

Permit Fact Sheet

General Information

Permit Number:	WI-0024821-09-0	
Permittee Name:	VILLAGE OF MONTFORT	
Address:	P O Box 157 102 East Park Street	
City/State/Zip:	Montfort WI 53569-0157	
Discharge Location:	SW bank of the Blue River 200 feet upstream of the Bluff Road bridge in the SE ¼ of the SE ¼ of Section 12, T6N R1W; Lat: 43.00351°N Long: 90.43624°W	
Receiving Water:	Blue River (Blue River Watershed, LW09 – Lower Wisconsin River Basin) in Grant County	
StreamFlow (Q _{7,10}):	4.0-4.9 cfs (seasonal see WQBEL Memo)	
Stream Classification:	Cold, Class II Trout Stream – Exceptional Resource Water	
Discharge Type:	Existing, continuous	
Design Flow(s)	Annual Average	0.105 MGD
Significant Industrial Loading?	No	
Operator at Proper Grade?	Required: Basic – A3, D, SS.	
Approved Pretreatment Program?	N/A	

Facility Description

The Village of Montfort operates a 0.105 million gallon per day (MGD) annual average design flow recirculating sand filter wastewater treatment facility (WWTF). The WWTF is located in north-east Grant County, and serves an estimated population of 725 from within the Village. There are no industrial facilities contributing flow to the sanitary sewer. Treatment is provided with a two-train septic tank that has three stages, a “dosing” (recirculation) tank, and four sand filter beds with underdrains. Effluent from the septic tank is mixed with recirculated flow and pumped to the sand filters. Effluent is discharged to the Blue River year-round and disinfected using ultraviolet radiation from May through September. Solids are removed from the septic tanks once every four to five years as needed.

Substantial Compliance Determination

Enforcement During Last Permit: Enforcement actions were taken for repeated effluent phosphorus violations. The permittee has completed previously required actions as part of the enforcement process; however, phosphorus violations have continued, as the permittee's treatment system is not designed to treat or remove phosphorus.

After a desk top review of all discharge monitoring reports, CMARs, land application reports, compliance schedule items, and a site visit on 9/13/2023, this facility has been found to be in substantial compliance with their current permit.

Compliance determination entered by Caitlin O’Connell on 9/28/2023.

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	0.04 MGD (2023)	Influent: 24-HR flow proportional composite sampler intake located at the entry point to the septic tank. Flow meter located in the influent manhole prior to the control building.
001	0.03 MGD (2023)	Effluent: 24-HR flow proportional composite sampler intake and flow monitoring located at the effluent weir in the recycling tank, prior to the UV system and discharge to the Blue River. Grab samples collected after disinfection.
003	4.59 dry US tons Hauled to another facility (reported in permit application)	Anaerobically digested, Liquid, Class B. Representative sludge samples shall be collected from the septic tank prior to land application. Additional sampling may be required prior to land application.
901	New outfall	Solids from septic tank from the Recirculating Sand Filter WWTF.

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	
BOD ₅ , Total		mg/L	2/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	2/Week	24-Hr Flow Prop Comp	

Changes from Previous Permit:

No changes.

Explanation of Limits and Monitoring Requirements

BOD₅ and Total Suspended Solids - Tracking of BOD₅, and Suspended Solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in the Standard Requirements 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	Weekly Avg	45 mg/L	2/Week	24-Hr Flow Prop Comp	November through April
BOD5, Total	Weekly Avg	32 mg/L	2/Week	24-Hr Flow Prop Comp	May through October
BOD5, Total	Monthly Avg	30 mg/L	2/Week	24-Hr Flow Prop Comp	
BOD5, Total	Weekly Avg	28 lbs/day	2/Week	Calculated	May through October
Suspended Solids, Total	Weekly Avg	45 mg/L	2/Week	24-Hr Flow Prop Comp	November through April
Suspended Solids, Total	Weekly Avg	32 mg/L	2/Week	24-Hr Flow Prop Comp	May through October
Suspended Solids, Total	Monthly Avg	30 mg/L	2/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	28 lbs/day	2/Week	Calculated	May through October
pH Field	Daily Max	9.0 su	5/Week	Grab	
pH Field	Daily Min	6.0 su	5/Week	Grab	
Dissolved Oxygen	Daily Min	6.0 mg/L	5/Week	Grab	
Nitrogen, Ammonia (NH3-N) Total	Daily Max	16 mg/L	2/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	16 mg/L	2/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	16 mg/L	2/Week	24-Hr Flow Prop Comp	
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	May through September
E. coli	% Exceedance	10 Percent	Monthly	Calculated	May through September
Phosphorus, Total	Monthly Avg	7.2 mg/L	2/Week	24-Hr Flow Prop Comp	Limit effective throughout the permit term, as it represents a minimum control level. See Water

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
					Quality Trading (WQT) sections for more information.
Phosphorus, Total		lbs/day	2/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	0.54 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)	Monthly Avg	0.47 lbs/day	Monthly	Calculated	Report the WQT TP Computed Compliance value using Equation 4b. in the Water Quality Trading (WQT) section. Value entered on the last day of the month.
WQT Credits Used (TP)	Annual Total	955 lbs/yr	Annual	Calculated	The sum of total monthly credits used may not exceed Table 2 values listed below.
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Annual in rotating quarters. See Nitrogen Series Monitoring section. Total

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
					Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrate + Nitrite Nitrogen.

Changes from Previous Permit

DO and pH - Sample frequency increased.

E. coli - Fecal coliform monitoring and limits have been replaced with Escherichia coli (E. coli) monitoring and limits. See additional explanation of limits under “Explanation of Limits and Monitoring Requirements” below.

Total Phosphorus – Water Quality Trading (WQT) requirements have been added as the permittee has chosen WQT for compliance with phosphorus limits.

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

Refer to the WQBEL memo for the detailed calculations, prepared by the Sarah Luck dated August 16, 2024 used for this reissuance.

BOD₅, Total Suspended Solids, pH, and Dissolved Oxygen: Standard municipal wastewater requirements for BOD₅, total suspended solids, dissolved oxygen, and pH are included based on ch. NR 210, Wis. Adm. Code ‘Sewage Treatment Works’ requirements for discharges to fish and aquatic life streams. Chapter NR 102, Wis. Adm. Code ‘Water Quality Standards for Surface Waters’ also specifies requirements for pH for fish and aquatic life streams.

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

E. Coli- Revisions to bacteria surface water quality criteria to protect recreational uses and accompanying E. coli WPDES permit implementation procedures became effective May 1, 2020. The new rule requires that WPDES permits for facilities with required disinfection include monitoring for E. coli while facilities are disinfecting during the recreation period, and establish effluent limitations for E. coli established in s. NR 210.06 (2), Wis. Adm Code. The administrative code rule changes included the following actions: revised the bacteria water quality criteria from fecal coliform to E. coli to protect recreation in ch. NR 102, Wis. Adm. Code.; removed fecal coliform criteria for certain individual waters from ch. NR 104, Wis. Adm. Code.; revised permit requirements for publicly and privately owned sewage treatment works in ch. NR 210, Wis. Adm. Code.; and, updated approved analytical methods for bacteria in ch. NR 219, Wis. Adm. Code.

Phosphorus – 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 Blue River is 0.075 mg/L. In this case, the WQBEL is 0.54 mg/L (monthly average) and 0.47 lbs/day (month average). A phosphorus concentration limit is necessary to prevent backsliding during the term of the permit. The minimum control value of 7.2 mg/l monthly average has been included in this permit reissuance. After

evaluation for anti-backsliding and anti-degradation it was determined that an increase in the concentration limit was warranted. See WQBEL for documentation.

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-2024-0019) or approved amendments thereof. The total 'WQT TP Credits' available are designated in the approved WQT Plan. The permittee implemented a variety of management practices including streambank stabilization and a barnyard conversion to perennial prairie grasses. The WQT Plan proposes the generation of a 955 pounds of 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.

Total Nitrogen Monitoring (NO₂+NO₃, TKN and Total N)- The Department has included effluent monitoring for Total Nitrogen in the permit through the authority under §§ 283.55(1)(e), Wis. Stats., which allows the department to require the permittee to submit information necessary to identify the type and quantity of any pollutants discharged from the point source, and through s. NR 200.065(1)(h), Wis. Adm. Code, which allows for this monitoring to be collected during the permit term. More information on the justification to include total nitrogen monitoring in wastewater permits can be found in the "Guidance for Total Nitrogen Monitoring in Wastewater Permits" dated October 1, 2019. Annual tests are scheduled in rotating quarters.

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

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 determined at this time that an increase in monitoring frequency for pH Field to 5/Week is appropriate due to be consistent with facilities of similar size and effluent quality across the state. An additional consideration for increasing sample frequency for process control parameters (DO, pH) is that they are tested for in-house, can quickly provide information on how well a treatment system is performing and help identify potential compliance issues. The increased monitoring frequency also ensures better calibration of sampling equipment, improves data reliability and ensures more frequent operator oversight of the treatment plant.

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. Radium requirements are addressed in s. NR 204.07(3)(n), Wis. Adm. Code.

PFAS- The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA 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.

3 Septage Management - Proposed Monitoring and Limitations

Septage management is required in accordance ch. NR 113, Wisconsin Administrative Code. Records must be kept and made available to the Department on request. Required record keeping includes volumes of septage pumped, dates when the septage was removed, land application site DNR number and method used to satisfy pathogen and vector control, and/or the treatment plant where septage is disposed. Annual reporting is required when the permittee land applies the septage. Annual reporting is also required when the permittee disposes of septage at a designated treatment facility.

This section is added to this permit term in replacement for Outfall 003 land application under ch. NR 204, Wis. Adm. Code.

Land Application - Monitoring and Limitations

The permittee has elected to handle solids from their system through regulations in ch. NR 113, Wis. Adm. Code. The land application Outfall 003 is inactivated and removed from this permit. No land application under ch. NR 204, Wis. Adm. Code is authorized.

4 Schedules

4.1 Quality Trading (WQT) Report

Required Action	Due Date
<p>Annual WQT Report: Submit an annual WQT report that shall cover the first year of the permit term. The WQT Report shall include:</p> <p>The number of pollutant reduction credits (lbs/month) used each month of the previous year to demonstrate compliance;</p> <p>The source of each month’s pollutant reduction credits by identifying the approved water quality trading plan that details the source;</p> <p>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</p> <p>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.</p>	01/31/2026
<p>Annual WQT Report #2: Submit an annual WQT report that shall cover the previous year.</p>	01/31/2027
<p>Annual WQT Report #3: Submit an annual WQT report that shall cover the previous year.</p>	01/31/2028
<p>Annual WQT Report #4: Submit the 4th 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.</p>	01/31/2029
<p>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</p>	

plan for the previous calendar year.	
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Explanation of Schedules

Reports are required 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

Special Reporting Requirements

None

Other Comments:

None

Attachments:

Water Quality Based Effluent Limits

Expiration Date:

December 31, 2029

Justification Of Any Waivers From Permit Application Requirements

None

Prepared By: Jennifer Jerich, Wastewater Specialist

Date: 8/14/2024

Revision date post fact check: 10/23/2024

Revision date post public notice & hearing:

CORRESPONDENCE/MEMORANDUM

DATE: August 16, 2024

TO: Jennifer Jerich – SCR/Horicon

FROM: Sarah Luck – SCR/Fitchburg

SUBJECT: Water Quality-Based Effluent Limitations for Montfort Wastewater Treatment Facility
WPDES Permit No. WI-0024821-09-0

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from the Montfort Wastewater Treatment Facility in Grant County. This municipal wastewater treatment facility (WWTF) discharges to the Blue River, located in the Blue River Watershed in the Lower Wisconsin River Basin (LW09). The evaluation of the permit recommendations is discussed in more detail in the attached report.

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

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						1
BOD ₅ May – October			32 mg/L 28 lbs/day	30 mg/L		2
November – April			45 mg/L	30 mg/L		
TSS May – October			32 mg/L 28 lbs/day	30 mg/L		2
November – April			45 mg/L	30 mg/L		
pH	9.0 s.u.	6.0 s.u.				2
Dissolved Oxygen May – October		6.0 mg/L				2
Ammonia Nitrogen	16 mg/L		16 mg/L	16 mg/L		2,3
Bacteria <i>E. coli</i>				126 #/100 mL geometric mean		4
Phosphorus WQT MCL Final				7.2 mg/L 0.54 mg/L 0.47 lbs/day		5
TKN, Nitrate+Nitrite, and Total Nitrogen						6

Footnotes:

1. Monitoring only.
2. No changes from the current permit.
3. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Code, are included in bold.

4. Bacteria limits apply during the disinfection season of May through September. Additional limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL. No compliance schedule is recommended.
5. A minimum control level (MCL) is required for water quality trading (WQT). This value is 7.2 mg/L as a monthly average and should not be exceeded during the permit term.
6. As recommended in the Department's October 1, 2019 *Guidance for Total Nitrogen Monitoring in Wastewater Permits*, annual total nitrogen monitoring is recommended for all minor municipal permittees. Total Nitrogen is the sum of nitrate (NO₃), nitrite (NO₂), and total kjeldahl nitrogen (TKN) (all expressed as N).

No WET testing is required because information related to the discharge indicates low risk for toxicity.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Sarah Luck (Sarah.Luck@wisconsin.gov) or Diane Figiel (Diane.Figiel@wisconsin.gov).

Attachments (3) – Narrative, Site Map, and Ammonia Nitrogen Calculations

PREPARED BY: Sarah Luck Date: August 16, 2024
Sarah Luck
Water Resources Engineer

E-cc: Caitlin O'Connell, Wastewater Engineer – SCR/Dodgeville
Diane Figiel, Water Resources Engineer – WY/3
Nate Willis, Wastewater Engineer – WY/3

**Water Quality-Based Effluent Limitations for
Montfort Wastewater Treatment Facility**

WPDES Permit No. WI-0024821-09-0

PART 1 – BACKGROUND INFORMATION

Facility Description

The Montfort Wastewater Treatment Facility is a recirculating sand filter located in northeast Grant County. Treatment is provided with a two-train septic tank that has three stages, a “dosing” (recirculation) tank, and four sand filter beds with underdrains. Effluent is discharged to the Blue River year-round and disinfected using ultraviolet radiation from May through September. There are no industrial contributors, and solids are removed from the septic tanks as needed.

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

Existing Permit Limitations

The current permit, which expired on December 31, 2023, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
Flow Rate					1
BOD ₅ May – October			32 mg/L 28 lbs/day	30 mg/L	2
November – April			45 mg/L	30 mg/L	
TSS May – October			32 mg/L 28 lbs/day	30 mg/L	2
November – April			45 mg/L	30 mg/L	
pH	9.0 s.u.	6.0 s.u.			2
Dissolved Oxygen May – October		6.0 mg/L			2
Ammonia Nitrogen	16 mg/L		16 mg/L	16 mg/L	3
Fecal Coliform May – September			656#/100 mL geometric mean	400#/100 mL geometric mean	3
Phosphorus Interim limit Final WQBELs				5.8 mg/L 0.54 mg/L 0.473 lbs/day	4

Footnotes:

1. Monitoring only.

Attachment #1

2. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.
3. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Code, are included in bold.
4. A compliance schedule is in the current permit to meet the final WQBELs by June 30, 2023.

Receiving Water Information

- Name: Blue River
- Waterbody Identification Code (WBIC): 1211000
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Cold, Class II trout stream and exceptional resource water at the point of discharge, non-public water supply.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following estimates are based on flow information from USGS for the Blue River obtained at Montfort in April 1994 in Grant County, where Outfall 001 is located.
 - 7-Q₁₀ = 4.0 cfs (cubic feet per second)
 - 7-Q₂ = 5.4 cfs (previously estimated from ratio of annual 7-Q₁₀ to 7-Q₂ at a similar location)
 - 90-Q₁₀ = 4.6 cfs (85% of 7-Q₂)
 - Harmonic Mean Flow = 5.7 cfs using a drainage area of 8.1 mi²
 - The Harmonic Mean has been estimated based on average flow and the 7-Q₁₀ using an equation from U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991, EPA/505/2-90-001, pgs. 88-89).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
7-Q ₁₀ (cfs)	4.0	4.0	4.9	4.9	4.9	4.1	4.1	4.1	4.5	4.5	4.5	4.0

- Hardness = 184 mg/L as CaCO₃. This value represents the geometric mean of data (n=3) collected in 2015 and stored in the Surface Water Integrated Monitoring System (SWIMS) database for Jones Slough, which is located approximately 20 miles downstream of the outfall but is expected to be similar to the hardness in the Blue River since no hardness data are available for the Blue River.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%
- Source of background concentration data: Metals data from the Pecatonica River at Hollandale is used for this evaluation because there is no data available for the Blue River. The Pecatonica River is within the same ecological landscape so ambient water quality characteristics are expected to be similar. The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations. Background data for calculating effluent limitations for ammonia nitrogen are described later.
- Multiple dischargers: None.
- Impaired water status: The Blue River is listed (as of 4/1/2012) as impaired for total phosphorus approximately nine miles downstream of the outfall. The Wisconsin River, located approximately 25 miles downstream of the outfall, is listed as impaired for total sediment.

Effluent Information

- Flow rate:
 - Design annual average = 0.105 MGD (Million Gallons per Day)
 - For reference, the actual average flow from January 2019 through June 2024 was 0.038 MGD.

Attachment #1

- Hardness = 253 mg/L as CaCO₃. This value represents the geometric mean of data (n=4) from August 2022 reported on the permit application.
- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water source: Domestic and commercial wastewater with water supply from wells; no industrial contributors.
- Additives: None.
- Effluent characterization: This facility is categorized as a minor municipality, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus ammonia, chloride, hardness, and phosphorus.
- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2 below, in the column titled “MEAN EFFL. CONC.”. Otherwise, substances with multiple effluent data are shown in the tables below or in their respective parts in this evaluation.

Copper Effluent Data

Sample Date	Copper (µg/L)	Sample Date	Copper (µg/L)	Sample Date	Copper (µg/L)
08/09/2022	20	08/21/2022	17	10/10/2022	17
08/12/2022	18	08/24/2022	17	10/14/2022	17
08/15/2022	17	08/27/2022	19	10/18/2022	18
08/18/2022	18	10/06/2022	16		
1-day P ₉₉ = 20 µg/L					
4-day P ₉₉ = 19 µg/L					

Chloride Effluent Data

Sample Date	Chloride (mg/L)
08/09/2022	231
08/12/2022	230
08/15/2022	250
08/18/2022	258
Average	242

The following table presents the average concentrations and loadings at Outfall 001 from January 2019 through June 2024 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Parameter Averages with Limits

	Average Measurement	Average Mass Discharged
BOD ₅	2.0 mg/L*	1.0 lbs/day
TSS	1.0 mg/L*	0.5 lbs/day
pH field	7.04 s.u.	
Phosphorus	5.44 mg/L	1.72 lbs/day
Ammonia Nitrogen	1.53 mg/L*	
Dissolved Oxygen	8.5 mg/L	

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

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

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

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99th percentile (or P₉₉) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

Acute Limits based on 1-Q₁₀

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

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

Where:

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

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

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

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

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

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q₁₀ method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is not the case for Montfort Wastewater Treatment Facility, and the limits are set based on two times the acute toxicity criteria.

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

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Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 3.2 cfs, (1-Q₁₀ (estimated as 80% of 7-Q₁₀)), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD. mg/L	ATC	MAX. EFFL. LIMIT*	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P ₉₉	1-day MAX. CONC.
Arsenic		340	679.6	135.9	2		
Cadmium	253	12.7	25.3	5.1	<2		
Chromium	253	3861	7721.8	1544	<3		
Copper	253	37.3	74.6			20	20
Lead	253	263	525.1	105.0	<10		
Nickel	253	1030	2060.4	412	8		
Zinc	253	271	542.8	108.6	20		
Chloride (mg/L)		757	1514.0	303	242		

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

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 1.0 cfs (¼ of the 7-Q₁₀), as specified in s. NR 106.06(4)(c), Wis. Adm. Code

SUBSTANCE	REF. HARD.* mg/L	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P ₉₉
Arsenic		148.0		1059	211.8	2	
Cadmium	175	3.82	0.0356	27.11	5.4	<2	
Chromium	184	142.04	0.958	1010	202.1	<3	
Copper	184	17.44	1.557	115.2			19
Lead	184	50.48	1.9702	349.1	69.8	<10	
Nickel	184	87.43		626	125.1	8	
Zinc	184	205.17	5.065	1437	287.4	20	
Chloride (mg/L)		395		2826	565.3	242	

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

Monthly Average Limits based on Wildlife Criteria (WC)

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

Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 1.4 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HTC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Cadmium	370	0.0356	3623	724.7	<2
Chromium (+3)	3818000	0.958	37393574	7478715	<3
Lead	140	1.9702	1354	270.8	<10
Nickel	43000		421143	84229	8

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 1.4 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HCC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	13.3		130.3	26.05	2

In addition to evaluating the need for limits for each individual substance for which HCC exist, s. NR 106.06(8), Wis. Adm. Code, requires the evaluation of the cumulative cancer risk. Because no effluent limits are needed based on HCC, determination of the cumulative cancer risk is not needed per s. NR 106.06(8), Wis. Adm. Code.

Conclusions and Recommendations

Based on a comparison of the effluent data and calculated effluent limitations, no effluent limitations are required.

Mercury – The permit application did not require monitoring for mercury because Montfort Wastewater Treatment Facility is categorized as a minor facility as defined in s. NR 200.02(8), Wis. Adm. Code. In accordance with s. NR 106.145(3)(a)3., Wis. Adm. Code, a minor municipal discharger shall monitor, and report results of influent and effluent mercury monitoring once every three months if, “there are two or more exceedances in the last five years of the high-quality sludge mercury concentration of 17 mg/kg specified in s. NR 204.07(5).” However, sludge sampling is not available. It is not expected that there are exceedances of the high-quality mercury concentration based on similar municipal treatment plants and the lack of industries. **No monitoring is recommended.**

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code. Based on the type of discharge, the effluent flow rate, and lack of indirect dischargers, **PFOS and PFOA monitoring is not recommended.** The Department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

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

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life. The current permit has daily maximum, weekly average, and monthly average limits.

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

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

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

Where:

A = 0.275 and B = 39.0 for a Cold-Water Category 1 fishery, and

pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. A total of 691 sample results were reported from January 2019 through June 2024. The maximum reported value was 7.52 s.u. (Standard pH Units). The effluent pH was 7.41 s.u. or less 99% of the time. The 1-day P₉₉, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 7.50 s.u. The mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 7.48 s.u. Therefore, a value of 7.50 s.u. is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 7.50 s.u. into the equation above yields an ATC = 13.28 mg/L.

Daily Maximum Ammonia Nitrogen Effluent Limitations Calculation Method

In accordance with s. NR 106.32(2), Wis. Adm. Code, daily maximum ammonia limitations are calculated using the 1-Q₁₀ receiving water low flow if it is determined that the previous method of acute ammonia limit calculation (2×ATC) is not sufficiently protective of the fish and aquatic life. The more restrictive calculated limits shall apply.

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

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
2×ATC	27
1-Q ₁₀	274

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

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

Daily Maximum Ammonia Nitrogen Limits – Cold water

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

Weekly and Monthly Average Limits based on Chronic Toxicity Criteria (CTC)

The weekly and monthly average ammonia nitrogen limits calculation from the previous memo do not change because there have been no changes in the effluent and receiving water flow rates. The calculations from the 2005 WQBEL memo are shown in Attachment #3.

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from January 2019 through June 2024, with those results being compared to the calculated limits to determine the need to include ammonia limits in the Montfort Wastewater Treatment Facility permit. That need is determined by calculating 99th upper percentile (or P₉₉) values for ammonia and comparing the daily maximum values to the daily maximum limit.

Ammonia Nitrogen Effluent Data	
	Ammonia Nitrogen mg/L
1-day P ₉₉	14.7
4-day P ₉₉	8.18
30-day P ₉₉	3.50
Mean*	1.53
Std	3.94
Sample size	574 (197 ND)
Range	<0.03 - 23.6

*“<” means that the pollutant was not detected at the indicated level of detection. The mean concentration was calculated using zero in place of the non-detected (ND) result.

Based on this comparison, there is no reasonable potential for the discharge to exceed any of the calculated ammonia nitrogen limits. However, **since the permit currently has daily maximum, weekly average, and monthly average limits year-round, the limits must be retained** regardless of reasonable potential, consistent with s. NR 106.33(1)(b), Wis. Adm. Code:

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

Conclusions and Recommendations

In summary, after rounding to two significant figures, the following ammonia nitrogen limitations are recommended. No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm Code.

Final Ammonia Nitrogen Limits			
	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
Year-round	16	16	16

Additional limits to meet the requirements in s. NR 106.07, Wis. Adm Code, are denoted in bold text.

PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR BACTERIA

On May 1, 2020, revisions to chs. NR 102 and NR 210, Wis. Adm. Code, became effective which replace fecal coliform limits with new *Escherichia coli* (*E. coli*) limits for protection of recreational uses. Section NR 210.06(2)(a)1, Wis. Adm. Code, includes two limits which must be included in permits for facilities which are required to disinfect:

1. The geometric mean of *E. coli* bacteria in effluent samples collected in any calendar month may not exceed 126 counts/100 mL.
2. No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 counts/100 mL.

E. coli monitoring is recommended at the same frequency that fecal coliform monitoring is required in the current permit. Since Montfort’s permit requires weekly monitoring, the 410 counts/100 mL limit will effectively function as a daily maximum limit unless the facility performs additional monitoring. Any additional monitoring beyond what is required by the permit must also be reported on the DMR as required in the standard requirements section of the permit. These limits are required during May through September. No changes are recommended to the current recreational period and the required disinfection season.

Effluent Data

Montfort Wastewater Treatment Facility has monitored effluent *E. coli* from July 2022 through June 2024 and a total of 27 results are available. A geometric mean of 126 counts/100 mL was not exceeded, with a maximum monthly geometric mean of 64 counts/100 mL. Effluent data has exceeded 410 counts/100 mL once (which is 4% of the total sample results). The maximum reported value was 600 counts/100 mL. Based on this effluent data it appears that the facility can meet new *E. coli* limits, and **a compliance schedule is not needed in the reissued permit.**

PART 5 – PHOSPHORUS

Technology-Based Effluent Limit

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

Since Montfort Wastewater Treatment Facility does not currently have an existing technology-based limit, the need for this limit in the reissued permit is evaluated. The data demonstrates that the annual monthly average phosphorus loading is less than 150 lbs/month, which is the threshold for municipalities in accordance with s. NR 217.04(1)(a)1, Wis. Adm. Code, and therefore **no technology-based limit is required.**

Annual Average Mass Total Phosphorus Loading

Month	Average Phosphorus Concentration (mg/L)	Total Effluent Flow (Million Gallons)	Calculated Mass (lbs/month)
July 2023	7.213	1.103	66
August 2023	7.030	1.025	60
September 2023	6.719	1.019	57

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Month	Average Phosphorus Concentration (mg/L)	Total Effluent Flow (Million Gallons)	Calculated Mass (lbs/month)
October 2023	6.203	1.005	52
November 2023	5.871	0.872	43
December 2023	5.481	0.987	45
January 2024	5.296	1.101	49
February 2024	4.918	1.144	47
March 2024	5.209	0.990	43
April 2024	5.352	1.284	57
May 2024	5.668	1.387	66
June 2024	5.235	1.678	73
Average			55

Total P (lbs/month) = Monthly average (mg/L) × total flow (MG/month) × 8.34 (lbs/gallon)
 Where total flow is the sum of the actual (not design) flow (in MGD) for that month

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

Water Quality-Based Effluent Limits (WQBEL)

Revisions to administrative rules regulating phosphorus took effect on December 1, 2010. These rule revisions include additions to s. NR 102.06, Wis. Adm. Code, which establish phosphorus standards for surface waters. Subchapter III of NR 217, Wis. Adm. Code, establishes procedures for determining WQBELs for phosphorus, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

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

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

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

Where:

WQC = 0.075 mg/L for the Blue River

Qs = 100% of the 7-Q₂ of 5.2 cfs

Cs = background concentration of phosphorus in the receiving water pursuant to s. NR 217.13(2)(d), Wis. Adm. Code

Qe = effluent flow rate = 0.105 MGD = 0.16 cfs

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

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

A previous evaluation resulted in a WQBEL of 0.54 mg/L using a background concentration of 0.061

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mg/L using data from 2011 collected upstream of the outfall. Section NR 217.13(2)(d), Wis. Adm. Code, states that the determination of upstream concentrations shall be evaluated at each permit reissuance. No additional data were available for consideration. Data for the downstream location is not used in the determination of the limit but rather is presented for informational purposes.

Summary of Instream Total Phosphorus Data for the Blue River

SWIMS ID	10021415	10022585
Station Name	Blue River at State HWY133	Blue River Blue River Rd 100m Upstream
Waterbody	Blue River	Blue River
Distance from Outfall 001	~ 24 miles <i>downstream</i>	~ 2.2 miles upstream
Sample Count	4	5
First Sample	06/25/2008	06/01/2011
Last Sample	09/17/2008	10/23/2011
Mean	0.167	0.0678
Median	0.153	0.061
NR 217 Median	Insufficient Data	0.061

Effluent Data

The following table summarizes effluent total phosphorus monitoring data from January 2019 through June 2024.

Total Phosphorus Effluent Data

	mg/L	lbs/day
1-day P ₉₉	9.07	4.17
4-day P ₉₉	7.09	2.78
30-day P ₉₉	6.00	2.06
Mean	5.44	1.72
Std	1.28	0.75
Sample size	573	573
Range	0.98 - 10.28	0.24 - 8.63

Note: A sample result of 40.31 mg/L on 04/20/2023 was removed from the dataset since it is an outlier and not believed to be representative of normal effluent conditions.

Reasonable Potential Determination

The discharge has reasonable potential to cause or contribute to an exceedance of the water quality criterion because the 30-day P₉₉ of reported effluent total phosphorus data is greater than the calculated WQBEL. Therefore, **a WQBEL is required.**

Mass Limits

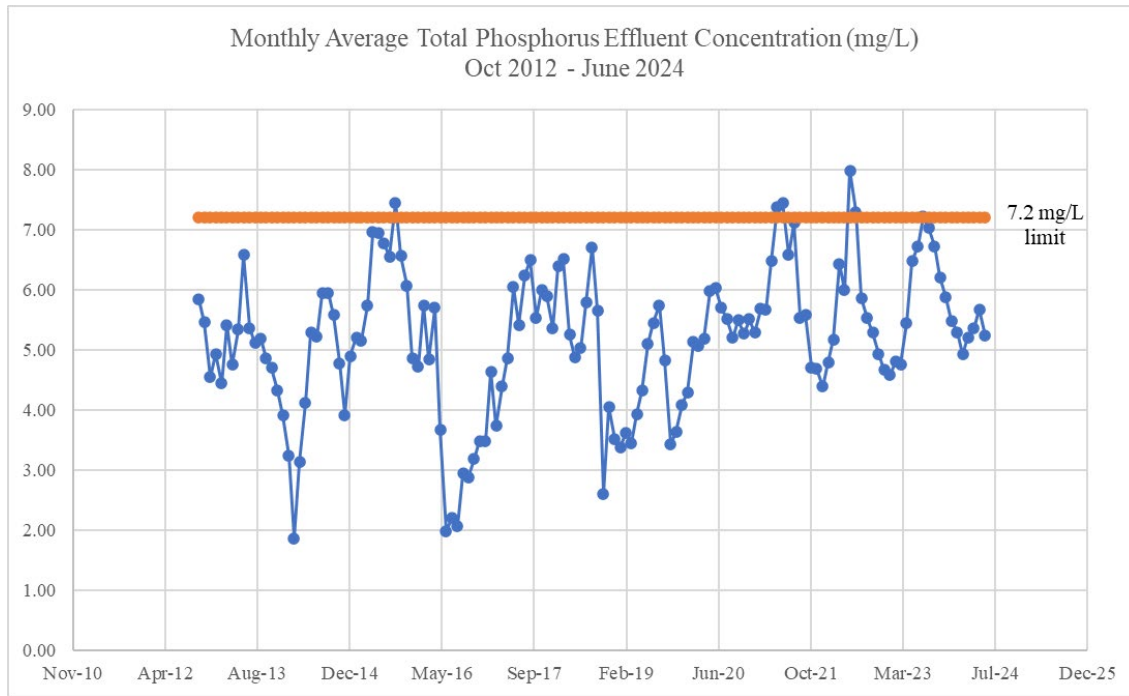
A mass limit is also required, pursuant to s. NR 217.14(1)(a), Wis. Adm. Code, because the discharge is to an exceptional resource water and also upstream of a phosphorus impaired water. **This final mass limit shall be 0.54 mg/L × 8.34 × 0.105 MGD = 0.47 lbs/day expressed as a monthly average.**

Water Quality Trading

A water quality trading plan for 955 lbs/year has been conditionally approved as an alternative

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compliance option to offset any total phosphorus discharged from Outfall 001 that exceeds the QBELs. The phosphorus QBELs may be expressed as computed compliance limits, but a Minimum Control Level (MCL) must be set as a limit not to be exceeded at the outfall location. The existing interim limit of 5.8 mg/L is not appropriate since it was calculated using a limited dataset of nine sample results. Evaluating 66 monthly averages of effluent concentrations since 2019 (and 141 monthly averages since October 2012), Montfort is able to comply with a monthly average limit of 7.2 mg/L 95% of the time. Therefore, **the MCL should be set to 7.2 mg/L as a monthly average.**



Antibacksliding and Antidegradation

A previous interim limit of 5.8 mg/L as a monthly average was implemented in the permit on October 1, 2012 and continued in the permit effective January 1, 2019 as part of coverage under the individual phosphorus variance. This limit was calculated in the QBEL memo dated August 1, 2012 and is the maximum value of nine sample results that were collected between 2009-2011. Montfort has shown steadily increasing phosphorus levels during the permit term leading to exceedances of the 5.8 mg/L limit. The facility has requested that the limit be increased as other treatment options, including chemical addition for phosphorus removal, have not proven viable. In order to relax an effective interim limit, conditions in ch. NR 207, Wis. Adm. Code, must be met.

Antibacksliding

The applicable antibacksliding requirements are spelled out in ss. NR 207.12(1) and NR 207.12(4), Wis. Adm. Code, since the 5.8 mg/L as a monthly average was an interim limit:

- (1) GENERAL. Except as provided in this section, effluent limitations or standards in a reissued, revoked and reissued, or modified permit shall be at least as stringent as the effective effluent limitations or standards in the previous permit. If one of the exceptions in subs. (2) to (4) is

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satisfied to relax or backslide a limitation, the limitation may only be made less stringent if both of the following apply:

- (a) The less stringent limitation is at least as stringent as required by the effluent limitation guideline in effect at the time the permit is reissued, revoked and reissued, or modified.
- (b) The less stringent limitation complies with state water quality standards, including the antidegradation requirements in subch. I.

Note: The requirements in sub. (1) is commonly referred to as the “safety clause” provision of the antibacksliding requirements in the Clean Water Act, and these requirements apply to any relaxation of any limitation. See 33 USC 1342(o)(3).

Since a phosphorus technology based effluent limit has never been triggered for Montfort, s. NR 207.12(1)(a), Wis. Adm. Code, is not applicable. Section NR 207.12(1)(b), Wis. Adm. Code, is satisfied following the antidegradation evaluation (see below) and because the water quality trade is consistent with state water quality standards.

- (4) RELAXING AN INTERIM EFFLUENT LIMITATION OR AN ELG-BASED LIMITATION OR STANDARD. Interim effluent limitations, standards, and conditions and ELG-based effluent limitations and standards that have taken effect in a permit may be relaxed in a reissued, revoked and reissued, or modified permit if the requirements in sub. (1) (a) and (b) are met and both of the following are met:
 - (a) Circumstances upon which the previous permit was based have materially and substantially changed since the time the permit was issued.
 - (b) Changes have occurred that would constitute cause for a permit modification or revocation and reissuance under ch. NR 203.

Section NR 207.12(4)(a), Wis. Adm. Code, is met because the initial interim limit was based on only nine sample results whereas now there are more than twelve hundred results since the interim limit was implemented. Section NR 207.12(4)(b), Wis. Adm. Code, is met since the permit is up for normal reissuance and since the facility has selected water quality trading as their phosphorus compliance option.

Antidegradation

Section NR 207.12(1)(b), Wis. Adm. Code, states that antidegradation requirements must also be met in order to relax a limit.

Since Outfall 001 discharges to the portion of the Blue River that is listed as an exceptional resource water and since the increased limit is being applied to an existing discharge, s. NR 207.03(4)(c), Wis. Adm. Code, is applicable. Section NR 207.03(4)(d), Wis. Adm. Code, is not applicable because there will be no significant lowering of water quality since water quality trading will provide an offset.

- (4) EXCEPTIONAL RESOURCE WATERS. If the department determines that a WPDES permit application proposes a new or increased discharge to exceptional resource waters, it shall review the application as follows:
 - (c) For a proposed increased discharge, water quality based effluent limitations for the increased portion of the discharge shall be determined in accordance with sub. (6).

Where “sub. (6)” is:

- (6) FISH AND AQUATIC LIFE WATERS. If the department determines that a WPDES permit application proposes a new or increased discharge to fish and

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aquatic life waters, it shall establish effluent limitations using the procedures in ss. NR 207.04 and 207.05.

For reference, ss. NR 207.04(1)(a)-(b), Wis. Adm. Code, states:

- (1) APPLICATION INFORMATION. Persons proposing a new or increased discharge to fish and aquatic life waters shall provide documentation for the following:
- (a) An assessment of existing treatment capability which demonstrates:
1. Any of the following:
 - a. The permittee's discharge equals or exceeds 85% of any mass permit limitation.
 - b. The permittee's monthly average discharge equals or exceeds 85% of a monthly average effluent limitation established in a permit for 3 consecutive months;
 - c. The permittee's weekly average discharge equals or exceeds 85% of a weekly average effluent limitation established in a permit for 4 consecutive weeks.
 - d. The permittee's daily discharge equals or exceeds 85% of a daily maximum effluent limitation established in a permit 5 or more times during a calendar year;
 - e. **There are exceedances of any daily maximum, weekly average or monthly average effluent limitation for a parameter in a permit; or**
 - f. A municipal permittee's compliance maintenance annual report point total, as required in ch. NR 208, is 70 or greater;
 2. **The treatment facilities were maintained in good working order;**
 3. **The treatment facilities were operated and maintained as efficiently as possible; and**
 4. **The conditions documented in subd. 1. were not due to temporary upsets.**
- (b) **Effluent quality data and background water quality data for indicator parameters so a determination will be made on whether or not a significant lowering of water quality will occur under s. NR 207.05.**

The applicable portions are denoted in bold text above. Based on the department's review of phosphorus effluent data reported by Montfort during the previous permit term (January 2019 through June 2024), the monthly average interim limit of 5.8 mg/L was exceeded 30% of the time. During this time, it is also noted that the treatment facility was maintained in good working order, operated and maintained as efficiently as possible, and the exceedances were not due to temporary upsets. Section NR 207.04(1)(b), Wis. Adm. Code, is verified but is not needed since no lowering of water quality will occur since water quality trading will provide offsets. This rationale can also be applied to the economic and alternatives analysis portions outlined in ss. NR 207.04(1)(c)-(d), Wis. Adm. Code.

Section NR 207.04(2), Wis. Adm. Code, outlines Department determinations. For reference, the applicable section, s. NR 207.04(2)(b)1, Wis. Adm. Code, states:

- (b) If the department determines that the existing treatment facilities do not have treatment capability to treat any proposed new or increased discharge and maintain treatment levels sufficient to meet existing effluent limitations, effluent limitations will be developed using the following procedures:
1. If the proposed new or increased discharge will not significantly lower water quality as determined under s. NR 207.05 (4) and will accommodate important economic and social development as documented under sub. (1)(c), water quality based effluent limitations will be determined based on applicable procedures and criteria in chs. NR 102, 103, 105 and 106

or on categorical effluent limitation procedures pursuant to chs. NR 200 to 297 as appropriate.

Montfort completed a chemical phosphorus removal pilot study in 2016 which resulted in inconsistent lower phosphorus levels and bed fouling. Therefore, the Department finds Montfort does not have any economically feasible treatment capabilities at their current facility. Since the relaxed limit will not significantly lower water quality due to water quality trading and will accommodate important economic and social development, the new limit will be determined using current data.

Sections NR 207.05(1)-(2), Wis. Adm. Code, outline the procedure for determining whether relaxing the effluent limitations will result in a significant lowering of water quality. As stated previously, this section is not applicable since lowering of water quality will not occur since water quality trading will provide offsets and the water quality trade is consistent with state water quality standards.

PART 6 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL

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

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

The table below summarizes the maximum temperatures reported during monitoring from July 2012 through August 2018 at Montfort Wastewater Treatment Facility. Temperature data from Highland Wastewater Treatment Facility, which also utilizes a recirculating sand filter, from February 2018 through June 2018 and October 2018 through December 2018 is also summarized in the table below (*italic text*).

Monthly Temperature Effluent Data & Limits

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(°F)
JAN	*	*	-	120
FEB	<i>39</i>	<i>39</i>	-	120
MAR	<i>40</i>	<i>41</i>	-	120
APR	<i>41</i>	<i>42</i>	-	120
MAY	<i>56</i>	<i>58</i>	-	120

Attachment #1

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(°F)
JUN	70	70	-	120
JUL	79	80	94	108
AUG	72	92	88	120
SEP	69	70	84	120
OCT	63	66	82	120
NOV	51	52	-	120
DEC	40	41	-	120

*No data available.

Reasonable Potential

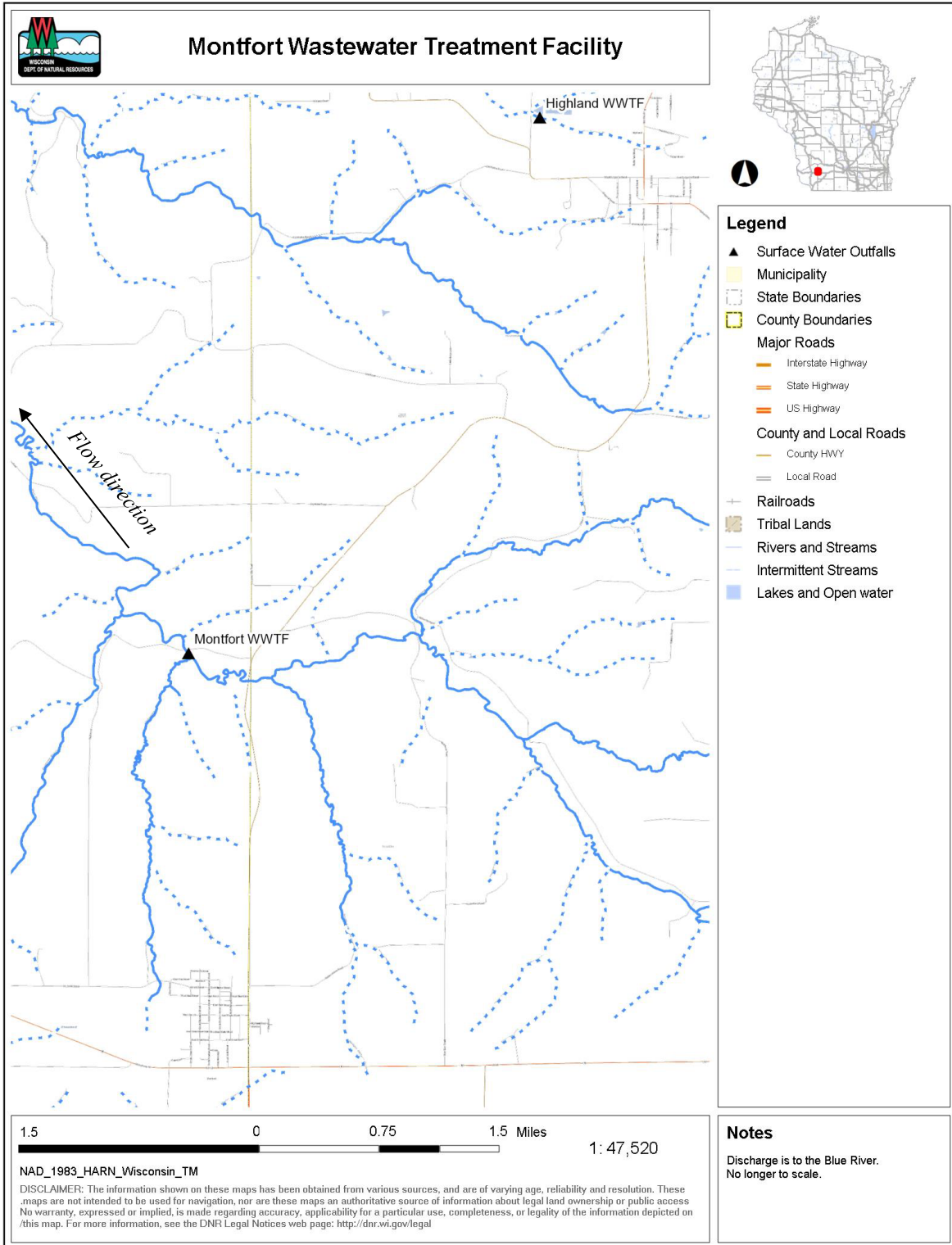
At temperatures above ~103°F, conventional biological treatment systems stop functioning properly and experience upsets. There is no indication that this has ever occurred at this treatment system. This information, coupled with the lack of industrial heat load and data from similar wastewater treatment facilities, led to the conclusion that there is no reasonable potential for the discharge to exceed the calculated limitations. Therefore, **no thermal limits or monitoring is required.**

PART 7 – WHOLE EFFLUENT TOXICITY (WET)

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

Guidance in Chapter 1.11 (WET Testing of Minor Municipal Discharges) of the *WET Program Guidance Document* was consulted. This is a minor municipal discharge (< 1.0 MGD) comprised solely of domestic wastewater with no history of WET failures and no toxic compounds detected at levels of concern. Although arsenic and nickel were detected, these results were well below the calculated limits. Furthermore, no additives are used for treatment. At this time, **no WET testing is recommended because of the low risk in effluent toxicity.**

Attachment #2
Site Map



Ammonia Nitrogen Calculations from the WQBEL Memo Dated April 19, 2005

AMMONIA (as N) LIMITS		COLDWATER COMMUNITY			
CLASSIFICATION:					
EFFLUENT FLOW (mgd):		0.105			
EFFLUENT FLOW (cfs):		0.162			
MAX. EFFLUENT pH (s.u.):		7.80			
BACKGROUND INFORMATION:					
		<i>summer</i>	<i>winter</i>	<i>spring</i>	<i>fall</i>
4Q3 (cfs)			0	0	0
7Q10 (cfs)		4.1	4.0	4.9	4.5
30Q5 (cfs)			0	0	0
7Q2 (cfs)		5.4	5.3	6.5	6
Ammonia (mg/L)		0.06	0.06	0.05	0.12
Temperature (deg C)		20	3	9	10
pH (std. units)		8.21	7.97	7.97	7.97
% of river flow used:		100	25	25	25
Reference weekly flow:		4.1	1	1.225	1.125
Reference monthly flow:		4.59	4.59	1.12625	1.38125
CRITERIA (in mg/L):					
Acute (@ effl. pH):		8.11	8.11	8.11	8.11
4-day Chronic (@ backgrd. pH):					
early life stages present		3.10	6.35	6.35	6.35
30-day Chronic (@ backgrd. pH):					
early life stages present		1.24	2.54	2.54	2.54
EFFLUENT LIMITS (in mg/L):					
Daily maximum (also see below)		16.21	16.21	16.21	16.21
Weekly average					
early life stages present		79.78	45.07	53.86	49.49
Monthly average					
early life stages present		34.56	19.73	23.71	21.53

Early life stages present limits apply year-round for coldwater streams.