

# Permit Fact Sheet

## General Information

Permit Number:	WI-0052761-10-0
Permittee Name:	Pine River Dairy Inc
Address:	10115 English Lake Rd
City/State/Zip:	Manitowoc WI 54220
Discharge Location:	T18N R23E Section 7 NW ¼ NW ¼
Receiving Water:	Groundwater of the Seven Mile & Silver Creek Watershed (MA01) via absorption ponds and a ridge & furrow system in Manitowoc County
Discharge Type:	Existing; Continuous

## Facility Description

Pine River Dairy is a creamery that processes whole cream into butter. Production of butter averages approximately 13,000 pounds per day. Buttermilk is a by-product of the butter manufacturing process and is sold to other facilities for processing into other related food products. The facility generates three types of wastewater: noncontact cooling water, process wastewater from cleaning processes, and boiler blowdown. Noncontact cooling water discharges to a series of two absorption ponds at an average rate of 14,100 gallons per day (gpd). Process and boiler blowdown wastewaters discharge to a 1.9-acre ridge & furrow land treatment system at an average rate of 2,788 gpd. The ridge & furrow system is comprised of two parallel cells that allow for an alternating load and rest cycle mode of operation. Sanitary wastes are discharged to a separate septic system that utilizes a subsurface soil absorption drain field, which is not regulated under this permit.

## Substantial Compliance Determination

**Enforcement During Last Permit:** There were no formal enforcement actions taken during the previous permit term.

After a desk top review of all discharge monitoring reports, land treatment annual reports, compliance schedule items, and a site visit on 7/25/23, this facility has been found to be in substantial compliance with their current permit.

**Compliance determination entered by Trevor Moen, Wastewater Engineer, on July 25, 2023.**

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
001	Avg. 14,100 gpd (1/1/19–12/31/23)	Discharge from Sample Point 001 shall be limited to noncontact cooling water. At Sampling Point 001, the permittee shall collect representative grab samples of the noncontact cooling water from the outfall pipe prior to being discharged to the absorption pond system via Outfall 001. The permittee shall estimate the noncontact cooling water flow rate to the absorption pond system based on the water meter on the water supply wells that supply water to the noncontact cooling water system.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
002	Avg. 2,788 gpd (1/1/19–12/31/23)	Discharge from Sample Point 002 shall be limited to process wastewater and boiler blowdown. At Sampling Point 002, the permittee shall collect representative grab samples for chloride, total Kjeldahl nitrogen, and total nitrite+nitrate nitrogen of the combined discharge of process wastewater and boiler blowdown from the outfall pipe prior to being discharged to the ridge and furrow system via Outfall 002. The permittee shall estimate the combined discharge flow rate of process wastewater and boiler blowdown to the ridge and furrow system based on the water meter on the water supply wells that supply water to the butter making process and the boiler system, until June 30, 2026. Starting on July 1, 2026, the permittee shall measure the combined discharge flow rate of process wastewater and boiler blowdown using a continuous flow recording device prior to being discharged to the ridge and furrow system.

## 1 Land Treatment – Monitoring and Limitations

### Sample Point Number: 001- NCCW TO ABSORPTION PONDS

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate	Monthly Avg - LT	24,000 gpd	Monthly	Monthly Avg	

#### Changes from Previous Permit:

No changes from the previous permit.

#### Explanation of Limits and Monitoring Requirements

Requirements for land treatment of industrial wastewater are determined in accordance with ch. NR 214, Wis. Adm. Code. Refer to the “Pine River Dairy, Inc. - Groundwater Evaluation Report, WPDES Permit # WI-0052761”, by Woody Myers, Hydrogeologist, dated March 8, 2024, for additional information regarding monitoring requirements.

## Sample Point Number: 002- PROCESS WATER TO RIDGE/FURROW

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		gpd	Monthly	Monthly Avg	The Flow Rate sample type shall be reported as a "Monthly Avg" until June 30, 2026. See also the Install Continuous Flow Recording Device Schedule.
Flow Rate		gpd	Daily	Continuous	The Flow Rate sample type shall be reported as "Continuous" starting July 1, 2026. See also the Install Continuous Flow Recording Device Schedule.
Hydraulic Application Rate	Monthly Avg	3,500 gal/ac/day	Monthly	Calculated	
Chloride		mg/L	Quarterly	Grab	
Nitrogen, Total Kjeldahl		mg/L	Quarterly	Grab	
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	Grab	
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.
Nitrogen, Max Applied On Any Zone	Annual Total	300 lbs/ac/yr	Annual	Calculated	Nitrogen Max Applied to Any Zone shall be based on Total Nitrogen.

### Changes from Previous Permit:

- Flow rate sample type is changing from monthly avg to continuous during the proposed permit term. The flow rate shall be reported as a monthly average until June 30, 2026. Starting on July 1, 2026, the flow rate shall be reported as continuous using a continuous flow recording device. See the "Install Continuous Flow Recording Device" Schedule for more information.
- Addition of nitrite + nitrate nitrogen monitoring and total nitrogen monitoring (calculated value).
- The nitrogen max applied to any zone shall be calculated based on total nitrogen. Previously, this value had been calculated using TKN but that is no longer appropriate.

## Explanation of Limits and Monitoring Requirements

Requirements for land treatment of industrial wastewater are determined in accordance with ch. NR 214, Wis. Adm. Code. Refer to the “Pine River Dairy, Inc. - Groundwater Evaluation Report, WPDES Permit # WI-0052761”, by Woody Myers, Hydrogeologist, dated March 8, 2024, for additional information regarding monitoring requirements.

## 2 Schedules

### 2.1 Land Treatment Management Plan

A management plan is required for the land treatment system.

Required Action	Due Date
<b>Land Treatment Management Plan:</b> Submit an update to the management plan to optimize the land treatment system performance and demonstrate compliance with Wisconsin Administrative Code NR 214.	09/30/2024

### 2.2 Land Treatment Annual Report

Required Action	Due Date
<b>Submit Annual Land Treatment Report #1:</b> Submit the Annual Land Treatment Report by January 31st for the previous calendar year.	01/31/2025
<b>Submit Annual Land Treatment Report #2:</b> Submit the Annual Land Treatment Report by January 31st for the previous calendar year.	01/31/2026
<b>Submit Annual Land Treatment Report #3:</b> Submit the Annual Land Treatment Report by January 31st for the previous calendar year.	01/31/2027
<b>Submit Annual Land Treatment Report #4:</b> Submit the Annual Land Treatment Report by January 31st for the previous calendar year.	01/31/2028
<b>Submit Annual Land Treatment Report #5:</b> Submit the Annual Land Treatment Report by January 31st for the previous calendar year.	01/31/2029
<b>Submit Annual Land Treatment Report After Permit Expiration:</b> In the event that this permit is not reissued prior to the expiration date, the permittee shall continue to submit Annual Land Treatment Reports to the Department by January 31st each year.	

### 2.3 Install Continuous Flow Recording Device

The permittee shall install a continuous flow recording device for the process wastewater discharged to the Ridge & Furrow System at Sampling Point (Outfall) 002 in accordance with the following schedule.

Required Action	Due Date
<b>Plans and Specifications:</b> Submit plans and specifications per ch. NR 108, Wis. Adm. Code, for installing a continuous flow recording device for the process wastewater discharged to the R&F System at Sampling Point (Outfall) 002.	06/30/2025
<b>Complete Install:</b> The permittee shall complete installation of the continuous flow recording device for the process wastewater discharged to the R&F System at Sampling Point (Outfall) 002.	06/30/2026

## **Explanation of Schedules**

**Land Treatment Management Plan** – An updated management plan is required to demonstrate compliance with s. NR 214.13(5)(e), Wis. Adm. Code.

**Land Treatment Annual Report** – Annual Land Treatment Report submittals are required by January 31st each year to demonstrate compliance with s. NR 214.13(3)(a) through (c), Wis. Adm. Code.

**Install Continuous Flow Recording Device** – Section NR 214.13(4)(a), Wis. Adm. Code, requires that the discharge to each cell of the ridge and furrow system shall be monitored for total daily flow. Additionally, s. NR 218.05(1), Wis. Adm. Code, requires that process wastes be measured with a continuous recording device. Therefore, this schedule is included for the facility to install a continuous flow recording device for the process wastewater discharge to the R&F System at Outfall 002. Installation of a continuous flow recording device is a reviewable project per ch. NR 108, Wis. Adm. Code, therefore, a plans and specifications submittal requirement is included in this schedule.

## **Attachments:**

NR140 GW Eval: Pine River Dairy, Inc. - Groundwater Evaluation Report, WPDES Permit # WI-0052761, by Woody Myers, Hydrogeologist, dated March 8, 2024

## **Expiration Date:**

June 30, 2029

## **Justification Of Any Waivers From Permit Application Requirements:**

No waivers from permit application requirements.

**Prepared By:** Sarah Donoughe, Wastewater Specialist-Adv

**Date:** April 26, 2024

**Notice of reissuance is published in the Herald Times Report, 902 Franklin Street, Manitowoc, WI 54220.**

DATE: March 8, 2024

FILE REF: 5231

TO: File

FROM: Woody Myers - WCR 

SUBJECT: Pine River Dairy, Inc. - Groundwater Evaluation Report, WPDES Permit # WI-0052761

**Site Information**

Pine River Dairy is an industrial dairy facility producing butter located at 10115 English Lake Road, Manitowoc, Manitowoc County. Wastewater is currently discharged to groundwater via infiltration by way of an absorption pond (seepage cell) for the non-contact cooling water and a ridge and furrow (R&F) for the process wastewater. These systems are located in the NW ¼ of the NW ¼ of Section 7, T18N, R23E, Town of Newton.

**Land Disposal Effluent & Groundwater Evaluation Summary**

**Table 1 Land Treatment Effluent Parameters and Limits  
Outfall 001 Absorption Pond**

Parameter	Current Permit WI-0052761-09		Proposed Permit WI-0052761-10	
	Limits and Units	Limit Type	Limits and Units	Limit Type
Flow Rate	24,000 gpd	Monthly Avg-LT	24,000 gpd	Monthly Avg-LT

No proposed permit changes

**Table 2 Land Treatment Effluent Parameters and Limits  
Outfall 002 Ridge & Furrow**

Parameter	Current Permit WI--0052761-09		Proposed Permit WI--0052761-10	
	Limits and Units	Limit Type	Limits and Units	Limit Type
Flow Rate	- gpd		- gpd	
Hydraulic Application Rate	3,500 gal/ac/day	Monthly Avg	3,500 gal/ac/day	Monthly Avg
Chloride	- mg/l		mg/l	
Nitrogen, Total Kjeldahl	- mg/l		mg/l	
*Nitrogen, Nitrite + Nitrate Total	Not Required		mg/L	
*Nitrogen, Total	Not Required		mg/L	
Nitrogen, Max Applied to Any Zone	300 lbs/ac/yr	Annual Total	300 lbs/ac/yr	Annual Total

\*proposed permit changes

The Nitrogen Max Applied to any Zone was previously reported as total Kjeldahl nitrogen. The department is requiring that the Nitrogen Max Applied to any Zone be based on total nitrogen. Total nitrogen is calculated based on the sum of nitrate + nitrite nitrogen and total Kjeldahl nitrogen.

## Geology

The bedrock under this facility is comprised of the undivided Cayugan, Niagaran and Alexandrian Series. These series are comprised of dolomitic sedimentary rock (*Bedrock Geologic Map of Wisconsin*, Wisconsin Geological and Natural History Survey (WGNHS), 1982). Bedrock is anticipated to be between 100 and 200 feet below ground surface (bgs) (*Depth to Bedrock in Wisconsin*, WGNHS, 1973). Surface soil consists of the Symco silt loam (USDA NRCS Web Soil Survey).

## Hydrogeology

Regional groundwater is anticipated to be to the east-southeast in this area of Manitowoc County (*Mean Elevation of Water Table*, Map, United States Department of Interior, 1968). The site is adjacent to an unnamed creek and 3,600 feet northwest of English Lake. A review of known wells was performed as a part of this evaluation. These wells include municipal, other than municipal, private and high-capacity wells. There are five wells within a 1,500-foot range of this facility's groundwater discharge.

## Land Treatment Loading Rates

There are two active outfalls at this facility. Outfalls 001 and 002 are both considered groundwater discharges. The following tables is the average flow (hydraulic loading) and Kjeldahl nitrogen, mass loading and chloride loading summations for the land treatment system.

**Table 3**  
**Loading Summaries Outfall 001 Absorption Pond**

Averages	
Year	Flow (gpd)
2023	16,465
2022	17,870
2021	13,312
2020	12,996
2019	12,758

**Table 4**  
**Loading Summaries Outfall 002 R & F**

Averages				
Year	Flow (gpd)	Kjeldahl Nitrogen (mg/l)	Nitrogen (lb/ac/yr)	Chloride (mg/l)
2023	2,408	39.1	151	98
2022	2,961	46.4	222	78
2021	2,913	20.5	96	50
2020	2,714	17.3	76	208
2019	2,604	15.4	64	275

## Proposed Groundwater Monitoring Requirements

Groundwater Monitoring systems are required for industrial wastewater discharges if the daily volume is equal to or greater than 15,000 gallons per day. The average flows for the non-contact cooling water discharge to the absorption pond did exceed the 15,000 gallons per day. The facility did not exceed the 15,000 gallons per day for the R & F system.

## **Conclusions**

The discharge for the non-contact cooling water (absorption pond) exceeded the 15,000 gallons per day average threshold. However, the wastewater is not anticipated to have any pollutants, so a groundwater monitoring system is not being required. The process wastewater discharge (R &F) did not exceed the threshold to require a groundwater monitoring system and the effluent levels are relatively low, so a groundwater monitoring system is not required for this system.

## **Compliance Schedule Recommendations**

Sections NR 214.12 (5)(b) and NR 214.13 (5)(e) Wis. Adm. Code requires a land treatment management plan for facilities with land treatment systems. The facility should review their plan within 90 days of permit reissuance and any revisions should be submitted to the department for approval.

Section NR 214.13(4)(a), Wis. Adm. Code, requires that the discharge to each cell of the ridge and furrow system shall be monitored for total daily flow. Additionally, section NR 218.05(1), Wis. Adm. Code, requires that process wastes be measured with a continuous recording device. Therefore, the permit shall include a schedule for the facility to install a continuous flow recording device for the process wastewater discharge to the R&F at Outfall 002.

## **Additional Information**

The management plan for the R & F system should include all of the criteria as set forth in section NR 214.13 Wis. Adm. Code. As an additional help the key sections in the management plan are the load rest cycles, the cover crop removal and the inspection of the R & F contours.

A R & F needs to have periods of wet and dry in order for the system to treat pollutants such as the nitrogen series. It is recommend the dry period (rest) be at least 24 hours. This means the loaded wastewater has a chance to infiltrate and the cell of the R & F stay dry for 24 hours. The length of time is not an Administrative Code requirement but a department suggestion.

Section NR 214.13 (5)(a) Wis. Adm. Code requires the ridge top grasses need to be cut and removed twice a year. This can include burning once per year. It is recommended that the cuttings be composted as far away from the system as possible.

Section NR 214.13 (2) Wis. Adm. Code gives dimensions for the contours of a proper R & F. This should be inspected annually and if the soil needs to be reworked it should be performed. In addition, if the infiltration rate slows significantly the furrows can be tilled or scraped to remove any fines that are impeding the infiltration.