

Permit Fact Sheet

General Information

| | |
|-------------------------------------|--|
| Permit Number | WI-0066648-02-0 |
| Permittee Name and Address | Essential Industries Inc PO Box 12, Merton, WI 53056 |
| Permitted Facility Name and Address | Essential Industries Inc 28391 Essential Rd, Merton, WI 53056 |
| Permit Term | July 01, 2026 to June 30, 2031 |
| Discharge Location | North side of the Bark River approximately 0.15 miles west of County Highway W in Merton, WI |
| Receiving Water | Bark River in the Bark River Watershed of Lower Rock River Basin in Waukesha County |
| Stream Flow (Q _{7,10}) | 7.1 cfs |
| Stream Classification | Warm water sport fish community, non-public water supply and recreational use |
| Discharge Type | Existing, Continuous |

Facility Description

Essential Industries produces polymers and resins for floor finishes as well as a variety of detergents and packaged finished goods for the sanitary maintenance supply industries. Soft water and reverse osmosis (RO) water are used for producing soap and detergent products. Discharge rates increased during the previous permit term due to the addition of a vacuum distillation system that utilizes a closed-loop chiller system. The discharge is made up of RO filter water discharge (approximately 775 gpd), water softener brine water discharge (approximately 46 gpd), and noncontact cooling (NCCW) (approximately 77,322 gpd). The discharge was previously covered under the NCCW general permit and switched to an individual permit in 2020 due to the total discharge containing additional wastewater other than NCCW.

Substantial Compliance Determination

After a desktop review of all discharge monitoring reports, compliance schedule items, and a site visit on February 14, 2025, this facility has been found to be in substantial compliance with their current permit.

Compliance determination made by Nick Lent, Wastewater Engineer, on March 24, 2025.

Sample Point Descriptions

| Sample Point Designation | | |
|--------------------------|---|--|
| Sample Point Number | Discharge Flow, Units, and Averaging Period | Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable) |
| 001 | 0.0865 MGD averaged 11/01/2020 – 04/04/2025 | EFFLUENT: Combined wastewater discharge from water softener brine discharge, reverse osmosis filter discharge, and non-contact cooling water. Flow shall be calculated from flow rates reported via In Plant sample points 101, 102 and 103. Representative grab |

| Sample Point Designation | | |
|--------------------------|---|--|
| Sample Point Number | Discharge Flow, Units, and Averaging Period | Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable) |
| | | samples collected at manhole prior to discharge to the Bark River. |
| 101 | 46 gpd reported via application for permit renewal. | Report flow from water softener discharged via Outfall 001. Flow shall be estimated based on regeneration cycle information. |
| 102 | 775 gpd reported via application for permit renewal. | Report flow from reverse osmosis filter discharged via Outfall 001. Flow shall be estimated based on operations and water use. |
| 103 | 77,322 gpd reported via application for permit renewal. | Report non-contact cooling water monitored via magnetic meter and discharged via Outfall 001. |

Permit Requirements

1 Inplant - Monitoring and Limitations

1.1 Sample Point Number: 101- Water Softener Discharge; 102- Reverse Osmosis Discharge

| Monitoring Requirements and Limitations | | | | | |
|---|------------|-----------------|------------------|-------------|-------|
| Parameter | Limit Type | Limit and Units | Sample Frequency | Sample Type | Notes |
| Flow Rate | | gpd | Daily | Total Daily | |

1.1.1 Changes from Previous Permit:

In-plant limitations and monitoring requirements were evaluated for this permit term. It was determined that sample points 101 and 102 should be added to the permit to track volumes of water softener brine and reverse osmosis discharge directed to outfall 001. See additional explanation of limits under “Explanation of Limits and Monitoring Requirements” below.

1.1.2 Explanation of Limits and Monitoring Requirements

Flow Rate- Sample frequency has been set to daily to align with reporting requirements for Outfall 001. Sample type has been set to Total Daily as defined in NR 218.04(16), Wis. Adm. Code as flow meters are not currently installed to track discharge from the sources listed for Sample Points 101 and 102.

1.2 Sample Point Number: 103- Non-Contact Cooling Water

| Monitoring Requirements and Limitations | | | | | |
|---|------------|-----------------|------------------|-------------|-------|
| Parameter | Limit Type | Limit and Units | Sample Frequency | Sample Type | Notes |
| Flow Rate | | gpd | Daily | Continuous | |

1.2.1 Changes from Previous Permit:

In-plant limitations and monitoring requirements were evaluated for this permit term. It was determined sample point 103 should be added to the permit to track the volumes of non-contact cooling water discharged via outfall 001. See additional explanation of limits under “Explanation of Limits and Monitoring Requirements” below

1.2.2 Explanation of Limits and Monitoring Requirements

Flow Rate- Sample frequency has been set to daily to align with reporting requirements for Outfall 001. Sample type has been set to continuous as defined in NR 218.04(17), Wis. Adm. Code, due to the current use of an in plant magnetic flow meter to track non-contact cooling water discharge volumes.

2 Surface Water - Monitoring and Limitations

2.1 Sample Point Number: 001- NCCW, RO & Water Softener

| Monitoring Requirements and Limitations | | | | | |
|---|-------------|-----------------|------------------|-------------|---|
| Parameter | Limit Type | Limit and Units | Sample Frequency | Sample Type | Notes |
| Flow Rate | | gpd | Daily | Total Daily | |
| BOD5, Total | | mg/L | Annual | Grab | |
| Suspended Solids, Total | Daily Max | 40 mg/L | Monthly | Grab | |
| Suspended Solids, Total | Monthly Avg | 40 mg/L | Monthly | Grab | |
| Suspended Solids, Total | Monthly Avg | 1.98 lbs/day | Monthly | Calculated | |
| pH Field | Daily Min | 6.0 su | Quarterly | Grab | |
| pH Field | Daily Max | 9.0 su | Quarterly | Grab | |
| Nitrogen, Ammonia (NH3-N) Total | | mg/L | Annual | Grab | |
| Oil & Grease (Hexane) | Daily Max | 15 mg/L | Annual | Grab | |
| Oil & Grease (Hexane) | Monthly Avg | 15 mg/L | Annual | Grab | |
| Chloride | Daily Max | 1,510 mg/L | Monthly | Grab | Sample when flow is reported at Sample Point 101. |
| Chloride | Weekly Avg | 1,510 mg/L | Monthly | Grab | |
| Chloride | Monthly Avg | 1,510 mg/L | Monthly | Grab | |
| Phosphorus, Total | Monthly Avg | 1.1 mg/L | Monthly | Grab | Interim limit effective until |

| Monitoring Requirements and Limitations | | | | | |
|---|-------------|-----------------|------------------|-------------|--|
| Parameter | Limit Type | Limit and Units | Sample Frequency | Sample Type | Notes |
| | | | | | October 31, 2028. |
| Phosphorus, Total | Monthly Avg | 0.225 mg/L | Monthly | Grab | Final limit effective November 1, 2028. See Permit Section 2.2.1.2 and Schedule 3.1. |
| Phosphorus, Total | 6-Month Avg | 0.075 mg/L | Monthly | Grab | Final limit effective November 1, 2028. See Permit Section 2.2.1.2 and Schedule 3.1. |
| Phosphorus, Total | Monthly Avg | 0.0438 lbs/day | Monthly | Calculated | Final limit effective November 1, 2028. See Permit Section 2.2.1.2 and Schedule 3.1. |

2.1.1 Changes from Previous Permit

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

- **Flow-** The sample frequency for flow has been changed from “monthly” to “daily” to align with the standard frequency used in WPDES permits for the reporting of discharge flow rates.
- **Temperature-** Monitoring for temperature has been removed from the permit as data collected during the previous term shows no reasonable potential for exceeding calculated temperature limitations.
- **Chloride-** Samples for monthly chloride monitoring are now required to occur when flow is reported via sample point 101 to ensure limits are not exceeded when effluent discharged at Outfall 001 includes water softener brine discharge.
- **Phosphorus-** The interim limit changed from a narrative limit to a WQBEL of 1.1 mg/L.

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 August 15, 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.

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

BOD5, Nitrogen, Ammonia (NH3-N), pH, and Oil & Grease- Monitoring and reporting for BOD5, Total (Biochemical Oxygen Demand), Nitrogen, Ammonia (NH3-N) Total, pH, and Oil & Grease are being retained from the permittee’s previous monitoring requirements under the non-contact cooling water general permit in accordance with antibrackling

requirements of NR 207.12, Wis. Adm. Code. The frequency of monitoring has not changed for these parameters. Monitoring may be removed from future permit terms once more data is collected.

3 Schedules

3.1 Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus

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

| Required Action | Due Date |
|---|------------|
| Final Plans and Specifications: The permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41, Stats., specifying treatment plant upgrades that must be constructed to achieve compliance with final phosphorus WQBELs, and a schedule for completing construction of the upgrades by the complete construction date specified below. | 10/31/2026 |
| Treatment Plant Upgrade to Meet WQBELs: The permittee shall initiate construction of the upgrades. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41, Stats. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications. | 06/30/2027 |
| Construction Upgrade Progress Report #1: The permittee shall submit a progress report on construction upgrades. | 12/31/2027 |
| Construction Upgrade Progress Report #2: The permittee shall submit a progress report on construction upgrades. | 06/30/2028 |
| Complete Construction & Achieve Compliance: The permittee shall complete construction of wastewater treatment system upgrades. | 11/01/2028 |

3.1.1 Explanation of Schedule

Schedule 3.1 is a continuation of Schedule 2.2, Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus, from permit issuance 0066648-01-0. The facility shall complete actions listed to comply with final phosphorus WQBELs by the date listed in the schedule.

Attachments

Water Quality-Based Effluent Limitations for Essential Industries Inc. WPDES Permit No. WI-0066648-02, August 15, 2025, Nicole Krueger

Justification Of Any Waivers From Permit Application Requirements

No waivers requested or granted as part of this permit reissuance.

Prepared By: Amanda Perdsock, Wastewater Specialist

Date: April 21, 2026