Permit Modification Fact Sheet

Changes from the previous permit fact sheet are highlighted in grey.

General Information

Permit Number:	WI-0023485-10-1	
Permittee Name:	VILLAGE OF BROOKLYN	
Address:	210 Commercial Street P.O. Box 189	
City/State/Zip:	Brooklyn WI 53521	
Discharge Location:	North bank of Allen Creek, ¼ mile south of Village limits just west of Hwy 104 bridge. (Lat: 42.84011º N / Lon: 89.36925º W; NE ¼ of NE ¼ of Section 12, T4N, R9E)	
Receiving Water:	Allen Creek (Allen Creek & Middle Sugar River Watershed, SP13 – Sugar-Pecatonica River Basin) in Green County	
StreamFlow ($Q_{7,10}$):	0.27 cfs	
Stream Classification:	Limited Forage Fish (LFF)	
Discharge Type:	Existing, Continuous	
Design Flow(s)	Annual Average	0.20 MGD
Significant Industrial Loading?	O&A Manufacturing	
Operator at Proper Grade?	Facility is Advanced with subclasses A1 – Suspended Growth Processes, B – Solids Separation, C – Biological Solids/Sludges, SS – Sanitary Sewage Collection System and P – Nutrient Removal (Phosphorus). Advanced certification is required. Operator is currently not at proper grade.	
Approved Pretreatment Program?	N/A	

Facility Description

The Village of Brooklyn operates an activated sludge wastewater treatment plant with one categorical industrial contributor. Preliminary treatments consist of a mechanical cylindrical screen. Biological phosphorus removal precedes the oxidation ditch which provides extended and biological treatment of wastewater pollutants, along with removal of ammonia. Ferric chloride is added for phosphorus removal before flow enters the final clarifier where the microorganisms are separated from the treated effluent. Effluent from the clarifiers is metered and discharged to Allen Creek. Waste sludge from the final clarifier is either returned to the head of the plant or stored on-site prior to land application.

The facility completed construction of the new ferric chloride phosphorus removal system, and new biological phosphorus removal system in summer of 2020.

Substantial Compliance Determination

Enforcement During Last Permit: A Notice of Noncompliance was sent June 14, 2024, for land application without a WPDES permitted outfall. If Brooklyn decides to land apply, they must submit a land application site request form and land application management plan for review and approval prior to land application.

After a desk top review of all discharge monitoring reports, CMARs, land application reports, compliance schedule items, and a site visit on June 7, 2023, this facility has been found to be in substantial compliance with their current 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	0.079 MGD (October 2018 – January 2024 Average)	Influent: 24-hr flow proportional composite samples shall be collected prior to the influent screening station. A magnetic flow meter is located after the influent screening station.
001	0.077 MGD (October 2018 – January 2024 Average)	Effluent: 24-hr flow proportional composite samples shall be collected from the manhole downstream of the final clarifier, prior to discharge to Allen Creek. Effluent DO and pH grab samples shall be taken from the clarifier effluent trough. An ultrasonic flow meter is located downstream of the final clarifier.
003	45 U.S. tons (2023 Permit Application)	Liquid, Class B. Representative sludge samples shall be collected from the sample tap at the biosolids station.

1 Influent – Monitoring Requirements

Sample Point Number: 701- INFLUENT

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

Changes from Previous Permit:

Flow: Sample frequency has been changed to 'Daily' for eDMR reporting purposes.

Explanation of Limits and Monitoring Requirements

BOD_5 and Total Suspended Solids: Tracking of BOD_5 and Suspended Solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in the Standard Requirements section of the permit.

2 Surface Water - Monitoring and Limitations

Sample Point Number: 001- EFFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Daily Max	30 mg/L	3/Week	24-Hr Flow Prop Comp	
BOD5, Total	Monthly Avg	15 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Daily Max	30 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	20 mg/L	3/Week	24-Hr Flow Prop Comp	
pH Field	Daily Max	9.0 su	5/Week	Grab	
pH Field	Daily Min	6.0 su	5/Week	Grab	
Dissolved Oxygen	Daily Min	4.0 mg/L	5/Week	Grab	
Nitrogen, Ammonia (NH3-N) Total	Daily Max	19 mg/L	3/Week	24-Hr Flow Prop Comp	May through October
Nitrogen, Ammonia (NH3-N) Total	Daily Max	17 mg/L	3/Week	24-Hr Flow Prop Comp	November through April
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	6.9 mg/L	3/Week	24-Hr Flow Prop Comp	May through October
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	12 mg/L	3/Week	24-Hr Flow Prop Comp	November through March
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	13 mg/L	3/Week	24-Hr Flow Prop Comp	April
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	3.7 mg/L	3/Week	24-Hr Flow Prop Comp	May through October
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	6.5 mg/L	3/Week	24-Hr Flow Prop Comp	November through March
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	6.9 mg/L	3/Week	24-Hr Flow Prop Comp	April
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Monitoring and limit effective May through September starting in 2029 per the Effluent Limitations for E. coli Schedule.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Monitoring and limit effective May through

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					September starting in 2029 per the Effluent Limitations for E. coli Schedule. 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	1.7 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective throughout the permit term, as it represents a minimum control level. See Water Quality Trading (WQT) sections for more information.
Phosphorus, Total		lbs/day	3/Week	Calculated	Report daily mass discharged using Equation 1a. in the Water Quality Trading (WQT) section.
WQT Credits Used (TP)		lbs/month	Monthly	Calculated	Report WQT TP Credits used per month using Equation 2c. in the Water Quality Trading (WQT) section. Available TP Credits are specified in Table 2 and in the approved Water Quality Trading Plan.
WQT Computed Compliance (TP)	Monthly Avg	0.225 mg/L	Monthly	Calculated	Report the WQT TP Computed Compliance value using Equation 4a. in the Water Quality Trading (WQT) section. Value entered on the last day of the month.
WQT Computed Compliance (TP)	6-Month Avg	0.075 mg/L	Monthly	Calculated	Value entered on the last day of June and December. Compliance with the six-month average limit is evaluated at the end of the six-month period.
WQT Computed Compliance (TP)	6-Month Avg	0.13 lbs/day	Monthly	Calculated	Report the WQT TP Computed Compliance value using Equation 4b. in

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					the Water Quality Trading (WQT) section. Value entered on the last day of June and Dec. Compliance with the six-month average limit is evaluated at the end of the six-month period.
WQT Credits Used (TP)	Annual Total	224 lbs/yr	Annual	Calculated	The sum of total monthly credits used may not exceed Table 2 values listed below.
Temperature Maximum		deg F	Daily	Continuous	Monitoring year-round in 2028.
Temperature Maximum	Weekly Avg	65 deg F	Daily	Continuous	Monitoring in October effective upon permit reissuance. Limit effective October starting in 2028. See Temperature schedule.
Temperature Maximum	Weekly Avg	57 deg F	Daily	Continuous	Monitoring in November effective upon permit reissuance. Limit effective November starting in 2028. See Temperature schedule.
Chloride		mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring in 2028.
PFOS		ng/L	Annual	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need schedule.
PFOA		ng/L	Annual	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need schedule.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	See Whole Effluent Toxicity (WET) Testing section.
Chronic WET	Monthly Avg	1.2 TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	See Whole Effluent Toxicity (WET) Testing section.
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Annual in rotating quarters. See Nitrogen Series Monitoring section. Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.

Changes from Previous Permit

Flow: Sample frequency has been changed to 'Daily' for eDMR reporting purposes.

DO & pH: Sample frequency has increased. pH samples need to be grab samples.

Disinfection & E. coli: At the end of the Disinfection and Effluent Limitations for E. coli compliance schedule, disinfection requirements and E. coli limits of 126 #/100 ml as a monthly geometric mean that may not be exceeded and 410 #/100 ml as a daily maximum that may not be exceeded more than 10 percent of the time in any calendar month will apply. Monitoring is not required until the limit becomes effective at the end of the compliance schedule.

Phosphorus: The minimum control level has decreased. The annual total WQT credits has increased. The mass limit is a six-month average.

Temperature: Sample frequency has changed to daily. Weekly average limits in October and November will become effective per the compliance schedule. Monitoring in October and November upon permit reissuance. Monitoring year-round in 2028.

Chloride: Sample frequency has changed to monthly, and the monitoring year has been updated.

PFOS and PFOA: Monitoring once every two months is included in the permit in accordance with s. NR 106.98(2)(c), Wis. Adm. Code. The monitoring frequency has been reduced from 1/ 2 Months to Annual.

Acute WET: Two acute WET tests have been included.

Chronic WET: The monthly average limit has decreased.

Total Nitrogen Monitoring (TKN, N02+N03 and Total N): Annual monitoring in rotating quarters throughout the permit term was added to the proposed permit.

Explanation of Limits and Monitoring Requirements

Please refer to the Water Quality Based Effluent Limits Memo for the Brooklyn Wastewater Treatment Facility dated April 4, 2024, prepared by Sarah Luck and used for this reissuance.

BOD_5, Total Suspended Solids (TSS), pH, and DO: No changes are recommended in the categorical permit limitations for BOD_5, TSS, pH, and DO. These limits are based on the Limited Forage Fish community of the receiving water as described in s. NR 104.02(3)(a), Wis. Adm. Code.

Ammonia: Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Tables 2C and 4B of ch. NR 105, Wis. Adm. Code. Subchapter IV of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for ammonia.

Disinfection & 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.

Section NR 102.04(5)(a), Wis. Adm. Code, states that all surface waters shall be suitable for recreational use and meet the E. coli criteria established to protect this use. Section NR 102.04(5)(b), Wis. Adm. Code, states that exceptions to the disinfection requirement can be made if the department determines, in accordance with the procedures specified in s. NR 210.06(3), Wis. Adm. Code, that disinfection is not required to meet water quality criteria. As part of the reissuance process, the requirements for disinfection were reviewed under s. NR 210.06(3), Wis. Adm. Code.

It was determined that the permittee is required to disinfect, during the following months May – September. See WQBEL for further explanation.

Phosphorus: Phosphorus requirements are based on the Phosphorus Rules that became effective December 1, 2010 as detailed in NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. Currently in NR 217 Wis. Adm. Code there are two methods used to determine if a phosphorus limit is needed: a technology based effluent limit (TBEL) and a water quality based effluent limit (WQBEL). Based on the size and classification of the stream, the water quality criteria for the Allen Creek is 0.075 mg/L. In this case, the WQBEL is 0.225 mg/L (monthly average), 0.075 mg/L & 0.13 lbs/day (6-month average). For the reasons explained in the April 30, 2012 paper entitled 'Justification for Use of Monthly, Growing Season and Annual Average Periods for Expression of WPDES Permit Limits for Phosphorus Discharges in Wisconsin', WDNR has determined that it is impracticable to express the phosphorus WQBEL for the permittee as a maximum daily, weekly or monthly value. The final effluent limit for phosphorus is expressed as a six-month average. It is also expressed as a monthly average equal to three times the derived WQBEL (which equates to 0.225 mg/L). This final effluent limit was derived from and complies with the applicable water quality criterion. A phosphorus concentration limit is necessary to prevent backsliding during the term of the permit. The previous interim limit of 7.9 mg/L is not appropriate since it would well exceed the available credits. A minimum control level of 1.7 mg/L is effective upon permit reissuance. This minimum control level is equal to the peak monthly average of data since the WQBELs went into effect.

The wastewater treatment facility is not able to meet the WQBEL. This permit authorizes the use of trading as a tool to demonstrate compliance with the phosphorus WQBELs. This permit includes terms and conditions related to the Water Quality Trading Plan (WQT-2023-0006) or approved amendments thereof. The total 'WQT TP Credits' available are designated in the approved WQT Plan. The Village is implementing ongoing whole field management with the installation of filter strips and cover crops. The WQT Plan proposes the generation of 224 lbs/yr phosphorus credits for the next five years.

Additional WQT subsections in the permit provide information on compliance determinations, annual reporting and re-opening of the permit.

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. Reasonable potential was shown for a weekly average temperature limit in October and November. A schedule has been included for meeting this limit. See permit for details on submittal of a DC study.

Chloride: Acute and chronic chloride toxicity criteria for the protection of aquatic life are included in Tables 1 and 5 of ch. NR 105, Wis. Adm. Code. Subchapter VII of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for chloride. Chloride monitoring is included during the fourth year of the permit term to ensure that 11 sample results are available at the next permit issuance to meet the data requirements of ch. NR 106, Wis. Adm. Code.

PFOS and PFOA: NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. At the first reissuance of a WPDES permit after August 1, 2022, the new rule requires WPDES permits for municipal dischargers with an average flow rate less than 1 MGD, to be evaluated on a case-by-case basis to

determine if monitoring is required pursuant to s. NR 106.98(2)(c), Wis. Adm. Code. The department evaluated the need for PFOS and PFOA monitoring taking into consideration the presence of potential PFOS or PFOA industrial wastes, remediation sites and other potential sources of PFOS or PFOA. Based on information available at the time the proposed permit was drafted, it was identified that the POTW has an indirect discharger(s) that may be a potential source of PFOS/PFOA.

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

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

Pursuant to s. NR 205.066, Wis. Adm. Code, the department may specify the monitoring frequency for PFOS and PFOA on a case-by-case basis after the initial 24 months of sampling.

After a review of the data submitted with the Year 2 Report on Effluent Discharges, the department has determined that it is warranted to reduce the sampling frequency in this case. The department is requiring continued monitoring of these compounds to complete the permit term to ensure that the current effluent quality is maintained. At the next permit reissuance, the department will make another determination as to whether further reduction or removal of monitoring is warranted, based on the continued sampling results.

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) Two acute and annual chronic WET tests are scheduled during the permit term.

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 fairness and consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term.

The department has been revisiting the sampling frequencies at every facility to evaluate whether current frequencies are appropriate or if an increase is warranted. The frequencies for DO, pH, and temperature were increased to align Brooklyn with other facilities of similar size to ensure fairness and in consideration of department guidance on sampling frequencies.

Requirements in administrative code (NR 108, 205, 210, and 214 Wis. Adm. Code) and Sections 283.55, Wis. Stats., were considered, where applicable, when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term. The department has determined at this time that the aforementioned changes in monitoring frequency are warranted based on the size and type of the facility.

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.

3 Land Application - Monitoring and Limitations

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
003	B	Liquid	Fecal Coliform	Injection	Land Application	45 U.S. tons

Does sludge management demonstrate compliance? **Yes**

Is additional sludge storage required? **No**

Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? **No**

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

Is a priority pollutant scan required? **No. Design flow is less than 5 MGD.**

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

Sample Point Number: 003- SLUDGE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
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	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
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	
Solids, Total		Percent	Annual	Composite	
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Annual	Composite	
Phosphorus, Total		Percent	Annual	Composite	
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	
Potassium, Total Recoverable		Percent	Annual	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Monitoring once in 2025.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Monitoring once in 2025.
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:

PCBs: Monitoring year for PCBs has been updated to 2025.

PFAS: Annual sludge monitoring is included in the permit pursuant s. NR 204.06(2)(b)9, Wis. Adm. Code.

Explanation of Limits and Monitoring Requirements

Requirements for land application of municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. Ceiling and high quality limits for metals in sludge are specified in s. NR 204.07(5), Wis. Adm. Code. Requirements for pathogens are specified in s. NR 204.07(6) 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.

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.

4 Schedules

4.1 Disinfection and Effluent Limitations for E. coli

The permittee shall install disinfection treatment and comply with surface water limitations for E. coli as specified. No later than 14 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance.

Required Action	Due Date
Progress Report: The permittee shall submit a progress report on development and submittal of a facility plan for upgrades to meet disinfection requirements and E. coli limits.	06/30/2025
Submit Facility Plan: The permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code for meeting disinfection requirements and complying with E. coli surface water limitations. The permittee may submit an abbreviated facility plan if the Department determines that the modifications are minor.	04/30/2026
Final Plans and Specifications: The permittee shall submit final construction plans to the Department for approval pursuant to ch. NR 108, Wis. Adm. Code, specifying treatment plant upgrades that must be constructed to meet disinfection requirements per s. NR 210.06(1), Wis. Adm Code, achieve compliance with final E. coli limitations, and a schedule for completing construction of the upgrades by the complete construction date specified below.	03/31/2027
Treatment Plant Upgrade to Meet Limitations: The permittee shall initiate bidding, procurement, and/or construction of the project. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41. Stats., prior to initiating activities defined as construction under ch. NR 108, Wis. Adm. Code. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications.	09/30/2027
Construction Upgrade Progress Report: The permittee shall submit a progress report on construction upgrades.	09/30/2028
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades.	03/31/2029
Achieve Compliance: The permittee shall achieve compliance with final E. coli limitations.	04/30/2029

Explanation of Schedule

A compliance schedule is included in the permit to provide time for the permittee to submit plans and specs and install disinfection treatment for meeting effluent E. coli water quality-based effluent limits and disinfection requirements pursuant s. NR 210.06, Wis. Adm. Code.

4.2 Annual Water Quality Trading (WQT) Report

Required Action	Due Date
Annual WQT Report: Submit an annual WQT report that shall cover the first year of the permit term. The WQT Report shall include: The number of pollutant reduction credits (lbs/month) used each month of the previous year to demonstrate compliance; The source of each month's pollutant reduction credits by identifying the approved water quality trading plan that details the source; A summary of the annual inspection of each nonpoint source management practice that generated any of the pollutant reduction credits used during the previous year; and Identification of noncompliance or failure to implement any terms or conditions of this permit with respect to water quality trading that have not been reported in discharge monitoring reports.	01/31/2025
Annual WQT Report #2: Submit an annual WQT report that shall cover the previous year.	01/31/2026
Annual WQT Report #3: Submit an annual WQT report that shall cover the previous year.	01/31/2027
Annual WQT Report #4: Submit an annual WQT report that shall cover the previous year.	01/31/2028
Annual WQT Report #5: Submit the 5th annual WQT report. If the permittee wishes to continue to comply with phosphorus limits through WQT in subsequent permit terms, the permittee shall submit a revised WQT plan including a demonstration of credit need, compliance record of the existing WQT, and any additional practices needed to maintain compliance over time.	01/31/2029
Annual WQT Report Required After Permit Expiration: In the event that this permit is not reissued by the expiration date, the permittee shall continue to submit annual WQT reports by January 31 each year covering the total number of pollutant credits used, the source of the pollution reduction credits, a summary of annual inspection reports performed, and identification of noncompliance or failure to implement any terms or conditions of the approved water quality trading plan for the previous calendar year.	

Explanation of Schedule

Reports are required, starting in 2025, that include the following information:

- Verification that site inspections occurred;
- Brief summary of site inspection findings;
- Identification of noncompliance or failure to implement any terms or conditions of the permit or trading plan that have not been reported in discharge monitoring reports;
- Any applicable notices of termination or management practice registration; and
- A summary of credits used each month over the calendar year

4.3 Temperature Limits Compliance and Dissipative Cooling Evaluation

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

Required Action	Due Date
Preliminary Compliance Report: Submit a preliminary compliance report indicating alternatives to achieve the final temperature limits. Informational Note: Refer to the Surface Water subsection titled 'Dissipative Cooling Demonstration - POTW Weekly Average Limits' regarding requests for	01/31/2026

Department consideration of dissipative cooling per NR 106.59, Wis. Adm. Code, as well as re-evaluation of the limits pursuant to NR 106 Subchapters V & VI or NR 102.26, Wis. Adm. Code.	
Action Plan: Submit an action plan for complying with all applicable effluent temperature limits.	04/30/2026
Construction Plans: Submit construction plans (if is required for complying with effluent temperature limits) and include plans and specifications with the submittal.	03/31/2027
Initiate Actions: Initiate actions identified in the plan.	09/30/2027
Complete Actions: Complete actions necessary to achieve compliance with effluent temperature limits.	09/30/2028

Explanation of Schedule

A compliance schedule, as allowed by NR 106.62, Wis. Adm. Code, is included in this permit to allow the permittee time to evaluate the facilities thermal discharge, determine whether dissipative cooling as allowed in NR 106.59, Wis. Adm. Code, will preclude the need for temperature limits because the permittee can demonstrate that the heat in the effluent is rapidly dissipated to the environment, and evaluate whether a facility upgrade is needed to meet the temperature limitations.

4.4 PFOS/PFOA Minimization Plan Determination of Need

Required Action	Due Date
Report on Effluent Discharge: Submit a report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations. This analysis should also include a comparison to the applicable narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code. This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results.	09/30/2025
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.	09/30/2026

Explanation of Schedule

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

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

4.5 Land Application Management Plan

A management plan is required for the land application system.

Required Action	Due Date
Land Application Management Plan Submittal: Submit a management plan to optimize the land application system performance and demonstrate compliance with ch. NR 204, Wis. Adm. Code. 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. Land Application Management Plan submittal and approval required prior to land application.	

Explanation of Schedule

A land application management plan shall be submitted to the department for approval.

Special Reporting Requirements

None.

Other Comments:

None.

Attachments:

PFOS and PFOA Water Quality-Based Effluent Limitations for the Brooklyn Wastewater Treatment Facility -WPDES Permit No. (WI-0023485) in Green County, by Amy Garbe, PE, Wastewater Engineer, dated October 22, 2026

Expiration Date:

September 30, 2029

Justification Of Any Waivers From Permit Application Requirements

No waivers were requested or given from permit application requirements.

Prepared By: BetsyJo Howe, Wastewater Specialist **Date:** 05/30/2024; 06/25/2024; 07/01/2024

Updated (based on fact check comments): Editorial changes for clarity. 7/12/2024

Updated (based on public notice comments): Editorial changes for clarity. 9/20/2024

Revised By: Sarah Donoughe, Wastewater Specialist-Adv **Date:** October 23, 2026

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: October 22, 2026

TO: Sarah Donoughe – NER

FROM: Kari Fleming – WY/3

SUBJECT: PFOS and PFOA Water Quality-Based Effluent Limitations for the Brooklyn Wastewater Treatment Facility -WPDES Permit No. (WI-0023485) in Green County

This is in response to your request for an evaluation of the need for PFOS and PFOA limitations for the Brooklyn Wastewater Treatment Facility. This municipal wastewater treatment facility (WWTF) discharges to Allen Creek, located in the Allen Creek and Middle Sugar River Watershed in the Sugar-Pecatonica River Basin.

The current permit, effective since October 2024, has monitoring only for PFOS and PFOA. The following review is based on new regulations which are now in effect throughout the state of Wisconsin and recommendations are made in accordance with chapters NR 102, 104, 105, 106, 207, and 217 of the Wisconsin Administrative Code, where applicable.

Receiving Water Information

- Name: Allen Creek
- Classification: Limited Forage Fish Community (LFF) upstream from Butts Corner Road. The modeled natural community at the outfall is cool-cold headwater. The classification changes to default Warmwater Sport Fish approximately 2.87 miles downstream from the discharge.
- Flow: The following 7-Q_{10} and 7-Q_2 values are from a USGS station located at Highway 104, approximately one mile south of Brooklyn, WI:
  7-Q_{10} = 0.27 cfs (cubic feet per second)
  7-Q_2 = 0.58 cfs
  Harmonic Mean Flow = 1.71 cfs using a drainage area of 10.8 mi^2

The Harmonic Mean has been estimated based on average flow and the 7-Q_{10} using an equation from U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991, EPA/505/2-90-001, pgs. 88-89).

- % of Flow used to calculate limits: 25%

Effluent Information

- Flow: Average Design Flow = 0.20 MGD (million gallons per day)
  For reference, the actual average flow from January 2024 to August 2026 was 0.075 MGD.
- Effluent characterization: This facility is categorized as a minor municipality.

The following table lists the statistics for effluent PFOS and PFOA levels from August 2024 through August 2026.

	PFOS ng/L	PFOA ng/L
1-day P_{99}	12.39	7.61
4-day P_{99}	6.74	5.68
30-day P_{99}	3.75	4.16

Printed on Recycled Paper

Mean*	2.10	3.42
Std	2.64	1.32
Sample Size	13	13
Range	<0.332-3.68	<0.246-5.59

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

Water Quality Based Limit – PFOS and PFOA

Administrative rules for PFOS and PFOA took effect on August 1, 2022. These rule revisions include additions to ch. NR 102 (s. NR 102.05), Wis. Adm. Code, which establish PFOS and PFOA standards for surface waters. Revisions to ch. NR 106 (s. NR 106, Subchapter VIII), Wis. Adm. Code, establish procedures for determining water quality based effluent limits for PFOS and PFOA, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

PFOS

Due to PFOS being a bioaccumulating compound of concern (BCC), no mixing zone is allowed pursuant to s. NR 106.98(4), Wis. Adm. Code. Therefore, the effluent limit for PFOS is set equal to criterion (8 ng/L).

PFOA

The conservation of mass equation is described in s. NR 106.06(4)(b)1., Wis. Adm. Code, and includes variables of water quality criterion (WQC), receiving water flow rate (Qs), effluent flow rate (Qe), and upstream PFOA concentrations (Cs) provided below.

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

Where:

WQC = 95 ng/L for Allen Creek
Qs = 25% of the harmonic mean pursuant s. NR 106.06(4)(c)10., Wis. Adm. Code = 0.43 cfs
Cs = background concentration of PFOA in the receiving water pursuant to s. NR 106.06(4)(e), Wis. Adm. Code
Qe = effluent flow rate = 0.20 MGD = 0.31 cfs
f = the fraction of effluent withdrawn from the receiving water = 0

After substituting the appropriate variables, the calculated PFOA limit is 226 ng/L.

Reasonable Potential Determination

In accordance with s. NR 106.98(4)(b), Wis. Adm. Code, **the discharge does not have reasonable potential to cause or contribute to an exceedance of the water quality criterion for PFOS** because the 30-day P99 of reported effluent PFOS data is less than the calculated WQBEL (8 ng/L). Therefore, **a WQBEL is not required.**

In accordance with s. NR 106.98(4)(a), Wis. Adm. Code, **the discharge does not have reasonable potential to cause or contribute to an exceedance of the water quality criterion for PFOA** because the 30-day P_{99} of reported effluent PFOA data is less than the calculated WQBEL (226 ng/L). Therefore, **a WQBEL is not required.**

Conclusions

The discharge has no reasonable potential to cause or contribute to an exceedance of the water quality

criterion for PFOS nor PFOA. Therefore, no WQBELs are required.

Pursuant to s. NR 205.066, Wis. Adm. Code, the department may specify the monitoring frequency for PFOS and PFOA on a case-by-case basis after the initial 24 months of sampling. **After a review of the available data, the department has determined that it is warranted to reduce the sampling frequency in this case to annually.**

If there are any questions or comments on these recommendations, please contact Amy Garbe by telephone at (608) 716-9968 or by email at Amy.Garbe@wisconsin.gov.

Attachments (2) – P99 Calculations

PREPARED BY: Amy Garbe, P.E., Wastewater Engineer date: 10/22/26

cc: Kenzie Ostien, P.E., Basin Engineer – SCR/Fitchburg
Nate Willis, P.E., PFAS Implementation Coordinator – CO

EFFLUENT VARIABILITY ANALYSIS -

SUBSTANCE:

NUMBER OF VALUES:			
TOTAL	13		
DETECTED	12		
NON-DETECTED	1		
d	0.076923		
m	2.27775		
mean of all data	2.102538		
s	2.641409		
n	1	4	30
d^n	0.076923	3.5E-05	3.82E-34
p	0.989167	0.99	0.99
Z_p	2.296601	2.326772	2.326785
1+(s/m)^2	2.344805	2.344805	2.344805
(sigma_d)^2	0.852202	0.852202	0.852202
mu_d	0.397087	0.397087	0.397087
(sigma_dn)^2	0.852202	0.325702	0.050066
mu_dn	0.397087	0.580329	0.718113
P_99 exponent	2.517189	1.908226	1.238739
P_99	12.39	6.74	3.45

Data Summary

Oct-24	1.19
Nov-24	<0.332
Jan-25	1.4
Mar-25	0.736
May-25	1.48
Jul-25	1.71
Sep-25	10.3
Nov-25	1.29
Jan-26	1.22
Mar-26	0.677
May-26	3.68
Jul-26	2.01
Sep-26	1.64

Attachment 2 – PFOA P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -			
=	= =	=	=
SUBSTANCE:			
NUMBER OF VALUES:	------		
TOTAL	13		
DETECTED	12		
NON-DETECTED	1		
d	0.076923		
m	3.719167		
mean of all data	3.433077		
s	1.28681		
	------	------	------
n	1	4	30
d^n	0.076923	3.5E-05	3.82E-34
p	0.989167	0.99	0.99
Z_p	2.296601	2.326772	2.326785
1+(s/m)^2	1.119712	1.119712	1.119712
(sigma_d)^2	0.113072	0.113072	0.113072
mu_d	1.256964	1.256964	1.256964
(sigma_dn)^2	0.113072	0.051851	0.007076
mu_dn	1.256964	1.207567	1.229919
P_99 exponent	2.029221	1.73739	1.425641
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P_99	7.61	5.68	4.16
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Data Summary	
Oct-24	4.47
Nov-24	<0.246
Jan-25	3.94
Mar-25	3.04
May-25	4.47
Jul-25	4.11
Sep-25	5.53
Nov-25	2.84
Jan-26	3.23
Mar-26	2.42
May-26	1.09
Jul-26	5.59
Sep-26	3.9