Permit Fact Sheet

General Information

Permit Number	WI-0032492-07-0
Permittee Name and Address	Butte des Morts Consolidated S. D. No. 1 P.O. Box 145, Butte Des Morts, WI 54927-0145
Permitted Facility Name and Address	Butte Des Morts Consolidated SD 1 4729 Spiegelberg Rd., Oshkosh, Wisconsin
Permit Term	October 01, 2025 to September 30, 2030
Discharge Location	Outfall 001**:** Latitude 44° 05' 38" N, Longitude 88° 38' 16" W
Receiving Water	Lake Butte des Morts in Lake Butte Des Mortes of Fox River (upper) in Winnebago County
Stream Flow ($Q_{7,10}$)	The permittee previously performed a mixing zone study which demonstrated that there is a unidirectional flow at the point of discharge. This study was approved by the Department and allows dilution to be considered using the sum of flow statistics from the Fox River at Berlin and the Wolf River at New London: $Q_{(7,10)}$ – 811 cfs $Q_{(7,2)}$ – 1166 cfs Harmonic Mean – 2306 cfs
Stream Classification	Warm water sport fish community, non-public water supply. Cold water and public water supply criteria used for bioaccumulating compounds of concern because the discharge is within the Great Lakes basin.
Discharge Type	Existing, Continuous
Annual Average Design Flow (MGD)	0.078 MGD
Industrial or Commercial Contributors	No
Plant Classification	A4 - Ponds, Lagoons and Natural Systems; D - Disinfection; SS - Sanitary Sewage Collection System
Approved Pretreatment Program?	N/A

Facility Description

The Butte des Morts Consolidated Sanitary District No. 1 in Winnebago County serves the unincorporated community of Butte des Morts and the surrounding developed area in the Towns of Oshkosh, Vinland, and Winneconne. The permittee owns and operates an aerated lagoon wastewater treatment facility designed to treat an average daily flow of 0.078 million gallons per day (MGD). The system consists of two aerated cells operated in series and followed by a third quiescent

settling lagoon. The effluent is disinfected on a seasonal basis using gaseous chlorine, followed by dechlorination using gaseous sulfur dioxide. Sludge generated during treatment accumulates in the lagoons for many years until it needs to be removed, and is applied on agricultural fields as a soil amendment and plant fertilizer.

The permittee will be completing steps to regionalize with Oshkosh WWTF this permit term in order to comply they total phosphorus limitations. The permittee plans to complete the required action items to complete regionalization. During the permit term, the permittee much continue to meet the requirements of a WPDES permit while they work towards termination of this WPDES permit.

Substantial Compliance Determination

After a desk top review of all discharge monitoring reports, CMARs, land application reports, compliance schedule items, and a site visit, this facility has been found to be in substantial compliance with their current permit with consideration that the permittee will be completed actions required to regionalize prior to 9/30/2030.

Compliance determination made by Mark Stanek on 6/9/2025.

Sample Point Descriptions

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
701	0.07 MGD (2024)	Influent - 24 hr flow proportional composite samples shall be collected from the bar screening chamber after the flow metering vault.
001	0.07 MGD (2024)	Effluent - 24 hr flow proportional composite samples shall be collected from the chlorine contact structure. Grab samples shall be collected after dechlorination.
002	N/A	Lagoon Sludge - Liquid sludge that accumulates in the aerated lagoons and settling pond. Representative samples shall be collected from various locations and depths then composited for analysis. At the time of sample collection, the permittee shall evaluate the depth or quantity of sludge in the lagoons and shall submit these findings with the characteristics report form.

Permit Requirements

1 Influent – Monitoring Requirements

1.1 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	
CBOD5		mg/L	Weekly	24-Hr Flow Prop Comp	
BOD5, Total		mg/L	Monthly	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	Weekly	24-Hr Flow Prop Comp	

Changes from Previous Permit:

Influent limitations and monitoring requirements were evaluated for this permit term and no changes were required in this permit section. The monitoring frequency was set to the same as the previous permit term because the reissued permit required regionalization and termination of discharge.

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. Monthly BOD5 sampling is required for CMAR reporting purposes when a permittee elects to have CBOD5 effluent limitations.

2 Surface Water - Monitoring and Limitations

2.1 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	
CBOD5	Weekly Avg	40 mg/L	Weekly	24-Hr Flow Prop Comp	See Standard Requirements section for percent removal requirements.
CBOD5	Monthly Avg	25 mg/L	Weekly	24-Hr Flow Prop Comp	See Standard Requirements section for percent removal requirements.
Suspended Solids, Total	Weekly Avg	45 mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids,	Weekly Avg	121 lbs/day	Weekly	Calculated	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Total					
Suspended Solids, Total	Monthly Avg	74 lbs/day	Weekly	Calculated	
Suspended Solids, Total		lbs/month	Monthly	Calculated	Calculate the Total Monthly Discharge of TSS and report on the last day of the month on the DMR. See TMDL Calculations section below.
Suspended Solids, Total		lbs/yr	Monthly	Calculated	Calculate the 12-month rolling sum of total monthly mass of TSS discharged and report on the last day of the month on the DMR. See TMDL Calculations section below.
Phosphorus, Total	Monthly Avg	5.0 mg/L	Weekly	24-Hr Flow Prop Comp	
Phosphorus, Total	Monthly Avg	0.43 lbs/day	Weekly	Calculated	Final TMDL-based mass limits go into effect per the phosphorus compliance schedule. See Phosphorus TMDL section below.
Phosphorus, Total	6-Month Avg	0.14 lbs/day	Weekly	Calculated	Final TMDL-based mass limits go into effect per the phosphorus compliance schedule. See Phosphorus section below.
Phosphorus, Total		lbs/month	Monthly	Calculated	Calculate the Total Monthly Discharge of phosphorus and report on the last day of the month on the DMR. See TMDL Calculations section below.
Phosphorus, Total		lbs/yr	Monthly	Calculated	Calculate the 12-month rolling sum of total monthly mass of phosphorus discharged and report on the last day of the month on the DMR. See TMDL Calculations section below.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
pH Field	Daily Max	9.0 su	5/Week	Grab	
pH Field	Daily Min	6.0 su	5/Week	Grab	
Fecal Coliform	Geometric Mean - Monthly	400 #/100 ml	Weekly	Grab	Interim limit effective May through September annually until the final E. coli limit goes into effect per the Effluent Limitations for E. coli schedule.
E. coli		#/100 ml	Weekly	Grab	Monitoring only May through September annually until the final limit goes into effect per the Effluent Limitations for E. coli schedule.
E. coli		#/100 ml	Weekly	Grab	Limit effective May through September annually per the Effluent Limitations for E. coli schedule.
E. coli		Percent	Monthly	Calculated	Limit effective May through September annually per the Effluent Limitations for E. coli schedule. See the E. coli Percent Limit section below. Enter the result in the DMR on the last day of the month.
Chlorine, Total Residual	Daily Max	38 ug/L	5/Week	Grab	Limits apply only when chlorine is added.
Chlorine, Total Residual	Weekly Avg	38 ug/L	5/Week	Grab	Limits apply only when chlorine is added.
Chlorine, Total Residual	Monthly Avg	38 ug/L	5/Week	Grab	Limits apply only when chlorine is added.
Chloride		ug/L	Monthly	Grab	Monitoring only during calendar year 2029 if regionalization is not complete prior to this date.
Nitrogen, Ammonia Variable Limit		mg/L	Weekly	See Table	Look up the variable ammonia limit from the 'Variable Ammonia

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					Limitation' table and report the variable limit in the Ammonia Variable Limit column on the eDMR.
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	Weekly	24-Hr Flow Prop Comp	Report the daily maximum Ammonia result in the Nitrogen, Ammonia (NH3-N) Total column of the eDMR. See Ammonia Limitation Section.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	108 mg/L	Weekly	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	108 mg/L	Weekly	24-Hr Flow Prop Comp	
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 Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.

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.

- The monitoring frequency was set to the same as the previous permit term because the reissued permit required regionalization and termination of discharge.
- **E. coli-** Fecal coliform monitoring and limits have been replaced with Escherichia coli (E. coli) monitoring and limits. While the permittee plans to terminate discharge as a long-term compliance option for TP, the permittee must continue to operate the facility in accordance with current regulations. Should compliance with E. coli limits require extensive construction, the permittee should include this in the OER report (see schedule) and get department approval for chosen compliance options.
- **Total Phosphorus-** A compliance schedule for regionalization has been added to the permit.

- **Phosphorus TMDL Limits-** An interim limit of 5.0 mg/L remains in effect upon reissuance and will remain in effect unless a more stringent limit is required at a future permit issuance by ss. NR 217.13 and NR 217.16(2), Wis. Adm. Code, or the limit is relaxed following procedures outlined in ch. NR 207, Wis. Adm. Code. Discharge effluent concentration (mg/L) shall be reported weekly upon permit reissuance and will be used to calculate amounts reported for mass-based parameters. An additional reporting requirement for lbs/month will be used to calculate the facility's 12-month rolling sum of total monthly discharge, which can be compared directly to the facility's designated WLA. Final TMDL WLA-based effluent limits of 0.14 lbs/day as a six-month average and 0.43 lbs/day as a monthly average will go into effect on 9/30/2030 in accordance with compliance schedule.
- **Chloride-** Chloride sampling in the 4th year of the permit term is required unless construction for regionalization has been initiated.
- **Total Nitrogen Monitoring (TKN, N02+N03 and Total N)**- Annual monitoring is required in specific quarters as outlined in the permit until construction for regionalization has been initiated.

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 dated **2/12/2025**.

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. Monitoring frequencies were retained at the current frequency because this facility will cease discharge during this permit term.

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 monthly average and weekly average limitations.

Phosphorus
The permittee was provided a compliance schedule in the previous permit for compliance with final WQBELs, as provided under ch. NR 217.17(2), Wis. Adm. Code. The final phosphorus WQBELs were scheduled take effect on November 1, 2025, unless the Department modifies, revokes and reissues, or reissues the permit to incorporate a revised limit prior to that time. Such revision may occur to implement a TMDL. The Upper Fox and Wolf River Basins TMDL was approved and this permit required regionalization with Oshkosh WWTF. Therefore, this permit term, the department has provided a compliance schedule to complete regionalization.

Consistent with s. NR 217.17(3)(c), Wis. Adm. Code, and the "Implementation Guidance for Wisconsin's Phosphorus Water Quality Standards", an interim effluent limit must be applied until the final phosphorus limits become effective. The Department has determined that an interim limit of 5.0 mg/L is appropriate for application in this situation, and it is retained in this reissued permit.

Upper Fox Wolf River Total Maximum Daily Load (TMDL): The permitted facility is located within the Upper Fox Wolf River Basin Total Maximum Daily Load (UFWRB TMDL), which was approved by EPA February 27, 2020. The TMDL establishes Waste Load Allocations (WLAs) for point source dischargers and determines the maximum amounts of phosphorus and total suspended solids that can be discharged and still protect water quality. The final effluent limits and monitoring expressed in the permit were derived from and comply with the applicable water quality criterion and are consistent with the assumptions and requirements of the EPA-approved WLAs in the TMDL, which are 40 lbs/yr for phosphorus and14,257 lbs/yr for TSS for the permitted facility.

The approved TMDL expresses WLAs as lbs/year and lbs/day (maximum annual load divided by 365 days). As outlined in Section 4.6 of the department's 2020 TMDL Implementation Guidance for Wastewater Permits, TMDL limits must be given in the permit that are consistent with the TMDL WLA permit limits derived from the TMDL and need to be

expressed as specified by 40 CFR 122.45 (d), s. NR 212.76 (4), and s. NR 205.065 (7), Wis. Adm. Code, unless determined to be impracticable. Impracticability has already been determined for phosphorus limits as laid out in the phosphorus impracticability agreement that was approved by USEPA in 2012 (see NPDES MOA Addendum dated July 12, 2012 at https://apps.dnr.wi.gov/swims/Documents/DownloadDocument?id=167886175).

For phosphorus, continuously discharging facilities covered by the UFWRB TMDL are given monthly average mass limits. If the equivalent effluent concentration is less than or equal to 0.3 mg/L, six-month average mass limits (averaging period of May through October and November through April) are also included. The equivalent effluent concentration of X mg/L was calculated for the facility, thus, TMDL based mass limits are expressed as 0.43 lbs\day monthly average and 0.14 lbs/day 6-month average. The permittee is unable to meet these limits and a schedule for regionalization has been included in this permit.

For TSS, continuously discharging municipal/industrial facilities covered by the UFWRB TMDL are given monthly average and weekly average/daily max mass limits.

Facilities with UFWRB TMDL based effluent limits for phosphorus and TSS must report the 12-month rolling sum of total monthly discharge (lbs/yr). If reported 12-month rolling sums exceed the facility's max annual WLA, the facility's mass limits (monthly average and six-month average) may be recalculated using more appropriate CVs or monitoring frequencies when the permit is reissued to bring discharge levels into compliance with the facility's given WLA. The permitee can meet this limit upon reissuance.

Sampling Prior to Regionalization- The reissued permit includes sampling for the Nitrogen series and Chloride. This sampling is required until construction for regionalization has started. When construction is initiated, the permittee may notify the department and request permission to stop sampling for chloride and the Nitrogen series. All other sampling and monitoring requirements are effective until the permittee discontinues discharge and receives approval to stop monitoring.

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)**
002	B	Liquid	Fecal Coliform	Injection / Incorporation	Land Application	None during previous 5 years
Does sludge management demonstrate compliance? **Yes, removal will occur with abandonment**						
Is additional sludge storage required? **No**						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? **No** If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in landapplying sludge from this facility						
Is a priority pollutant scan required? **No** 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: 002- 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	
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	Once	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Once	Composite	
Phosphorus, Total		Percent	Once	Composite	
Phosphorus, Water Extractable		% of Tot P	Once	Composite	
Potassium, Total Recoverable		Percent	Once	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.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
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 were made from the previous permit. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

PCB- Sampling year updated

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

List 2- Sampling for List 2 is required in the year that land application occurs as part of the abandonment of the WWTF.

3.1.2 Explanation of Limits and Monitoring Requirements

The permit includes a schedule for submittal of a desludge management plan and land application land management plan that will be used on conjunction with the abandonment of the lagoons following regionalization with Oshkosh. Sludge monitoring, including List 2, should occur in coordination with the lagoon abandonment.

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

PFAS- The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA has developed a draft risk assessment to determine future land application rates and released this risk assessment in January of 2025. The department is evaluating this new information. Until a decision is made, the "Interim Strategy for Land Application of Biosolids and Industrial Sludges Containing PFAS" should be followed

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

4 Schedules

4.1 Effluent Limitations for E. coli

The permittee shall comply with surface water limitations for E. coli as specified. No later than 14 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance. If a submittal is required, a timely submittal fulfills the notification

Required Action	Due Date
Status Update: The permittee shall submit information within the discharge monitoring report (DMR) comment section documenting the steps taken in preparation for properly monitoring and	11/21/2025

testing for E. coli including, but not limited to, selected test method and location of sampling.	
Operational Evaluation Report: The permittee shall prepare and submit an Operational Evaluation Report to the Department for review and approval. The report shall include an evaluation of collected effluent data and proposed operational improvements that will optimize efficacy of disinfection at the treatment plant during the period prior to complying with final E. coli limitations and, to the extent possible, enable compliance with the final E. coli limitations. The report shall include a plan and schedule for implementation of the operational improvements. These improvements shall occur as soon as possible, but not later than April 30, 2027. The report shall state whether the operational improvements are expected to result in compliance with the final E. coli limitations. The permittee shall implement the operational improvements in accordance with the approved plan and schedule specified in the Operational Evaluation Report and in no case later than April 30, 2027. If the Operational Evaluation Report concludes that the operational improvements are expected to result in compliance with the final E. coli limitations, the permittee shall comply with the final E. coli limitations by April 30, 2027 and the permittee is not required to comply with subsequent milestones identified below in this compliance schedule (‘Submit Facility Plan’, 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet Limitations', ‘Construction Upgrade Progress Report’, 'Complete Construction', 'Achieve Compliance'). FACILITY PLAN - If the Operational Evaluation Report concludes that operational improvements alone are not expected to result in compliance with the final E. coli limitations, the permittee shall initiate development of a facility plan for meeting final E. coli limitations and comply with the remaining required actions in this schedule of compliance. If the Department disagrees with the conclusion of the report and determines that the permittee can achieve final E. coli limitations using the existing treatment system with only operational improvements, the Department may reopen and modify the permit to include an implementation schedule for achieving the final E. coli limitations sooner than April 30, 2030.	10/31/2026
Submit Facility Plan: If the Operational Evaluation Report concluded that the permittee cannot achieve final E. coli limitations with operational improvements alone, the permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code. The permittee may submit an abbreviated facility plan if the Department determines that the modifications are minor.	04/30/2027
Final Plans and Specifications: The permittee shall submit final construction plans to the Department for approval pursuant to ch. NR 108, Wis. Adm. Code, specifying treatment plant upgrades that must be constructed to achieve compliance with final E. coli limitations and a schedule for completing construction of the upgrades by the complete construction date specified below.	03/31/2028
Treatment Plant Upgrade to Meet Limitations: The permittee shall initiate bidding, procurement, and/or construction of the project. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41. Stats., prior to initiating activities defined as construction under ch. NR 108, Wis. Adm. Code. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications.	09/30/2028
Construction Upgrade Progress Report: The permittee shall submit a progress report on construction upgrades.	09/30/2029
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades.	03/31/2030
Achieve Compliance: The permittee shall achieve compliance with final E. coli limitations.	04/30/2030

4.1.1 Explanation of Schedule

A compliance schedule is included in the permit to provide time for the permittee to investigate options for meeting new effluent E. coli water quality-based effluent limits while coming into compliance with the limits as soon as reasonably possible. While the permittee will be regionalizing, that is a long-term compliance option and the permittee must be in compliance with all regulations up until regionalization occurs. If the permittee determines that construction would be required for compliance with E. coli limits, the permittee shall contact the department for actions and next steps. However, most permittees are able to readily comply with E. coli limitations.

4.2 Regionalization Schedule and Phosphorus WQBEL Compliance

Required Action	Due Date
Submit Regionalize Facility Plan: The permittee shall submit a Facility plan per s. NR 110.08, Wis. Adm. Code. If the facility plan recommends regionalization with the Oshkosh Wastewater Treatment Facility. The Facility Plan shall include details related to the removal or upgrades of the lagoons. This plan shall also include that Clean Water Fund loan application has been completed.	03/31/2026
Submit Plans & Specifications: The permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41. Wis. Stats., specifying actions that must be constructed to regionalize with the Oshkosh Wastewater Treatment Facility and a schedule for completing construction of the upgrades by the 'Complete Construction' date specified below. The plans and specs are required by this date for Clean Water Fund loan requirements.	09/30/2026
Progress Report: The permittee shall submit a report verifying they are moving forward with regionalization after the clean water fund loans has been awarded. If regionalization is determined to no longer be a feasible option, the permittee will include as part of this report the steps to be taken to upgrade their existing treatment plant and to achieve compliance by required date.	12/31/2026
Progress Report: The permittee shall submit a progress report summarizing status of regionalization and abandonment of the WWTF.	06/30/2027
Initiate Regionalization Construction: Initiate construction required for regionalization.	06/30/2028
Complete Regionalization Construction: Complete regionalization to the Oshkosh WWTF.	06/30/2029
Complete Lagoon Abandonment: Complete lagoon abandonment and request the department terminate the Butte des Morts WWTF.	06/30/2030
Compliance with Phosphorus WQBEL and/or Permit Termination: Complete all reports and actions required for termination of the Butte des Morts WWTF Permit. If the permittee does not complete the above listed actions to cease discharge by 9/30/2030, final phosphorus limits of 0.43 lbs/day as a monthly average and 0.14 lbs/day as a six-month average shall become effective.	09/30/2030

Explanation of Schedule

The pervious permit included final TP WQBELs set to be effective on 11/1/2025. Since that permit reissuance TMDL mass limits have been implemented for this permittee. The permittee has chosen regionalization for TP compliance and this schedule is included to complete regionalization and abandonment of the WWTF by the end of this permit term.

4.3 Land Application Management Plan

A management plan is required for the land application system.

Required Action	Due Date

Land Application Management Plan Submittal: Submit an update to the management plan to optimize the land application system performance and demonstrate compliance with ch. NR 204, Wis. Adm. Code, by the Due Date. This management plan shall 1) specify information on pretreatment processes (if any); 2) identify land application sites; 3) describe site limitations; 4) address vegetative cover management and removal; 5) specify availability of storage; 6) describe the type of transporting and spreading vehicle(s); 7) specify monitoring procedures; 8) track site loading; 9) address contingency plans for adverse weather and odor/nuisance abatement; and 10) include any other pertinent information. Once approved, all landspreading activities shall be conducted in accordance with the plan. Any changes to the plan must be approved by the Department prior to implementing the changes. This plan is due 90 days prior to land application.	

Explanation of Schedule

An up-to-date Land Application Management Plan is required that documents how the permittee will manage the land application of biosolids consistent with ch. NR 204, Wis. Adm. Code. This plan is due 90 days prior to land application as part of lagoon abandonment.

4.4 Lagoon Desludge Plan

Required Action	Due Date
Submit Lagoon Desludge Plan: The permittee shall submit a management plan if removal of sludge will occur during the permit term. At a minimum, the plan shall address how the sludge will be sampled, removed, transported, and disposed of. 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 a minimum of 90 days prior to desludging as part of lagoon abandonment.	

Explanation of Schedule

A plan for desludging the lagoon as part of the abandonment of the WWTF is required. This plan shall be submitted 90 days prior to desludging.

Other Comments

None

Attachments

Water Quality Based Effluent Limits dated 2/12/2025

Justification Of Any Waivers From Permit Application Requirements

No waivers requested or granted as part of this permit reissuance

Prepared By: Jennifer Jerich, Wastewater Specialist

Date: 8/7/2025

Revision date post fact check:

Revision date post public notice:

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 02/12/2025

TO: Lisa Creegan – SER

FROM: Nicole Krueger – SER Nicole Krueger

SUBJECT: Water Quality-Based Effluent Limitations for Butte des Morts Consolidated SD No. 1
WPDES Permit No. WI-0032492-07

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 Butte des Morts Consolidated SD No. 1 in Winnebago County. This municipal wastewater treatment facility (WWTF) discharges to Lake Butte des Morts, located in the Lake Butte des Morts Watershed in the Upper Fox River Basin. This discharge is included in the Upper Fox and Wolf River TMDL as approved by EPA in February 2020. 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						1,2
$CBOD_5$			40 mg/L	25 mg/L		1
TSS TMDL			45 mg/L 121 lbs/day	30 mg/L 74 lbs/day		3
pH	9.0 s.u.	6.0 s.u.				1
Bacteria						4
Interim Limit Fecal Coliform				400 #/100 mL geometric mean		
Final Limit *E. coli*				126 #/100 mL geometric mean		
Residual Chlorine May – September	38 µg/L		**38 µg/L**	**38 µg/L**		1,5
Ammonia Nitrogen	Variable		**108 mg/L**	**108 mg/L**		1,5,6
Chloride						7
Phosphorus Interim TMDL				5.0 mg/L 0.43 lbs/day	0.14 lbs/day	3,8
TKN, Nitrate+Nitrite, and Total Nitrogen						9

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. The TSS and phosphorus mass limits are based on the Total Maximum Daily Load (TMDL) for the Upper Fox and Wolf River Basin to address phosphorus water quality impairments within the TMDL area. The TMDL was approved by EPA in February 2020.

4. Bacteria limits apply during the disinfection season of May through September. The fecal coliform interim limit will apply until the end of the compliance schedule when *E. coli* limits take effect. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
5. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
6. The variable daily maximum ammonia nitrogen limit table corresponding to various effluent pH values may be included in the permit in place of the single limit. 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 ≤ pH ≤ 6.1	108	7.0 < pH ≤ 7.1	66	8.0 < pH ≤ 8.1	14
6.1 < pH ≤ 6.2	106	7.1 < pH ≤ 7.2	59	8.1 < pH ≤ 8.2	11
6.2 < pH ≤ 6.3	104	7.2 < pH ≤ 7.3	52	8.2 < pH ≤ 8.3	9.4
6.3 < pH ≤ 6.4	101	7.3 < pH ≤ 7.4	46	8.3 < pH ≤ 8.4	7.8
6.4 < pH ≤ 6.5	98	7.4 < pH ≤ 7.5	40	8.4 < pH ≤ 8.5	6.4
6.5 < pH ≤ 6.6	94	7.5 < pH ≤ 7.6	34	8.5 < pH ≤ 8.6	5.3
6.6 < pH ≤ 6.7	89	7.6 < pH ≤ 7.7	29	8.6 < pH ≤ 8.7	4.4
6.7 < pH ≤ 6.8	84	7.7 < pH ≤ 7.8	24	8.7 < pH ≤ 8.8	3.7
6.8 < pH ≤ 6.9	78	7.8 < pH ≤ 7.9	20	8.8 < pH ≤ 8.9	3.1
6.9 < pH ≤ 7.0	72	7.9 < pH ≤ 8.0	17	8.9 < pH ≤ 9.0	2.6

7. Monitoring at a frequency to ensure that 11 samples are available at the next permit issuance.
8. A compliance schedule to meet the TMDL-based phosphorus limits is recommended in the reissued permit, with the interim limit of 5.0 mg/L as a monthly average being effective immediately upon reissuance.
9. 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).

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

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

Attachments (3) – Narrative, Map, & 2006 Ammonia Calculations

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Water Quality-Based Effluent Limitations for
Butte des Morts Consolidated SD No. 1

WPDES Permit No. WI-0032492-07

Prepared by: Nicole Krueger

PART 1 – BACKGROUND INFORMATION

Facility Description

The Butte des Morts Consolidated Sanitary District No. 1 in Winnebago County serves the unincorporated community of Butte des Morts and the surrounding developed area in the Towns of Oshkosh, Vinland, and Winneconne. The permittee owns and operates an aerated lagoon wastewater treatment facility designed to treat an average daily flow of 0.078 million gallons per day (MGD). Ferric chloride began being used in the aerated lagoon in 2018 to remove phosphorus. The system consists of two aerated cells operated in series and followed by a third quiescent settling lagoon. The effluent is disinfected on a seasonal basis using gaseous chlorine, followed by dechlorination using a liquid sodium bisulfite solution. Sludge generated during treatment accumulates in the lagoons for many years until it needs to be removed and is applied on agricultural fields as a soil amendment and plant fertilizer. Butte des Morts will be discontinuing their discharge and regionalizing during the reissued permit to comply with phosphorus limits.

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

Existing Permit Limitations

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

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						1
$CBOD_5$			40 mg/L	25 mg/L		2
TSS				60 mg/L		3
pH	9.0 s.u.	6.0 s.u.				2
Fecal Coliform May – September			**660#/100 mL** **geometric mean**	400#/100 mL geometric mean		4
Residual Chlorine May – September	38 µg/L		**38 µg/L**	**38 µg/L**		4
Ammonia Nitrogen	Variable		**108 mg/L**	**108 mg/L**		4
Phosphorus Interim Final				5.3 mg/L 0.12 mg/L	0.040 mg/L 0.0276 lbs/day	5

Footnotes:

1. Monitoring only.

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. 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. However, ferric chloride is used for phosphorus removal, so this variance is no longer applicable for this facility.
4. Limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
5. A compliance schedule is in the current permit to meet the final WQBEL by 11/01/2025.

Receiving Water Information

- Name: Lake Butte des Morts
- Waterbody Identification Code (WBIC): 139900
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply. Note: Cold Water and Public Water Supply criteria are used for bioaccumulating compounds of concern, because the discharge is within the Great Lakes basin.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q_{10} and 7-Q_2 values are from USGS from the Fox River at Berlin and the Wolf River at New London combined, where Outfall 001 is located.

  7-Q_{10} = 811 cfs (cubic feet per second)
  7-Q_2 = 1166 cfs
  Harmonic Mean Flow = 2306 cfs

- Hardness = 197 mg/L as $CaCO_3$. This value represents the geometric mean of data from chronic WET testing from Winneconne WWTF, upstream of Butte des Morts from 06/10/1997 – 03/19/2008.
- % 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 Wolf River at New London is used for this evaluation. 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: Lake Butte des Morts is 303(d) impaired for mercury, total phosphorus, TSS, and PCBs.

Effluent Information

- Design flow rate(s):
  Annual average = 0.078 MGD (Million Gallons per Day)
  Peak daily = 0.195 MGD

  For reference, the actual average flow from 01/01/2020 – 12/31/2024 was 0.059 MGD.

- Hardness = 387 mg/L as $CaCO_3$. This value represents the geometric mean of data from 01/17/2023 – 02/07/2023.
- 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: Chlorine is used for disinfection, sodium bisulfite is used for dechlorination, and ferric chloride is used for phosphorus removal.
- 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.

Effluent Copper Data

Sample Date	Copper µg/L	Sample Date	Copper µg/L	Sample Date	Copper µg/L
01/17/2023	18	02/14/2023	41	03/14/2023	18
01/24/2023	20	02/21/2023	33	03/21/2023	28
01/31/2023	26	02/28/2023	32	03/28/2023	25
02/07/2023	32	03/07/2023	33		
1-day P_{99} = 48.9 µg/L					
4-day P_{99} = 37.3 µg/L					

Effluent Chloride Data

Sample Date	Chloride mg/L	Sample Date	Chloride mg/L	Sample Date	Chloride mg/L
06/04/2012	499	12/19/2017	798	01/17/2023	667
06/07/2012	500	01/02/2018	880	01/24/2023	670
06/11/2012	525	01/09/2018	969	01/31/2023	668
06/15/2012	546	01/16/2017	916	02/07/2023	666
1-day P_{99} = 1163 mg/L					
4-day P_{99} = 906 mg/L					

The following table presents the average concentrations and loadings at Outfall 001 from 11/01/2018 – 01/31/2024 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
$CBOD_5$	8.2 mg/L*
TSS	20 mg/L
pH field	7.3 s.u.
Phosphorus	1.5 mg/L
Ammonia Nitrogen	16 mg/L*
Fecal Coliform	103 #/100 mL*
Chlorine	10 µg/L*

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

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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 not the case for Butte des Morts 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).

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 648.8 cfs, (1-Q_{10} (estimated as 80% of 7-Q_{10})), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

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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.
Chlorine		19.0		38.1			**215**	**970**
Arsenic		340	10	680	136	<14		
Cadmium	387	48.7	0.29	97.3	19.5	<0.3		
Chromium	301	4446	2.5	8892	1778	<1.3		
Copper	387	55.6	5.7	111			48.9	41
Lead	356	365	1.77	729	146	<3.5		
Nickel	268	1080		2161	432	23		
Zinc	333	345	1.92	689	138	5.4		
Chloride (mg/L)		757	14.9	1514			1163	969

* The indicated hardness may differ from the effluent hardness because the effluent hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the acute criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.
* * The 2 × ATC method of limit calculation yields a more restrictive limit than consideration of ambient concentrations and 1-Q_{10} 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 = 202.75 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}
Chlorine		7.28		12237			142
Arsenic		152	10	239043	47809	<14	
Cadmium	175	3.82	0.29	5934	1187	<0.3	
Chromium	197	230	2.5	382758	76552	<1.3	
Copper	197	18.5	5.7	21505			37.3
Lead	197	53.9	1.77	87664	17533	<3.5	
Nickel	197	92.6		155708	31142	23	
Zinc	197	218	1.92	362889	72578	5.4	
Chloride (mg/L)		395	14.9	638950			906

* 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 = 576.5 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	0.29	1766408	353282	<0.3

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		MEAN	MO'LY	1/5 OF	MEAN
Chromium (+3)	3818000	2.5	18241704328	3648340866	<1.3
Lead	140	1.77	660440	132088	<3.5
Nickel	43000		205446254	41089251	23

Monthly Average Limits based on Human Cancer Criteria (HCC)
RECEIVING WATER FLOW = 576.5 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	10	15777	3155	<14

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

Conclusions and Recommendations
Based on a comparison of the effluent data and calculated effluent limitations, effluent limitations are required for chlorine.

Total Residual Chlorine – Because chlorine is added as a disinfectant, effluent limitations are recommended to assure proper operation of the de-chlorination system. Section NR 210.06(2)(b), Wis. Adm. Code, states, "When chlorine is used for disinfection, the daily maximum total residual chlorine concentration of the discharge may not exceed 0.10 mg/L." Because the WQBELs are more restrictive, they are recommended instead. Specifically, a daily maximum limit of 38 µg/L is required. Due to revisions to s. NR 106.07(2), Wis. Adm. Code, mass limitations are no longer required.

Sections NR 106.07(3) and NR 205.067(7), Wis. Adm. Code require WPDES permits contain weekly average and monthly average limitations for municipal dischargers whenever practicable and necessary to protect water quality. **Therefore, the current weekly average and monthly averages limit of 38 µg/L are required to continue** to meet expression of limits requirements in addition to the daily max limit.

Chloride – Considering available effluent data from the current and previous permit applications (06/04/2012 – 02/07/2023), the 1-day P_{99} chloride concentration is 1163 mg/L, and the 4-day P_{99} of effluent data is 906 mg/L.

These effluent concentrations are below the calculated WQBELs for chloride; therefore, no effluent limits are needed. **Chloride monitoring is recommended to ensure that 11 sample results are available at the next permit issuance to meet the data requirements of s. NR 106.85, Wis. Adm. Code.**

Mercury – The permit application did not require monitoring for mercury because Butte des Morts 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 because Butte des Morts operates a lagoon system. 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 mercury 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 effluent flow rate and the lack of indirect dischargers contributing to the collection system, 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. 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:

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

Where:

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

The effluent pH data was examined as part of this evaluation. A total of 783 sample results were reported from 11/07/2018 – 01/30/2024. The maximum reported value was 8.61 s.u. (Standard pH Units). The effluent pH was 8.25 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 8.43 s.u. The mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 8.37 s.u. Therefore, a value of 8.4 s.u. is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 8.4 s.u. into the equation above yields an ATC = 3.9 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.

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Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
2×ATC	7.8
1-Q_{10}	20770

The 2×ATC method yields the most stringent limits for Butte des Morts.

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 – WWSF

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	108	7.0 < pH ≤ 7.1	66	8.0 < pH ≤ 8.1	14
6.1 < pH ≤ 6.2	106	7.1 < pH ≤ 7.2	59	8.1 < pH ≤ 8.2	11
6.2 < pH ≤ 6.3	104	7.2 < pH ≤ 7.3	52	8.2 < pH ≤ 8.3	9.4
6.3 < pH ≤ 6.4	101	7.3 < pH ≤ 7.4	46	8.3 < pH ≤ 8.4	7.8
6.4 < pH ≤ 6.5	98	7.4 < pH ≤ 7.5	40	8.4 < pH ≤ 8.5	6.4
6.5 < pH ≤ 6.6	94	7.5 < pH ≤ 7.6	34	8.5 < pH ≤ 8.6	5.3
6.6 < pH ≤ 6.7	89	7.6 < pH ≤ 7.7	29	8.6 < pH ≤ 8.7	4.4
6.7 < pH ≤ 6.8	84	7.7 < pH ≤ 7.8	24	8.7 < pH ≤ 8.8	3.7
6.8 < pH ≤ 6.9	78	7.8 < pH ≤ 7.9	20	8.8 < pH ≤ 8.9	3.1
6.9 < pH ≤ 7.0	72	7.9 < pH ≤ 8.0	17	8.9 < pH ≤ 9.0	2.6

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

Weekly and monthly average limits are not included in the current permit but are being evaluated here due to changes to ch. NR 106, Wis. Adm. Code. **The weekly and monthly average ammonia nitrogen limits calculation from the previous memo do not change** because there have been no changes in the effluent and receiving water flow rates. The calculations from the previous WQBEL memo are shown in Attachment #3.

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from 11/06/2018 – 01/30/2024, with those results being compared to the calculated limits to determine the need to include ammonia limits in Butte des Morts' permit for the respective month ranges. That need is determined by calculating 99th upper percentile (or P_{99}) values for ammonia during each of the month ranges and comparing the daily maximum values to the daily maximum limit.

Ammonia Nitrogen Effluent Data

	Ammonia Nitrogen mg/L
1-day P_{99}	71.4
4-day P_{99}	39.8
30-day P_{99}	22.9
Mean*	15.7

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	Ammonia Nitrogen mg/L
Std	14.5
Sample size	265
Range	<0.1 – 50

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

Conclusions and Recommendations

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

Final Ammonia Nitrogen Limits

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
Year-round	Variable	108	**108**

PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR BACTERIA

On May 1, 2020, revisions to chs. NR 102 and NR 210, Wis. Adm. Codes, 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. Because Butte des Morts' 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

Butte des Morts has monitored effluent *E. coli* from 06/07/2022 – 06/27/2023 and a total of 23 results are available. A geometric mean of 126 counts/100 mL was exceeded twice out of 5 months where *E. coli* was monitored, with a maximum monthly geometric mean of 328 counts/100 mL. Effluent data did not exceed 410 counts/100. The maximum reported value was 385 counts/100 mL. Based on this effluent data it appears that the facility can't meet new *E. coli* limits and a compliance schedule is recommended in the reissued permit.

Interim Limit

The permit will include a compliance schedule to meet these limits. During the compliance schedule, an interim limit applies to prevent back-sliding from the current level of disinfection during the compliance schedule period. Therefore, the current **fecal coliform limit shall be included in the reissued permit as an interim limit of 400 counts/100 mL as a monthly geometric mean**. Any weekly geometric mean limit which was included in the current permit for expression of limits purposes does not need to be included in the permit as an interim limit.

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.

Because Butte des Morts 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 to 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	Monthly Avg. mg/L	Total Flow MG/month	Total Phosphorus lb./mo.
Jan	1.4	1.65	19.3
Feb	1.2	1.37	13.7
Mar	5.4	1.63	73.5
Apr	5.8	2.11	102
May	0.86	2.87	20.6
June	1.0	2.45	20.4
July	4.9	2.63	107
Aug	1.4	2.32	27.1
Sept	1.2	1.57	15.7
Oct	6.5	1.48	80.1
Nov	5.1	2.01	85.3
Dec	0.8	1.84	12.3
Average			48.1

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

Upper Fox Wolf River Basin

Total phosphorus (TP) effluent limits in lbs/day are calculated as recommended in the *TMDL Development and Implementation Guidance: Integrating the WPDES and Impaired Waters Programs (*April 2020) and are based on the annual phosphorus wasteload allocation (WLA) given in pounds per year. This WLA found in Appendix H of the *Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids in the Upper Fox and Wolf River Basins (UFW TMDL)* report dated February 2020 are expressed as maximum annual loads (lbs/year).

For the reasons explained in the April 30, 2012 paper entitled *Justification for Use of Monthly, Growing Season and Annual Average Periods for Expression of WPDES Permit Limits for Phosphorus Discharges in Wisconsin*, WDNR has determined that the phosphorus WQBELs set equal to WLAs would not be consistent with the assumptions and requirements of the TMDL. Therefore, limits given to facilities included in the Upper Fox and Wolf River Basins TMDL are given monthly average mass limits and, if the equivalent effluent concentration is less than or equal to 0.3 mg/L, six-month average mass limits are also included. The following equation shows the calculation of equivalent effluent concentration:

TP Equivalent Effluent Concentration = WLA ÷ (365 days/yr * Flow Rate * Conversion Factor)
= 40 lbs/yr ÷ (365 days/yr * 0.078 MGD * 8.34)
= 0.17 mg/L

Since this value is less than 0.3 mg/L, both a six-month average mass limit and a monthly average mass limit are applicable for total phosphorus. The monthly average limit is set equal to three times the six-month average limit.

TP 6-Month Average Permit Limit = WLA ÷ 365 days/yr * multiplier
= (40 lbs/yr ÷ 365 days/yr) * 1.30
= 0.14 lbs/day

TP Monthly Average Permit Limit = TP 6-Month Average Permit Limit * 3
= 0.14 lbs/day * 3
= 0.43 lbs/day

The multiplier used in the six-month average calculation was determined according to the implementation guidance. A coefficient of variation was calculated, based on phosphorus mass monitoring data, to be 1.3. This is the standard deviation divided by the mean of mass data. However, it is believed that the optimization of the wastewater treatment system to achieve the WLA-derived permit limits will reduce effluent variability. Thus, the maximum anticipated coefficient of variation expected by the facility is 0.6. This value, along with monitoring frequency, is used to select the multiplier. The current permit specifies phosphorus monitoring as monthly; however, EPA recommends at least weekly monitoring for TMDL-based limits. If a different monitoring frequency is used, the stated limits should be reevaluated.

Six-month average and monthly average mass effluent limits are recommended for this discharge. The limits are equivalent to concentrations of 0.22 mg/L and 0.66 mg/L, respectively, at the facility design flow of 0.078 MGD.

The UFW TMDL establishes TP wasteload allocations to reduce the loading in the entire watershed including WLAs to meet water quality standards for tributaries to the Upper Fox and Wolf River. Therefore, WLA-based WQBELs are protective of immediate receiving waters and TP WQBELs derived according to s. NR 217.13, Wis. Adm. Code are not required.

Since wasteload allocations are expressed as annual loads (lbs/yr), permits with TMDL-derived monthly average permit limits should require the permittee to calculate and report rolling 12-month sums of total monthly loads for TP. Rolling 12-month sums can be compared directly to the annual wasteload allocation.

Effluent Data
The following table summarizes effluent total phosphorus monitoring data from 11/06/2018 – 01/02/2024.

Total Phosphorus Effluent Data

	Phosphorus mg/L	Phosphorus lbs/day
1-day P_{99}	9.06	5.94
4-day P_{99}	4.95	3.21
30-day P_{99}	2.75	1.62
Mean	1.83	0.97
Std	1.85	1.25
Sample size	73	73
Range	0.17 - 7.2	0.063 – 6.98

Interim Limit
An interim limit is needed when a compliance schedule is included in the permit to meet the TMDL limits. This limit should reflect a value which the facility is able to currently meet; however, it should also consider the receiving water quality, keeping the water from further impairment. **It's recommended that the interim limit be set equal 5.0 mg/L, expressed as a monthly average.** This value reflects the 4-day P_{99} from the current permit term.

PART 6 – TOTAL SUSPENDED SOLIDS

Ch. NR 210, Wis. Adm. Code
The current permit has a monthly average TSS limit of 60 mg/L which 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. However, ferric chloride is used at the facility, so this variance concentration limit is no longer applicable for this facility.

The TSS limits shall be updated to the concentration limits in s. NR 210.05(1)(b), Wis. Adm. Code of 30 mg/L as a monthly average and 45 mg/L as a weekly average for a fish and aquatic life classification.

TMDL
Total Suspended Solids (TSS) effluent limits in lbs/day are calculated as recommended in the *TMDL Development and Implementation Guidance: Integrating the WPDES and Impaired Waters Programs (*April 2020). This WLAs found in Appendix I of the *Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids in the Upper Fox and Wolf Basins (UFW TMDL)* report dated February 2020 are expressed as maximum annual loads (lbs/year).

Revisions to chs. NR 106 and 205, Wis. Adm. Code align Wisconsin water quality-based effluent limits with 40 CFR 122.45(d), which requires WPDES permits to contain the following concentration limits, whenever practicable and necessary to protect water quality:

- Weekly average and monthly average limitations for continuous discharges subject to ch. NR 210.
- Daily maximum and monthly average limitations for all other discharges.

Butte des Morts is a municipal treatment facility and is therefore subject to weekly average and monthly average TSS limits derived from TSS annual WLAs.

TSS Monthly Average Permit Limit = WLA ÷ 365 days/yr * multiplier
= (14,257 lbs/yr ÷ 365 days/yr) * 1.90
= 74 lbs/day

TSS Weekly Average Permit Limit = WLA ÷ 365 days/yr * multiplier
= (14,257 lbs/yr ÷ 365 days/yr) * 3.11
= 121 lbs/day

The multiplier used in the weekly average and monthly average calculation was determined according to implementation guidance. A coefficient of variation was calculated, based on TSS mass monitoring data, to be 1.1. This is the standard deviation divided by the mean of mass data. However, it is believed that the optimization of the wastewater treatment system to achieve the WLA-derived permit limits will reduce effluent variability. Thus, the maximum anticipated coefficient of variation expected by the facility is 0.6. This value, along with monitoring frequency, is used to select the multiplier. The current permit specifies TSS monitoring as weekly; if a different monitoring frequency is used, the stated limits should be reevaluated.

Weekly average and monthly average mass effluent limits are recommended for this discharge. The limits are equivalent to concentrations of 187 mg/L and 114 mg/L, respectively, at the facility design flow of 0.078 MGD.

Since wasteload allocations are expressed as annual loads (lbs/yr), permits with TMDL-derived monthly average permit limits should require the permittee to calculate and report rolling 12-month sums of total monthly loads for TSS. Rolling 12-month sums can be compared directly to the annual wasteload allocation.

Effluent Data

The following table summarizes effluent total suspended solids monitoring data from 11/06/2018 – 01/30/2024. Data from 12/15/2020 and 02/16/2021 were removed in this evaluation because the results were abnormally high compared to the weeks before and after these dates so are likely not representative of normal conditions.

Total Suspended Solids Effluent Data

	TSS mg/L	TSS lbs/day
1-day P_{99}	82.5	51.2
4-day P_{99}	46.6	27.9
30-day P_{99}	28.2	15.4
Mean*	20.2	10.2
Std	16.5	10.5
Sample size	255	255
Range	2.4 – 92	0.133 – 73.4

Butte des Morts can currently meet the ch. NR 210, Wis. Adm. Code concentration and the TMDL-based

mass TSS limits. Therefore, **a compliance schedule is not needed.**

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.

Due to the amount of upstream flow available for dilution in the limit calculation (Qs:Qe >20:1), the lowest calculated limitation is 120° F (s. NR 106.55(6)(a), Wis. Adm. Code).

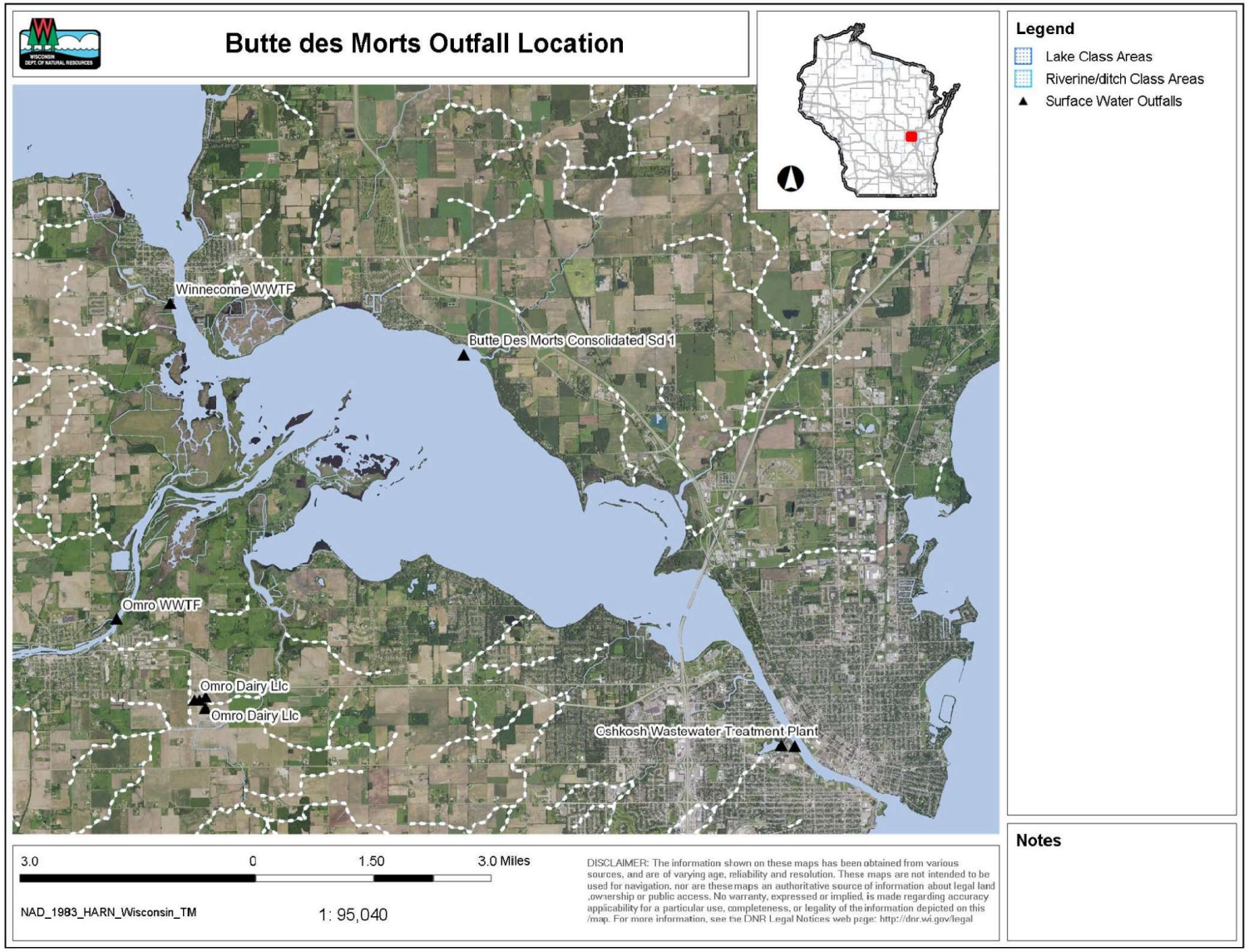
At temperatures above approximately 103° F, conventional biological treatment systems do not function properly and experience upsets. There is no indication that this has ever occurred in this treatment system. Therefore, there is no reasonable potential for the discharge to exceed this limit. **No monitoring or effluent limits are recommended for temperature.**

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).*

- Chronic testing is usually not recommended where the ratio of the 7-Q_{10} to the effluent flow exceeds 100:1 and acute testing is not typically recommended if the ratio exceeds 1000:1. For Butte des Morts that ratio is approximately 6720:1. With this amount of dilution, there is believed to be little potential for acute or chronic toxicity effects in Lake Butte des Morts associated with the discharge from Butte des Morts, so **the need for acute and chronic WET testing will not be considered further.**

Attachment #2



Attachment #3

2006 Ammonia Limits Calculations

Ammonia-Nitrogen: The State of Wisconsin promulgated revised water quality standards for this substance during the term of the current permit. Those revisions became effective March 1, 2004, and include criteria based on both acute and chronic toxicity to aquatic life.

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

Where: A = 0.411 and B = 58.4 for a Warmwater Sport fishery, and
pH (su) = that characteristic of the effluent.

The effluent pH data for the past three years was examined as part of this evaluation. A total of 505 sample results were reported from July 2003 through June 2006. The maximum reported value was 8.87 su (Standard pH Units), while pH values of 8.73 su, 8.63 su, 8.60 su and 8.59 su were also each reported just once. So, more than 99% of the time the pH was 8.6 or less. The one-day P_{99}, calculated in accordance with s. NR 106.05(5), is 8.61 su. And the mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 8.58 su. A value of 8.6 is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 8.6 into the equation above yields an ATC = 2.65 and a computed daily maximum limit of 5.3 mg/L.

However, the precision and accuracy of the pH monitoring data have not been verified. In addition, it is conceivable that modifications to the treatment process could alter the effluent pH. And finally, the rules allow manipulation of the effluent pH in order to comply with daily maximum limits for ammonia nitrogen. Consequently, presented below is a table of daily maximum limitations corresponding to various effluent pH values. Use of this table is not recommended in the permit, but it is presented herein for informational purposes.

Daily Maximum Limits

Effluent pH - s.u.	NH_3-N Limit – mg/L	Effluent pH - s.u.	NH_3-N Limit – mg/L
pH ≤ 7.5	No Limit	8.2 < pH ≤ 8.3	9.4
7.5 < pH ≤ 7.6	34*	8.3 < pH ≤ 8.4	7.8
7.6 < pH ≤ 7.7	29*	8.4 < pH ≤ 8.5	6.4
7.7 < pH ≤ 7.8	24*	8.5 < pH ≤ 8.6	5.3
7.8 < pH ≤ 7.9	20*	8.6 < pH ≤ 8.7	4.4
7.9 < pH ≤ 8.0	17	8.7 < pH ≤ 8.8	3.7
8.0 < pH ≤ 8.1	14	8.8 < pH ≤ 8.9	3.1
8.1 < pH ≤ 8.2	11	8.9 < pH ≤ 9.0	2.6

* During the months of May through October if the pH is less than or equal to 7.9 there is no daily maximum limit for NH_3-N for municipal WWTF's treating primarily domestic wastewater. Limits shown in the table above with an asterisk* apply from November through April only.

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

Where: pH = the pH (su) of the receiving water,

E = 0.854,
C = the minimum of 2.85 or $1.45 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Present),
or C = $1.45 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Absent), and
T = the temperature (ºC) of the receiving water – (Early Life Stages Present),
or T = the maximum of the actual temperature (ºC) and 7 - (Early Life Stages Absent)

Ammonia Nitrogen Limitations Based on Chronic Toxicity		**SUMMER**	**WINTER**	**SPRING**
		June – Sept.	Oct. – March	April & May
BACKGROUND INFORMATION	7-Q_{10} (cfs)	811	811	811
	7-Q_2 (cfs)	1166	1166	1166
	Ammonia (mg/L)	0.03	0.11	0.04
	Temperature (º C)	25	7	10
	pH (standard units)	8.73	8.50	8.73
	% of river flow used	100	25	25
	Reference weekly flow	811	202.75	202.75
	Reference monthly flow	991.1	247.775	247.775
CRITERIA (in mg/L):	4-day Chronic (@ background pH)			
	early life stages present	0.94	2.72	1.85
	early life stages absent	0.94	4.42	2.48
	30-day Chronic (@ background pH)			
	early life stages present	0.38	1.09	0.74
	early life stages absent	0.38	1.77	0.99
EFFLUENT LIMITS (in mg/L):	Weekly average			
	early life stages present	6130	4393	3046
	early life stages absent		7248	4098
	Monthly average			
	early life stages present	2849	2012	1439
	early life stages absent		3407	1954

Section NR 106.33(2) specifies that the department may not include limits for Ammonia Nitrogen in WPDES permits for municipal WWTF's treating primarily domestic wastewater, when the calculated limits are equal to or greater than 20 mg/L from May through October, and equal to or greater than 40 mg/L from November through April. Consequently, no weekly average or monthly average ammonia limits are recommended for the Butte des Morts CSD #1 WWTF.

A review of the reported effluent data for the past three years reveals that the effluent concentration routinely exceeds the calculated daily maximum limit of 5.3 mg/L, particularly from December through May. Consequently that effluent limit is apparently needed in accordance with s. NR 106.05(3)(a).

However s. NR 106.38 provides for a variance from water quality standards for this substance for wastewater treatment systems that consist primarily of lagoons. The Butte des Morts CSD #1 has requested this variance with the application for permit reissuance. If that variance is granted, weekly monitoring is recommended and if the facility cannot comply with the limitation a Facilities Plan that evaluates alternatives for achieving compliance shall be submitted within 48 months of permit issuance, in accordance with s. NR 106.33(4).