Permit Modification Fact Sheet

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

General Information

Permit Number:	WI-0023141-10-1	
Permittee Name:	City of Abbotsford	
Address:	504 E Linden St PO BOX 589	
City/State/Zip:	Abbotsford, WI 54405	
Discharge Location:	401 S. 11th Street., Abbotsford, WI 54405 Lat: 44.94227° N Lon: 90.30937° W	
Receiving Water:	Elm Brook, located in the Upper Big Eau Pleine Watershed of the Upper Wisconsin River Central Sub-basin in Marathon County	
StreamFlow ($Q_{7,10}$):	0 cfs	
Stream Classification:	Limited Aquatic Life, Non-public Water Supply	
Design Flow(s)	Daily Maximum	1.573 million gallons per day (MGD)
	Weekly Maximum	1.072 MGD
	Monthly Maximum	0.638 MGD
	Annual Average	0.323 MGD
Significant Industrial Loading?	None	
Operator at Proper Grade?	Yes. The treatment plant is rated as a BASIC facility with subclasses A1 (Biological Treatment: Suspended Growth Processes), B (Solids Separation), C (Biological Solids/Sludge Handling, Processing, and Reuse), P (Nutrient Removal: Total Phosphorus), and SS (Sanitary Sewage Collection System). Josh Soyk is the designated Operator-in-Charge and carries the required certification types to run the plant with exception to SS. The SS subclass category was added to ch. NR114, Wis. Adm. Code April 2022, and s. NR 114.53(4), Wis. Adm. Code allows for 12 months to gain certification for new subclass listings. The need to designate an operator-in-charge for the collection system is identified in the July 11, 2022 Wastewater Facility Inspection report.	
Approved Pretreatment Program?	N/A	

Facility Description

The Abbotsford Wastewater Treatment Facility treats domestic waste from the City of Abbotsford. The facility has an annual average design flow of 0.323 million gallons per day (MGD) and had an actual annual average influent flow of 0.25 MGD in 2017. The activated sludge type treatment plant consists of grit removal, screening, two sequencing batch

reactors (SBRs), aerobic digestion, and reed bed basins for sludge dewatering. Phosphorus is currently removed with chemical addition (ferric chloride). Sludge is treated via aerobic digestion and thickened using reed beds prior to beneficially reusing the Class B biosolids on Department approved fields through land application.

Substantial Compliance Determination

Enforcement During Last Permit - No enforcement actions were taken during the last permit term. Minor violations of effluent limits, missed samples, and late reporting were addressed by the facility at the time of occurrence with no further action required.

After a desk top review of all discharge monitoring reports, CMARs, land application reports, compliance schedule items, and a facility inspection on May 31st and June 1st 2022 conducted by DNR wastewater engineer, Nick Lindstrom, 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, WasteType/sample Contents and Treatment Description (as applicable)**
701	Annual average 0.24 MGD; peak daily average 1.44 MGD; peak weekly average 0.77 MGD; peak monthly average 0.52 MGD. Values derived from collected data over last permit term.	INFLUENT: Continuous flow monitoring and representative 24-hour composite samples shall be collected after the Hycor screening and prior to grit removal.
002	No sludge has been removed from the reed beds to date.	REED BED CAKE SLUDGE: A representative sample of the sludge shall be collected as a composite of grab samples and analyzed prior to land application.
005	No effluent flow monitoring.	EFFLUENT: Representative 24-hour composite samples are to be collected from Manhole D after the sequencing batch reactors and prior to the riprap effluent discharge depression and overland flow to Elm Brook.

1 Influent - Proposed Monitoring

Sample Point Number: 701- INFLUENT: AFTER HYCOR SCREEN

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 Comp	
Suspended Solids, Total		mg/L	3/Week	24-Hr Comp	

Changes from Previous Permit

The flow sample frequency has been changed from continuous to daily for eDMR reporting purposes.

Explanation of Limits and Monitoring Requirements

Characterization of the influent strengths and volumes coming into the treatment plant is required under s. NR 210.04, Wis. Adm. Code. through minimally monitoring for flow, BOD5, Total, and Total Suspended Solids. It was determined by the department in the previous permit term that 24-hr composite sampling three times per week is adequate to characterize the influent quality for this facility.

2 Surface Water - Proposed Monitoring and Limitations

Sample Point Number: 005- EFFLUENT to ELM BROOK

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
BOD5, Total	Monthly Avg	20 mg/L	3/Week	24-Hr Comp	
BOD5, Total	Weekly Avg	30 mg/L	3/Week	24-Hr Comp	
Suspended Solids, Total	Monthly Avg	20 mg/L	3/Week	24-Hr Comp	
Suspended Solids, Total	Weekly Avg	30 mg/L	3/Week	24-Hr Comp	
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Dissolved Oxygen	Daily Min	4.0 mg/L	Daily	Grab	
Copper, Total Recoverable	Daily Max	35 ug/L	Monthly	24-Hr Comp	See permit subsection 'Copper Daily Max Limits & Relationship to Hardness Monitoring'.
Copper, Total Recoverable	Monthly Avg	22 ug/L	Monthly	24-Hr Comp	
Copper, Total Recoverable	Weekly Avg	22 ug/L	Monthly	24-Hr Comp	
Copper, Total Recoverable	Daily Max	0.46 lbs/day	Monthly	Calculated	See permit subsection 'Copper Daily Max Limits & Relationship to Hardness Monitoring'.
Copper, Total Recoverable	Weekly Avg	0.059 lbs/day	Monthly	Calculated	See permit subsection 'Copper Alternative Wet Weather Weekly Average Mass Limit'. Report the copper mass result in the

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					'Copper Weekly Average Mass' column on the DMR. Compare to the 'Variable Copper Mass Limitation' table to determine compliance.
Copper Variable Limit		lbs/day	Monthly	Calculated	Look up the variable copper mass limit from the 'Variable Copper Mass Limitation' table in the permit. Report the variable limit in the 'Copper Variable Limit' column on the DMR.
Hardness, Total as CaCO3		mg/L	Quarterly	24-Hr Comp	See permit subsection 'Copper Daily Max Limits & Relationship to Hardness Monitoring'.
Chloride		mg/L	Quarterly	24-Hr Comp	Monitoring only for eight consecutive quarters starting in October 2025 and ending September 2027.
Phosphorus, Total	Monthly Avg	0.6 mg/L	3/Week	24-Hr Comp	
Phosphorus, Total	Monthly Avg	1.96 lbs/day	Monthly	Calculated	See permit subsection 'Total Maximum Daily Load (TMDL) Limitations for Total Phosphorus'.
Phosphorus, Total	6-Month Avg	0.65 lbs/day	Monthly	Calculated	See permit subsection 'Total Maximum Daily Load (TMDL) Limitations for Total Phosphorus'.
Phosphorus, Total		lbs/month	Monthly	Calculated	Calculate the Total Monthly Discharge of phosphorus and report on the last day of the month on the DMR. See permit subsection 'Total Maximum Daily Load (TMDL) Limitations for Total Phosphorus'.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total		lbs/yr	Monthly	Calculated	Calculate the 12-month rolling sum of total monthly mass of phosphorus discharged and report on the last day of the month on the DMR. See permit subsection 'Total Maximum Daily Load (TMDL) Limitations for Total Phosphorus'.
Nitrogen, Ammonia (NH3-N) Total	Daily Max	15 mg/L	3/Week	24-Hr Comp	Effective year-round
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	6.0 mg/L	3/Week	24-Hr Comp	Effective Oct - Dec
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	4.2 mg/L	3/Week	24-Hr Comp	Effective May - Sept
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	3.7 mg/L	3/Week	24-Hr Comp	Effective Jan - April
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	14 mg/L	3/Week	24-Hr Comp	Effective Oct - Dec
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	9.7 mg/L	3/Week	24-Hr Comp	Effective May - Sept
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	8.3 mg/L	3/Week	24-Hr Comp	Effective Jan - April
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Comp	See permit subsection 'Nitrogen Series Monitoring'.
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Comp	See permit subsection 'Nitrogen Series Monitoring'.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	See permit subsection 'Nitrogen Series Monitoring'. Total Nitrogen = Total Kjeldahl N (mg/L) + (Nitrite + Nitrate Nitrogen) (mg/L)
PFOS		ng/L	1/ 2 Months	Grab	Monitoring only. See permit subsections 'PFOS/PFOA Sampling and

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					Reporting Requirements' and 'PFOS and PFOA Minimization Plan Requirements' and permit schedule 'PFOS and PFOA Minimization Plan'.
PFOA		ng/L	1/ 2 Months	Grab	Monitoring only. See permit subsections 'PFOS/PFOA Sampling and Reporting Requirements' and 'PFOS and PFOA Minimization Plan Requirements' and permit schedule 'PFOS and PFOA Minimization Plan'.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Comp	See permit subsection 'Whole Effluent Toxicity (WET) Testing'.
Chronic WET	Monthly Avg	1.0 TUc	See Listed Qtr(s)	24-Hr Comp	See permit subsection 'Whole Effluent Toxicity (WET) Testing'.

Changes from Previous Permit

Chloride – Quarterly sampling starting in October 2025 and ending in September 2027 (eight quarters total) was added to the permit.

Total Nitrogen Monitoring (NO2+NO3, TKN and Total N) – Quarterly monitoring for Total Nitrogen was added to the permit.

Total Phosphorus – Monthly average and six-month average mass limits were added to the permit. Monthly reporting of a 12-month rolling sum of Total Phosphorus mass was added to the permit and reported as lbs/yr.

Total Nitrogen Monitoring (NO2+NO3, TKN and Total N) – Annual monitoring in rotating quarters for the nitrogen series was added to the permit.

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. Language requiring the implementation of a PFOS and PFOA Minimization Plan has been added to the permit.

Chronic WET – A Chronic WET limit of 1.0 TUc was added to the permit.

No changes were made to the monitoring requirements or limits for BOD5, Total Suspended Solids, pH, Dissolved Oxygen, Copper, or Nitrogen, Ammonia (NH3-N) Total.

Explanation of Limits and Monitoring Requirements

Monitoring Frequency Review

Monitoring frequencies for all parameters with corresponding effluent limitations were evaluated. Relevant requirements in chs. NR 108, 205, 210, and 214, Wis. Adm. Code, s. 283.55, Wis. Stats along with recommendations in applicable program and pollutant specific guidance were considered when determining appropriate monitoring frequencies. Based on the facility type and size, pollutant and limit type, effluent quality, and variability of data reported, the effluent monitoring frequencies for this permittee are determined to be appropriate and correspond with recommendations provided in the "Monitoring Frequencies for Individual Wastewater Permits" (April 12, 2021) guidance.

Water Quality Based Limits and WET Requirements

Copper – Final effluent limits for copper became effective on April 1, 2021 during the previous permit term. Copper is a water quality concern at this facility. The 4-day P99 of data exceeds the calculated weekly average limit, therefore limits are required to continue. The applicable non-wet weather weekly average mass limit is 0.059 pounds/day. The applicable wet weather mass limit is 0.20 pounds/day.

Chloride – Effluent data collected from October 2015 through October 2021 (11 sample results total) was used to determine reasonable potential following procedures outlined in s. NR 106.05, Wis. Adm. Code. A collection of eight quarterly samples is included in the permit to supplement the minimally required four samples for the next permit application to allow continuation of this approach for determining future reasonable potential. Without having more recent representative data, reasonable potential will be based on arithmetic average of the collected permit application data alone and compared to one-fifth of the Chronic Toxicity Criteria (CTC) of 395 mg/l. The average of permit application data from October 2021 is 265 mg/l, which is greater than one-fifth of the CTC.

Total Maximum Daily Load (TMDL) Derived Limits for Total Phosphorus - Wasteload allocations (WLA) specified in TMDLs are expressed as WQBELs (water quality based effluent limits). The derived WQBELs are consistent with the assumptions and requirements of the approved site-specific criteria for Lakes Petenwell, Castle Rock, and Wisconsin. The Total Phosphorus WLA for this facility is 160 lbs/yr, and is directly from Appendix K of the EPA-approved Total Maximum Daily Loads for Total Phosphorus in the Wisconsin River Basin report dated April 26, 2019. This total WLA is expressed as monthly and six-month averages in the permit.

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

Total Nitrogen Monitoring (NO2+NO3, TKN and Total N) - Based on the "Guidance for Total Nitrogen Monitoring in WPDES Permits" dated October 2012, quarterly effluent monitoring for Total Nitrogen is suggested for municipal majors discharging to the Mississippi River Basin. Total Nitrogen monitoring has been included in permits for these municipal majors since 2012. This guidance was updated in 2019 to expand to all municipal minor facilities discharging to the Mississippi River Basin. Quarterly effluent monitoring for Total Nitrogen is suggested whose permit applications show > 40 mg/L Total Nitrogen due to industrial contribution. Annual monitoring in rotating quarters is suggested for all other dischargers. The permittee analyzed its effluent for the nitrogen series as part of the application for reissuance. The calculated Total Nitrogen (the sum of Nitrite + Nitrate and TKN) was 5.6 mg/l. Annual monitoring is included in the permit consistent with the frequency recommended in the updated guidance.

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 previous PFOS/PFOA sample results were within 1/5 of the PFOS standard of 8 ng/l under s. NR 102.04(8)(d)1, Wis. Adm. Code.

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.

Language was added to the permit to ensure that the actions outlined in the approved minimization plan are accomplished over the next several years. The determination to require the implementation of a minimization plan will be reevaluated at the next permit reissuance.

Pursuant to s. NR 106.985(1), Wis. Adm. Code, the department notified the permittee on 4/17/2025 of the requirement to develop a PFOS and PFOA Minimization Plan that satisfies the requirements in s. NR 106.99, Wis. Adm. Code. The permittee submitted a minimization plan on 5/20/2025; this plan was approved by the department on 6/13/2025.

Whole effluent toxicity (WET) – 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)

Categorical Limits

No categorical limits apply for this facility.

3 Land Application - Proposed 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	Cake	Fecal Coliform < 2,000,000 MPN or CFU/g TS	Incorporation	Land application	21 dry U.S. tons (sludge removed from reed beds every 10-15 years)
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, therefore the permittee must monitor sludge annually for radium 226.						
Is a priority pollutant scan required? No. Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

Sample Point Number: 002- REED BED CAKE SLUDGE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Annual	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Annual	Composite	
Phosphorus, Total		Percent	Annual	Composite	
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	
Potassium, Total Recoverable		Percent	Annual	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Once in calendar year 2024. See permit subsection 'Sludge Analysis for PCBs'.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once in calendar year 2024. See permit subsection 'Sludge Analysis for PCBs'.
Radium 226 Dry Wt		pCi/g	Annual	Composite	

Changes from Previous Permit

The method of composite sampling has been identified in the permit as the composite of an equal number of grab samples collected from each reed bed cell, with a minimum of one per cell (4 total). The depth of sample collection must represent the entire depth of sludge within each cell.

Composite sampling of the reed bed cake sludge is required in **calendar year 2024**. This mirrors the previous permit PCB monitoring requirement of a single sampling event occurring in the calendar year following permit reissuance.

Explanation of Limits and Monitoring Requirements

Requirements for land application of municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. Ceiling and high quality limits for metals in sludge are specified in s. NR 204.07(5). Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07 (7) for vector attraction requirements. The facility meets vector attraction requirements for land application of municipal sludge through incorporation into the soil. Limitations for PCBs are addressed in s. NR 204.07(3)(k). Radium requirements are addressed in s. NR 204.07(3)(n).

Water extractable phosphorus (WEP) – WEP is the coefficient for determining plant available phosphorus from measured total phosphorus. In Wisconsin, the Penn State Method is utilized and is expressed in percent. While a total P may be significant, the WEP may show that only a small percentage of the P is available to plants because of factors such as treatment processes and chemical addition that "tie-up" phosphorus limiting the amount of phosphorus that is plant available. As part of the Wisconsin's nutrient management plan (NMP) requirements, the accounting of all fertilizers must be included over the NMP cycle. The fertilizer value of the waste needs to be communicated to the farmer and accounted for in the NMP.

4 Schedules

4.1 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 influent, intake, in-plant, collection system sampling, and blank sample results.	03/31/2024

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.	03/31/2025

4.2 Reed Bed Phragmites Survey

An annual survey of adjacent lands for phragmites is required.

Required Action	Due Date
Submit an Annual Phragmites Survey: The permittee shall conduct an annual survey of adjacent lands for new Phragmites growth. Surveys shall be done at a time of the year when Phragmites are biologically active. The annual surveys shall contain the name and qualifications of the person(s) completing the inspection, the date of the survey, and at a minimum include descriptions of the area(s) inspected, land use(s), dominant plant community, existing Phragmites stands, and any areas of potential concern or newly discovered Phragmites growth. Photographic documentation of the survey area(s) is also recommended. The survey area should be as large as practicable and include any area potentially susceptible to phragmites growth. Survey results shall be submitted to the Department within 60 days of survey completion. The Department shall be notified within 24 hours whenever new growths of Phragmites are discovered. The Department may require the permittee to eradicate specific stands of Phragmites in these areas.	12/31/2024
Annual Phragmites Survey: Annual survey of adjacent lands for phragmites is due.	12/31/2025
Annual Phragmites Survey: Annual survey of adjacent lands for phragmites is due.	12/31/2026
Annual Phragmites Survey: Annual survey of adjacent lands for phragmites is due.	12/31/2027
Annual Phragmites Reports After Permit Expiration: In the event that this permit is not reissued on time, the permittee shall continue to submit annual phragmites surveys each year. The survey is due no later than December 31 of each year.	

4.3 PFOS and PFOA Minimization Plan

This compliance schedule requires the permittee to achieve compliance by the Due Date.

Required Action	Due Date
Submit Progress Report #1: Submit an annual progress report. The annual progress report shall: Indicate which source reduction measures or activities in the approved PFOS and PFOA minimization plan have been implemented; Identify which suspected sources have been monitored; Include an analysis of trends in weekly, monthly and annual average PFOS and/or PFOA concentrations; and Include an analysis of how influent and effluent concentrations vary with time and with significant loadings of PFAS such as loads from industries or other sources into the collection system.	09/30/2026
Submit Progress Report #2: Submit the PFOS and PFOA minimization progress report as defined above.	03/31/2027
Submit Progress Report #3 and Re-evaluation: Submit a progress report on the success in the implementation of the PFAS minimization plan. The report shall include a summary of all actions taken and analysis of trends in weekly, monthly, and annual average PFOA and/or PFOS effluent concentrations. If initial PMP actions were not successful enough to result in PFOA and/or PFOS reductions below the values in s. NR 102.04(8)(d)1., Wis. Adm. Code, the permittee shall submit an updated PMP with the permit application for reissuance. Based on facility and PMP specifics the permittee may be allowed up to 53 additional months after the permit expiration date to implement additional PMP actions before being required to install PFAS treatment technologies. This schedule may be modified to adjust compliance schedule dates to incorporate any changes in minimization plan goals and actions or as new information is made available to the Department.	09/30/2027
Submit Progress Report #4: Submit the PFOS and PFOA minimization progress report as defined above.	03/31/2029
Submit Progress Report #5: Submit the PFOS and PFOA minimization progress report as defined above.	03/31/2030
Submit Progress Report #6: Submit the PFOS and PFOA minimization progress report as defined above.	03/31/2031
Submit Progress Report #7: Submit the PFOS and PFOA minimization progress report as defined above.	03/31/2032
Submit Final Progress Report and Re-evaluation: Submit a progress report on the success in the implementation of the PFOS and PFOA minimization plan. The report shall include a summary of all actions taken and analysis of trends in weekly, monthly, and annual average PFOS and/or PFOA effluent concentrations. If initial PMP actions were not successful enough to result in PFOS and/or PFOA reductions below the values in s. NR 102.04(8)(d)1., Wis. Adm. Code, the permittee shall be required to install PFAS treatment technologies to meet the calculated WQBELs.	09/30/2032
Submit Facility Plan: The permittee shall submit a facility plan to the Department for approval pursuant to s. NR 110.09, Wis. Adm. Code. The permittee may submit an abbreviated facility plan after discussions with the Department.	09/30/2033

Plan and Specification Submittal: The permittee shall submit final construction plans and specifications to the Department for approval pursuant to ch. NR 108, Wis. Adm. Code, specifying treatment plant upgrades that must be constructed to achieve compliance with the applicable PFOS and/or PFOA WQBELs, and a schedule for completing construction of the upgrades by the complete construction date specified below.	09/30/2034
Treatment Plant Upgrade to Meet Limitations: The permittee shall initiate bidding, procurement, and/or construction of the project. The permittee shall obtain approval of final constructions 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/specifications and schedule by the Department, the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications.	09/30/2035
Complete Construction: The permittee shall complete construction of the wastewater treatment plant upgrades.	09/30/2036
Achieve Compliance: The permittee shall achieve compliance with the PFOS water quality-based effluent limit of 8 ng/L as a monthly average.	10/31/2036

Explanation of Schedules

Reed Bed Phragmites Survey – An annual survey is a required condition of the permit in the 'Land Application' section. This schedule specifies the due date for the annual survey as the end of each calendar year.

PFOS/PFOA Minimization Plan Determination of Need - 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.

PFOS and PFOA Minimization Plan – The department has made the determination that this facility has reasonable potential to cause or contribute to an exceedance of the PFOS standard in s. NR 102.04(8)(d)1., Wis. Adm. Code, based on the reasonable potential procedures and data collected under s. NR 106.98, Wis. Adm. Code. Pursuant to s. NR 106.985(1), Wis. Adm. Code, the department notified the permittee on 4/17/2025 of the requirement to develop a PFOS and PFOA Minimization Plan that satisfies the requirements in s. NR 106.99, Wis. Adm. Code. The permittee submitted a minimization plan on 5/20/25; this plan was approved by the department on 6/13/2025.

The permittee is allowed up to 85 months to implement the minimization plan as outlined above. This schedule may be modified as more data is collected and the success of the proposed minimization plan is further evaluated. The permittee is required to submit annual progress reports every year, with a third progress report required to be submitted with the permit application. If necessary, a final progress report is required at the end of the next permit term.

If the minimization plan actions have not been successful enough to no longer have reasonable potential to cause or contribute to an exceedance of the applicable PFOS standards, then the permittee will be required to install a treatment system or otherwise take steps necessary to come into compliance with the applicable standard(s) by the final Due Date.

Special Reporting Requirements

No special reporting requirements.

Attachments:

~~"Water Quality-Based Effluent Limits Technical Memorandum for the Abbotsford Wastewater Treatment Facility WPDES Permit No. WI-0023141" dated November 23, 2022, and prepared by department Water Resources Engineer, Ben Hartenbower, P.E.~~

PFOS and PFOA Water Quality-Based Effluent Limitations for the Abbotsford Wastewater Treatment Facility -WPDES Permit No. (WI-0023141) in Marathon County, by Amy Garbe, PE, Wastewater Engineer, dated April 17, 2025

City of Abbotsford WWTF, PFOS Minimization Plan, WPDES Permit No. WI-0023141-10-0, dated May 20, 2025

Approval of PFOS Minimization Plan letter, by Nate Willis, PE, Wastewater Section Manager, dated 06/13/2025

Proposed Expiration Date:

March 31, 2028

Justification Of Any Waivers From Permit Application Requirements

No permit application waivers granted for permit application monitoring or other requirements.

Prepared By:

Bryan Hartsook Wastewater Field Supervisor

Date: February 13, 2023

Revised By: Sarah Donoughe, Wastewater Specialist-Adv

Date: July 14, 2025

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: April 17, 2025

TO: Sarah Donoughe – NER

FROM: Kari Fleming – WY/3

SUBJECT: PFOS and PFOA Water Quality-Based Effluent Limitations for the Abbotsford Wastewater Treatment Facility -WPDES Permit No. (WI-0023141) in Marathon County

This is in response to your request for an evaluation of the need for PFOS and PFOA limitations for the Abbotsford Wastewater Treatment Facility. This municipal wastewater treatment facility (WWTF) discharges to Elm Brook, located in the Upper Big Eau Pleine Watershed in the Central Wisconsin River Basin.

The current permit, effective since April 2023, 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: Elm Brook
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code:
  - Limited Aquatic Life community (upstream from Lincoln Road, now named Huckleberry Rd), non-public water supply
  - Approximately two miles from the outfall: Limited Forage Fish from Lincoln Road to Dill Creek
  - Less than five miles from the outfall: Dill Creek – Warm Water Sport Fisch Community, non-public water supply
- Flow: Due to the nature of the receiving water, the 7-Q10, 7-Q2, and Harmonic Mean are estimated to be zero.
  7-Q10 = 0 cfs (cubic feet per second)
  7-Q2 = 0 cfs
  Harmonic Mean Flow = 0 cfs
- % of Flow used to calculate limits: 25%

Effluent Information

- Flow:
  Annual average = 0.323 MGD (Million Gallons per Day)
  Peak daily = 1.573 MGD
  Peak weekly = 1.072 MGD

For reference, the actual average flow from January 2023 to February 2025 was 0.25 MGD.

- Effluent characterization: This facility is categorized as a minor municipality

The following table lists the statistics for effluent PFOS and PFOA levels from December 2020 and May 2023 through March 2025.

	PFOS ng/L	PFOA ng/L
1-day P_{99}	22.11	30.70
4-day P_{99}	13.44	19.97
30-day P_{99}	9.07	14.51
Mean	7.07	11.91
Std	4.26	5.65
Sample Size	13	13
Range	2.71-19	6.5-23

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 s. NR 106.98(4), Wis. Adm. Code. Therefore, the effluent limit for PFOS is set equal to criteria (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 Elm Brook
Qs = 25% of the harmonic mean pursuant s. NR 106.06(4)(c)10., Wis. Adm. Code = 0 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 = 0.323 MGD = 0.50 cfs
f = the fraction of effluent withdrawn from the receiving water = 0

After substituting the appropriate variables, the calculated PFOA limit is 95 ng/L.

Reasonable Potential Determination
In accordance with s. NR 106.98(4)(a), Wis. Adm. Code, **, the discharge has 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 greater than the calculated WQBEL (8 ng/L). Therefore, **a WQBEL is required.**

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 (95 ng/L). Therefore, **a WQBEL is not required.**

Conclusions
The following is a summary of limits recommended by this evaluation:

- Monthly average PFOS limit of 8 ng/L

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: _____ date: 4/17/25
Amy Garbe, P.E., Wastewater Engineer

cc: Nick Lindstrom, Basin Engineer – WCR/Eau Claire
Nate Willis, P.E., PFAS Implementation Coordinator – CO

Attachment 1 – PFOS P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -				
=	= =	=	=	
SUBSTANCE:				
NUMBER OF VALUES:	------			
TOTAL	13			
DETECTED	13			
NON-DETECTED	0			
d	0			
m	7.07			
mean of all data	7.07			
s	4.260481			
	------	------	------	
n	1	4	30	
d^n	0	0	0	
p	0.99	0.99	0.99	
Z_p	2.326785	2.326785	2.326785	
1+(s/m)^2	1.363144	1.363144	1.363144	
(sigma_d)^2	0.309794	0.309794	0.309794	
mu_d	1.800964	1.800964	1.800964	
(sigma_dn)^2	0.309794	0.086898	0.012032	
mu_dn	1.800964	1.912411	1.949844	
P_99 exponent	3.096032	2.598314	2.205072	
	-------	-------	-------	
P_99	22.11	13.44	9.07	
	-------	-------	-------	

Data Summary	
Dec-20	2.71
May-23	5.9
Jul-23	5.2
Sep-23	5.2
Nov-23	10.7
Jan-24	3.2
Mar-24	5.4
May-24	6.9
Jul-24	19
Sep-24	8.5
Nov-24	9.2
Jan-25	4
Mar-25	6

Attachment 2 – PFOA P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -

SUBSTANCE:			
NUMBER OF VALUES:			
TOTAL	13		
DETECTED	13		
NON-DETECTED	0		
d	0		
m	11.90692		
mean of all data	11.90692		
s	5.652093		
n	1	4	30
d^n	0	0	0
p	0.99	0.99	0.99
Z_p	2.326785	2.326785	2.326785
1+(s/m)^2	1.22533	1.22533	1.22533
(sigma_d)^2	0.20321	0.20321	0.20321
mu_d	2.375515	2.375515	2.375515
(sigma_dn)^2	0.20321	0.054803	0.007483
mu_dn	2.375515	2.449718	2.473379
P_99 exponent	3.424403	2.99442	2.674655
P_99	30.70	19.97	14.51

Data Summary

Dec-20	7.88
May-23	14
Jul-23	6.5
Sep-23	9.11
Nov-23	13.4
Jan-24	7.2
Mar-24	8
May-24	7
Jul-24	23
Sep-24	13
Nov-24	23
Jan-25	8.7
Mar-25	14

City of Abbotsford WWTF
PFOS Minimization Plan
WPDES Permit No. WI-0023141-10-0

Background

The City of Abbotsford owns and operates a wastewater treatment facility (WWTF) that treats wastewater from the City's collection system. The Abbotsford facility treats wastewater via grit removal, screening, two sequencing batch reactors (SBRs), and aerobic digestion of sludge. The facility utilizes reed bed basins for sludge dewatering. Effluent is discharged to Elm Brook, located in the Upper Big Eau Pleine Watershed of the Upper Wisconsin River Central Sub-basin in Marathon County, WI.

There are currently no confirmed influent sources of PFOA/PFOS to the City's WWTF. Abbyland Foods is the only large industry in the City. Abbyland has their own WWTF and WPDES permit, therefore there is no industrial wastewater flow from Abbyland to Abbotsford's WWTF. There are two small industrial users and one laundromat that contribute wastewater to Abbotsford's WWTF. At this time, wastewater from these small industries has not been analyzed for PFOS or PFOA. Additionally, the City sampled the water treatment plants (WTP) for PFAS compounds. PFOA and PFOS at the water treatment plants were non-detect, except for the Central Water Treatment Plant. The Central WTP PFOA and PFOS sample results were 0.92 and 0.72 ng/L respectively, which is well below the applicable criteria.

The 99th percentile PFOA sampling results indicated there is no reasonable potential for PFOA to exceed the narrative limit. The PFOS 99th percentile exceeded the 8 ng/L limit for the 1 day P99, 4 day P99, and 30 day P99. Therefore, the focus of this minimization plan is on PFOS rather than PFOA.

Source Identification

PFOS in the raw groundwater in Abbotsford is significantly under the narrative limit, indicating the contaminate originates from dischargers to the collection system. Additionally, since the groundwater does not contain significant levels of PFOS, infiltration into the collection system is not considered a potential source. According to the Wisconsin DNR RR Sites Map, there are no sites in the City requiring PFAS sampling. At the time of this report, the City has not identified any specific users discharging PFOS. However, desktop research indicates a few users in the City will be further investigated as potential sources.

Table 1 Potential PFOS Sources

Source	Type of Process	Contacted?	Possible source?
All Metal Stamping	Metal stamping, plastic injection molding, fire-rated products	TBD	TBD
Creative Automation, Inc.	Laminate Countertop, finishing	TBD	TBD
Laundry	Laundromat	TBD	TBD

The dischargers identified in **Table 1** will be contacted to determine if there is any possibility they could be discharging some level of PFOS. This is identified in **Table 2** as planned actions.

Data Analysis

The City of Abbotsford's average PFOS concentration for the past two years was 7.4 ng/L, which is below the 8 ng/L narrative standard in NR 102. There were four exceedances of the PFOS narrative standard. There is no general trend from the PFOS data, as the exceedances occur during different times of the year, and at different concentrations. The data ranges from 4.0 to 19 ppt, with an average of 7.4 ppt. There was one sample at 19 ppt, and the next highest result was 10.7 ppt, therefore the 19 ppt is considered an outlier in this data set. The data comprises of grab samples taken every two months, so it is challenging to identify a clear trend in data from periodic samples. The 1-day P99, 4-day P99, and 30-day P99 are 22.17 ng/L, 13.69 ng/L, and 9.41 ng/L respectively; therefore, there is potential to exceed the 8 ng/L limit. The data is tabulated in **Appendix A**.

Planned Actions

The table below outlines the activities the City will conduct to further investigate the levels of PFOS in the wastewater effluent. Since there is minimal concentration of PFOS in the raw water, the City will investigate the sampling protocol, and the inputs to the sewer system.

Table 2 Minimization Plan

Minimization Plan Activities	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year
Sampling Protocol:							
Continue Effluent Sampling	X	X	X	X	X	X	X
Conduct Composite Sampling of WWTF Effluent	X	X	X				
Influent Sampling at WWTF	X	X	X				
Submit Split Samples to Different Labs	X	X	X				
Test different sampling methods	X	X	X				
Source Reduction:							
Identify potential sources	X	X	X				
Research on users	X						
Correspondence with users and/or users to sample their wastewater discharge	X	X	X				
Verified PFOS contributors will be required to submit a plan to the City detailing the steps they will take to minimize PFOS and their sampling protocol.				X	X	X	X
Sample potential sources	X	X	X				
Sample via manholes or lift stations	X	X	X				
Public Education and Outreach	X	X	X	X	X	X	X

After the research on potential sources and sampling are conducted, the City will determine the plausible sources of PFOS in the collection system. Next, the City will work with identified users who contribute PFOS to the wastewater collection system to reduce the amount of PFOS discharged. To decrease the influent PFOS concentrations to the WWTF, the users can identify alternative chemicals for their manufacturing process that do not contain PFOS, find an alternative disposal method instead of discharging to the sewer collection system, or potentially use wastewater pretreatment to remove PFOS prior to discharging to the collection system. The plan the user must submit to the City should provide details of the alternative they will use to minimize the amount of PFOS discharged to the collection system.

APPENDIX A

City of Abbotsford

Historical Effluent Wastewater Data

PFOA Concentration (ng/L)

Date	Result
5/11/2023	14.0
7/12/2023	6.5
9/13/2023	9.1
11/8/2023	13.4
1/9/2024	7.2
3/5/2024	8.0
5/1/2024	7.0
7/10/2024	23.0
9/5/2024	13.0
11/12/2024	23.0
1/7/2025	8.7
3/10/2025	14
Avg:	**12.2**
Max:	**23.0**

City of Abbotsford

Historical Effluent Wastewater Data

PFOS Concentration (ng/L)

Date	Result
5/11/2023	5.9
7/12/2023	5.2
9/13/2023	5.2
11/8/2023	10.7
1/9/2024	3.2
3/5/2024	5.4
5/1/2024	6.9
7/10/2024	19.0
9/5/2024	8.5
11/12/2024	9.2
1/7/2025	4.0
3/10/2025	6.0
Avg:	**7.4**
Max:	**19.0**

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster Street
Box 7921
Madison WI 53707-7921

Tony Evers, Governor
Karen Hyun, Ph.D., Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

06/13/2025

Joshua Soyk, City Administrator
City of Abbotsford
P.O. Box 589
Abbotsford, WI 54405

Subject: Approval of PFOS Minimization Plan

Dear Joshua Soyk:

The Wisconsin Department of Natural Resources (hereafter department) is conditionally approving the PFOS minimization plan (PMP) for the Abbotsford Wastewater Treatment Facility in Abbotsford, Wisconsin, submitted by Nora Rickman, MSA Professional Services, and received for approval on 05/01/2025 with a revised plan received on 05/20/2025.

There are currently no confirmed influent sources of PFOA or PFOS to Abbotsford's WWTF, though the 30-day P99 for the PFOS data collected to date is 9.4 ng/L which exceeds the calculated effluent limitation of 8 ng/L. This data evaluation determined a minimization plan shall be developed per s. NR 106.98(4), Wis. Adm. Code. There are reportedly two small industrial users and one laundromat which contribute wastewater to Abbotsford's WWTF. At this time, wastewater from these small industries has not been analyzed for PFOS or PFOA. Abbotsford is proposing to perform sampling of the industries, the sewerage system, and the influent and follow up as appropriate.

The PMP is hereby approved in accordance with s. 283.31, Wis. Stats. and s. NR 106.985(2)(a), Wis. Adm. Code, subject to the following conditions:

1. That if modifications to the approved PMP are necessary, a revised PMP shall be submitted to the department for its approval prior to commencement of the modifications.
2. That the PMP be followed in accordance with the requirements of WPDES Permit No. WI-0023141-10-0 and subsequent approved modifications to the PMP and the permit.

Per s. NR 106.985(2)(b), Wis. Adm. Code, the department will modify Abbotsford's WPDES permit to include the PFOS minimization plan, and other related terms and conditions, including annual progress reporting requirements and a schedule of compliance to meet applicable water quality based effluent limitations. As part of the modification, the approved PMP will be available for public comment as part of the public noticed package.

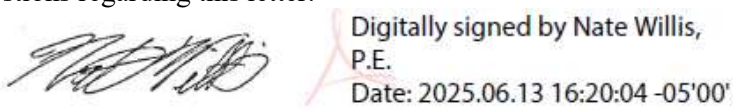
This conditional approval is not to be construed as a department determination on the issuance of a WPDES permit or an opinion as to the ability of the proposed PMP to comply with effluent limitations in such a permit. Also, this letter is not to be construed as an approval for activities requiring approval under other Wisconsin administrative codes or statutes or by other federal, state or local agencies.

If you believe you have a right to challenge this decision, the Wisconsin statutes and administrative codes establish time periods which requests to review department decisions must be filed. For judicial review of a decision pursuant to ss. 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed, or otherwise

served by the department, to file your petition with the appropriate circuit court and serve the petition on the department. Such a petition for judicial review must name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to s. 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. All requests for contested case hearings must be made in accordance with s. NR 2.05(5), Wis. Adm. Code, and served on the Secretary in accordance with s. NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing does not extend the 30-day period for filing a petition for judicial review. The filing of a request for a contested case hearing is not prerequisite for judicial review.

Please contact Nate Willis by phone (608) 535-2369 or email: nathaniel.willis@wisconsin.gov if you have any questions regarding this letter.



Nate Willis, P.E.
Wastewater Section Manager
Bureau of Water Quality

e-cc:

Nora Rickman – MSA
Geisa Bittencourt – DNR
Sarah Donoughe – DNR
Nicholas Lindstrom – DNR
Amy Garbe – DNR