Permit Fact Sheet

General Information

Permit Number	WI-0027618-09-0
Permittee Name and Address	Grande Cheese Company 250 Camelot Drive, Fond du Lac, WI 54935
Permitted Facility Name and Address	Grande Cheese Company - Chilton W3286 CTH F, Chilton, WI
Permit Term	October 01, 2025 to September 30, 2030
Discharge Location	NW ¼ of SW ¼, Section 11, T18N, R19E, South Branch Manitowoc River Watershed (MA 05), and groundwater of the Lakeshore Basin via spray irrigation and landspreading in Calumet County
Receiving Water	Unnamed tributary to the South Branch of the Manitowoc River in Calumet County
Stream Flow ($Q_{7,10}$)	0 cfs
Stream Classification	Warm Water Sport Fish, non-public water supply
Discharge Type	Existing, Continuous

Facility Description

Grande Cheese Company (formerly Tillamook and Foremost Farms USA) plans to operate the dairy processing plant near Chilton in central Calumet County. Foremost Farms ended operations in July 2020 and sold the facility to Tillamook. Grande Cheese Company then acquired the facility in May 2023 and is planning on processing 1.8 million lbs/day of milk and generating 70 million pounds of cheese per year. The discharge of 0.362 MGD is expected to the existing outfall to the unnamed tributary to the South Branch of the Manitowoc River.

At the upgraded treatment facility, there will be high strength and normal strength equalization tanks. The high strength waste (HSW) will flow to an enhanced biological phosphorus removal process before being routed to the aeration basin or if inappropriate to feed into the system the HSW can sent to be hauled offsite for disposal or landspread under Outfall 005.. The normal strength waste will flow to denitrification tank before flow to the aeration basin. Solids are separated by an ultrafiltration. A phosphorus-removal additive will be utilized and precipitated solids will be separated via an additional ultrafiltration membrane. The effluent will be cooled and oxygenated prior to discharge to the Outfall 001. The sludge separated during wastewater treatment will be sent to two sludge silos. The industrial sludge will either be landspread on department approved sites under Outfall 005 or sent to the spray irrigation system under Outfall 002.

The facility has an existing lagoon system that will be used for various purposes. The lagoon will receive partially treated off-specification permeate and serve as emergency storage for industrial sludge or treatment tank overflow events. The lagoon contents will either be pumped back to the wastewater treatment facility for further treatment or sent to the spray irrigation system under Outfall 002.

Substantial Compliance Determination

There have been no discharged from Grande Cheese Chilton during the previous permit term. This facility has been found to be in substantial compliance with their current permit.

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)**
001	0 MGD (June 2023 – June 2025)	At Sampling Point 001, the permittee shall collect representative samples of final effluent from the effluent automatic composite sampler drawing 24-hour flow proportional composite samples from the pipe prior to the cooling tower except that the permit shall collect grab samples of the effluent for pH and dissolved oxygen following the oxygenation sump and continuously monitor for temperature prior to discharge to the Unnamed Tributary of the South Branch of the Manitowoc River via Outfall 001. The permittee shall measure the effluent flow rate using a continuous flow recording device on the pipe prior to the cooling tower.
002	0 MGD (June 2023 – June 2025)	At Sampling Point 002, the permittee shall collect representative grab samples of wastewater treatment facility sludge from the sludge silo and/or contingency lagoon stored sludge, partially treated off-specification permeate, and precipitation prior to discharge to spray irrigation system via Outfall 002.
005	0 GPD (2023-2024)	At Sampling Point 005, the permittee shall collect representative grab samples of wastewater treatment system sludge prior to discharge to landspreading on department approved sites via Outfall 005.
006	0 GPD (2023-2024)	At Sampling Point 006, the permittee shall collect representative grab samples of diverted high strength dairy wastewater prior to landspreading on department approved sites via Outfall 006.
101	0 GPD (2023-2024)	At Sampling Point 101, the permittee shall collect representative grab composite samples of the concentrated salt brine prior to being hauled offsite for further treatment. The facility should estimate the total monthly volume of concentrated salt brine hauled offsite.
102	N/A	At Sampling Point 102, the permittee shall measure the flow rate of high strength waste diverted from the primary raw wastewater lift station to the high strength waste equalization tank.
103	N/A	At Sampling Point 103, the permittee shall measure the flow rate of partially treated off-specification permeate, emergency industrial sludge and/or various tank overflow events diverted to the lagoon.
104	N/A	At Sampling Point 104, the permittee shall measure the flow rate of the lagoon contents pumped to the spray irrigation system under Outfall 002.
105	N/A	At Sampling Point 105, the permittee shall measure the flow rate of the liquid sludge from the sludge silos pumped to the spray irrigation system under Outfall 002
106	N/A	At Sampling Point 106, the permittee shall measure the flow rate of the liquid sludge from the sludge silos pumped to the landspreading

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
		system under Outfall 005.
107	N/A	At Sampling Point 107, the permittee shall measure the flow rate of the high strength waste from the high strength waste equalization tank pumped to the landspreading system under Outfall 006.

Permit Requirements

Sample Point Designation For Groundwater Monitoring Systems			
System	**Sample Pt Number**	**Well Name**	**Comments**
Spray Irrigation	801	Well 1	Non-Point of Standard
	804	Well 4	Non-Point of Standard
	806	Well 6	Non-Point of Standard
	808	Well 5	Non-Point of Standard
	809	MW-2B	Non-Point of Standard
	812	MW-12	Non-Point of Standard
	813	MW-13	Background; Well to replace 811

1 Inplant - Monitoring and Limitations

1.1 Sample Point Number: 101- HAULED BRINE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Volume		gal	Monthly	Total Monthly	
Chloride		mg/L	Monthly	Grab Comp	

1.1.1 Changes from Previous Permit:

In-plant limitations and monitoring requirements were evaluated for this permit term and no changes were required in this permit section.

1.1.2 Explanation of Limits and Monitoring Requirements

This monitoring provides tracking of the concentrated salt brine hauled off-site for further treatment.

1.2 Sampling Point 102 - HWS DIVERSION

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Estimated	

1.2.1 Explanation of Limits and Monitoring Requirements

This monitoring provides tracking of the high strength waste from the primary raw wastewater lift system to the high strength waste equalization tank.

1.3 Sampling Point 103 - LAGOON DIVERSION

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Estimated	

1.3.1 Explanation of Limits and Monitoring Requirements

This monitoring provides tracking of partially treated off-specification permeate, emergency industrial sludge, and/or various tank overflow events to the lagoon.

1.4 Sampling Point 104 - LAGOON STORAGE TO SI

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Estimated	

1.4.1 Explanation of Limits and Monitoring Requirements

This monitoring provides tracking of the lagoon contents pumped to the spray irrigation system under Outfall 002.

1.5 Sampling Point 105 – LIQUID SLUDGE TO SI

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Estimated	

1.5.1 Explanation of Limits and Monitoring Requirements

This monitoring provides tracking of the liquid sludge from the sludge silos pumped to the spray irrigation system under Outfall 002.

1.6 Sampling Point 106 – LIQUID STORAGE TO LS

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Estimated	

1.6.1 Explanation of Limits and Monitoring Requirements

This monitoring provides tracking of the liquid sludge from the sludge silos pumped to the landspreading system under Outfall 005.

1.7 Sampling Point 107 – HSW TO SI

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Estimated	

1.7.1 Explanation of Limits and Monitoring Requirements

This monitoring provides tracking of the high strength waste from the high strength waste equalization tank pumped to the landspreading system under Outfall 006.

2 Surface Water - Monitoring and Limitations

2.1 Sample Point Number: 001- TREATED PROCESS WW-NCCW

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Daily Max	16 mg/L	3/Week	24-Hr Flow Prop Comp	Effective October - April.
BOD5, Total	Daily Max	8.2 mg/L	3/Week	24-Hr Flow Prop Comp	Effective May - September.
BOD5, Total	Weekly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	Effective October - April.
BOD5, Total	Weekly Avg	5.0 mg/L	3/Week	24-Hr Flow Prop Comp	Effective May - September.
BOD5, Total	Monthly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	Effective October - April.
BOD5, Total	Monthly Avg	5.0 mg/L	3/Week	24-Hr Flow	Effective May - September.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
				Prop Comp	
BOD5, Total	Daily Max	63 lbs/day	3/Week	Calculated	
BOD5, Total	Monthly Avg	28 lbs/day	3/Week	Calculated	
Suspended Solids, Total	Daily Max	16 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Daily Max	80 lbs/day	3/Week	Calculated	
Suspended Solids, Total	Monthly Avg	40 lbs/day	3/Week	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.
pH Field	Daily Max	9.0 su	3/Week	Grab	
pH Field	Daily Min	6.0 su	3/Week	Grab	
Dissolved Oxygen	Daily Min	7.0 mg/L	3/Week	Grab	
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	24-Hr Flow Prop Comp	
Phosphorus, Total	Monthly Avg	1.0 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective throughout the permit term, as it represents a minimum control level.
Phosphorus, Total	Monthly Avg	1.2 lbs/day	3/Week	Calculated	
Phosphorus, Total	6-Month Avg	0.39 lbs/day	3/Week	Calculated	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
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/year	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.
Temperature Maximum	Daily Max	86 deg F	3/Week	Continuous	Limit effective upon reissuance - March 2026. See table in Temperature Limits section of the permit for final limits following compliance schedule.
Temperature Maximum	Daily Max	deg F	Daily	Continuous	See final limits table in Temperature Limits section of the permit.
Temperature Maximum	Weekly Avg	deg F	Daily	Continuous	See final limits table in Temperature Limits section of the permit.
Chloride		mg/L	Monthly	24-Hr Flow Prop Comp	Monthly monitoring in 2027.
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	Quarterly	Calculated	Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	
Chronic WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	2x/year in rotating quarters. See the Whole Effluent

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					Toxicity (WET) Testing section.

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.

- **BOD5, Total –** Daily max and monthly average limits changed. Weekly average concentration limit added.
- **Suspended Solids, Total –** Daily max and monthly average concentration and mass limits changed. Weekly average concentration limit added.
- **Dissolved Oxygen** – Daily minimum limit changed.
- **Phosphorus, Total** – Mass limits added.
- **Temperature** – Weekly average and daily maximum limits effective 4/1/2026 following completion of the Temperature Limits compliance schedule.
- **Dissolved Oxygen** – Daily minimum limit changed.
- **Chloride** – Sample frequency changed from quarterly to monthly for one year.
- **Nitrogen, Kjeldahl** – Quarterly monitoring added.
- **Nitrogen, Nitrite + Nitrate Total** – Quarterly monitoring added.
- **Nitrogen, Total**– Quarterly monitoring added.
- **Chronic WET** – Sample frequency changed from annual to 2x/year.

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 June 20, 2025 and technology-based effluent limitations (TBEL) memo dated June 20, 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.

BOD5, Suspended Solids: The receiving stream will likely be verified as WWSF (warm water sport fish) after discharge starts. Because of this, BOD5 and Suspended Solids concentration limits are calculated based on this classification. Because no dilution is available in the receiving water, the calculated limits would be the lowest that the Department typically gives to facilities. The daily maximum and monthly average mass BOD_5 and daily maximum mass TSS limits are technology based effluent limits (TBELs) which became more stringent as a result of updated production data per ch. NR 240, Wis. Adm. Code.

Northeast Lakeshore Total Maximum Daily Load (TMDL): The permitted facility is located within the Northeast Lakeshore Total Maximum Daily Load (NEL TMDL), which was approved by EPA October 30, 2023. 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 123 lbs/yr for phosphorus and 9,828 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 2023 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 NEL 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 0.11 mg/L was calculated for the facility, thus, TMDL based mass limits are expressed as 1.2 lbs/day as a monthly average and 0.39 lbs/day as a six-month average.

For TSS, continuously discharging industrial facilities covered by the NEL TMDL are given monthly average and daily max mass limits. Only the monthly average mass limit is TMDL-based because the daily maximum TBEL is more stringent than the calculated daily maximum TMDL-based limit.

Facilities with NEL 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 (coefficient of variation) or monitoring frequencies when the permit is reissued to bring discharge levels into compliance with the facility's given WLA.

Temperature – A daily maximum limit is effective upon permit reissuance per antibacksliding requirements in ch. NR 207, Wis. Adm. Code. A compliance schedule is included with the permit to meet weekly average and daily maximum temperature limits.

Chloride: Monthly monitoring in 2027 is required 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.

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. Quarterly effluent monitoring for Total Nitrogen is included in the permit because of the potential for higher nitrogen loading resulting from higher flows (major facilities), higher concentrations, or both. More information on the justification to include total nitrogen monitoring in wastewater permits can be found in the "Guidance for Total Nitrogen Monitoring in Wastewater Permits" dated October 1, 2019.

3 Land Treatment – Monitoring and Limitations

3.1 Sample Point Number: 002- WWTF SLUDGE and LAGOON STORAGE to SI, Spray Irrigation

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Total Daily	
Hydraulic Application Rate	Monthly Avg	3,000 gal/ac/day	Monthly	Calculated	Effective May - October.
Hydraulic Application Rate	Monthly Avg	0 gal/ac/day	Monthly	Calculated	Effective November - April.
Hydraulic Loading Rate	Daily Max	29,700 gal/acre	Daily	Calculated	
Nitrogen, Total Kjeldahl		mg/L	Monthly	Grab	
Nitrogen, Nitrite + Nitrate Total		mg/L	Monthly	Grab	
Nitrogen, Total		mg/L	Monthly	Calculated	
Chloride		mg/L	Monthly	Grab	
Nitrogen, Max Applied On Any Zone		lbs/ac/yr	Monthly	Calculated	
Chloride, Max Applied to Any Zone	Annual Total	20,000 lbs/ac/yr	Monthly	Total Annual	
Soil - Nitrogen, Available		mg/kg	Annual	Grab	
Soil - Phosphorus, Available		mg/kg	Annual	Grab	
Soil - Potassium, Available		mg/kg	Annual	Grab	
Soil - pH Lab		su	Annual	Grab	
Other Sources of Nitrogen		lbs/ac/yr	Annual	Measure	

3.1.1 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.

- **Hydraulic Application Rate –** Limit of "0 gal/ac/day" added for months of November – April.
- **Chloride –** Annual total limit removed.
- **Nitrogen, Nitrite + Nitrate –** Monitoring added.
- **Nitrogen, Total –** Monitoring added.

- **Nitrogen, Max Applied On Any Zone –** Monitoring added.
- **Chloride, Max Applied On Any Zone –** Monitoring and limit added.
- **Soil Series (Nitrogen, Available; Phosphorus, Available; pH Lab; Other Sources of Nitrogen) –** Monitoring added.

3.1.2 Explanation of Limits and Monitoring Requirements

All requirements for land treatment of industrial wastewater are determined in accordance with ch. NR 214, Wis. Adm. Code. All categorical limits are based on ch. NR 214, Wis. Adm. Code Subchapter II (14)-Spray field. More information on the limitations can be found in the Groundwater Evaluation Report for Grande Cheese Company, Chilton WI-0027618, by Woody Myers, Hydrogeologist, dated July 17, 2025.

Soil Series (Nitrogen, Available; Phosphorus, Available; pH Lab; Other Sources of Nitrogen) - These parameters were previously required in the annual report.

4 Groundwater – Monitoring and Limitations

4.1 Groundwater Monitoring System for Spray Irrigation

Location of Monitoring system: adjacent to the spray irrigation system

Groundwater Monitoring Well(s) to be Sampled: Well 1 (801), Well 4 (804), Well 6 (806), Well 5 (808), MW-2B (809), MW-12 (812), MW-13 (813)

Groundwater Monitoring Well(s) Used to Evaluate Background Groundwater Quality: MW-13 (813)

Groundwater Monitoring Well(s) Used for Point of Standards Application: None.

Parameter	Units	Preventative Action Limit	Enforcement Standard	Frequency
Depth To Groundwater	feet	N/A	N/A	Quarterly
Groundwater Elevation	feet MSL	N/A	N/A	Quarterly
Nitrogen, Total Kjeldahl	mg/L	N/A	N/A	Quarterly
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	10	10	Quarterly
Nitrogen, Ammonia Dissolved	mg/L	2.0	9.7	Quarterly
Nitrogen, Organic Dissolved	mg/L	2.2	N/A	Quarterly
Chloride	mg/L	125	250	Quarterly
Solids, Total Dissolved	mg/L	1,475	N/A	Quarterly
COD	mg/L	28	N/A	Quarterly
pH Field	su	6.0-8.0	N/A	Quarterly

4.1.1 Changes from Previous Permit:

Groundwater 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.

- **All Parameters –** Frequency changed from 3/Year to Quarterly.
- **Nitrogen, Ammonia Dissolved –** Enforcement Standard limit added.

4.1.2 Explanation of Limits and Monitoring Requirements

Groundwater limits and requirements are determined in accordance with ch. NR 140, Wis. Adm. Code. Indicator parameter Preventive Action Limit (PAL) values are established per s. NR 140.20, Wis. Adm. Code. Alternative Concentration Limits (ACLs) as allowed under s. NR 140.28, Wis. Adm. Code, are established on a case-by-case basis. ACL's have been established for Nitrite + Nitrate (as N), Dissolved Nitrogen, and Ammonia Nitrogen.

For more information, please refer to the Groundwater Evaluation Report for Grande Cheese Company, Chilton WI-0027618, by Woody Myers, Hydrogeologist, dated July 17, 2025.

5 Land Application - Sludge/By-Product Solids (industrial only)

5.1 Sample Point Number: 005- WWTF SLUDGE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Quarterly	Grab	
Nitrogen, Total Kjeldahl		Percent	Quarterly	Grab	
Chloride		Percent	Quarterly	Grab	
pH Lab		su	Quarterly	Grab	
Phosphorus, Total		Percent	Quarterly	Grab	
Phosphorus, Water Extractable		% of Tot P	Quarterly	Grab	
Potassium, Total Recoverable		Percent	Quarterly	Grab	
Lead Dry Wt		mg/kg	Annual	Grab	
Zinc Dry Wt		mg/kg	Annual	Grab	
Copper Dry Wt		mg/kg	Annual	Grab	
Nickel Dry Wt		mg/kg	Annual	Grab	
Cadmium Dry Wt		mg/kg	Annual	Grab	
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Quarterly	Grab	
					information.
PFAS Dry Wt			Annual	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

5.1.1 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.

Flow Rate – Removed, instead reported on Annual Land Application Form and Daily Logs.

Waste Type - Waste type for Outfall 005 changed from industrial wastewater to industrial sludge.

Units – Units for Nitrogen, Total Kjeldahl and Chloride changed from "mg/L" to "Percent".

Nitrogen, Total Kjeldahl and Chloride – Monitoring frequency changed from 2/Month to Quarterly.

Monitoring Added – Monitoring added for Solids, Total, pH Lab, Phosphorus, Total, Phosphorus, Water Extractable, Potassium, Total Recoverable, Lead Dry Wt, Zinc Dry Wt, Copper Dry Wt, Nickle Dry Wt, and Cadmium Dry Wt.

PFAS –Monitoring is required annually pursuant to s. NR 214.18(5)(b), Wis. Adm. Code.

5.1.2 Explanation of Limits and Monitoring Requirements

Requirements for land application of industrial sludge are determined in accordance with ch. NR 214 Wis. Adm. Code. Monitoring parameters, units, and frequency were updated for industrial sludge sample type instead of the previous industrial wastewater.

PFAS: The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA has released a draft assessment which documents the potential public health risks associated with land applying biosolids contaminated with PFOA and/or PFOS, and the department is currently evaluating this information. 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.

5.2 Sample Point Number: 006- HIGH STRENGTH WASTE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Quarterly	Grab	
Nitrogen, Total Kjeldahl		mg/L	Quarterly	Grab	
Chloride		mg/L	Quarterly	Grab	
Phosphorus, Total		mg/L	Quarterly	Grab	
Phosphorus, Water Extractable		% of Tot P	Quarterly	Grab	

5.2.1 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.

Flow Rate – Removed, instead reported on Annual Land Application Form and Daily Logs.

Nitrogen, Total Kjeldahl and Chloride – Monitoring frequency changed from 2/Month to Quarterly.

Phosphorus, Total – Monitoring added.

Phosphorus, Water Extractable – Monitoring added.

5.2.2 Explanation of Limits and Monitoring Requirements

Requirements for land application of industrial sludge are determined in accordance with ch. NR 214 Wis. Adm. Code.

6 Schedules

6.1 Landspreading Management Plan

A management plan is required for the land application system.

Required Action	Due Date
Landspreading Management Plan: Submit a management plan to optimize the landspreading system performance and demonstrate compliance with Wisconsin Administrative Code NR 214.	03/31/2026

6.1.1 Explanation of Schedule

Landspreading Management Plan (industrial) - An up-to-date Landspreading Management plan is a standard requirement in reissued industrial permits per s. NR 214.17(6)(c), Wis. Adm. Code.

6.2 Land Treatment Management Plan

A management plan is required for the land treatment system.

Required Action	Due Date
Land Treatment Management Plan: Submit a management plan to optimize the land treatment	03/31/2026

system performance and demonstrate compliance with Wisconsin Administrative Code NR 214.	

6.2.1 Explanation of Schedule

Land Treatment Management Plan (industrial) - An up-to-date Land Treatment Management plan is a standard requirement in reissued industrial permits per ch. NR 214, Wis. Adm. Code.

6.3 Temperature Limits

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

Required Action	Due Date
Comply With Final Temperature Limits: Complete construction and start up/calibration of cooling towers to meet temperature limits.	03/31/2026

6.3.1 Explanation of Schedule

Temperature Limits (Industrial Facilities) – This schedule allows time for the permittee to investigate thermal compliance, create an action plan, and implement actions to come into compliance with the effluent temperature limits.

6.4 Groundwater Monitoring Well Site Map Submittal

A map is required of the land treatment system per ch. s. NR 141.065, Wis. Adm. Code.

Required Action	Due Date
Monitoring Well Site Map: Submit a site map in accordance with s. NR 141.065, Wis. Adm. Code. All monitoring well locations shall be reported to the department on a plan map drawn to a specific scale. The map shall indicate structure boundaries, any nearby surface waters and a north arrow. The plan shall show the wells in relation to each other, to property and structure boundaries and to a common reference point on a horizontal grid system. The origin of the grid system shall be located according to the latitude and longitude or according to the state plan coordinate system. The exact vertical location of the top of the well casing shall be referenced to the nearest benchmark for the national geodetic survey datum to an accuracy of 0.01 feet. This plan map shall show the exact location of the installed well on a horizontal grid system which is accurate to 1 foot. The groundwater monitoring well latitude/longitude need to be provided in decimal degrees.	12/31/2025

6.4.1 Explanation of Schedule

A map is required of the land treatment system per ch. s. NR 141.065, Wis. Adm. Code.

6.5 Groundwater Monitoring Well - Abandonment

Required Action	Due Date
Abandonment: Complete abandonment of monitoring well(s) 810, 811, (and 806 if repair is unsuccessful). The well(s) shall be abandoned in accordance with s. NR 141.25, Wisconsin Administrative Code. (Note: Documentation of well abandonment must be submitted to the Department within 60 days of well abandonment.)	11/30/2025

6.5.1 Explanation of Schedule

Wells 806 and 811 have been damaged and should be abandoned. Well 810 is located in the middle of the spray irrigation field and is of no value for determining compliance with groundwater quality standards. All three wells (806 if damage cannot be repaired, 810 and 811) should be abandoned and documentation of abandonment should be submitted to the Department.

6.6 Groundwater Monitoring Well - Installation

Required Action	Due Date
Plans and Specifications: Submit plans and specifications for installation of monitoring well(s) 813 (background well).	11/01/2025
Installation: Complete well installation in accordance with ch NR 141, Wisconsin Administrative Code. (Note: Documentation of well construction must be submitted to the Department within 60 days of well installation.)	12/30/2025

6.6.1 Explanation of Schedule

Due to damage and future abandonment of the current background well (811) a new well needs to be installed as a replacement.

Attachments

Water Quality-Based Effluent Limitations for Grande Cheese Company – Chilton WPDES Permit No. WI-0027618-09, by Nicole Krueger, PE, Water Resources Engineer, dated June 20, 2025

Technology-Based Effluent Limitations for Grande Cheese Company – Chilton WPDES Permit No. WI-0027618-09, by Nicole Krueger, PE, Water Resources Engineer, dated June 20, 2025

Groundwater Evaluation Report for Grande Cheese Company, Chilton WI-0027618, by Woody Myers, Hydrogeologist, dated July 17, 2025

Justification Of Any Waivers From Permit Application Requirements

No waivers requested or granted as part of this permit reissuance

Prepared By: Ashley Clark, Wastewater Specialist

Date: July 22, 2025

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 06/20/2025

TO: Ashley Clark – NER

FROM: Nicole Krueger – SER Nicole Krueger

SUBJECT: Water Quality-Based Effluent Limitations for Grande Cheese Company – Chilton
WPDES Permit No. WI-0027618-09

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 Grande Cheese Company – Chilton in Calumet County. This industrial facility discharges to the unnamed tributary of the South Branch of the Manitowoc River, located in the South Branch Manitowoc River Watershed in the Lakeshore Basin. This discharge is included in the Northeast (NE) Lakeshore Total Maximum Daily Load (TMDL) as approved by EPA on 10/30/2023. 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
BOD_5 Oct – April May – Sept TBEL	 **16 mg/L** **8.2 mg/L** 63 lbs/day		 10 mg/L 5.0 mg/L	 **10 mg/L** **5.0 mg/L** 28 lbs/day		3,4
TSS TBEL TMDL	 **16 mg/L** 80 lbs/day		10 mg/L	**10 mg/L** 40 lbs/day		3,4,5
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		7.0 mg/L				
Ammonia Nitrogen						1,2
Phosphorus Interim/TBEL TMDL				 1.0 mg/L 1.2 lbs/day	 0.39 lbs/day	5,6
Temperature	86 °F					7
Chloride						8
Acute WET						9,10
Chronic WET						9,10
TKN, Nitrate+Nitrite, and Total Nitrogen						11

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. 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.

4. The daily maximum and monthly average BOD_5 and daily maximum TSS mass limits are categorical limits based on ch. NR 240, Wis. Adm. Code, which are addressed in a separate memo.
5. The monthly average TSS and monthly average and six-month average phosphorus mass limits are based on the Total Maximum Daily Load (TMDL) for the Northeast Lakeshore Basin to address phosphorus water quality impairments within the TMDL area. The TMDL was approved by EPA on 10/30/2023.
6. The monthly average limit of 1.0 mg/L shall continue after the TMDL-based limits become effective for antibacksliding purposes in ch. NR 207, Wis. Adm. Code.
7. After a compliance schedule, the following temperature limits based on a WWSF classification are recommended.

Month	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	49	76
FEB	50	76
MAR	52	77
APR	55	79
MAY	65	82
JUN	76	84
JUL	81	85
AUG	81	84
SEP	73	82
OCT	61	80
NOV	49	77
DEC	49	76

8. Monitoring at a frequency to ensure at least 11 samples are available at the next permit issuance.
9. Acute WET testing is recommended at a 2x yearly frequency and the chronic WET testing is recommended at a quarterly frequency. 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%. The primary control water used in chronic WET tests conducted on Outfall 001 shall be a grab sample collected from
10. 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. Testing should continue after the permit expiration date (until the permit is reissued).
11. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, quarterly total nitrogen monitoring is recommended for class A cheese plants. Total Nitrogen is the sum of nitrate (NO_3), nitrite (NO_2), and total kjeldahl nitrogen (TKN) (all expressed as N).

If a satisfactory phosphorus chemical SOP is established and implemented at the facility prior to permit reissuance, then acute WET testing can be reduced to 1x yearly and chronic WET testing can be reduced to 2x yearly.

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 (2) – Narrative & Outfall Map

PREPARED BY: Nicole Krueger, Water Resources Engineer – SER

E-cc: Trevor Moen, Wastewater Engineer – NER
Heidi Schmitt Marquez, Regional Wastewater Supervisor – NER
Diane Figiel, Water Resources Engineer – WY/3
Nate Willis, Wastewater Engineer – WY/3

Attachment #1

Water Quality-Based Effluent Limitations for
Grande Cheese Company – Chilton

WPDES Permit No. WI-0027618-09

Prepared by: Nicole Krueger

PART 1 – BACKGROUND INFORMATION

Facility Description

Grande Cheese Company (formerly Tillamook and Foremost Farms USA) plans to operate the dairy processing plant near Chilton in central Calumet County. Foremost Farms ended operations in July 2020 and sold the facility to Tillamook. Grande Cheese Company then acquired the facility in May 2023 and is planning on processing 1.8 million lbs/day of milk and generating 70 million pounds of cheese per year. The discharge of 0.362 MGD is expected to the existing outfall to the unnamed tributary to the South Branch of the Manitowoc River.

At the upgraded treatment facility, there will be high strength and normal strength equalization tanks. The high strength waste will flow to an enhanced biological phosphorus removal process before being routed to the aeration basin. The normal strength waste will flow to denitrification tank before flow to the aeration basin. Solids are separated by an ultrafiltration. A phosphorus-removal additive will be utilized and precipitated solids will be separated via an additional ultrafiltration membrane. The effluent will be cooled and oxygenated prior to discharge to the outfall.

There is not effluent data available at this time for Grande Cheese because the facility has not started discharging yet. **The existing permit requirements are carried over from Tillamook's and Foremost Farms' permit due to antidegradation and antibacksliding requirements per ch. NR 207, Wis. Adm. Code.** Note: there was not a discharge from the facility during Tillamook's ownership.

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

Existing Permit Limitations

The current permit, which expired on 06/30/2023, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Rolling 12 Month Average	Footnotes
Flow Rate						1
BOD_5	40 mg/L 94 lbs/day			20 mg/L 28 lbs/day		2,3
TSS	40 mg/L 138 lbs/day			20 mg/L 57 lbs/day		2,3
pH	9.0 s.u.	6.0 s.u.				
Dissolved Oxygen		4.0 mg/L				3
Ammonia Nitrogen						1
Phosphorus MDV Interim Limit					1.0 mg/L	
Temperature	86 °F					

Attachment #1

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Rolling 12 Month Average	Footnotes
Chloride						1
WET						5

Footnotes:

1. Monitoring only.
2. The mass limits are categorical limits based on ch. NR 240, Wis. Adm. Code, from previous production information. They are evaluated in a separate memo.
3. These concentration limits are based on the Limited Aquatic Life (LAL) community of the immediate receiving water as described in s. NR 104.02(3)(b), Wis. Adm. Code.
4. 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.
5. The IWC for chronic WET was 86%. Acute and chronic WET testing was required annually.

Receiving Water Information

- Name: Unnamed tributary to the South Branch of the Manitowoc River
- Waterbody Identification Code (WBIC): 3000134
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: The unnamed tributary was historically considered limited aquatic life (LAL) from Outfall 001 downstream 2.5 miles to the South Branch Manitowoc River but is not currently listed as a variance water in ch. NR 104 Wis. Adm. Code. Because of the anticipated effluent flow rate, a fish community is expected to be established in the unnamed tributary, so warmwater sport fish (WWSF) is anticipated to be the correct classification. Therefore, the immediate and downstream waters are classified as Warm Water Sport Fish (WWSF) community, non-public water supply and recreational use. 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 estimates based on the nature of the stream and from USGS for downstream conditions.

  7-Q_{10} = 0 cfs (cubic feet per second)
  7-Q_2 = 0 cfs

  South Branch Manitowoc River (2.5 miles downstream of Outfall 001)
  7-Q_{10} = 0.25 cfs
  7-Q_2 = 1.83 cfs

- Hardness = 369 mg/L as $CaCO_3$. This value represents the geometric mean of data from 01/03/2017 – 01/24/2017 from when Foremost Farms was operating the facility. The hardness for Grande Cheese is expected to be similar.
- % 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: The unnamed tributary (WBIC 3000057) just downstream from the direct discharge location (WBIC 3000134) is 303(d) listed as impaired for TSS.

Effluent Information

- Flow rate(s):
  Expected annual average = 0.362 million gallons per day (MGD)
- Hardness = 416 mg/L as $CaCO_3$. This value represents the geometric mean of data from chronic WET testing from 04/25/2017 – 05/06/2020 from Foremost Farms data.
- 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 supply: 2 private wells.
- Additives: Grande Cheese has included 6 additives in the permit application. These additives are listed below:
  - Neo Water FX300 – phosphorus precipitation
  - Sodium Hydroxide – cleaning membrane and sent to equalization tank
  - Citric Acid – cleaning membrane and sent to equalization tank
  - Nitric Acid – cleaning membrane and sent to equalization tank
  - Sodium Bisulfite – cleaning membrane and sent to equalization tank
  - Sodium Hypochloride – cleaning membrane and sent to equalization tank
  - An additive review is not necessary for any additives where either the toxicity is well documented and understood, can be controlled by a WQBEL, or are not believed to be present in the discharge. Therefore, an additive review is not needed at this time.

PART 2 – BOD_5 and TSS

The current BOD_5 and TSS limits are 40 mg/L as a daily maximum and 20 mg/L as a monthly average limit. These limits are based on an LAL classification. Because the receiving stream will likely be verified as WWSF after discharge from Grande Cheese starts, BOD_5 and TSS limits are calculated based on this classification.

WWSF classification

In establishing BOD_5 (Biochemical Oxygen Demand) limitations, the primary intent is to prevent a lowering of dissolved oxygen levels in the receiving water below water quality standards as specified in ss. NR 102.04(4)(a) and (b). The 26-lb method is the most frequently used approach for calculating BOD_5 limits when resources are not available to develop a detailed water quality model. This simplified model was developed in the 1970's by the Wisconsin Committee on Water Pollution on the Fox, Wisconsin, Oconto, and Flambeau Rivers. Further studies throughout the 1970's proved this model to be relatively accurate. The model has since then been used by the Department on many occasions when resources are not available to perform a site-specific model. The "26" value stems from the following equation:

$$\frac{26\ {}^{\text{lbs}}/_{\text{day}}}{{}^{\text{ft}^3}/_{\text{sec}}} * \frac{1\,\text{day}}{86{,}400\,\text{sec}} * \frac{454{,}000\,\text{mg}}{\text{lbs}} * \frac{1\,\text{ft}^3}{28.32\,\text{L}} = 4.8 = 2.4 * 2\ {}^{\text{mg}}/_{\text{L}}$$

The 4.8 has been calculated by taking 2.4 which is the number one receives when converting 26 lbs of BOD/day/cfs into mg/L, multiplied by 2.0 which is the change in the DO level. A typical background DO level for Wisconsin waters is 7 mg/L, so a 2 mg/L decrease is allowed in order to meet the 5 mg/L standard for warm water streams. The above relationship is temperature dependent and an appropriate temperature correction factor is applied. The 26-lb method is based on a typical 24°C summer value for warm water streams. Adjustments for temperature are made using the following equation:

$$k_t = k_{24}\left(0.967^{(T-24)}\right)$$

Where k_{24} = 26 lbs of BOD/day/cfs

Calculations based on Full Assimilative Capacity at 7Q10 Conditions:

$$Limitation(mg/L) = 2.4\left(DO_{stream} - DO_{std}\right)\left(\frac{\left({}_7Q_{10} + Q_{eff}\right)}{Q_{eff}}\right)\left(0.967^{(T-24)}\right)$$

Where:
Q_{eff} = effluent design flow = 0.362 MGD
DO_{stream} = background dissolved oxygen = 7 mg/L
DO_{std} = dissolved oxygen criteria from s. NR 102.04(4) = 5.0 mg/L
${}_7Q_{10}$ = 0 cfs
T = Receiving water temperature from s. NR 102.25

Because no dilution is available in the receiving water, the calculated limits would be the lowest that the Department typically gives to facilities. **The recommended effluent limitations are 5.0 mg/L as a weekly average from May through October and 10 mg/L November through April** (rounded to two significant digits). Given that these limitations are the lowest that the Department would typically give to a facility, these limitations shall be considered at those needed to prevent significant lowering of water quality. **As there is little or no dilution available under low flow conditions a dissolved oxygen limit of 7.0 mg/L as a daily minimum is also recommended.**

The TSS limitations are primarily given to maintain or improve water clarity and are not water quality based. However, the Department typically does not require TSS limits lower than 10 mg/L. **Therefore, the weekly and monthly average limits for TSS are recommended to be 10 mg/L.**

Expression of limits requirements
Sections NR 106.07(4) and NR 205.067(7), Wis. Adm. Code require WPDES permits contain daily maximum and monthly average limitations for industrial dischargers whenever practicable and necessary to protect water quality.

1. Whenever a weekly average limitation is determined necessary to protect water quality:
    - A daily maximum limitation shall also be included calculated using the following procedure:

      Daily Maximum Limitation= WQBELc × DMF

      Where:
      DMF = Daily Multiplication Factor as defined in Table 2
      CV = coefficient of variation (CV) as calculated in s. NR 106.07(5m), Wis. Adm. Code.

s. NR 106.07 (4) (e). Table 2 — Daily Multiplication Factor

CV	0.1	0.2	0.3	0.4	0.5	**0.6**	0.7	0.8	0.9	1.0
DMF	1.114	1.235	1.359	1.460	1.557	**1.639**	1.712	1.764	1.802	1.828

Attachment #1

Recommended BOD_5 and TSS Limits

Parameter	Daily Maximum	Weekly Average	Monthly Average	Multiplication Factor (CV)
BOD_5				
Oct – April	**16 mg/L**	10 mg/L	10 mg/L	1.639 (0.6)
May – Sept	**8.2 mg/L**	5.0 mg/L	5.0 mg/L	1.639 (0.6)
TSS	**16 mg/L**	10 mg/L	10 mg/L	1.639 (0.6)

See Part 6 for additional TMDL-based TSS limits and the separate TBEL memo for BOD_5 and TSS TBEL-based limits.

PART 3 – 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.

In this case, limits calculated based on the mass balance equation are more restrictive and this method is used to calculate the daily maximum limits shown in the table below.

The following tables list the calculated WQBELs for this discharge. 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 cfs

SUBSTANCE	REF. HARD.* mg/L	ATC	MAX. EFFL. LIMIT**
Arsenic		340	340
Cadmium	369	46	46
Chromium	301	4446	4446
Copper	369	53.2	53.2
Lead	356	365	365
Nickel	268	1080	1080
Zinc	333	345	345
Chloride (mg/L)		757	757

* 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.

* * 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 cfs

SUBSTANCE	REF. HARD.* mg/L	CTC	WEEKLY AVE. LIMIT
Arsenic		152	152
Cadmium	175	3.82	3.82
Chromium	301	326	326
Copper	369	31.6	31.6
Lead	356	95.5	95.5
Nickel	268	120	120
Zinc	333	345	345
Chloride (mg/L)		395	395

* 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)
RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	WC	MO'LY AVE. LIMIT
Mercury (ng/L)	1.3	1.3

Monthly Average Limits based on Human Threshold Criteria (HTC)
RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	HTC	MO'LY AVE. LIMIT
Cadmium	370	370
Chromium (+3)	3818000	3818000
Lead	140	140
Nickel	43000	43000

Monthly Average Limits based on Human Cancer Criteria (HCC)
RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	HCC	MO'LY AVE. LIMIT
Arsenic	13	13

Conclusions and Recommendations
Limits and/or monitoring recommendations are made in the paragraphs below:

Chloride – **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.**

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code. Based on the type of discharge, **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 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. Given the fact that Grande Cheese does not currently have ammonia nitrogen limits, the need for limits is evaluated at this time.

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

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

Where:

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

The WQBEL memo from August 2017 used a maximum effluent pH of 8.3 s.u. for Foremost Farms. It is assumed the effluent for Grande Cheese be similar. Using a pH of 8.3 s.u., the calculated ATC is 4.7 s.u..

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	9.4
1-Q_{10}	4.7

Weekly and Monthly Average Limits based on Chronic Toxicity Criteria (CTC)
Weekly average and monthly average limits for ammonia nitrogen are based on chronic toxicity criteria in ch. NR 105, Wis. Adm. Code.

The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified as a Warm Water Sport Fish Community is calculated by the following equation, according to subchapter IV of NR 106, Wis. Adm. Code.

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

Where:

pH = the pH (s.u.) 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)

The 4-day criterion is equal to the 30-day criterion multiplied by 2.5. The 4-day criteria are used in a mass-balance equation with the 7-Q_{10} (4-Q_3, if available) to derive weekly average limitations. And the 30-day criteria are used with the 30-Q_5 (estimated as 85% of the 7-Q_2 if the 30-Q_5 is not available) to derive monthly average limitations. The stream flow value is further adjusted to temperature; 100% of the flow is used if the Temperature ≥ 16 ºC, 25% of the flow is used if the Temperature < 11 ºC, and 50% of the flow is used if the Temperature ≥ 11 ºC but < 16 ºC.

Section NR 106.32 (3), Wis. Adm. Code, provides a mechanism for less stringent weekly average and monthly average effluent limitations when early life stages (ELS) of critical organisms are absent from the receiving water. This applies only when the water temperature is less than 14.5 ºC, during the winter and spring months. Burbot, an early spawning species, are not believed to be present in the unnamed tributary, based on raw fish data in the Fisheries Management Information System. So "ELS Absent" criteria apply from October through March, and "ELS Present" criteria will apply from April through September for a WWSF classification.

The "default" basin assumed values are used for Temperature, pH and background ammonia concentrations, because minimum ambient data is available. These values are shown in the table below, with the resulting criteria and effluent limitations.

Weekly and Monthly Ammonia Nitrogen Limits – WWSF

		Spring	Summer	Winter
		April & May	June – Sept.	Oct. - March
Effluent Flow	Qe (MGD)	0.362	0.362	0.362
Background Information	7-Q_{10} (cfs)	0.25	0.25	0.25
	7-Q_2 (cfs)	1.83	1.83	1.83
	Ammonia (mg/L)	0.04	0.05	0.105
	Average Temperature (°C)	12	19	4
	Maximum Temperature (°C)	14	21	10
	pH (s.u.)	8.06	8.08	7.99
	% of Flow used	50	100	25
	Reference Weekly Flow (cfs)	0.0	0.0	0.0
	Reference Monthly Flow (cfs)	0.0	0.0	0.0
Criteria mg/L	4-day Chronic			
	Early Life Stages Present	5.5	3.7	
	Early Life Stages Absent			8.2
	30-day Chronic			
	Early Life Stages Present	2.2	1.5	
	Early Life Stages Absent			3.3
Effluent Limitations mg/L	Weekly Average			
	Early Life Stages Present	5.5	3.7	
	Early Life Stages Absent			8.2
	Monthly Average			
	Early Life Stages Present	2.2	1.5	
	Early Life Stages Absent			3.3

Conclusions and Recommendations

There is not ammonia data available for Grande Cheese, so reasonable potential cannot be determined at this time. Based on previous data from Foremost Farms, the maximum reported effluent data from the last permit was 1.7 mg/L and the average was 0.32 mg/L. Assuming the effluent ammonia for Grande Cheese will be lower than Foremost Farms due to the wastewater treatment plant upgrade, there likely won't be reasonable potential for ammonia limits. **It's recommended that monitoring be included in the reissued permit to determine reasonable potential in the next issuance.**

PART 5 – PHOSPHORUS

Technology-Based Effluent Limit (TBEL)
Subchapter II of Chapter NR 217, Wis. Adm. Code, requires industrial facilities that discharge greater than 60 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 Grande Cheese currently has a 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.

Northeast Lakeshore TMDL
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 K of the *Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids in the Northeast Lakeshore Region* report are expressed as maximum annual loads (lbs/year). **Because Grande Cheese purchased the facility from Tillamook, the WLAs that were assigned to Tillamook are the ones assigned to Grande Cheese.**

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 Northeast Lakeshore Basin 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:

$$\text{TP Equivalent Effluent Concentration} = \text{WLA} \div (365\ \text{days/yr} * \text{Flow Rate} * \text{Conversion Factor})$$
$$= 123\ \text{lbs/yr} \div (365\ \text{days/yr} * 0.362\ \text{MGD} * 8.34)$$
$$= 0.11\ \text{mg/L}$$

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.

$$\text{TP 6-Month Average Permit Limit} = \text{WLA} \div 365\ \text{days/yr} * \text{multiplier}$$
$$= (123\ \text{lbs/yr} \div 365\ \text{days/yr}) * 1.17$$
$$= 0.39\ \text{lbs/day}$$

$$\text{TP Monthly Average Permit Limit} = \text{TP 6-Month Average Permit Limit} * 3$$
$$= 0.39\ \text{lbs/day} * 3$$
$$= 1.2\ \text{lbs/day}$$

The multiplier used in the six-month average calculation was determined according to the implementation guidance. Because there is not data available from Grande Cheese, the default 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 3/week and this is recommended to remain the same; 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 a concentration of 0.13 mg/L and 0.39 mg/L, respectively, at the facility design flow of 0.362 MGD.

The TMDL establishes TP wasteload allocations to reduce the loading in the entire watershed including WLAs to meet water quality standards for tributaries in the Northeast Lakeshore Basin. 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.

Interim Limit
Grande Cheese has designed the new treatment facility to be able to meet the TMDL-based limits. However, a compliance schedule may be included if additional optimization is needed after discharge commences. If a compliance schedule is included in the permit, an interim limit will be needed. It's recommended that the current monthly average limit of 1.0 mg/L continue as the interim limit. This should continue after the TMDL limits become effective as well to meet antibacksliding requirements in ch. NR 207, Wis. Adm. Code.

PART 6 – TOTAL SUSPENDED SOLIDS

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 Northeast Lakeshore Region* report are expressed as maximum annual loads (lbs/year). **Because Grande Cheese purchased the facility from Tillamook, the WLAs that were assigned to Tillamook are the ones assigned to Grande Cheese.**

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.

Grande Cheese is an industrial facility and is therefore subject to daily maximum and monthly average TSS limits derived from TSS annual WLAs.

TSS Monthly Average Permit Limit = WLA ÷ 365 days/yr * multiplier
= (9,828 lbs/yr ÷ 365 days/yr) * 1.47
= 40 lbs/day

TSS Daily Maximum Permit Limit = WLA ÷ 365 days/yr * daily multiplier

= (9,828 lbs/yr ÷ 365 days/yr) * 3.11
= 84 lbs/day

The multiplier used in the weekly average and monthly average calculation was determined according to implementation guidance. Because there is not data available from Grande Cheese, the default 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 3/week; if a different monitoring frequency is used, the stated limits should be reevaluated.

Daily maximum and monthly average mass effluent limits are recommended for this discharge. The limits are equivalent to a concentration of 28 mg/L and 13 mg/L, respectively, at the facility design flow of 0.362 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.

It's expected that the new wastewater treatment facility will be able to meet these mass limits upon initial discharge, so no compliance schedule is recommended for TSS.

TBELs will be calculated based on production information. Those mass limits may differ from the limits in this memo. The more stringent calculated limits will be recommended.

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), Wis. Adm. Code, the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s. NR 106.53(2)(c), Wis. Adm. Code, the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation.

Monthly Temperature Effluent Data & Limits

Month	Calculated Effluent Limit	
	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	49	76

Attachment #1

Month	Calculated Effluent Limit	
	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
FEB	50	76
MAR	52	77
APR	55	79
MAY	65	82
JUN	76	84
JUL	81	85
AUG	81	84
SEP	73	82
OCT	61	80
NOV	49	77
DEC	49	76

In accordance with s. NR 106.56(12), Wis. Adm. Code, when representative effluent temperature data is not available at the time of permit reissuance, **the proposed permit shall include effluent temperature monitoring (for at least one year), WQBELs for temperature, and a compliance schedule to meet the temperature limits based on the WWSF classification.**

The current permit has a daily maximum limit of 86 °F based on the previous LAL classification which shall be effective upon permit reissuance per antibacksliding requirements in ch. NR 207, Wis. Adm. Code.

PART 7 – WHOLE EFFLUENT TOXICITY (WET)

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

- 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 LC_{50} (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:

$$IWC\ (as\ \%) = Q_e \div \{(1 - f)\ Q_e + Q_s\} \times 100$$

Where:

Q_e = annual average flow = 0.362 MGD = 0.560 cfs
f = fraction of the Q_e withdrawn from the receiving water = 0
Q_s = ¼ of the 7-Q_{10} = 0 cfs ÷ 4 = 0 cfs

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), 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.
- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), 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.

Grande Cheese does not have any available WET data to determine reasonable potential for limits at this time.

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.

WET Checklist Summary

	Acute	Chronic
AMZ/IWC	Not Applicable. **0 Points**	IWC = 100%. **15 Points**
Historical Data	0 tests used to calculate RP. **5 Points**	0 tests used to calculate RP. **5 Points**
Effluent Variability	No available data **0 Points**	Same as Acute. **0 Points**
Receiving Water Classification	WWSF **5 Points**	Same as Acute. **5 Points**
Chemical-Specific	No available data	No available data

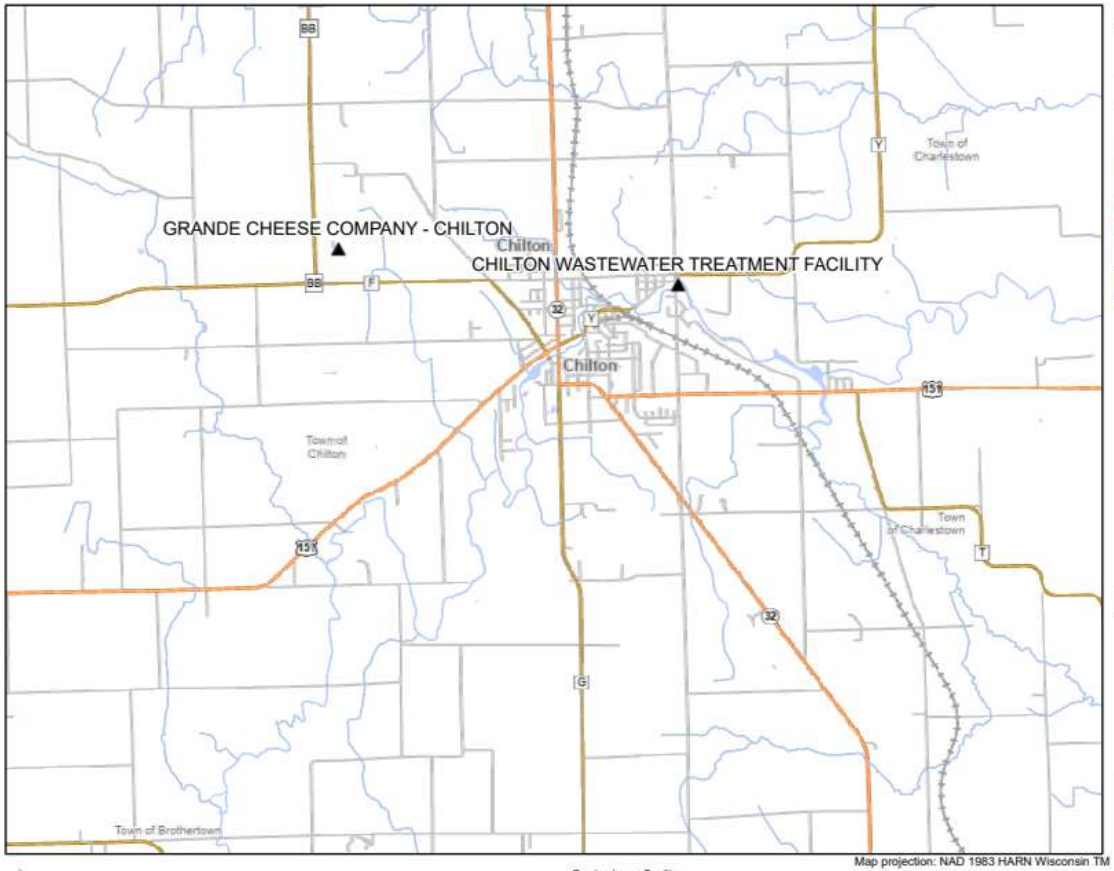
Attachment #1

	Acute	Chronic
Data	**0 Points**	**0 Points**
Additives	1 Biocide and 5 Water Quality Conditioners added. Permittee does not have proper P chemical SOPs in place. **23 Points**	One additive is used more than once per 4 days. **23 Points**
Discharge Category	Dairy industry **20 Points**	Same as Acute. **20 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:	**53 Points**	**68 Points**
Recommended Monitoring Frequency (from Checklist):	2x yearly	Quarterly
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, 2x yearly acute and quarterly 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. Testing should continue after the permit expiration date (until the permit is reissued).
- If a satisfactory phosphorus chemical SOP is established and implemented at the facility prior to permit reissuance, **then acute WET testing can be reduced to 1x yearly and chronic WET testing can be reduced to 2x yearly.**

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Grande Cheese Outfall



Legend: (some map layers may not be displayed)

- Surface Water Outfalls
- 24K Streams and Rivers
- Rivers and Streams
- Intermittent Streams
- Open Water

Latest Leaf Off Imagery

- Red: Band_1
- Green: Band_2
- Blue: Band_3

Notes:

Map projection: NAD 1983 HARN Wisconsin TM

N

Map: 0 5,000 10,000 Feet
0 1,000 2,000 Meters

Service Layer Credits:
Latest Leaf Off Imagery: , Basic Basemap (Cached):

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Date Printed: 5/23/2025 3:00 PM

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 06/20/2025

TO: Ashley Clark – NER

FROM: Nicole Krueger – SER Nicole Krueger

SUBJECT: Technology-Based Effluent Limitations for Grande Cheese Company – Chilton
WPDES Permit No. WI-0027618-09

Technology-Based Effluent Limitations (TBELs) Recommended for Outfall 001:

Parameter	Daily Maximum	Daily Minimum	Monthly Average
BOD_5, Total	63 lbs/day		28 lbs/day
TSS	80 lbs/day		40 lbs/day
pH	9.0 su	6.0 su	

PART 1 – BACKGROUND INFORMATION

Grande Cheese Company (formerly Tillamook and Foremost Farms USA) plans to operate the dairy processing plant near Chilton in central Calumet County. Grande Cheese Company acquired the facility in May 2023 and is planning to process 1.8 million lbs/day of milk and generating 70 million pounds of cheese per year.

PART 2 – INDUSTRIAL CATEGORIES

Chapter NR 240, Wis. Adm. Code, specifies effluent guidelines for discharges from dairy product categories of point sources and subcategories. Grande Cheese would fall under the "Natural and Processed Cheese" and "Condensed Whey" subcategories as defined in s. NR 240.02, Wis. Adm. Code. These guidelines are based on federal effluent guidelines in 40 CFR Part 405 Subparts F and K. The permittee must meet the applicable effluent limit guidelines as described in this chapter. These effluent limit guidelines include:

- Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT) in s. NR 240.10, Wis. Adm. Code.
- Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT) in s. NR 240.11, Wis. Adm. Code.
- If determined to be a new source, new source performance standards (NSPS) in s. NR 240.12, Wis. Adm. Code.

If the calculated limits are less than or equal to the limits in the current permit, then the limits would be set equal to the recalculated limits. If the recalculated limits are less restrictive than the limits from the current permit, they cannot be increased unless the the antidegradation and anti-backsliding provisions of ch. NR 207, Wis. Adm. Code, are met.

Section NR 220.13, Wis. Adm. Code, includes provisions that address cases where federal and state rule differ. Section 283.11, Wis. Stats., address compliance with federal standards. In this case, the state rules are consistent with federal rules with a few exceptions. In such cases, the permit will in all cases be based on the state rule notwithstanding the federal regulations. The omissions are described below.

- The state or federal rules do not specify a date for the definition for a new source. Therefore, it is necessary to review available federal guidance. The Boornazian memo (September 28, 2006) specifies a new source date for 40 CFR Part 405 Subparts A – L of May 28, 1974. The Department relies on the Boornazian memo to establish date of applicability for NSPS.
- State rules incorrectly list best available treatment (BAT) standards for BOD, TSS, and pH. BAT applies to priority pollutants and nonconventional pollutants and does not apply to BOD, TSS or pH.
- The federal standard rule lists revised BCT standards requirements. All BCT limitations are set to be the same as the best practicable control technology (BPT) standards. State rules in ch. NR 240, Wis. Adm. Code, do not list standards for BCT.

PART 3 – LEVELS OF CONTROL

Grande Cheese has cheese and whey processes which construction commenced after May 28, 1974. Therefore, the process wastewater from these lines is subject to BPT, BCT, BAT and NSPS standards for the "Natural and Processed Cheese" and "Condensed Whey" subcategories are applicable as specified in 40 CFR Part 405 Subparts F and K and ch. NR 240.12, Wis. Adm. Code.

PART 4 – CURRENT PRODUCTION LEVELS

The current levels of production for each Subcategory are provided by Grand Cheese – Chilton.

Natural and Processed Cheese

Process	Material Used (lbs/day)
Cheese Production	1,810,010

Condensed Whey

Process	Material Used (lbs/day)
Whey Separator	1,602,859
Whey Nanofiltration System	1,594,845

PART 5 – BOD INPUT

The BOD_5 input is the 5-day biochemical oxygen demand of raw materials that enter the process. The current production levels in Part 4 are converted to BOD input equivalents by multiplying the amount of raw material by BOD factors specified in s. NR 240.03(1) or s. NR 240.07 Wis. Adm. Code and 40 CFR Part 405.

Natural and Processed Cheese

Process	Material Used (lbs/day)	BOD Factor[1] (lbs/100 lbs)	Adjusted Total BOD Input[2] (lbs/day)
Milk Intake	1,810,010	10.39	188,060
Total			**188,060**

Condensed Whey

Process	Material Used (lbs/day)	BOD Factor[1] (lbs/100 lbs)	Adjusted Total BOD Input[2] (lbs/day)
Whey Separator	1,602,859	4.72	75,655

Process	Material Used (lbs/day)	BOD Factor[1] (lbs/100 lbs)	Adjusted Total BOD Input[2] (lbs/day)
Whey NF System	1,594,845	4.72	75,277
Total			**150,932**

Footnotes:
1. The BOD Factors are listed in ch. NR 240.07 Wis. Adm. Code, Table 1 for generally accepted published values for protein, fat, and carbohydrate content.
2. Adjusted Total BOD input = BOD input * BOD factor / 100

PART 6 – TBEL CALCULATIONS FOR NATURAL AND PROCESSED CHEESE

pH
Any discharge subject to BPT, BCT, or NSPS limitations or standards in this part must remain within the pH range of 6.0 to 9.0.

New Source Performance Standards (NSPS)
The cheese production commenced construction after May 28th, 1974. Therefore, the NSPS limitations of 40 CFR Part 405.65 would apply.

Total BOD Input (lbs/day)	NSPS Effluent Limitations				Calculated Limits			
	BOD (lbs/1,000 lbs)		TSS (lbs/1,000 lbs)		BOD (lbs/day)[1]		TSS (lbs/day)[1]	
	Avg	Max	Avg	Max	Avg	Max	Avg	Max
188,060	0.08	0.16	0.10	0.20	15	30	19	38

Footnotes:
1. The limits (lbs/day) = total BOD input (lbs/day) / 1000 * NSPS limitations

PART 7 – TBEL CALCULATIONS FOR WHEY

pH
Any discharge subject to BPT, BCT, or NSPS limitations or standards in this part must remain within the pH range of 6.0 to 9.0.

New Source Performance Standards (NSPS)
The whey processing commenced construction after May 28th, 1974. Therefore, the NSPS limitations of 40 CFR Part 405.115 would apply.

Total BOD Input (lbs/day)	NSPS Effluent Limitations				Calculated Limits			
	BOD (lbs/1,000 lbs)		TSS (lbs/1,000 lbs)		BOD (lbs/day)[1]		TSS (lbs/day)[1]	
	Avg	Max	Avg	Max	Avg	Max	Avg	Max
150,932	0.11	0.22	0.14	0.28	17	33	21	42

Footnotes:
1. The limits (lbs/day) = total BOD input (lbs/day) / 1000 * NSPS limitations

PART 8 – FINAL CALCULATED LIMITS

Per s. NR 240.06(4) Wis. Adm. Code, the total discharge limits shall be the total of the amounts calculated from the BOD input in each of the final product subcategories and all of the other subcategories with intermediate products in Parts 6 and 7 of this memo, shown below.

Subcategory	**Monthly average BOD (lbs/day)**	**Daily maximum BOD (lbs/day)**	**Monthly average TSS (lbs/day)**	**Daily maximum TSS (lbs/day)**
Natural and Processed Cheese	15	30	19	38
Condensed Whey	17	33	21	42
Total	**32**	**63**	**40**	**80**

Final Calculated Effluent Limitations			
Parameter & Units	**Daily Maximum**	**Daily Minimum**	**Monthly Average**
BOD_5	63 lbs/day		32 lbs/day
TSS	80 lbs/day		40 lbs/day
pH	9.0 su	6.0 su	

The Department has determined that calculated limits for the monthly average BOD_5 is greater than the limits calculated in the previous permit of 28 lbs/day. Therefore, the monthly average limit for BOD_5 must remain the same as in the current permit. If Grande Cheese would like to request an increase to the existing permit limits, an assessment of their effluent data consistent with the requirements of ss. NR 207.04(1)(a) and (c), Wis. Adm. Code, must be provided. This evaluation is on a parameter by parameter basis and includes consideration of operations, maintenance and temporary upsets. Without a demonstration of need for a higher limit in accordance with s. NR 207.04, Wis. Adm. Code, the current limits shall be continued in the reissued permit.

The calculated daily maximum BOD_5 and TSS limits are more stringent than the ones in the current permit so these are recommended to be in the reissued permit. The calculated monthly average TMDL-based effluent limit for TSS is equivalent to the calculated monthy average TBEL.

The daily maximum and monthly average concentration limits in the final WQBEL memo are also recommended to be included in the reissued permit along with the mass concentrations that are recommended in this TBEL memo.