Dorchester Public Noticed Permit Fact Sheet

General Information

Permit Number	WI-0021571-10-0
Permittee	Village of Dorchester, Village Hall, 250 Parkside Drive, Dorchester WI 54425
Permitted Facility	Dorchester Wastewater Treatment Facility, 3rd Avenue, Dorchester, WI
Permit Term	May 01, 2025 to March 31, 2030
Discharge Location	NW ¼ of NE ¼, Section 14, T29N, R1E, Town of Mayeville, Clark County
Receiving Water	Unnamed Creek 14-10, a tributary to the North Fork of the Popple River, located in the Popple River Watershed of the Black River Basin in Clark County
Stream Flow ($Q_{7,10}$)	0 cfs
Stream Classification	Limited Forage Fish, Non-public Water Supply
Discharge Type	Existing, Continuous
Annual Average Design Flow	0.128 MGD
Industrial or Commercial Contributors	Meyer Manufacturing
Plant Classification	A4 - Ponds, Lagoons and Natural Systems; P - Total Phosphorus; SS - Sanitary Sewage Collection System
Approved Pretreatment Program?	N/A

Facility Description

The Dorchester Wastewater Treatment Facility treats domestic wastewater from the Village of Dorchester. The facility has an annual average influent design flow of 0.128 million gallon per day (MGD) and had an actual annual influent flow of 0.104 in 2024. Treatment is via a five-celled aerated lagoon type system. Chemical phosphorus treatment via ferric chloride is added in the manhole prior to Pond 5. In this permit term the influent BOD & TSS monitoring frequency increased from weekly to 2/week. Significant effluent limit and monitoring changes this permit term are as follows: 1) the sample frequency for flow (at influent and effluent) has been changed from “continuous” to “daily” for eDMR reporting purposes, 2) the conditional reapproval of a multi-discharger variance (MDV) for phosphorus interim MDV limit, 3) the ammonia limits changed, 4) addition of chronic WET testing, 5) an increase in BOD, TSS, phosphorus, ammonia and DO monitoring frequencies, 6) addition of copper limits and a schedule to meet the limits, 7) Since chemical treatment is currently utilized in Pond 5, this facility no longer qualifies for the total suspended solids variance limitation in accordance with s. NR 210.07(2), Wis. Adm. Code, therefore new TSS limits are included, and 8) the CBOD limits have been removed and new BOD limits are included. Clarification language has been added notifying the permittee they must monitor sludge for List 2 nutrients and meet the requirements of List 3 (Pathogen Control) and List 4 (Vector Attraction Reduction) prior to landspreading if they remove sludge from the lagoon(s). A schedule has been included requiring the permittee submit a sludge management plan prior to removal and land application of sludge from the pond(s). Additionally, to quantitate the risk, PFAS sludge sampling has been included in the permit pursuant to ss. NR214.18(5)(b) and NR 204.06(2)(b)9., Wis. Adm. Code. A schedule has also been added that requires the permittee have an operator certified in the P Subclass (Phosphorus).

Substantial Compliance Determination

Enforcement During Last Permit: The facility has had some CBOD violations during spring turnover in past years. In addition, they have had a couple of violations in July and August after the ponds become stagnant holding during the month of June due to stringent permit limits. The facility is still optimizing their phosphorus chemical treatment and had violations in May, July and August of 2024. The facility received a notice of noncompliance for these violations and in response developed a standard operating procedure for chemical dosing.

After a desk top review of all Discharge monitoring reports, CMARs, land application reports, and compliance schedule items, and an inspection on 09/05/2024, Dorchester Wastewater Treatment Facility has been found to be in substantial compliance with their current permit.

Compliance determination made by Jenna Monahan on 09/10/2024.

Sample Point Descriptions

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
701	**Influent**: 0.104 MGD in 2024	Representative influent samples shall be collected at the influent lift station wet well.
001	**Effluent**: 0.117 MGD 2024	Representative effluent samples shall be collected at the outfall manhole prior to discharge to the unnamed tributary to the North Fork of the Popple River.
003	**Lagoon Sludge**, removed fall 2024 but sludge removal is not anticipated this permit term	Representative composite sludge samples shall be collected in 2026 and monitored for the parameters as listed in the table below. If the permittee plans to remove sludge, they shall monitor sludge for Lists 1, 2, 3 & 4 prior to land application. The Department shall be notified at least 30 days in advance of sludge removal so that appropriate monitoring forms can be provided. Approval of landspreading sites must be completed prior to sludge removal.

Permit Requirements

1 Influent – Monitoring Requirements

1.1 Sample Point Number: 701- INFLUENT MANHOLE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	2/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	2/Week	24-Hr Flow Prop Comp	

1.1.1 Changes from Previous Permit:

Influent monitoring requirements were evaluated for this permit term and the only change made is an increase in the BOD and TSS monitoring frequency from weekly to 2/week.

1.1.2 Explanation of Limits and Monitoring Requirements

Monitoring of influent flow, BOD5 and total suspended solids is required by s. NR 210.04(2), Wis. Adm. Code, to assess wastewater strengths and volumes and to demonstrate the percent removal requirements in s. NR 210.05, Wis. Adm. Code, and in the Standard Requirements section of the permit.

2 Surface Water - Monitoring and Limitations

2.1 Sample Point Number: 001- EFFLUENT TO POPPLE RIVER

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate	Daily Max	0.2 MGD	Daily	Continuous	Flow reporting required year-round. Limit applies March, April & May.
BOD5, Total	Daily Max	30 mg/L	2/Week	Calculated	
BOD5, Total	Monthly Avg	15 mg/L	2/Week	Calculated	
Suspended Solids, Total	Daily Max	30 mg/L	2/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	20 mg/L	2/Week	24-Hr Flow Prop Comp	
pH Field	Daily Min	6.0 su	Daily	Grab	
pH Field	Daily Max	9.0 su	Daily	Grab	
Dissolved Oxygen	Daily Min	4.0 mg/L	Daily	Grab	
Nitrogen, Ammonia Variable Limit		mg/L	2/Week	24-Hr Flow Prop Comp	Daily max variable limit applies year-round. Look up the variable ammonia limit from the 'Variable Daily Max Ammonia Limitation' table below and report the variable limit in the Ammonia Variable Limit column on the eDMR.
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	2/Week	24-Hr Flow Prop Comp	Report the daily maximum Ammonia result in the Nitrogen, Ammonia (NH3-N) Total column of the

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					eDMR. See Ammonia Limitation Section.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	mg/L	2/Week	24-Hr Flow Prop Comp	Weekly avg & monthly avg limits vary monthly. See "Variable Weekly Avg & Monthly Avg Ammonia Limitation" table below for applicable limits.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	mg/L	2/Week	24-Hr Flow Prop Comp	
Copper, Total Recoverable	Weekly Avg	16 ug/L	Monthly	24-Hr Flow Prop Comp	Copper monitoring & reporting required at permit reissuance. Limits effective 04/01/2028. See associated compliance schedule.
Copper, Total Recoverable	Weekly Avg - Variable	lbs/day	Monthly	Calculated	Report the lbs discharged on the DMR in the column for 'Copper, Tot Rec (in lbs/day). See the weather-related subsection below & associated compliance schedule.
Copper Variable Limit		lbs/day	Monthly	Calculated	Report the applicable mass limit on the DMR in the Variable Limit column. See the weather-related subsection below & associated compliance schedule.
Phosphorus, Total	Monthly Avg	1.0 mg/L	2/Week	24-Hr Flow Prop Comp	This is an interim MDV limit effective throughout the permit term. See the MDV/Phosphorus subsections and phosphorus schedules in the permit.
Phosphorus, Total		lbs/month	Monthly	Calculated	Report the total monthly phosphorus discharged in lbs/month on the last day of the month on the DMR. See Standard Requirements in the permit for 'Appropriate Formulas' to calculate the Total Monthly Discharge in lbs/month.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total		lbs/yr	Annual	Calculated	Report the sum of the total monthly discharges (for the months that the MDV is in effect) for the calendar year on the Annual report form.
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Monitoring required annually in specific quarters. See Nitrogen Series Monitoring section in the permit. Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	
Chronic WET		TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET testing section in the permit. Sample shall be collected at the same time as a monthly copper sample.

2.1.1 Changes from Previous Permit

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

- **Flow-** The sample frequency for flow has been changed from "continuous" to "daily" for eDMR reporting purposes
- **BOD/TSS** – removal of the CBOD variance for lagoons, BOD limits included, removal of TSS lagoon variance
- **Copper** – Addition of copper limits and an associated compliance schedule to meet them
- **Chronic WET** – testing required three times during the permit term
- **Monitoring frequencies**: Increase in BOD, TSS and phosphorus from weekly to 2/week and an increase in DO from weekly to daily

2.1.2 Explanation of Limits and Monitoring Requirements

Detailed discussions of limits and monitoring requirements can be found in the attached water quality-based effluent limits (WQBEL) memo written by Ben Hartenbower, "Water Quality-Based Effluent Limitations for the Dorchester Wastewater Treatment Facility WPDES Permit No. WI-0021571", dated February 13, 2025.

Monitoring Frequencies- The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure consistency in permits issued across the state. Guidance and requirements in administrative code were considered when

determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term. The monitoring frequency for BOD, TSS, phosphorus and ammonia has been increased from weekly to 2/week and the DO monitoring frequency increased from weekly to daily.

Expression of Limits- In accordance with the federal regulation 40 CFR 122.45(d) and s. NR 205.065, Wis. Adm. Code, limits in this permit are to be expressed as weekly average and monthly average whenever practicable.

Ammonia: Weekly and monthly average ammonia limits that vary by the month and daily maximum ammonia limits that vary with effluent pH apply year-round are presented in the tables below.

Variable Daily Max Ammonia Limitation Table

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
$6.0 \leq pH \leq 6.1$	54	$7.0 < pH \leq 7.1$	33	$8.0 < pH \leq 8.1$	6.9
$6.1 < pH \leq 6.2$	53	$7.1 < pH \leq 7.2$	30	$8.1 < pH \leq 8.2$	5.7
$6.2 < pH \leq 6.3$	52	$7.2 < pH \leq 7.3$	26	$8.2 < pH \leq 8.3$	4.7
$6.3 < pH \leq 6.4$	51	$7.3 < pH \leq 7.4$	23	$8.3 < pH \leq 8.4$	3.9
$6.4 < pH \leq 6.5$	49	$7.4 < pH \leq 7.5$	20	$8.4 < pH \leq 8.5$	3.2
$6.5 < pH \leq 6.6$	47	$7.5 < pH \leq 7.6$	17	$8.5 < pH \leq 8.6$	2.7
$6.6 < pH \leq 6.7$	45	$7.6 < pH \leq 7.7$	14	$8.6 < pH \leq 8.7$	2.2
$6.7 < pH \leq 6.8$	42	$7.7 < pH \leq 7.8$	12	$8.7 < pH \leq 8.8$	1.8
$6.8 < pH \leq 6.9$	39	$7.8 < pH \leq 7.9$	10	$8.8 < pH \leq 8.9$	1.6
$6.9 < pH \leq 7.0$	36	$7.9 < pH \leq 8.0$	8.4	$8.9 < pH \leq 9.0$	1.3

Variable Weekly Avg & Monthly Avg Ammonia Limitation

Month	Weekly Avg (mg/L)	Monthly Avg (mg/L)
January	16	6.5
February	16	6.5
March	18	10
April	14	13
May	12	11
June	6.5	2.6
July	6.3	2.3
August	6.7	2.5
September	9.5	3.6
October	14	5.7
November	16	7.2
December	16	6.5

Copper: Copper monitoring and reporting is required at the permit effective date. Limitations become effective 04/01/2028 per the associated compliance schedule. Copper has a mass limit based on weather conditions. The applicable non-wet weather mass limit is 0.017 pounds/day. The applicable wet weather mass limit is 0.071 pounds/day.

Phosphorus: Water quality based effluent limits of 0.225 mg/L (monthly average) and 0.075 lbs/day (6-month average) were set to become effective unless a variance was granted. The permittee applied for, and was granted, a multi-discharge variance (MDV) for phosphorus during the previous permit term and has re-applied for the MDV as provided for in s. 283.16, Wis. Stats., and approved by USEPA on February 6, 2017 for a 10-year duration. The permittee qualifies for the MDV because it is an existing source and a major facility upgrade is needed to comply with the applicable phosphorus WQBELs, thereby creating a financial burden. Dorchester's MDV application was conditionally approved by the DNR on

November 22, 2024. The conditional approval of Dorchester's MDV application recommended a highest attainable condition (HAC) of 0.6 mg/L. The facility submitted a letter per 283.16(6)(am) Wis. Stats. requesting to hold their MDV limit at 1.0 mg/L in the permit term due to significant seasonal shifts and a continued effort with their consultant and Wisconsin Rural Water to implement operational changes to achieve more consistent phosphorus concentrations. After further consideration and a review of the facility's letter, the Department determined that a HAC of 1.0 mg/L is appropriate for this permit term to allow additional time to optimize chemical addition and other operational changes to achieve optimal phosphorus removal.

Conditions of the MDV require the permittee to optimize phosphorus removal throughout the permit term, comply with interim limits and make annual payments to participating county(s) by March 1 of each year based on the pounds of phosphorus discharged during the previous year in excess of the specified target value. A reopener clause is included in the permit to address the current MDV's expiration date, as a permit action may be required to update or remove variance provisions if the MDV is altered or unavailable after February 6, 2027.

The "price per pound" value is $50.00 adjusted for CPI annually during the first quarter as defined by s. 283.16(8)(a)2, Wis. Stats and takes effect for reissued permits with effective dates starting April 1. This may differ from the "price per pound" that is public noticed; however, the "price per pound" is set upon reissuance and is applicable for the entire permit term. The participating county(s) uses these payments to implement non-point source phosphorus control strategies at the watershed level.

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. Testing is required annually; see permit for specific quarters.

Whole Effluent Toxicity: Whole effluent toxicity (WET) testing requirements and limits (if applicable) are determined in accordance with ss. NR 106.08 and NR 106.09 Wis. Adm. Code, as revised August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at http://dnr.wi.gov/topic/wastewater/wet.html). Chronic WET testing is required three times during the permit term. See the permit for the specific quarters chronic WET testing is required.

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 permit was drafted, the department has determined the permittee does not need to sample for PFOS or PFOA as part of this permit reissuance. The department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

3 Land Application - Monitoring and Limitations

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
003	B	Liquid	Sludge was removed from the lagoon in the fall 2024; sludge removal is not anticipated this permit term.			
Does sludge management demonstrate compliance? Yes						
Is additional sludge storage required? No						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No						
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.						

3.1 Sample Point Number: 003- LAGOON SLUDGE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Once	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Once	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Once	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Once	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Once	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Once	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Once	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Once	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Once	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Once	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Once	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Once	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Once	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Once	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Zinc Dry Wt	Ceiling	7,500 mg/kg	Once	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Once	Composite	
Nitrogen, Total Kjeldahl		Percent	Per Application	Composite	
Nitrogen, Ammonia (NH3-N) Total		Percent	Per Application	Composite	
Phosphorus, Total		Percent	Per Application	Composite	
Phosphorus, Water Extractable		% of Tot P	Per Application	Composite	
Potassium, Total Recoverable		Percent	Per Application	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	
PFOA + PFOS		ug/kg	Once	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Once	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

3.1.1 Changes from Previous Permit:

Sludge limitations and monitoring requirements were evaluated for this permit term and the following changes described below were made from the previous permit:

List 2 Nutrient monitoring – Monitoring for list 2 (nutrients) is highly recommended at the same time as the monitoring of List 1 (metals) in year 2 of the permit. Results will assist in the determination of the acres needed for land application of sludge should it be necessary.

Change in form submittal – In prior permit reissuances when it has been noted in the application that sludge would not be removed during the permit term, the department required sampling during the second year of the permit term and the sludge characteristic report (3400-049) would be generated only during that year. Due to moving to electronic submittal of forms via Switchboard, forms 3400-049 (“Characteristics Report”), 3400-052 (“Other Methods of Disposal”) and 3400-055 (“Annual Land Application”) will now be generated by the department and the permittee will be required to submit all three reports each year of the permit term. This change was adopted to provide the permittee flexibility because many lagoon desludging projects can be unexpected, are delayed or staggered over multiple years. Additionally, it is used to officially report that no land application of sludge has occurred, and annual submittal of the forms is required per the standard requirements section.

PFAS – Monitoring for PFAS has been added once during the permit term pursuant s. NR 204.06(2)(b)9., Wis. Adm. Code.

3.1.2 Explanation of Limits and Monitoring Requirements

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

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 this WPDES permit pursuant to ss. NR 214.18(5)(b) and NR 204.06(2)(b)9., Wis. Adm. Code.

4 Schedules

4.1 Copper Compliance Schedule

Required Action	Due Date
Report on Effluent Discharges: Submit a report on effluent discharges of copper with conclusions regarding compliance;	03/31/2026
Action Plan: Submit an action plan for complying with the copper effluent limitations. If construction is required, include plans and specifications with the submittal.	09/30/2026
Initiate Actions: Initiate actions identified in the plan.	06/30/2027
Complete Actions: Complete actions necessary to achieve compliance with the copper effluent limitations. Limitations become effective 04/01/2028.	03/31/2028

Explanation of Schedule: The compliance schedule for copper provides a schedule for conducting the actions necessary to comply with the new limits. The compliance schedule lays out a timeline for the permittee to investigate and implement a plan to comply with the limits by the end of the schedule.

4.2 Phosphorus Payment per Pound to County

The permittee is required to make annual payments for phosphorus reductions to the participating county or counties in accordance with s. 283.16(8), Wis. Stats, and the following schedule. The price per pound will be set at the time of permit reissuance and will apply for the duration of the permit.

Required Action	Due Date
Annual Verification of Phosphorus Payment to County: The permittee shall make a total payment to the participating county or counties approved by the Department by March 1 of each calendar year. The amount due is equal to the following: [(lbs of phosphorus discharged minus the permittee's target value) times ($66.62 per pound)] or $640,000, whichever is less. See the payment calculation steps in the Surface Water section. The permittee shall submit Form 3200-151 to the Department by March 1 of each calendar year indicating total amount remitted to the participating counties to verify that the correct payment was made. The first payment verification form is due by the specified Due Date. Note: The applicable Target Value is 0.2 mg/L as defined by s. 283.16(1)(h), Wis. Stats. The "per pound" value is $50.00 adjusted for CPI.	03/01/2026
Annual Verification of Payment #2: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2027
Annual Verification of Payment #3: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2028
Annual Verification of Payment #4: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2029
Annual Verification of Payment #5: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2030
Continued Coverage: If the permittee intends to seek a renewed variance, an application for the MDV (Multi Discharger Variance) shall be submitted as part of the application for permit reissuance in accordance with s. 283.16(4)(b), Wis. Stats.	
Annual Verification of Payment After Permit Expiration: In the event that this permit is not reissued prior to the expiration date, the permittee shall continue to submit Form 3200-151 to the Department indicating total amount remitted to the participating counties by March 1 each year.	

Explanation of County Payment Schedule: Subsection 283.16(6)(b), Wis. Stats., requires permittees that have received approval for the multi-discharger variance (MDV) to implement a watershed project that is designed to reduce non-point sources of phosphorus within the HUC 8 watershed in which the permittee is located. The permittee has selected the "Payment to Counties" watershed option described in s. 283.16(8), Wis. Stats. Under this option the permittee shall make annual payment(s) to participating county(s) that are calculated based on the amount of phosphorus actually discharged during a calendar year in pounds per year less the amount of phosphorus that would have been discharged had the permittee discharged phosphorus at a target value concentration of 0.2 mg/L. The pounds of phosphorus discharged in excess of the target value is multiplied by a per pound phosphorus charge that will equal $66.62 per pound. This schedule requires the permittee to submit Form 3200-151 to the Department indicating the total amount remitted to the participating county(s).

4.3 Phosphorus Schedule - Continued Optimization

The permittee is required to optimize performance to control phosphorus discharges per the following schedule.

Required Action	Due Date
Optimization: The permittee shall continue to implement the optimization plan as previously approved to optimize performance to control phosphorus discharges. Submit a progress report on optimizing removal of phosphorus by the Due Date.	03/31/2026
Progress Report #2: Submit a progress report on optimizing removal of phosphorus.	03/31/2027
Progress Report #3: Submit a progress report on optimizing removal of phosphorus.	03/31/2028
Progress Report #4: Submit a progress report on optimizing removal of phosphorus.	03/31/2029
Progress Report #5: Submit a progress report on optimizing removal of phosphorus.	03/31/2030

Explanation of Continued Optimization Schedule: Per s. 283.16(6)(a), Wis. Stats. the Department may include a requirement that the permittee optimize the performance of a point source in controlling phosphorus discharges, which may be necessary to achieve compliance with multi-discharger variance interim limits. This compliance schedule requires the permittee to continue to implement the optimization plan that was approved during the previous permit term.

4.4 Operator Certification

Required Action	Due Date
Operator Certification- P Subclass: Per s. NR 114.53 Wis. Adm. Code, the permittee shall have an operator in charge certified in the P Subclass (Phosphorus) by the due date. Within 30 days of receiving certification, the permittee shall notify the department in writing of the certified operator's name and certification number with the P Subclass certification.	06/01/2025

Explanation of Operator Certification Schedule: Per s. NR 114.53 Wis. Adm. Code, Dorchester WWTF must have an operator in charge that holds all certifications at the proper level.

4.5 Sludge Management Plan

Required Action	Due Date
Sludge Management Plan: The permittee shall submit a management plan for approval if removal of sludge will occur during this permit term. The plan shall demonstrate compliance with ch. NR 204, Wis. Adm. Code and at minimum address 1) How and where is sludge sampled; 2) Available sludge storage details and location(s); 3) How will the sludge be removed with details on volume, characterization and how will the treatment plant continue to function during the drawdown; 4) Describe the type of transportation and spreading vehicles and loading and unloading practices; 5) Identify approved land application sites, apply for needed sites, site limitations, total acres needed and vegetative cover management; 6) Specify record keeping procedures including site loading; 7) Address contingency plans for adverse weather and odor/nuisance abatement; and 8) Include any other pertinent information such as other disposal options that may be used or specifications of any pretreatment processes Once approved, all sludge management activities shall be conducted in accordance with the plan. Any changes to the plan must be approved by the Department prior to implementing the changes. No desludging may occur unless approval from the Department is obtained. Daily logs shall be kept that record where the sludge has been disposed.	

The plan is due at least 60 days prior to desludging.	

Explanation of Sludge Management Plan Schedule: If the lagoons are to be de-sludged during this permit term, a management plan is needed to show compliance with ch NR 204, Wis. Adm. Code that clearly explains how the sludge will be safely removed, what contingencies are in place, the type of equipment that will be used and how the sludge will be land applied to ensure the proper precautions are in place to prevent any negative impacts to surface water or groundwater.

Other Comments

Publishing Newspaper: The Tribune Phonograph, PO Box 677, Abbotsford, WI 54405-0677

Attachments

- Water Quality Based Effluent Limits: February 13, 2025 memo from Ben Hartenbower to Holly Heldstab titled "Water Quality-Based Effluent Limitations for the Dorchester Wastewater Treatment Facility WPDES Permit No. WI-0021571"
- MDV Evaluation Checklist, completed by Matt Claucherty, dated 11/22/2024
- MDV Conditional Approval Letter, completed by Matt Claucherty, dated 11/22/2024

Justification Of Any Waivers From Permit Application Requirements

No waivers requested or granted as part of this permit reissuance

Prepared By: Holly Heldstab, Wastewater Specialist **Date:** March 6, 2025

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: February 13, 2025

TO: Holly Heldstab– WCR/Eau Claire

FROM: Benjamin Hartenbower – WCR/Eau Claire

SUBJECT: Water Quality-Based Effluent Limitations for the Dorchester Wastewater Treatment Facility WPDES Permit No. WI-0021571

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 Dorchester Wastewater Treatment Facility in Clark County. This municipal wastewater treatment facility (WWTF) discharges to Unnamed Creek 14-10, located in the Popple River Watershed in the Black River Basin. 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 March - May	 0.2 MGD					1
BOD_5	30 mg/L			15 mg/L		2
TSS	30 mg/L			20 mg/L		2
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		4.0 mg/L				1,2
Ammonia Nitrogen						1,3
January	Variable		16 mg/L	6.5 mg/L		
February	Variable		16 mg/L	6.5 mg/L		
March	Variable		18 mg/L	10 mg/L		
April	Variable		14 mg/L	13 mg/L		
May	Variable		12 mg/L	11 mg/L		
June	Variable		6.5 mg/L	2.6 mg/L		
July	Variable		6.3 mg/L	2.3 mg/L		
August	Variable		6.7 mg/L	2.5 mg/L		
September	Variable		9.5 mg/L	3.6 mg/L		
October	Variable		14 mg/L	5.7 mg/L		
November	Variable		16 mg/L	7.2 mg/L		
December	Variable		16 mg/L	6.5 mg/L		
Copper			16 µg/L, 0.017 lbs/day			4
Phosphorus HAC Interim Limit Final WQBEL				 1.0 mg/L 0.225 mg/L	 0.075 mg/L	5
TKN, Nitrate+Nitrite, and Total Nitrogen						6
Chronic WET						7,8

Footnotes:

1. No changes from the current permit.

2. These limits are based on the Limited Forage Fish (LFF) community of the immediate receiving water as described in s. NR 104.02(3)(a), Wis. Adm. Code.
3. The variable daily maximum ammonia nitrogen limit table corresponding to effluent pH values. These limits apply year-round.

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
$6.0 \leq pH \leq 6.1$	54	$7.0 < pH \leq 7.1$	33	$8.0 < pH \leq 8.1$	6.9
$6.1 < pH \leq 6.2$	53	$7.1 < pH \leq 7.2$	30	$8.1 < pH \leq 8.2$	5.7
$6.2 < pH \leq 6.3$	52	$7.2 < pH \leq 7.3$	26	$8.2 < pH \leq 8.3$	4.7
$6.3 < pH \leq 6.4$	51	$7.3 < pH \leq 7.4$	23	$8.3 < pH \leq 8.4$	3.9
$6.4 < pH \leq 6.5$	49	$7.4 < pH \leq 7.5$	20	$8.4 < pH \leq 8.5$	3.2
$6.5 < pH \leq 6.6$	47	$7.5 < pH \leq 7.6$	17	$8.5 < pH \leq 8.6$	2.7
$6.6 < pH \leq 6.7$	45	$7.6 < pH \leq 7.7$	14	$8.6 < pH \leq 8.7$	2.2
$6.7 < pH \leq 6.8$	42	$7.7 < pH \leq 7.8$	12	$8.7 < pH \leq 8.8$	1.8
$6.8 < pH \leq 6.9$	39	$7.8 < pH \leq 7.9$	10	$8.8 < pH \leq 8.9$	1.6
$6.9 < pH \leq 7.0$	36	$7.9 < pH \leq 8.0$	8.4	$8.9 < pH \leq 9.0$	1.3

4. The alternate wet weather weekly average limitation for copper is 0.071 lbs/day.
5. Under the phosphorus MDV, the highest attainable condition (HAC) limit is 1.0 mg/L. The final WQBELs remain at 0.225 mg/L as a monthly average and 0.075 mg/L as a six-month average.
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 (NO_3), nitrite (NO_2), and total kjeldahl nitrogen (TKN) (all expressed as N).
7. Three chronic WET tests are recommended in the reissued permit. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge and should continue after the permit expiration date (until the permit is reissued).
8. The Instream Waste Concentration (IWC) to assess chronic test results is 100%. According to the State of Wisconsin Aquatic Life Toxicity Testing Methods Manual (s. NR 219.04, Table A, Wis. Adm. Code), chronic testing shall be performed using a dilution series of 100%, 75%, 50%, 25% & 12.5% and the dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from Unnamed Creek 14-10.

Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are not required due to the non-continuous nature of the discharge.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Benjamin Hartenbower at (715) 225-4705 or Benjamin.Hartenbower@wisconsin.gov or Diane Figiel at Diane.Figiel@wisconsin.gov.

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

PREPARED BY: _____ Date: 02/13/2025

Benjamin Hartenbower, PE,
Water Resources Engineer

E-cc:

Jenna Monahan, Wastewater Engineer – WCR/Eau Claire
Geisa Bittencourt, Regional Wastewater Supervisor – WCR/Eau Claire
Diane Figiel, Water Resources Engineer – WY/3
Chris Willger, Water Quality Biologist – WCR/Eau Claire
Nate Willis, Wastewater Engineer – WY/3

Attachment #1

Water Quality-Based Effluent Limitations for the Dorchester Wastewater Treatment Facility WPDES Permit No. WI-0021571

Prepared by: Benjamin P. Hartenbower

PART 1 – BACKGROUND INFORMATION

Facility Description:
The DORCHESTER WASTEWATER TREATMENT FACILITY consists of a five cell aerated lagoon system. Chemical addition prior to Pond 5 is included for phosphorus removal. Outfall 001 is located on the North bank of Unnamed Trib. of North Fork of the Popple River, southeast of Lagoon #3 at the WWTF. Attachment #4 is a map of the area showing the approximate location of Outfall 001.

Existing Permit Limitations
The current permit, expiring on March 31, 2025, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						1
March - May	0.2 MGD					
$CBOD_5$						
March			40 mg/L, 25.3 lbs/day	25 mg/L		
April			40 mg/L, 52.5 lbs/day	25 mg/L		
May			40 mg/L, 21.6 lbs/day	25 mg/L		
June			10 mg/L	10 mg/L		
July - February	25			12 mg/L		
TSS						
June			10 mg/L	10 mg/L		
July - May				60 mg/L		2
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		4.0 mg/L				1
Ammonia Nitrogen						3
March	Variable		18 mg/L	10 mg/L		
April	Variable		14 mg/L	13 mg/L		
May	Variable		12 mg/L	11 mg/L		
June	Variable		6.5 mg/L	2.6 mg/L		
July	Variable		6.3 mg/L	2.3 mg/L		
August	Variable		6.7 mg/L	2.5 mg/L		
September	Variable		9.5 mg/L	3.6 mg/L		
October	Variable		14 mg/L	5.7 mg/L		
November	Variable		16 mg/L	7.2 mg/L		
December - February	Variable		16 mg/L	6.5 mg/L		

Attachment #1

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Phosphorus Interim MDV Interim Final WQBEL				 8.0 mg/L 1.0 mg/L 0.225 mg/L	 0.075 mg/L	4
TKN, Nitrate+Nitrite, and Total Nitrogen						5

Footnotes:

1. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.
2. The TSS limit is a variance limit according to s. NR 210.07(2), Wis. Adm. Code, where aerated lagoons and stabilization ponds are the principal treatment processes.
3. The variable daily maximum ammonia nitrogen limit table corresponding to effluent pH values. These limits apply year-round.

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
$6.0 \leq pH \leq 6.1$	54	$7.0 < pH \leq 7.1$	33	$8.0 < pH \leq 8.1$	6.9
$6.1 < pH \leq 6.2$	53	$7.1 < pH \leq 7.2$	30	$8.1 < pH \leq 8.2$	5.7
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$6.8 < pH \leq 6.9$	39	$7.8 < pH \leq 7.9$	10	$8.8 < pH \leq 8.9$	1.6
$6.9 < pH \leq 7.0$	36	$7.9 < pH \leq 8.0$	8.4	$8.9 < pH \leq 9.0$	1.3

4. Under the phosphorus MDV, a highest attainable condition (HAC) limit of 1.0 mg/L was effective April 1, 2024.
5. Monitoring only.

Receiving Water Information

- Name: Unnamed Creek 14-10
- Waterbody Identification Code (WBIC): 1755800
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Limited Forage Fish (LFF), non-public water supply.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: Due to the nature of the receiving water, the 7-Q_{10},7-Q_2 and Harmonic Mean are estimated to be zero.
  7-Q_{10} = 0 cfs (cubic feet per second)
  7-Q_2 = 0 cfs
  Harmonic Mean Flow = 0 cfs
- Hardness = 165 mg/L as $CaCO_3$. This value represents the geometric mean effluent data. Effluent hardness is used in place of receiving water because there is no receiving water flow upstream of the discharge.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: Not applicable where the receiving water low flows are zero.

- Source of background concentration data: Background concentrations are not included because they do not impact the calculated WQBEL when the receiving water low flows are equal to zero.
- Multiple dischargers: None
- Impaired water status: Less than one mile downstream from the outfall location, the North Fork of the Popple River is listed as impaired for Total Phosphorus.

Effluent Information:

- Design Flow Rates(s):
  Annual Average = 0.128 MGD (Million Gallons per Day)
  Peak weekly = 0.535 MGD (estimated)
  For reference, the actual average flow from April 2020 to November 2024 during discharge occurences was 0.156 MGD.
- Hardness = 165 mg/L as $CaCO_3$. This value represents the geometric mean of 4 effluent samples collected from 06/27/2024 to 09/18/2024.
- 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 wastewater with water supply from wells.
- Additives: Ferric Chloride
- 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 Chloride and Hardness. The permit-required monitoring for Ammonia Nitrogen and Phosphorus from April 2020 to December 2024 is used in this evaluation.

Chemical Specific Effluent Data at Outfall 001

Sample Date	Chloride mg/L	Sample Date	Copper µg/L
09/10/2019	176	06/27/2024	18
09/14/2019	172	07/08/2024	15
09/17/2019	174	07/10/2024	14
09/20/2019	182	07/13/2024	14
11/06/2019	124	07/16/2024	13
11/10/2019	124	07/19/2024	11
11/20/2019	142	07/23/2024	14
06/27/2024	184	07/27/2024	13
07/19/2024	196	07/30/2024	13
07/23/2024	194	08/03/2024	15
07/27/2024	190	08/07/2024	10
1-day P_{99}	240	1-day P_{99}	19.3
4-day P_{99}	202	4-day P_{99}	16.3

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.".

The following table presents the average concentrations and loadings at Outfall 001 from April 2020 to December 2024 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6):

Parameter Averages with Limits

	Average Measurement	Average Mass Discharged
$CBOD_5$	6.8 mg/L*	7.54 lbs/day
TSS	18.2 mg/L	
pH	6.75 s.u.	
Dissolved Oxygen	11.38 mg/L	
Ammonia Nitrogen	2.78 mg/L*	
Phosphorus	0.96 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 P_{99}) 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-Q_{10}

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-Q_{10} 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.

$$\text{Limitation} = \frac{(WQC)\,(Qs + (1-f)\,Qe) - (Qs - f\,Qe)\,(Cs)}{Qe}$$

Where:

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

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

Qe = 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

Cs = 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-Q_{10} method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is the case for the Dorchester Wastewater Treatment Facility.

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).

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 0.00 cfs, (1-Q_{10} (estimated as 80% of 7-Q_{10})), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD. mg/L	ATC	MEAN BACK-GRD.	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P_{99}	1-day MAX. CONC.
Arsenic		340		340	68	2		
Cadmium	165	18.27		18.27	3.65	<1		
Chromium (+3)	165	2713		2713	543	11.0		
Copper	165	24.84		24.84			19.3	18.0
Lead	165	173.14		173.14	34.63	<1		
Nickel	165	715.5		715.5	143.1	<9		
Zinc	165	186.21		186.21	37.24	<6		
Chloride		757		757			240	196

* * Per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016 consideration of ambient concentrations and 1-Q_{10} flow rates yields a more restrictive limit than the 2 × ATC method of limit calculation.

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)
RECEIVING WATER FLOW = 0.00 cfs (¼ of the 7-Q_{10}), 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		152		152	30	2	
Cadmium	165	3.64		3.64	0.73	<1	
Chromium (+3)	165	199		199	40	11.0	
Copper	165	15.86		15.86			16.3
Lead	165	45.35		45.35	9.07	<1	
Nickel	165	79.6		79.6	15.9	<9	
Zinc	165	186.21		186.21	37.24	<6	
Chloride		395		395			202

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 = 0.00 cfs (¼ of the Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HTC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	30-day P_{99}
Cadmium	370.0		370.0	74.0	<1	
Chromium (+3)	3818000		3818000	763600	11.0	
Lead	140		140	28	<1	
Nickel	43000		43000	8600	<9	

Monthly Average Limits based on Human Cancer Criteria (HCC)
RECEIVING WATER FLOW = 0.00 cfs (¼ of the 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.	30-day P_{99}
Arsenic	13.3		13.3	2.7	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, limits are required for Copper.

Copper – Considering available effluent data from the permit application, the 4-day P_{99} concentration is 16.3 µg/L, and the 1-day P_{99} concentration is 19.3 µg/L, with a maximum concentration of 18.0 µg/L. The effluent exceeds the calculated weekly limit, therefore concentration and mass limits, as well as monthly monitoring, are required.

The weekly mass limitation of 0.017 lbs/day is based on the concentration limit and the annual average flow of 0.128 MGD (15.86 µg/L * 0.128 MGD * 8.34/1000) in accordance with s. NR 106.07(2)(c), Wis. Adm. Code. The alternate wet weather weekly average mass limitation of 0.071 lbs/day is based on the estimated peak weekly design flow of 0.535 MGD.

PFOS and PFOA
The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98, Wis. Adm. Code. Monitoring of the water supply produced a PFOS result of 0.51 ng/L and a PFOA result of 1.00 ng/L. These results are less than one fifth of the respective criteria for each substance. Based on the annual design flow and lack of nondomestic contributions, it is unlikely that the effluent will contain PFOS or PFOA. **Therefore, monitoring is not recommended.** If information becomes available that indicates PFOS or PFOA may be present in the effluent, the monitoring requirements may change.

Mercury – The permit application did not require monitoring for mercury because the Dorchester 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). A review of the past five years of sludge characteristics data reveals that all the sample results are within expected analytical ranges and well below the 17 mg/kg level. The average concentration in the sludge from 2020 was 0.18 mg/kg. Therefore, **no mercury monitoring is recommended at Outfall 001.**

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR CONVENTIONAL POLLUTANTS

In accordance with s. NR 104.02(3)(a)2, Wis. Adm. Code and based on the receiving water classification, the recommended limitations for BOD_5 are 30 mg/L daily maximum and 15 mg/L monthly average. The recommended limitations for TSS are 30 mg/L daily maximum and 20 mg/L monthly average. In order to maintain adequate dissolved oxygen above and below the spring, a dissolved oxygen limit of 4.0 mg/L daily minimum is recommended.

Since chemical treatment is currently unilized in Pond 5, this facility no longer qualifies for the TSS variance limitation of 60 mg/L in accordance with s. NR 210.07(2), Wis. Adm. Code.

Attachment #1

PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life. The current permit has daily maximum, weekly average, and monthly average limits. These limits are re-evaluated at this time due to the following changes:

- Subchapter IV of ch. NR 106, Wis. Adm. Code allows limits based on available dilution instead of limits set to twice the acute criteria.
- The maximum expected effluent pH has changed

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

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

Where:

A = 0.411 and B = 58.4 for a Limited Forage Fishery, and
pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. A total of 1518 sample results were reported from April 2020 to December 2024. The maximum reported value was 7.77 s.u. (Standard pH Units). The effluent pH was 7.54 s.u. or less 99% of the time. The 1-day P_{99}, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 7.55 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 7.52 s.u. Therefore, a value of 7.55 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 7.55 s.u. into the equation above yields an ATC = 18.43 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-Q_{10} 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-Q_{10} (estimated as 80 % of 7-Q_{10}) and the 2×ATC approach are shown below.

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
2×ATC	36.86
1-Q	18.43

The 1-Q_{10} method yields the most stringent limits for the Dorchester Wastewater Treatment Facility.

The current permit has variable daily maximum effluent limits based on effluent pH. Presented below is a table of daily maximum limitations corresponding to various effluent pH values.

Daily Maximum Ammonia Nitrogen Limits – LFF

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
$6.0 \leq pH \leq 6.1$	54	$7.0 < pH \leq 7.1$	33	$8.0 < pH \leq 8.1$	6.9
$6.1 < pH \leq 6.2$	53	$7.1 < pH \leq 7.2$	30	$8.1 < pH \leq 8.2$	5.7
$6.2 < pH \leq 6.3$	52	$7.2 < pH \leq 7.3$	26	$8.2 < pH \leq 8.3$	4.7
$6.3 < pH \leq 6.4$	51	$7.3 < pH \leq 7.4$	23	$8.3 < pH \leq 8.4$	3.9
$6.4 < pH \leq 6.5$	49	$7.4 < pH \leq 7.5$	20	$8.4 < pH \leq 8.5$	3.2
$6.5 < pH \leq 6.6$	47	$7.5 < pH \leq 7.6$	17	$8.5 < pH \leq 8.6$	2.7
$6.6 < pH \leq 6.7$	45	$7.6 < pH \leq 7.7$	14	$8.6 < pH \leq 8.7$	2.2
$6.7 < pH \leq 6.8$	42	$7.7 < pH \leq 7.8$	12	$8.7 < pH \leq 8.8$	1.8
$6.8 < pH \leq 6.9$	39	$7.8 < pH \leq 7.9$	10	$8.8 < pH \leq 8.9$	1.6
$6.9 < pH \leq 7.0$	36	$7.9 < pH \leq 8.0$	8.4	$8.9 < pH \leq 9.0$	1.3

Weekly Average and Monthly Average Limits based on Chronic Toxicity Criteria (CTC)
No changes are recommended to the current weekly and monthly average ammonia limits because there have been no changes in the effluent and receiving water flow rates. The calculations from the previous WQBEL memo are shown in attachment #2.

Effluent Data
The following table evaluates the statistics based upon ammonia data reported from April 2020 to December 2024, with those results being compared to the calculated limits to determine the need to include ammonia limits in the Dorchester Wastewater Treatment Facility permit for the respective month ranges.

Ammonia Nitrogen Effluent Data

Ammonia Nitrogen mg/L	January	February	March	April	May
1-day P_{99}	6.4	10.1	16.1	16.1	12.6
4-day P_{99}	4.1	6.8	10.8	11.4	8.2
30-day P_{99}	2.9	5.2	8	8.9	6
Mean*	2.4	4.3	6.7	7.7	5
Std	1.2	1.8	2.9	2.7	2.3
Sample size	17	16	18	21	21
Range	0.8 - 4.5	1.8 - 6.9	1.6 - 11.8	2.1 - 12	0.8 - 9

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

Attachment #1

Ammonia Nitrogen Effluent Data

Ammonia Nitrogen mg/L	July	August	September	October	November	December
1-day P_{99}	N/A	2.4	4.4	4.3	2.55	5
4-day P_{99}	N/A	1.4	2.4	2.4	1.58	2.8
30-day P_{99}	N/A	0.8	1.2	1.4	0.98	1.7
Mean*	0.84	0.6	0.7	0.9	0.71	1.2
Std	0.65	0.5	1	0.9	0.51	1
Sample size	12	22	22	21	22	22
Range	<0.1 - 2.04	<0.1 - 1.5	<0.01 - 3.3	<0.1 - 2.7	<0.1 - 2.1	0.3 - 4.6

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

The permit currently has daily maximum, weekly average, and monthly average limits. Where there are existing ammonia nitrogen limits in the permit, 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, **the current limits and monitoring for ammonia nitrogen are recommended to continue.**

Final Ammonia Nitrogen Limits

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
January	Variable	16	6.5
February	Variable	16	6.5
March	Variable	18	10
April	Variable	14	13
May	Variable	12	11
June	Variable	6.5	2.6
July	Variable	6.3	2.3
August	Variable	6.7	2.5
September	Variable	9.5	3.6
October	Variable	14	5.7
November	Variable	16	7.2
December	Variable	16	6.5

PART 5 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR BACTERIA

Section NR 102.04(5), Wis. Adm. Code, states that all surface waters shall be suitable for supporting recreational use and shall meet *E. coli* criteria during the recreation season. Section NR 102.04(5)(b), Wis. Adm. Code, allows the Department to make exceptions when it determines, in accordance with s. NR 210.06(3), Wis. Adm. Code, that wastewater disinfection is not required to meet *E. coli* limits and protect the recreational use. Section NR 210.06(3), Wis. Adm. Code, tasks the Department with determining the need for disinfection using a site-specific analysis based on potential risk to human or animal health. It sets out the factors that must be considered in determining the necessity to disinfect municipal wastewater or to change the length of the disinfection season.

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.

The Dorchester Wastewater Treatment Facility had previously been exempted from disinfection based on the limited aquatic life or limited forage fish community classification of the receiving water. Section NR 210.06(3)(g), Wis. Adm. Code, states that disinfection decisions may be made based on the hydrologic classifications listed in s. NR 104.02(1), Wis. Adm. Code (not on the water quality classifications - i.e., limited forage fish, limited aquatic life - that are defined in s. NR 104.02(3), Wis. Adm. Code). The hydrologic classification for the tributary from the Dorchester treatment plant to the North Fork Poplar River is listed in ch. NR 104, Wis. Adm. Code, as noncontinuous.

Discharges to noncontinuous streams usually result in effluent-dominated situations. The risk of illness is related to the concentration of *E. coli* and therefore dilution is an important consideration when considering risk to human health. Since little to no dilution is present in these situations, disinfection should not be exempted based solely on this hydrological classification.

$$\text{Detention Time [days]} = \frac{\text{Total Pond Volume [MG]}}{\text{180-d average flow rate[mgd]}}$$

The last permit term's flow data shows that, as a rolling average, > 180-d detention time was provided at all times during the permit term. The greatest 180 day rolling average at Outfall 001 was 0.1383 MGD (December 2022 to May 2023). Using a total pond volume of 29 MG, the minimum detention time was 210 days. Since data shows that the facility provides > 180-d detention time, disinfection is not required and effluent limits and monitoring are not needed in the permit.

PART 6 – 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.

Because the Dorchester Wastewater Treatment Facility currently has a monthly average limit of 1.0 mg/L, this limit should be included in the reissued permit. This limit remains applicable unless a more stringent WQBEL is given.

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 unnamed Creek 14-10, a tributary to the North Fork of the Popple 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):

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

Where:

WQC = 0.075 mg/L for unnamed Creek 14-10, a tributary to the North Fork of the Popple River.
Qs = 100% of the 7-Q_2 of 0 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 = 0.1284 MGD = 0.199 cfs
f = the fraction of effluent withdrawn from the receiving water = 0

Since the receiving water flow is equal to zero, the effluent limit is set equal to criteria.

The impaired water listing of the North Fork of the Popple River less than one mile downstream from the outfall location also points towards the notion that effluent phosphorus limits equal to the water quality criterion are needed to prevent the discharge from contributing to further impairment of the receiving water. The Guidance for Implementing Wisconsin's Phosphorus Water Quality Standards for Point Source Discharges (2020) suggests setting effluent limits equal to the criterion in the absence of an EPA approved total maximum daily load for discharges of phosphorus to phosphorus impaired waters.

Effluent Data
The following table summarizes effluent total phosphorus monitoring data from April 2020 to December 2024.

	Phosphorus mg/L
1-day P_{99}	6.21
4-day P_{99}	3.37
30-day P_{99}	1.65
Mean	0.96
Std	1.32
Sample size	214
Range	0.05 - 7.89

Reasonable Potential Determination
Since the 30-day P_{99} of reported effluent total phosphorus data is greater than the calculated WQBEL, **the discharge has reasonable potential to cause or contribute to an exceedance of the water quality criterion.** Therefore, **a WQBEL is required.**

Limit Expression
According to s. NR 217.14 (2), Wis. Adm. Code, because the calculated WQBEL is less than or equal to 0.3 mg/L, the effluent limit of 0.075 mg/L may be expressed as a six-month average. If a concentration limitation expressed as a six-month average is included in the permit, a monthly average concentration limitation of 0.225 mg/L, equal to three times the WQBEL calculated under s. NR 217.13, Wis. Adm. Code. shall also be included in the permit. The six-month average should be averaged during the months of May – October and November – April.

Mass Limits
Because the discharge is to a surface water that is to or upstream of a water body that is impaired for Total Phosphorus, a mass limit is also required, pursuant to s. NR 217.14(1)(a), Wis. Adm. Code. **This final mass limit shall be 0.075 mg/L × 8.34 × 0.1284 MGD = 0.080 lbs/day expressed as a six-month average.**

Multi-Discharge Variance Interim Limit
With the permit application, the Village of Dorchester has re-applied for the phosphorus multi-discharger variance (MDV). Conditions of the phosphorus MDV require the facility to comply with an interim phosphorus limit in lieu of meeting the final WQBEL. The recommended interim limit during the 2nd permit under MDV approval, pursuant to s. 283.16 (6) (am), Wis. Stats., is **1.0 mg/L as a monthly average.**

PART 7 – 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), 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), 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 for the current facility reported from April 2020 to December 2024.

Monthly Temperature Effluent Data & Limits

Month	Calculated Effluent Limit	
	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	54	78
FEB	54	79
MAR	57	80
APR	63	81
MAY	70	84
JUN	77	85
JUL	81	86
AUG	79	86
SEP	73	85
OCT	63	83
NOV	54	80
DEC	54	79

Section NR 106.59(2)(b) allows the use of temperature effluent data, on a case-by-case basis, from at least two other POTWs within a 100-mile radius that utilize similar wastewater treatment technology and have a similar ratio of domestic to industrial waste stream composition, or representative data of the POTW.

A review of effluent temperature data collected from the Coon Valley WWTF, the Owen WWTF, and the Vesper WWTF indicate it is unlikely that effluent temperatures from the Dorchester Wastewater Treatment Facility which operates an aerated lagoon system and consists primarily of domestic sewage would exceed effluent temperature limits during the respective months.

Reasonable Potential
Based on the available discharge temperature data, no reasonable potential for exceeding the weekly or daily maximum limits exist, and **no limits or monitoring are recommended**.

PART 8 – WHOLE EFFLUENT TOXICITY (WET)

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

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

- Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure. To assure that a discharge is not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid IC_{25} (Inhibition Concentration) greater than the instream waste concentration (IWC), according to s. NR 106.09(3)(b), Wis. Adm Code. The IWC is an estimate of the proportion of effluent to total volume of water (receiving water + effluent). The IWC of 100% shown in the WET Checklist summary below was calculated according to the following equation, as specified in s. NR 106.03(6), Wis. Adm Code:

$$\text{IWC (as \%)} = Qe \div \{(1 - f)\, Qe + Qs\} \times 100$$

Where:
Qe = annual average flow = 0.128 MGD = 0.199 cfs
f = fraction of the Qe withdrawn from the receiving water = 0
Qs = ¼ of the 7-Q_{10} = 0.00 cfs ÷ 4 = 0.00 cfs

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual*, a synthetic (standard) laboratory water may be used as the dilution water and primary control in acute WET tests, unless the use of different dilution water is approved by the Department prior to use. The primary control water must be specified in the WPDES permit.

- Receiving water must be used as the dilution water and primary control in chronic WET tests, unless the use of different dilution water is approved by the Department prior to use. The dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from the receiving water location, upstream and out of the influence of the mixing zone and any other known discharge. The specific receiving water location must be specified in the WPDES permit.

- Shown below is a tabulation of all available WET data for Outfall 001. Efforts are made to ensure that decisions about WET monitoring and limits are made based on representative data, as specified in s. NR 106.08(3), Wis. Adm Code. Data which is not believed to be representative of the discharge was not included in reasonable potential calculations. The table below differentiates between tests used and not used when making WET determinations.

WET Data History

Date Test Initiated	Acute Results LC_{50} %				Chronic Results IC_{25} %					Footnotes or Comments
	C. dubia	Fathead minnow	Pass or Fail?	Used in RP?	*C. dubia*	Fathead Minnow	Algae (IC_{50})	Pass or Fail?	Use in RP?	
08/24/2006	>100	>100	Pass	Yes	>100	>100		Pass	Yes	
05/15/2008	>100	>100	Pass	Yes	>100	>100		Pass	Yes	

- According to s. NR 106.08, Wis. Adm. Code, WET reasonable potential is determined by multiplying the highest toxicity value that has been measured in the effluent by a safety factor, to predict the likelihood (95% probability) of toxicity occurring in the effluent above the applicable WET limit. The safety factor used in the equation changes based on the number of toxicity detects in the dataset. The fewer detects present, the higher the safety factor, because there is more uncertainty surrounding the predicted value. WET limits must be given, according to s. NR 106.08(6), Wis. Adm. Code, whenever the applicable Reasonable Potential equation results in a value greater than 1.0.

  Acute Reasonable Potential = [(TUa effluent) (B)]
  Chronic Reasonable Potential = [(TUc effluent) (B)(IWC)]

  According to s. NR 106.08(6)(d), Wis. Adm. Code, TUa and TUc effluent values are equal to zero whenever toxicity is not detected (i.e. when the LC_{50}, IC_{25} or $IC_{50} \geq 100\%$).

  Acute Reasonable Potential = 0 < 1.0, reasonable potential is not shown, and a limit is not required.

  Chronic Reasonable Potential = 0 < 1.0, reasonable potential is not shown, and a limit is not required.

The WET checklist was developed to help DNR staff make recommendations regarding WET limits, monitoring, and other related permit conditions. The checklist indicates whether acute and chronic WET limits are needed, based on requirements specified in s. NR 106.08, Wis. Adm. Code. The checklist steps the user through a series of questions, assesses points based on the potential for effluent toxicity, and suggests monitoring frequencies based on points accumulated during the checklist analysis. As toxicity potential increases, more points accumulate, and more monitoring is recommended to ensure that toxicity is not occurring. A summary of the WET checklist analysis completed for this permittee is shown in the table below. Staff recommendations based on best professional judgment are provided below the summary table. For guidance related to reasonable potential and the WET checklist, see Chapter 1.3 of the WET Guidance Document: https://dnr.wisconsin.gov/topic/Wastewater/WET.html.

Attachment #1

WET Checklist Summary

	Acute	Chronic
AMZ/IWC	Not Applicable. **0 Points**	IWC = 100% **15 Points**
Historical Data	Two tests used to calculate RP. No tests failed. Data not available in past 5 years. **5 Points**	Two tests used to calculate RP. No tests failed. Data not available in past 5 years. **5 Points**
Effluent Variability	Minimal exceedances and upsets. One NON sent in 2024. **0 Points**	Same as Acute. **0 Points**
Receiving Water Classification	<4 miles to WWSF (5 pts) **5 Points**	Same as Acute. **5 Points**
Chemical-Specific Data	No reasonable potential for limits based on ATC; Ammonia nitrogen limit carried over from the current permit. Arsenic, Chromium, Copper, and Chloride detected. (3 pts) Additional Compounds of Concern: none **3 Points**	Reasonable potential for Copper limits based on CTC; (5 pts) Ammonia nitrogen limit carried over from the current permit. Arsenic, Chromium, and Chloride detected. (3 pts) Additional Compounds of Concern: none **8 Points**
Additives	No biocides and one water quality conditioner (1 pt) added. Permittee has proper P chemical SOPs in place. **1 Point**	All additives used more than once per 4 days. **1 Point**
Discharge Category	No Industrial Contributors **0 Points**	Same as Acute. **0 Points**
Wastewater Treatment	Secondary or Better **0 Points**	Same as Acute. **0 Points**
Downstream Impacts	No impacts known. **0 Points**	Same as Acute. **0 Points**
Total Checklist Points:	**14 Points**	**34 Points**
Recommended Monitoring Frequency (from Checklist):	No acute monitoring required.	3 tests during permit term
Limit Required?	No	No
TRE Recommended? (from Checklist)	No	No

- After consideration of the guidance provided in the Department's WET Program Guidance Document (2022) and other information described above, three chronic WET tests are recommended in the reissued permit. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge and should continue after the permit expiration date (until the permit is reissued).

Attachment #2

Ammonia Nitrogen Limit Calculations from the February 2, 2005 WQBEL Memo

Effluent Flow (MGD):	0.1284	0.2	0.2	0.2	0.2	0.1284	0.1284	0.1284	0.1284	0.1284	0.1284	0.1284
Effluent Flow (cfs):	0.199	0.309	0.309	0.309	0.309	0.199	0.199	0.199	0.199	0.199	0.199	0.199
Background Information												
	Jan [1]	Feb [1]	Mar [2]	Apr [2]	May [2]	Jun [2]	Jul [3]	Aug [3]	Sep [3]	Oct [1]	Nov [1]	Dec [1]
7-Q_{10} (cfs)	0	0	0.15	0.55	0.15	0	0	0	0	0	0.02	0
7-Q_2 (cfs)	0	0				0	0	0	0	0		0
Ammonia (mg/L)	0.17	0.17	0.17	0.06	0.06	0.03	0.03	0.03	0.03	0.03	0.03	0.17
Temperature (deg C)	1	1	4	9	17	21	23	22	16	9	7	3
pH (std. units)	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
% of river flow used:	25	25	25	25	100	100	100	100	100	25	25	25
Reference weekly flow:	0	0	0.083	0.309	0.331	0	0	0	0	0	0.004	0
Reference monthly flow:	0	0	0.4225	1.575	1.69	0	0	0	0	0	0.0225	0
Effluent Limits (mg/L):												
Weekly average												
early life stages present				14	12	6.5	6.3	6.7	9.5			
early life stages absent	16	16	18							14	16	16
Monthly average												
early life stages present				13	11	2.6	2.3	2.5	3.6			
early life stages absent	6.5	6.5	10							5.7	7.2	6.5

[1] Based on protecting warm water sport fish community in the North Fork Popple River, no allowance for decay due to low temperatures.
[2] Based on protecting warm water sport fish community in Unnamed Creek 14-10.
[3] Based on protecting warm water sport fish community in the North Fork Popple River, allowance for decay.

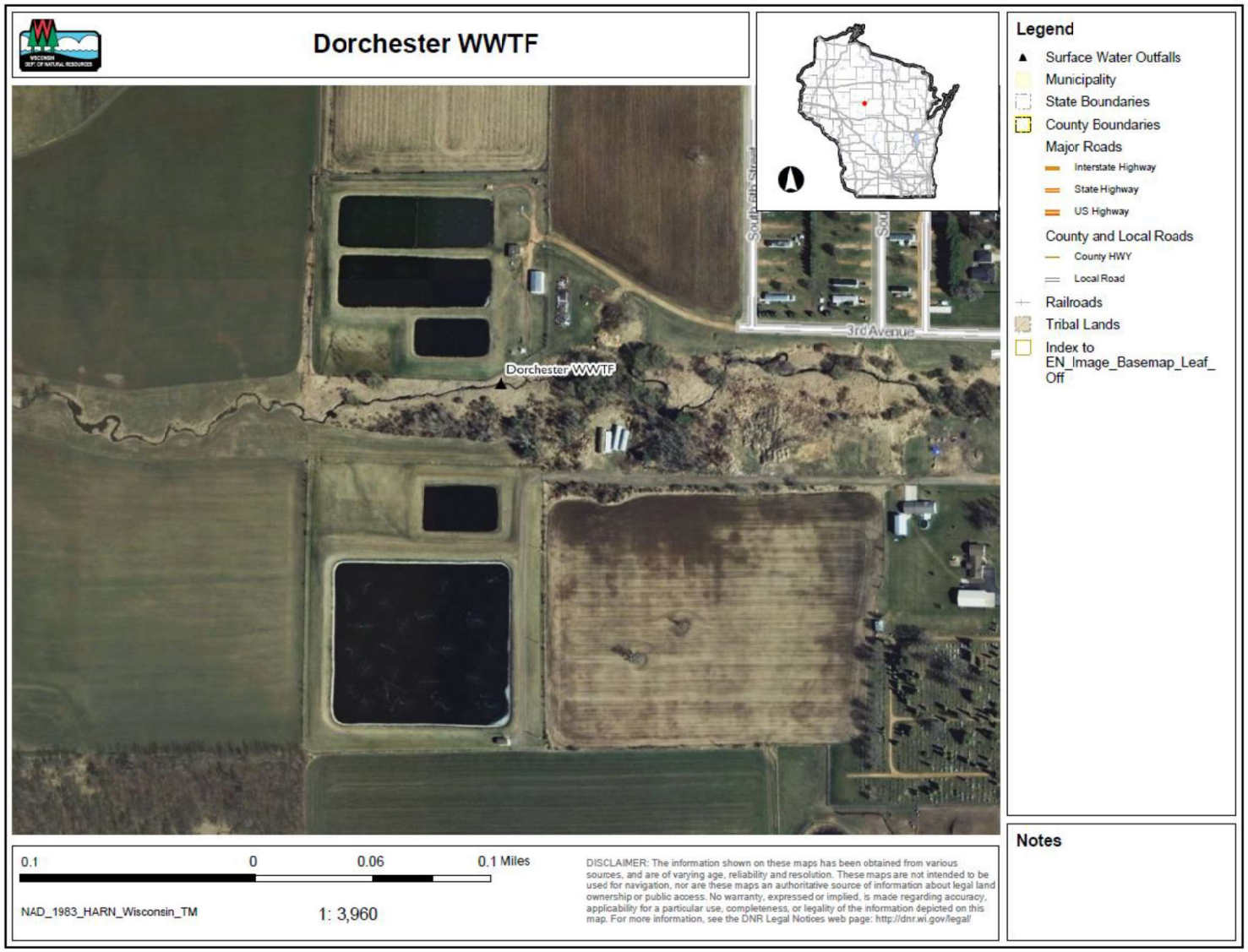
Attachment #3

Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

						Temp Dates	Flow Dates
Facility:	Dorchester WWTF		**7-Q_{10}:**	0.00	cfs		
Outfall(s):	001		**Dilution:**	25%		**Start:** N/A	04/01/20
Date Prepared:	01/28/2025		**f:**	0		**End:** N/A	12/31/24
Design Flow (Qe):	0.128	MGD	**Stream type:**	Limited forage fish community			
Storm Sewer Dist.	0	ft	**Qs:Qe ratio:**	0.0	:1		
			Calculation Needed?	Yes			

Month	Water Quality Criteria			Receiving Water Flow Rate (Qs)	Representative Highest Effluent Flow Rate (Qe)		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Ta (default)	Sub-Lethal WQC	Acute WQC		7-day Rolling Average (Qesl)	Daily Maximum Flow Rate (Qea)		Weekly Average	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(cfs)	(MGD)	(MGD)		(°F)	(°F)	(°F)	(°F)
JAN	37	54	78	0.00	0.133	0.141	0			54	78
FEB	39	54	79	0.00	0.134	0.153	0			54	79
MAR	43	57	80	0.00	0.138	0.164	0			57	80
APR	50	63	81	0.00	0.198	0.199	0			63	81
MAY	59	70	84	0.00	0.195	0.199	0			70	84
JUN	64	77	85	0.00						77	85
JUL	69	81	86	0.00	0.417	0.492	0			81	86
AUG	68	79	86	0.00	0.224	0.274	0			79	86
SEP	63	73	85	0.00	0.152	0.203	0			73	85
OCT	55	63	83	0.00	0.182	0.196	0			63	83
NOV	46	54	80	0.00	0.190	0.199	0			54	80
DEC	40	54	79	0.00	0.174	0.216	0			54	79


Dorchester WWTF
Dorchester WWTF
3rd Avenue
Legend
Surface Water Outfalls
Municipality
State Boundaries
County Boundaries
Major Roads
Interstate Highway
State Highway
US Highway
County and Local Roads
County HWY
Local Road
Railroads
Tribal Lands
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WISCONSIN
DEPT. OF NATURAL RESOURCES

11/22/2024

Kurt Schwoch
250 Parkside Drive
Dorchester, WI 54425

Subject: Conditional approval of a multi-discharger phosphorus variance
Receiving Stream: Poplar River in Clark County
Permittee: Village of Dorchester, WPDES WI-0021571

Dear Mr. Schwoch:

In accordance with s. 283.16 of the Wisconsin Statutes, you have requested coverage under Wisconsin's multi-discharger phosphorus variance for the Village of Dorchester Wastewater Treatment Facility in an application dated 10/1/2024. Wisconsin's multi-discharger phosphorus variance was approved by EPA on February 6, 2017. Coverage under the multi-discharger phosphorus variance may only be granted to an existing source that demonstrates a major facility upgrade is necessary to achieve phosphorus compliance and the upgrade will result in economic hardship as defined in the federally approved variance. The water quality criterion for which you are seeking a variance is contained in s. NR 102.06, Wis. Adm. Code.

After review of the application materials, the Department is tentatively approving coverage under the phosphorus multi discharger variance because the applicant has demonstrated that a major facility upgrade would be required to comply with the phosphorus water quality based effluent limitation, and the applicant meets the economic hardship eligibility criteria delineated in the federally approved variance. In addition, the permitted facility has agreed to comply with the interim limitations that will be included in the WPDES permit, and has agreed to reduce the amount of phosphorus entering surface waters by making payments to the counties pursuant to s. 283.16(6)(b)1., Wis. Stats.

Public comment on this decision will be solicited at the time of permit reissuance after which a final decision will be made. The Department appreciates your attention and interest in Wisconsin's multi-discharger phosphorus variance. Should you have further questions regarding this matter, please contact me at (608) 400 – 5596 or by email at matthew.claucherty@wisconsin.gov.

Sincerely,

Matt Claucherty, MDV Point Source Coordinator
Bureau of Water Quality

e-cc Rick Golz, Village of Dorchester
Nora Rickman, MSA Professional Services
Jenna Monahan, WDNR
Holly Heldstab, WDNR
Tim Elkins, EPA Region 5
Micah Bennett, EPA Region 5

State of Wisconsin
Department of Natural Resources
Bureau of Water Quality
Permits Section - WQ/3

Multi-Discharger Variance Application Evaluation Checklist

Form 3200-145 (R 5/16)

Notice: This checklist is meant to be a tool to help Department of Natural Resources (DNR) staff review municipal and industrial multi-discharger variance (MDV) applications (Forms 3200-149 and 3200-150). Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31-19.39, Wis. Stats.).

Permittee Name

Village of Dorchester

WPDES Permit Number	County
WI- 0 | 0 | 2 | 1 | 5 | 7 | 1	Clark

1. Did the point source apply for the MDV at the appropriate time?	◉ Yes ○ No. *STOP- facility not eligible at this time.*	*See Questions 1-3.*
2. This operation is (check one):	○ New or relocated outfall. *STOP- facility not eligible.* ◉ Existing outfall	*See Questions 5-6.*
3. Is the point source is located in an MDV eligible area?	◉ Yes ○ No. *STOP- facility not eligible.*	*Apply County information to Appendix H. Additional information provided in Q7 on municipal form & Q7-8 on industrial form.*
4. The secondary indicator score for the county (counties) the discharge is located is:	3	*See Appendices A-F. If the score is less than 2, stop; the facility is not eligible.* *See Q23 on municipal form & Q28 on industrial form.*
5. Is a major facility upgrade required to comply with phosphorus limits?	◉ Yes ○ No. *STOP- facility not eligible.*	*See Q8 on municipal form/Q9 on industrial form.*
6. List the months where phosphorus limits cannot be achieved during the permit term:	☒ All ☒ Jan ☒ Apr ☒ Jul ☒ Oct ☒ Feb ☒ May ☒ Aug ☒ Nov ☒ Mar ☒ Jun ☒ Sep ☒ Dec	*Consider checking with limit calculator. If this does not match information in application, the application should be updated prior to approval.*

7. What is the current effluent level achievable?

Outfall Number(s)	Conc. (mg/L)	Method for calculation:	Does this concur with application?	
001	1.78	◉ 30-day P99 ○ Other, specify:	○ Yes ◉ No, why not: MDV Application used larger dataset	*DNR staff should verify the effluent concentration value(s) provided. See Q11 on municipal form & Q12 on industrial form.*

8. What is the appropriate interim limitation(s) for the permit term?

0.6 mg/L as a monthly average pursuant to s. 283.16(6)(a)2., Wis. Stats.
Target Value = 0.2 mg/L

Provide Rationale:

The facility has optimized phosphorus treatment to below 0.6 mg/L at times, though sees regular spikes in effluent phosphorus that exceed the current interim limit. A schedule will likely be required before the 0.6 mg/L limit takes effect.

Note: See description in Section 2.02 of the MDV implementation guidance. Interim limitations should reflect the "highest attainable condition" for the permittee in question pursuant to s. 283.16(7), Wis. Stat.

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9. *For Industries Only*- Where does the phosphorus in the effluent come from? (check all that apply)	☐ Process ☐ Additive Usage ☐ Water supply *Can intake credits be given or can the facility use an alternative water supply?* ◯ Not feasible ◯ Possibly, but further analysis needed ◯ Not evaluated at this time	*See Q14-15 & 19 on industrial form. If the answer is "possibly" or "not evaluated", the schedule section of the MDV permit should contain a requirement to perform this analysis.*
10. Has this facility optimized?	◉ Yes ◯ In progress ◯ No	*See Q14 on municipal form & Q16 & 20 on industrial form. Facility must optimize and operate at an optimize treatment level (s. 283.16(6)(a), Wis. Stat.)If no will need compliance schedule.*
11. Has a facility plan/compliance alternative plan been completed for the facility?	◉ Yes ◯ In progress ◯ No	*See Q15 on municipal form & Q17 on industrial form.*
12. What is the projected cost for complying with phosphorus? Source:	$ 3,450,000.00 Updated site-specific cost estimate submitted with MDV appliction	*Facility must submit site-specific compliance costs. If cost projections are used from EIA, the permittee must certify that these costs are reasonable for the facility in question. See "projected compliance costs" in Section 2.02 of the MDV Implementation Guidance for details.*

Comments on planning efforts:

A 2019 Final Compliance Alternatives Plan, prepared by MSA professional services inc. on behalf of the Village of Dorchester provided costs for and alternatives to meeting a final WQBEL of 0.075 mg/L as a 6-month average. Watershed based alternatives were evaluated. Adaptive Management was deemed not viable due to the magnitude of phosphorus impairment in the receiving water. Regionalization was not feasible due to distance (cost associated with forcemain ~5 miles long) and similar phosphorus compliance challenges at neighboring facilities. Multiple tertiary treatment options were presented, along with site-specific cost estimates. The lowest cost option was used for the economic demonstration, with current itemized costs submitted with the MDV application in 2024. In 2022, the facility adopted chemical phosphorus removal and optimization efforts have taken place since. Annual reports indicate challenges with refining chemical treatment and high strength contributors may play a role in effluent phosphorus spikes.

13. Are adaptive management and water quality trading viable?	◯ Yes ◯ Perhaps. Additional analysis required. ◉ No	*See Q18-21 on municipal form & Q22-25 on industrial form. If additional analyses required, the applicant may need to complete this analysis during the MDV permit term.*
14. Has the point source met the appropriate primary screener?	◉ Yes ◯ No. *STOP- facility not eligible.*	*See Q4 of this form in addition to the "eligibility" guidance in Section 2.01 of the MDV Implementation Guidance.*

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Comments on economic demonstration:

The MDV application included a cost estimate for a co mag tertiary filtration upgrade. Capital costs were $3,263,000 and O&M increases were estimated at $14,540.00 annually. Assuming a 20-year CWFP loan at 2.2% interest, annual payments would be $203,426.58. With O&M costs and factoring in an 84% residential use rate, the residential portion is $183,091.92. These costs, divided amongst 380 households, results in per-user cost increase of $481.82. Current rates are $242.00 annually and future rates would be $723.82 annually. This value is 1.31% of Dorchester's $55,179 median household income. In Clark County with a secondary indicator score of 3, projected sewer rates at 1% of MHI meet the primary screener. The applicant meets the primary screener.

15. What watershed option was selected?

- (•) County project option. *Complete Section 5.*
- ( ) Binding, written agreement with the DNR to construct a project or implement a watershed plan. *Complete Section 4.*
- ( ) Binding, written agreement with another person that is approved by the DNR to construct a project or implement a watershed plan. *Complete Section 4.*

Section 4. Watershed Plan Review

16. MDV Plan Number: *Note: This is for tracking purposes. Contact Statewide Phosphorus Implementation Coordinator for the plan number.*	_____
17. Did the point source complete Form 3200-148?	( ) Yes ( ) No
18. Is the project area in the same HUC 8 watershed as the point of discharge?	( ) Yes ( ) No. *STOP- Watershed plan must be updated.*
19. What is the annual offset required? *See Section 2.03 of the MDV implementation guidance. If this value is different from the offset target provided in form 3200-148, the watershed plan should be amended.*	_____
20. Does the plan ensure that the annual load is offset annually?	( ) Yes ( ) No. *STOP- Watershed plan must be updated.*

21. Are projects occurring on land owned/operated by a CAFO or within a permitted MS4 boundary?

- ( ) Yes. *Work with appropriate DNR staff to ensure projects are not working towards other permit compliance.*
- ( ) No.

22. Are other funding sources being used as part of the MDV watershed project?

- ( ) Yes. *Work with appropriate DNR staff to ensure that funding sources can be appropriately used in the plan area.*
- ( ) No.

23. Do you have any concerns about the watershed project? *Note: Coordinate with other DNR staff as appropriate.*	( ) Yes. *STOP- Watershed plan must be updated.* ( ) No.

Comments:

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Section 5. Payment to the County(ies)

24. At this time, the appropriate per pound payment is: $ 64.75

See "Payment Calculator" document at *\\central\water\WQWT_PROJECTS\WY_CW_Phosphorus\MDV*.

Section 6. Determination

Based on the available information, the MDV application is:

- (•) Approved
- ( ) Request for more information
- ( ) Denied

Additional Justification (if needed):

Per MSA's response to DNR's 10/31/24 request for more information, water quality trading was recently investigated but no trading partners were available. Chemical feed is not possible to meet low-level phosphorus limits.

Certification

Preparer Name	Title	Date
Matt Claucherty	Water Resources Management Specialist	11/22/2024

Signature of Preparer: Matt Claucherty

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