These limits are based on the Warm Water Sport Fish (WWSF) community of the immediate receiving water as described in s. NR 210.05(1), Wis. Adm. Code.
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. The following table are the additional TMDL derived limits for TSS and total phosphorus from the Rock River TMDL, approved by EPA in September 2011.

Month	Monthly Average TSS Effluent Limit (lbs/day)	Weekly Average TSS Effluent Limit (lbs/day)	Monthly Average TP Effluent Limit lbs/day
January	468	618	15.43
February	519	684	18.44
March	468	618	15.1
April	485	641	14.9
May	468	618	12.7
June	485	641	12.3
July	468	618	8.51
August	434	574	7.01
September	485	641	6.92
October	468	618	7.84
November	485	641	9.79
December	468	618	12.2

5. 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 only
7. Annual acute and chronic WET testing is required in the current permit. The IWC for chronic WET was 86%.

Monitoring for total recoverable cadmium, chromium, copper, lead, nickel and zinc is also required because WalCoMet operates a local pretreatment program for the many industries that discharge to the treatment facility.

Receiving Water Information

- Name: Turtle Creek
- Waterbody Identification Code (WBIC): 790300
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply and recreational use.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q₁₀ and 7-Q₂ values are from USGS for Station 05431032, where Outfall 001 is located. The low flows were updated on 09/01/2006 by USGS.

7-Q₁₀ = 6.9 cubic feet per second (cfs)

7-Q₂ = 11.6 cfs

90-Q₁₀ = 10.3 cfs

Harmonic Mean Flow = 24.1 cfs using a drainage area of 83.3 mi²

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).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
7-Q ₁₀ (cfs)	14.0	12.9	17.3	18.0	14.6	10.4	10.1	8.7	7.1	9.0	13.0	11.7
7-Q ₂ (cfs)	19.3	28.4	29.4	33.0	25.1	23.4	15.0	13.5	12.8	15.5	17.2	16.2

- Hardness = 307 mg/L as CaCO₃. This value represents the geometric mean of data from chronic WET testing from 10/24/2017 – 05/14/2019.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%. This is the default mixing ratio. The facility completed a mixing zone study in 2002 which demonstrated that a 25% mixing zone is appropriate to use in this evaluation.
- Source of background concentration data: Metals data from the Rock River at Afton is used for this evaluation because there is no data available for the Turtle Creek. Rock River is within the same ecological landscape so ambient water quality characteristics are expected to be similar. Background chloride data is from Turtle Creek at STH 14. 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.

Attachment #1

- Impaired water status: The immediate receiving water is impaired for low DO and total phosphorus.

Effluent Information

- Design flow rate(s):
Annual average = 7.0 million gallons per day (MGD)
For reference, the actual average flow from 01/01/2021 – 04/30/2025 was 3.73 MGD.
- Hardness = 385 mg/L as CaCO₃. This value represents the geometric mean of data (n = 4) collected in March 2025 for the permit reissuance 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 13 industrial contributors.
- Water supply: Municipality waterworks from 9 service areas, surface water and groundwater.
- Additives: WalCoMet has included four additives in the permit application that have the potential to be present in Outfall 001. These additives are listed below:
 - Ferric chloride – phosphorus removal
 - Clarifloc A-210P – disc filter phosphorus control
 - Clarifloc CE-1442 – waste activated sludge thickener
 - Chlorine gas – return activated sludge chlorination
 - 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.
- Effluent characterization: This facility is categorized as a major municipal, so the permit application required effluent sample analyses for all the “priority pollutants” except for the Dioxins and Furans as specified in s. NR 200.065, Table 1, Wis. Adm. Code. The permit-required monitoring for Cd, Cr, Cu, Pb, Ni, Hg and Zn from 01/01/2021 – 04/30/2025 is used in this evaluation.
- 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.

Permit-Required Monitoring

	Cadmium**	Chromium	Copper	Lead**
1-day P ₉₉		2.42	7.51	
4-day P ₉₉		2.26	6.07	
30-day P ₉₉		1.47	3.96	
Mean*	0.0079	1.10	2.99	ND
Std		0.33	1.25	
Sample size	52	52	52	52
Range	<0.098 - 0.21	<0.99 - 2.7	<1.9 - 8.9	<0.25 - <27

	Nickel	Mercury	Zinc µg/L	Chloride mg/L
1-day P ₉₉	14.9	0.74	23.4	491
4-day P ₉₉	10.6	0.54	18.8	437
30-day P ₉₉	6.83	0.43	15.0	405

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	Nickel	Mercury	Zinc µg/L	Chloride mg/L
Mean*	5.15	0.38	13.1	388
Std	2.78	0.12	3.43	40.5
Sample size	52	52	51	17
Range	<1.2 - 16	0.18 - 0.69	<10 - 23	280 - 430

*Results below the limit of detection (LOD) were included as zeroes in calculation of average.

**Less than 11 data points were detected so P₉₉s could not be calculated.

The following table presents the average concentrations and loadings at Outfall 001 from 01/01/2021 – 04/30/2025 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	2.09 mg/L*	
TSS	0.728 mg/L*	14.6 lbs/day
pH field	7.81 s.u.	
Dissolved Oxygen	10.1 mg/L	
Ammonia Nitrogen	0.148 mg/L*	
<i>E. coli</i>	9.1 #/100 mL**	
Phosphorus	0.45 mg/L	13.8 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 P₉₉) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

Acute Limits based on 1-Q₁₀

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

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

Where:

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

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

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

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

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

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q₁₀ method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is the case for WalCoMet.

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

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 5.52 cfs, (1-Q₁₀ (estimated as 80% of 7-Q₁₀)), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD.* mg/L	ATC	MEAN BACK-GRD.	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P ₉₉	1-day MAX. CONC.
Arsenic		340	0.79	513	103	<1.1		
Cadmium	385	48.4	0.20	72.9	14.6	0.0079		
Chromium	301	4446	0.42	6711			2.42	2.7
Copper	385	55.4	1.52	82.8			7.51	8.9
Lead	356	365	0.83	550	110	<0.25		
Mercury (ng/L)		830	1.54	1252			0.74	0.69
Nickel	268	1080	1.34	1630			14.9	16
Zinc	333	345	5.15	518			23.4	23
Chloride (mg/L)		757	63.9	1110			491	430

* 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.

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

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 1.725 cfs (¼ of the 7-Q₁₀), as specified in s. NR 106.06(4)(c), Wis. Adm. Code

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SUBSTANCE	REF. HARD.* mg/L	CTC	MEAN BACK- GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P ₉₉
Arsenic		152	0.79	176	35.3	<1.1	
Cadmium	175	3.82	0.20	4.40	0.88	0.0079	
Chromium	301	326	0.42	378			2.26
Copper	307	27.0	1.52	31.1			6.07
Lead	307	82.8	0.83	95.8	19.2	<0.25	
Mercury (ng/L)		440	1.54	510			0.54
Nickel	268	120	1.34	139			10.6
Zinc	307	321	5.15	371			18.8
Chloride (mg/L)		395	63.9	448			437

* 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)

RECEIVING WATER FLOW = 2.47 cfs (¼ of the 90-Q₁₀), as specified in s. NR 106.06(4), Wis. Adm. Code

SUBSTANCE	WC	MEAN BACK- GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	30-day P ₉₉
Mercury (ng/L)	1.3	1.54	1.3			0.45

Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 6.018 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.	30-day P ₉₉
Cadmium	370	0.20	575	115	0.12	
Chromium (+3)	3818000	0.42	5939238			1.3
Lead	140	0.83	217	43.5	1.4	
Mercury (ng/L)	1.5	1.54	1.5			0.45
Nickel	43000	1.34	66890			5.4

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 6.018 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HCC	MEAN BACK- GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	13.3	0.79	20.3	4.05	<1.1
Chloroform	1960		3049	610	0.46

In addition to evaluating the need for limits for each individual substance for which HCC exist, s. NR 106.06(8), Wis. Adm. Code, requires the evaluation of the cumulative cancer risk. Because no effluent

limits are needed based on HCC, determination of the cumulative cancer risk is not needed per s. NR 106.06(8), Wis. Adm. Code.

Conclusions and Recommendations

Based on a comparison of the effluent data and calculated effluent limitations, effluent limitations are not required for toxic substances in this section. Monitoring recommendations are made in the paragraphs below:

Chloride – Considering available effluent data from the current permit term (02/04/2021 – 02/06/2025), the 1-day P₉₉ chloride concentration is 491 mg/L, and the 4-day P₉₉ of effluent data is 437 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 data is available at the next permit issuance to meet the data requirements of s. NR 106.85, Wis. Adm. Code. More frequent monitoring is recommended in the reissued permit** because the 4-day P₉₉ is close to exceeding the calculated weekly average WQBEL and the additional monitoring will assist in evaluating reasonable potential more precisely. Monitoring at 4 days per month on consecutive days for one year is recommended.

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

The current permit requires monthly monitoring of the influent and effluent for total recoverable mercury. A total of 52 effluent sampling results are available from 01/11/2021 – 04/15/2025 for total recoverable mercury. The average concentration was 0.38 ng/L, and the maximum was 0.69 ng/L. Because the 30-day P₉₉ of available data (0.73 ng/L) is less than the most stringent WQBEL of 1.3 ng/L, **no WQBEL for mercury is required for permit reissuance. Monitoring only is recommended to be continued.**

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code. Previous monitoring produced a PFOS result of 8.48 ng/L and a PFOA result of 9.43 ng/L. The PFOS result is greater than one fifth of the criteria of 8 ng/L. Based on the effluent flow rate and the available PFOS/PFOA monitoring data, **PFOS and PFOA monitoring is recommended at a once every two months frequency.**

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:

- The maximum expected effluent pH has changed

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

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

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

Where:

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

The effluent pH data was examined as part of this evaluation. A total of 1581 sample results were reported from 01/02/2021 – 04/30/2025. The maximum reported value was 8.56 s.u. (Standard pH Units). The effluent pH was 8.18 s.u. or less 99% of the time. The 1-day P₉₉, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 8.19 s.u. The mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 8.19 s.u. Therefore, a value of 8.2 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 8.2 s.u. into the equation above yields an ATC = 5.7 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 the 1-Q₁₀ receiving water low flow if it is determined that the previous method of acute ammonia limit calculation (2×ATC) is not sufficiently protective of the fish and aquatic life. The more restrictive calculated limits shall apply.

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

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
2×ATC	11
1-Q ₁₀	8.6

The 1-Q₁₀ method yields the most stringent limits for WalCoMet.

This limit is greater than the current daily maximum limit of 8.2 mg/L. Without a demonstration of need for a higher limit in accordance with s. NR 207.04, Wis. Adm. Code, the current limits must be continued in the reissued permit. The Department would be unable to increase the limit due to the lack of need as shown via the antidegradation rule (ch. NR 207, Wis. Adm. Code) because the highest reported concentration was 6.53 mg/L during the previous permit term. **No changes are recommended in any of the permit limits for ammonia.**

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 #3.

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from 01/02/2021 – 04/30/2025.

Ammonia Nitrogen Effluent Data

Ammonia Nitrogen mg/L	April - May	June - September	October - March
1-day P ₉₉	1.69	0.0480	2.07
4-day P ₉₉	1.08	0.0592	1.16
30-day P ₉₉	0.47	0.0360	0.48
Mean*	0.12	0.0240	0.17
Std	0.68	0.0000	0.68
Sample size	191	330	581
Range	<0.048 - 6.53	<0.048 - 0.048	<0.048 - 5.49

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

Reasonable Potential

The need to include ammonia limits in WalCoMet's permit is determined by calculating 99th upper percentile (or P₉₉) values for ammonia and comparing those to the calculated limits. Based on this comparison, there is no reasonable potential for the discharge to exceed any of the calculated ammonia nitrogen limits. However, since the permit currently has weekly and monthly average limits year-round, **the limits must be retained regardless of reasonable potential**, consistent with s. NR 106.33(1)(b), Wis. Adm. Code:

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

Conclusions and Recommendations

In summary, after rounding to two significant figures, the following ammonia nitrogen limitations are recommended. No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm Code. Additional limits to meet the requirements in s. NR 106.07, Wis. Adm Code, are denoted in bold text.

Final Ammonia Nitrogen Limits

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
January	8.2	8.2	6.0
February	8.2	8.2	6.8
March	8.2	8.2	6.9
April	8.2	7.5	3.5
May	8.2	7.0	4.1
June	8.2	5.0	3.6
July	8.2	4.3	2.4
August	8.2	4.5	2.4
September	8.2	6.4	3.0
October	8.2	8.2	3.9

Attachment #1

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
November	8.2	8.2	4.8
December	8.2	8.2	4.7

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 WalCoMet has phosphorus limits in effect that are more stringent than 1.0 mg/L, the need for a TBEL will not be considered further. The monthly average limit of 0.8 mg/L shall be continued.

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.

The Department has developed a TMDL for the Upper and Lower Rock River Basins which was approved by the US EPA in September 2011.

Section NR 217.16, Wis. Adm. Code, states that the Department may include a TMDL-based limitation for phosphorus in addition to, or in lieu of, an s. NR 217.13 WQBEL in a WPDES permit. The Rock River TMDL was developed to protect and improve water quality of phosphorus impaired waters by determining wasteload allocations (WLAs) for point and nonpoint sources of phosphorus. WalCoMet discharges to Turtle Creek which was listed as impaired for phosphorus at the time of TMDL development, so the TMDL-based limit can be included in the WPDES permit absent the s. NR 217.13, Wis. Adm. Code WQBEL. This is consistent with the current permit.

TMDL-Derived Limits

The approved Rock River TMDL report provides effluent limitations that are given in lbs/month in the document *Final Rock River TMDL Report with Tables*. The monthly WLAs were calculated as monthly averages in lbs/day as shown in the table below.

TMDL Limits

Month	Monthly TP WLA ¹ lbs/month	Monthly Average TP Effluent Limit lbs/day
January	478.23	15.4
February	516.42	18.4
March	469.15	15.1
April	447.74	14.9

Attachment #1

Month	Monthly TP WLA ¹ lbs/month	Monthly Average TP Effluent Limit lbs/day
May	394.83	12.7
June	370.17	12.3
July	263.95	8.51
August	217.39	7.01
September	207.49	6.92
October	243.07	7.84
November	293.60	9.79
December	376.93	12.2

Footnotes:

1. Rock River TMDL Appendix P. Monthly Total Phosphorus Allocations by Wastewater Treatment Facility

There are no changes to the WLAs or calculations and the final monthly average TP limits are rounded to three significant figures for consistency. WalCoMet has upgraded the treatment facility to replace sand filters with tertiary disc filters to assist in meeting the phosphorus limits which became effective in 2024.

Effluent Data

The following table summarizes effluent total phosphorus monitoring data from 07/02/2024 – 04/29/2025, after the TMDL limits became effective and the disc filters were installed.

Total Phosphorus Effluent Data

	Concentration mg/L	Mass lbs/day
1-day P ₉₉	0.76	19.6
4-day P ₉₉	0.49	13.1
30-day P ₉₉	0.35	9.80
Mean	0.29	8.19
Std	0.14	3.52
Sample size	128	128
Range	0.08 - 0.65	2.18 - 16.93

PART 5 – TOTAL SUSPENDED SOLIDS

The Rock River TMDL includes wasteload allocations (WLA) for total suspended solids (TSS) which shall be expressed as both weekly and monthly limits for a municipal facility. WalCoMet is currently able to comply with the TMDL- based mass limits for TSS, shown below:

TMDL TSS Limits

Month	Monthly TSS WLA ¹ (tons/month)	Monthly Average TSS Effluent Limit (lbs/day)	Weekly Average TSS Effluent Limit (lbs/day)
January	7.26	468	618
February	7.26	519	684

Attachment #1

Month	Monthly TSS WLA ¹ (tons/month)	Monthly Average TSS Effluent Limit (lbs/day)	Weekly Average TSS Effluent Limit (lbs/day)
March	7.26	468	618
April	7.28	485	641
May	7.26	468	618
June	7.28	485	641
July	7.26	468	618
August	6.74	434	574
September	7.28	485	641
October	7.26	468	618
November	7.28	485	641
December	7.26	468	618

Footnotes:

1. From the Rock River TMDL Appendix Q.

Because WalCoMet is currently complying with both phosphorus and TSS TMDL-based limits and the monitoring frequency has not changed, the TSS limits are not recalculated at this time and **no changes are recommended for the TSS limits in the reissued permit**. WalCoMet has been complying with these limits since 2015.

Effluent data from the current permit term is shown below for informational purposes.

Total Suspended Solids Effluent Data

	Concentration mg/L	Mass lbs/day
1-day P ₉₉	5.72	183
4-day P ₉₉	3.00	110
30-day P ₉₉	1.55	46
Mean*	0.73	14.6
Std	1.31	62.5
Sample size	1117	1974
Range	<0 – 11	<0 – 883

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

**PART 6 – WATER QUALITY-BASED EFFLUENT LIMITATIONS
FOR THERMAL**

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

In accordance with s. NR 106.53(2)(b), Wis. Adm. Code, the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s.

NR 106.53(2)(c), Wis. Adm. Code, the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation. These values were based off actual flow reported from 01/01/2021 – 04/30/2025.

The table below summarizes the maximum temperatures reported during monitoring from 01/01/2024 – 12/31/2024.

Monthly Temperature Effluent Data & Limits

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(°F)
JAN	51	52	56	92
FEB	50	52	56	84
MAR	51	52	58	92
APR	53	55	57	86
MAY	58	59	68	90
JUN	63	65	80	90
JUL	65	66	84	88
AUG	67	68	85	89
SEP	66	66	76	85
OCT	64	65	65	88
NOV	61	62	55	98
DEC	55	56	56	94

Reasonable Potential

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

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

Comparing the representative highest effluent temperature to the calculated effluent limits determines the reasonable potential of exceeding the effluent limits. The months in which limitations are recommended

are shown in bold. Based on this analysis, weekly average temperature maximum limits are necessary for November.

WalCoMet has submitted a request for consideration of dissipative cooling in January 2016 for a study that was completed in November 2015 which demonstrated that the effluent hugs the west bank of the creek so there is zone of free passage along the east side of the creek. The instream temperature dropped to below 5° F of the ambient temperature within 43 feet downstream of the outfall. WalCoMet has submitted statements that there have been no substantive changes in operations or loadings. 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 for one year 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 7 – WHOLE EFFLUENT TOXICITY (WET)

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

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. To assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC₅₀ (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09(2)(b), Wis. Adm Code.
- Chronic 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 IC₂₅ (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 86%**, 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:

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

Where:

Q_e = annual average flow = 7.0 MGD = 10.8 cfs

Attachment #1

f = fraction of the Q_c withdrawn from the receiving water = 0

Q_s = $\frac{1}{4}$ of the $7-Q_{10}$ = $6.9 \text{ cfs} \div 4 = 1.725 \text{ cfs}$

- 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 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. The facility went through a major upgrade in 2009, so data prior to this is not included in this evaluation.

WET Data History

Date Test Initiated	Acute Results LC ₅₀ %				Chronic Results IC ₂₅ %				Footnotes or Comments
	<i>C. dubia</i>	Fathead minnow	Pass or Fail?	Used in RP?	<i>C. dubia</i>	Fathead Minnow	Pass or Fail?	Use in RP?	
03/16/2010	>100	>100	Pass	No	>100	>100	Pass	No	1
03/01/2016	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
09/13/2016					>100	>100	Pass	Yes	
06/06/2017	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
10/24/2017					>100	>100	Pass	Yes	
02/13/2018					>100	>100	Pass	Yes	
07/17/2018					>100	>100	Pass	Yes	
10/03/2018	>100	>100	Pass	Yes					
05/14/2019					>100	>100	Pass	Yes	
07/17/2019	>100	>100	Pass	Yes					
03/10/2020	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
07/14/2020					97.2	>100	Pass	Yes	
04/20/2021	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
10/25/2022	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
09/26/2023	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
03/19/2024	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
04/22/2025	>100	>100	Pass	Yes	98.6	>100	Pass	Yes	

Footnotes:

1. *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.**

$$\text{Acute Reasonable Potential} = [(TU_a \text{ effluent}) (B)(AMZ)]$$

$$\text{Chronic Reasonable Potential} = [(TU_c \text{ effluent}) (B)(IWC)]$$

According to s. NR 106.08(6)(d), Wis. Adm. Code, TU_a and TU_c 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.

$$\text{Chronic Reasonable Potential} = [(TU_c \text{ effluent}) (B)(IWC)]$$

Chronic WET Limit Parameters

TU_c (maximum) 100/IC ₂₅	B (multiplication factor from s. NR 106.08(6)(c), Wis. Adm. Code, Table 4)	IWC
100/97.2 = 1.03	3.8 Based on 2 detects	86%

$$[(TU_c \text{ effluent}) (B)(IWC)] = 3.36 > 1.0$$

Therefore, reasonable potential is shown for chronic WET limits using the procedures in s. NR 106.08(6), Wis. Adm. Code, and representative data from 08/23/2005 – 04/22/2025.

Expression of WET limits

Chronic WET limit = $[100/IWC] TU_c = 1.2 TU_c$ 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

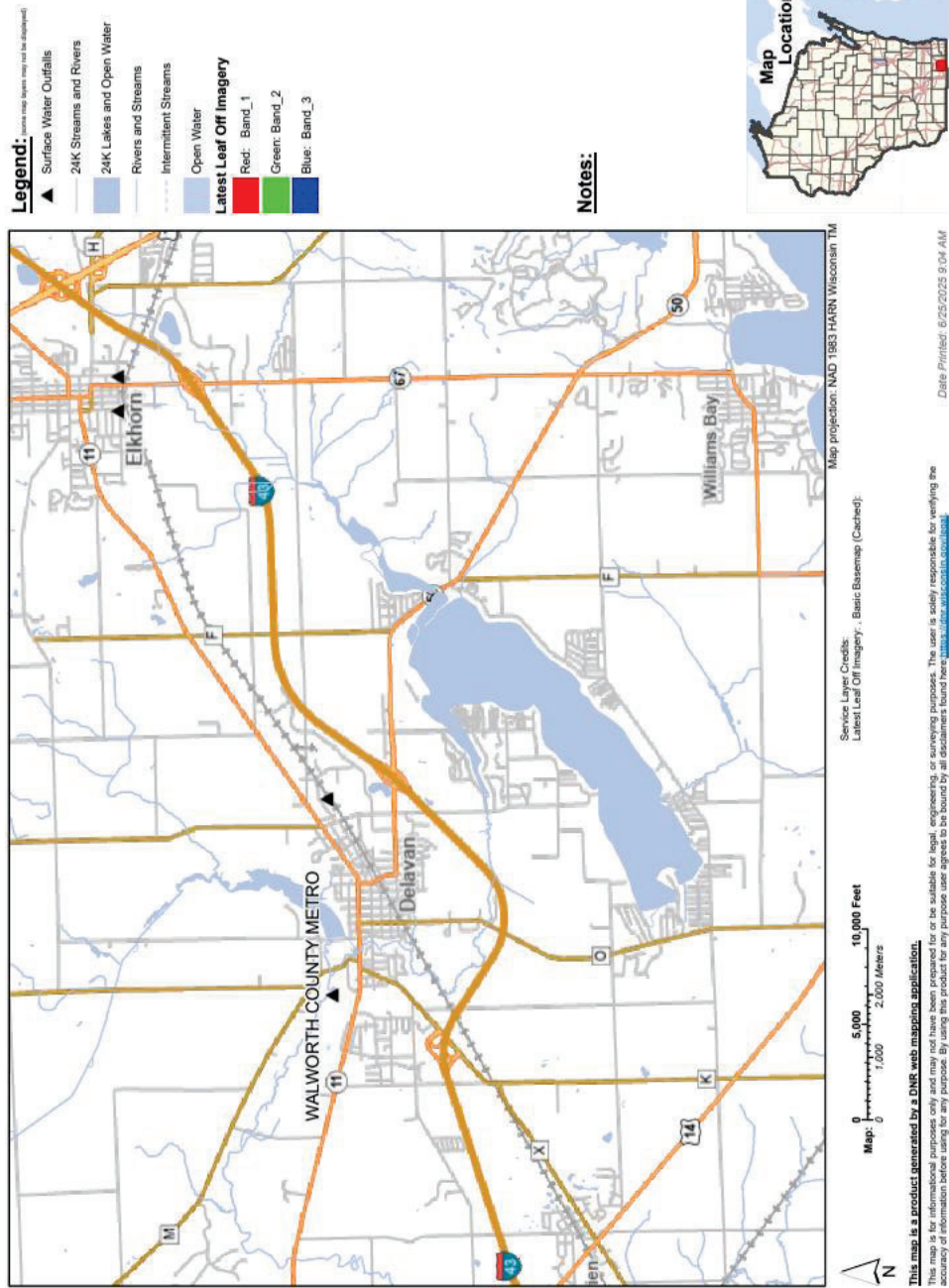
	Acute	Chronic
AMZ/IWC	Not Applicable. 0 Points	IWC = 86%. 15 Points
Historical Data	10 tests used to calculate RP. No tests failed. 0 Points	14 tests used to calculate RP. No tests failed. 0 Points
Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations. 0 Points	Same as Acute. 0 Points
Receiving Water Classification	WWSF 5 Points	Same as Acute. 5 Points
Chemical-Specific Data	No reasonable potential for any limits based on ATC; Ammonia nitrogen limit carried over from the current permit. Cadmium, chromium, copper, mercury, nickel, zinc, chloride, and ammonia detected. Additional Compounds of Concern: Chloroform 5 Points	No reasonable potential for any limits based on CTC; Ammonia nitrogen limit carried over from the current permit. Cadmium, chromium, copper, mercury, nickel, zinc, chloride, and ammonia detected. Additional Compounds of Concern: Chloroform 5 Points
Additives	1 Biocide and 3 Water Quality Conditioners added. Permittee has proper P chemical SOPs in place. 6 Points	Some additives used more than once per 4 days. 6 Points
Discharge Category	13 Industrial Contributors. 15 Points	Same as Acute. 15 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:	31 Points	46 Points
Recommended Monitoring Frequency (from Checklist):	1x yearly	2x yearly
Limit Required?	No	Yes Limit = 1.2 TU _c
TRE Recommended? (from Checklist)	No	No

- The use of chlorine at the plant adds 3 points to the checklist. However, chlorine is used once a year and is treated through the wastewater treatment facility. It's recommended that the chronic tests are

completed annually, rather than 2x/year because the use of chlorine is not expected to contribute to toxicity in the outfall.

- After consideration of the guidance provided in the Department's *WET Program Guidance Document* (2022) and other information described above, annual acute and 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).
- 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 1.2 TUC 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.
- A minimum of annual acute and chronic monitoring is recommended because WalCoMet is a major municipal discharger with a design flow greater than 1.0 MGD. Federal regulations at 40 CFR Part 122.21(j) require at least 4 acute and chronic WET tests with each permit application on samples collected since the previous reissuance. Therefore, annual monitoring is recommended in the permit term, so that data will be available for the next permit application.

Walworth County Metro Outfall Location



Attachment #3
2014 Ammonia Nitrogen Limits Calculation

Weekly average and monthly average limits for Ammonia Nitrogen are based on chronic toxicity criteria.

The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified as a Warmwater sport fishery is calculated by the following equation.

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

Where:

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

E = 0.854,

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

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

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

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

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

The rules provide a mechanism for less stringent weekly average and monthly average effluent limitations when early life stages (ELS) of critical organisms are absent from the receiving water. This applies only when the water temperature is less than 14.5 °C, during the winter and spring months. Burbot, an early spawning species, are not believed to be present in Turtle Creek, based on conversations with local fisheries biologists. So “ELS Absent” criteria apply from October through March, and “ELS Present” criteria will apply from April through September.

The following sources are used to determine “default” basin values due to the fact that there is minimal ambient data.

- Temperature = Ta in ch. NR 102 for small warm water sport fish
- pH from the *pH Default Summary* based on hardness > 151 ppm
- Background ammonia concentrations from the *Background Condition Guidance* for the Rock River Basin

The criteria and resulting effluent limitations are shown in the table below:

		January	February	March	April	May	June
Background Information	7-Q ₁₀ (cfs)	14	12.9	17.3	18	14.6	10.4
	7-Q ₂ (cfs)	19.3	28.4	29.4	33	25.1	23.4
	Ammonia (mg/L)	0.17	0.17	0.17	0.09	0.09	0.07
	Temperature (°C)	0.6	1.1	3.3	8.9	14.4	18.9
	pH (s.u.)	7.9	7.9	7.9	8.09	8.09	8.09
	% of Flow used	25	25	25	25	50	100

Attachment #3

	Reference Weekly Flow (cfs)	3.5	3.225	4.325	4.5	7.3	10.4
	Reference Monthly Flow (cfs)	4.10125	6.035	6.2475	7.0125	10.6675	19.89
Criteria mg/L	4-Day Chronic						
	Early Life Stages Present	6.99	6.99	6.99	5.32	5.32	4.01
	Early Life Stages Absent	11.36	11.36	11.36	7.65	5.36	4.01
	30-Day Chronic						
	Early Life Stages Present	2.80	2.80	2.80	2.13	2.13	1.61
	Early Life Stages Absent	4.54	4.54	4.54	3.06	2.15	1.61
Effluent Limitations mg/L	Weekly Average						
	Early Life Stages Present				7.50	8.85	7.80
	Early Life Stages Absent	14.97	14.69	15.82			
	Monthly Average						
	Early Life Stages Present				3.45	4.14	4.42
	Early Life Stages Absent	6.20	6.98	7.06			

Attachment #3

		July	August	September	October	November	December
Background Information	7-Q ₁₀ (cfs)	10.1	8.7	7.1	9	13	11.7
	7-Q ₂ (cfs)	15	13.5	12.8	15.5	17.2	16.2
	Ammonia (mg/L)	0.07	0.07	0.1	0.1	0.1	0.17
	Temperature (°C)	20.1	19.4	15.6	10	4.4	1.7
	pH (s.u.)	8.08	8.08	8.08	8.06	8.06	8.06
	% of Flow used	100	100	50	25	25	25
	Reference Weekly Flow (cfs)	10.1	8.7	3.55	2.25	3.25	2.925
	Reference Monthly Flow (cfs)	12.75	11.475	5.44	3.29375	3.655	3.4425
Criteria mg/L	4-Day Chronic						
	Early Life Stages Present	3.77	3.95	5.04	5.57	5.57	5.57
	Early Life Stages Absent	3.77	3.95	5.04	7.45	9.04	9.04
	30-Day Chronic						
	Early Life Stages Present	1.51	1.58	2.02	2.23	2.23	2.23
	Early Life Stages Absent	1.51	1.58	2.02	2.98	3.62	3.62
Effluent Limitations mg/L	Weekly Average						
	Early Life Stages Present	7.22	7.06	6.66			
	Early Life Stages Absent				8.98	11.73	11.44
	Monthly Average						
	Early Life Stages Present	3.20	3.18	2.98			
	Early Life Stages Absent				3.86	4.80	4.71

Attachment #3

To highlight the recommended changes from current NH₃-N effluent limits, current effluent limits are on the left half and recommended effluent limits for permit reissuance are on the right half of the table

Existing Limits				Calculated Limits			
Month	Daily Max mg/L	Weekly Average mg/L	Monthly Average mg/L	Month	Daily Max mg/L	Weekly Average mg/L	Monthly Average mg/L
January	8.2	14	6	January	8.2	14	6
February	8.2	14	6.8	February	8.2	14	6.8
March	8.2	15	6.9	March	8.2	15	6.9
April	8.2	9.5	4.5	April	8.2	7.5	3.5
May	8.2	7	4.9	May	8.2	7	4.1
June	8.2	5	3.6	June	8.2	5	3.6
July	8.2	4.3	2.4	July	8.2	4.3	2.4
August	8.2	4.5	2.4	August	8.2	4.5	2.4
September	8.2	6.4	3.4	September	8.2	6.4	3
October	8.2	11	4.9	October	8.2	9	3.9
November	8.2	14	5.8	November	8.2	12	4.8
December	8.2	14	5.7	December	8.2	11	4.7

Values in bold represent a change (lower effluent limit) from the current permit

The more restrictive of the two are recommended for the new permit unless the facility is able to make a demonstration of need under s. NR 207.04. The Department would be unable to increase the limit unless antidegradation requirements are met.

If WalCoMet would like to request an increase to the existing permit limits, an assessment of their effluent data consistent with the requirements of ss. NR 207.04(1)(a) and (c) must be provided. This evaluation is on a parameter by parameter basis and includes consideration of operations, maintenance and temporary upsets.

An initial review by department staff concluded that the requirements of s. NR 207.04(1)(a) do not appear to be met for ammonia nitrogen based on WalCoMet's effluent data from January 2009 through April 2014. Ammonia Nitrogen data from July 4th, 5th, and 6th of 2010 were unusually high, yet below the daily maximum of 8.2 mg/L. If those concentrations were endured for a full 7 days, they may have exceeded the current (and proposed) July weekly limit of 4.3mg/L. However, it is believed that that data is not representative of a typical July month. July 2009, 2011, 2012, and 2013's maximums, averages, and p99 values are actually closer to values in the June summary below.

Therefore WalCoMet's current effluent limits for ammonia nitrogen, where more restrictive, are recommended to be retained in the reissued permit consistent with s. NR 207.04(2).

Ammonia Nitrogen Effluent Data Summary, January 2009-April 2014

Month	January	February	March	April	May	June
Sample Size	143	129	120	137	120	115
Maximum	2.57	7.8	6.01	1.76	1.59	2.13
Mean	0.304	0.671	0.222	0.098	0.117	0.077
1-day P ₉₉	2.03	4.47	2.27	0.97	0.91	0.76
4-day P ₉₉	1.10	2.43	1.38	0.57	0.51	0.46
30-day P ₉₉	0.53	1.18	0.58	0.24	0.23	0.19
Month	July	August	September	October	November	December
Sample Size	163	122	116	120	114	118
Maximum	7.29	0.24	1.95	1.72	1.54	1.14
Mean	0.244	0.065	0.091	0.095	0.108	0.136
1-day P ₉₉	3.00	0.25	0.86	0.91	0.91	1.00
4-day P ₉₉	2.13	0.14	0.51	0.55	0.52	0.55
30-day P ₉₉	0.93	0.09	0.22	0.23	0.23	0.25

All Ammonia Nitrogen data is reported in mg/L

Ammonia Nitrogen Conclusion:

After rounding to two significant figures, **the following effluent limitations for Ammonia Nitrogen are recommended for WalCoMet.** No mass limitations are recommended in accordance with s. NR 106.32(5). After checking WalCoMet's DMRs from January 2009 through April 2014, it does not appear that WalCoMet will have problems meeting the new, more-stringent, weekly and or monthly average Ammonia Nitrogen effluent limits for April, September, October, November, or December.

Month	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
January	8.2	14	6.0
February	8.2	14	6.8
March	8.2	15	6.9
April	8.2	7.5	3.5
May	8.2	7.0	4.1
June	8.2	5.0	3.6
July	8.2	4.3	2.4
August	8.2	4.5	2.4
September	8.2	6.4	3.0
October	8.2	9.0	3.9
November	8.2	12	4.8
December	8.2	11	4.7

Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

Facility:	WalCoMet	7-Q₁₀:	6.90 cfs	Temp Dates	Flow Dates
Outfall(s):	001	Dilution:	25%	Start:	01/01/24
Date Prepared:	7/2/2025	f:	0	End:	12/31/24
Design Flow (Q_e):	7.00 MGD	Stream type: Small warm water sport or forage fish com			
Storm Sewer Dist.	0 ft	Qs:Q_e ratio:	0.2 :1		
			Calculation Needed?	YES	

Month	Water Quality Criteria			Receiving Water Flow Rate (Qs)		Representative Highest Effluent Flow Rate (Q _e)		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	T _a (default) (°F)	Sub-Lethal WQC (°F)	Acute WQC (°F)	7-day Rolling Average (Q _{esl}) (MGD)	Daily Maximum Flow Rate (Q _{ea}) (MGD)	7-day Rolling Average (Q _{esl}) (MGD)	Daily Maximum Flow Rate (Q _{ea}) (MGD)		Weekly Average (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	33	49	76	14.00	5.444	6.017	6.017	0	51	52	56	92
FEB	34	50	76	12.90	5.965	11.269	11.269	0	50	52	56	84
MAR	38	52	77	17.30	6.074	7.365	7.365	0	51	52	58	92
APR	48	55	79	18.00	9.842	13.709	13.709	0	53	55	57	86
MAY	58	65	82	14.60	5.930	7.337	7.337	0	58	59	68	90
JUN	66	76	84	10.40	4.678	5.143	5.143	0	63	65	80	90
JUL	69	81	85	10.40	6.804	8.869	8.869	0	65	66	84	88
AUG	67	81	84	8.70	4.452	4.741	4.741	0	67	68	85	89
SEP	60	73	82	7.10	5.563	8.605	8.605	0	66	66	76	85
OCT	50	61	80	9.00	4.211	5.617	5.617	0	64	65	65	88
NOV	40	49	77	13.00	3.427	3.616	3.616	0	61	62	55	98
DEC	35	49	76	11.70	3.872	4.404	4.404	0	55	56	56	94